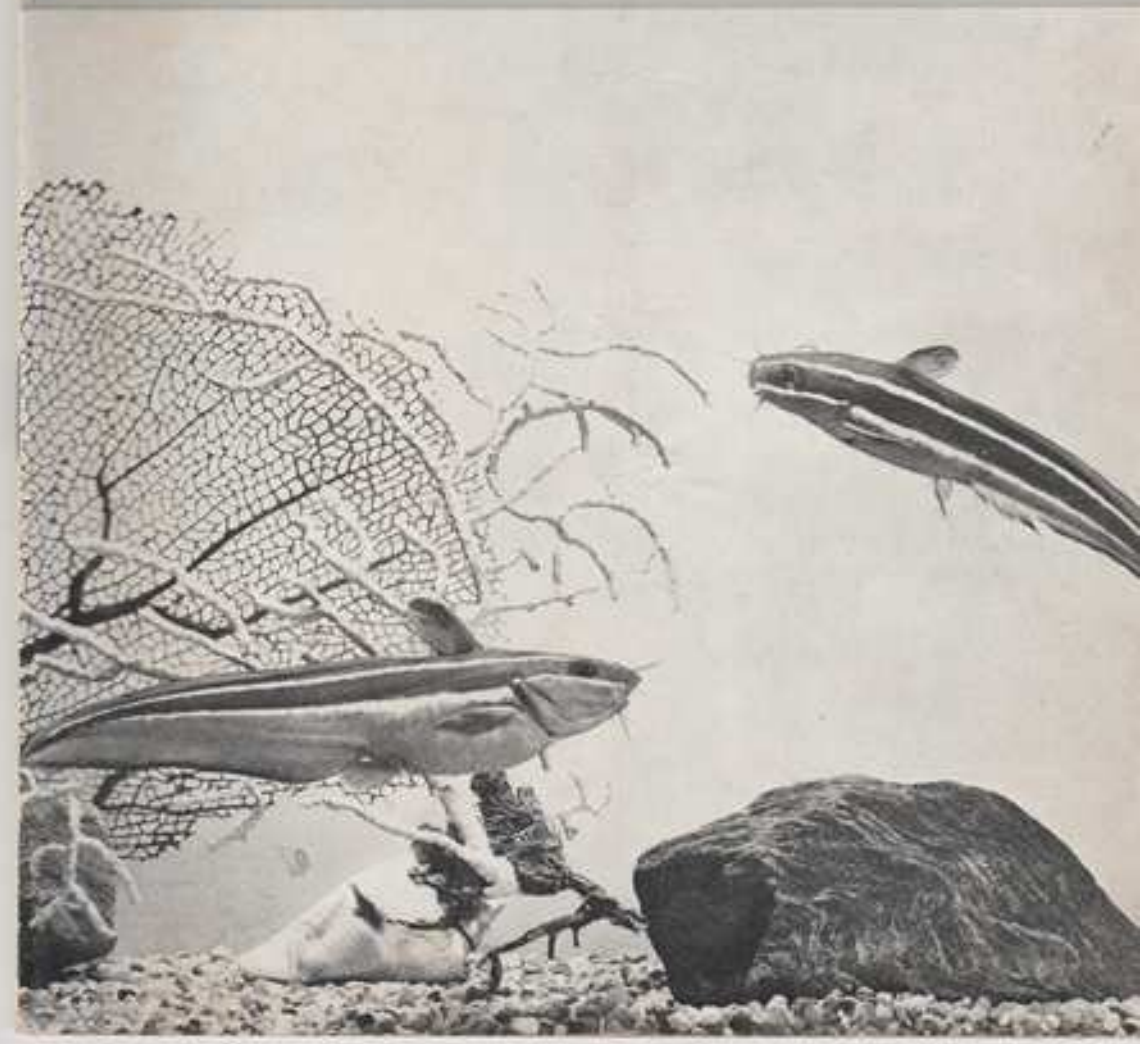
February
1968

# the Aquarist

and Pondkeeper

2/6
monthly



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### HALVEN FILTERS

| | |
|---|---|
| Babysaver Bottom Filter | 7/- |
| Outside Filter Small | 16/3 |
| " " Large | 23/- |
| Champagne Filter (Bubbletop) | 34/6 |
| Filterfast 3in 50 G.P.H. | 32/3 |
| " 5in 60 " | 54/9 |
| " Lge 100 " | 100/- |

### THERMOSTATS

| | each |
|---|---|
| Silk Stat | 22/- |
| Constat External, 10 amp | 36/- |
| Constat New External Type QK | 25/- |
| Wizard External | 25/- |
| Inter-Pet | 35/- |
| UNO | |
| Out/Adj. | 18/- |
| Ins/Adj. | 13/- |
| Ins/Adj. "Popular" | 10/- |
| "Popular" with neon indicator | 12/6 |
| Preset Matic | 24/6 |
| Wizard | 10/-, 12/6, 18/- |

### AERATORS

| | |
|---|---|
| Rena Junior | 29/- |
| Rena Summit | 21/- |
| Quicko | 25/- |
| Rena | 35/- |
| Montrose Major | 24/- |
| Montrose Minor | 21/- |

### GARDEN PUMPS

| | |
|---|---|
| Hippo Fountain Kits | £5 10 0 |
| Otter Fountain Kit | £8 17 6 |
| Otter Combined Kit | £10 10 0 |

### PISTON PUMPS

| | |
|---|---|
| Hy-flo Junior New Super | 107/6 |
| Hy-flo "A" | 130/- |
| Hy-flo "B" | 163/- |
| Hy-flo "C" | 236/- |

### Thermometers

| | |
|---|---|
| Mercury | 6/6 |
| Blue Gem | 5/- |
| Dumpy | 6/6 |
| Superb External Stick-on | 6/6 |

### Sundries

| | |
|---|---|
| T Pieces | 10d. |
| Clamps | 1/3 |
| Aeration Tubing 8d. yd. | |
| Siphon Tubing 1/6 yd. | |
| Glass Wool | 1/3 |
| Filter Carbon | 2/- |
| Halamid | 4/- |
| Aquariumstop | 2/6 |
| Ich Spot Cure | 3/- |
| Vivo | 2/6 |
| Hobby Spot Cure | 3/9 |
| White Spot Miracle Cure | 2/6 |

### Filters

| | |
|---|---|
| Dynaflow Filter | £8 17 6 |
| New Super Model | £7 15 0 |
| Grosvel Bubble-Up | 37/6 |
| Hykro Outside | 15/- |
| Corner | 4/6 |
| Outside | 18/6 |
| Windmill Hand Rejector | 15/- |
| Windmill Air Rejector | 10/- |
| Super Model | 15/6 |
| Convert | 19/6 |
| Premier Biological Sub-Gravel Filters | 12/6, 15/- |
| Sediket | 8/- |
| Slim Jim | 17/6 |
| Bottom Filter | 6/6 |

### TROPICALS

**Neons, 9 for £1; 2/6 each**

| | | | |
|---|---|---|---|
| Roseeus | 4/- | Pterophyllum | 10/-, 15/- |
| Angels | 2/6 & 3/6 | Large Green Saillin | |
| White Cloud Minnows | 2/6 | Mollies | from 3/- |
| Flames | 2/6 | Black Angels | 6/-, 7/6 |
| Beacons | 2/6 | Black Lace Angels | 4/- to 7/6 |
| Black Widows | 2/6 | Tiger barbs | 2/- & 3/- |
| Platys various, | from 2/6 | Glowlights | 2/- |
| Swordtails various, from | 3/- | Penguins (each) | 3/- |
| Schuberti barbs | 3/- | Bumble Bees (each) | 3/- |
| Scissortails | 3/- | Mollies, Black from | 3/6 & 5/- |
| Guppies (pair) | 1/6, 3/- | Lemon tetras | 4/- |
| Harlequins | 3/- | Glassfish Adult | 4/6 |
| Cherry barbs | 3/- | Astreus Cats | 7/6 |
| Nigger barbs | 3/- | Otocilinus Cats | 7/6 |
| Chequer barbs | 3/- | Fighters | 10/-, 12/6 |
| Red Eyed Tetra | 3/- | Serpae | 3/6 |

Thick lip 3/-, dwarf or leeri 3/6, Kissing 4/-, Opaline 2/6, Gouramis.

### "SWIRL-AWAY"

| | |
|---|---|
| Aquarium Vacuum Cleaner | 48/6 |
| Super Model | 56/9 |

### EHEIM FILTERS STOCKED

### BOOK CASE BOW-FRONTED AQUARIUM

| | | | |
|---|---|---|---|
| 48 × 10 × 15 | | £35 | 0 0 |
| 36 × 12 × 15 | | £24 | 0 0 |
| **Standard Bow** | **£25,** | **£17, £13** | **0 0** |

### PLANTS

| | |
|---|---|
| Sagittaria | from 6d. each |
| Vallis. Toris | " 6d. " |
| Vallis. Spiralis | " 6d. " |
| Amboilis | " 6d. " |
| Ludwigia | " 6d. " |
| Hygrophila | " 6d. " |
| Cryptocoryne | " 2/- & 3/- |
| Wisteria | " 1/6 & 2/- |
| Giant Hygrophila | " 1/6 & 2/- |

By post, add 2/-. Minimum 10/-.

### HEATERS 25w to 200w

Uno & Wizard 8/6

### ADULT FISHES

| | |
|---|---|
| Pelmatochromis Kribensis | 3/- & 7/6 each |
| Geophagus Small | 7/- |
| Anostomus | 20/-, 25/6 |
| Headstanders | 17/6 |
| Black Cardinal | 4/6 each |
| Scats from | 15/- to 20/- |
| Antoniori Cats | 5/- & 7/6 |
| Malayan Angels | 10/- to 20/- |
| Black Veil Angels | 6/- & 7/6 |
| Tin Foil Barbs 3" | 6/-, 7/6 |
| Silversharks 4" - 5" | 20/-, 25/- |
| Freemouth | 4/- |
| Red Veiltail Guppy | 10/- & 15/- pair |
| Red Tail Sharks | 3/6 & 7/6 |
| Keyhole Cichlid | 15/- |

*Our minimum order for fishes is £2, a charge of 15/- for container. Carriage to Neasden Main Line Station and telegram stating time of arrival. Give phone number if possible.*

### NYLON COATED AQUARIA. STOCK SIZES

| | |
|---|---|
| 24 × 12 × 15 | £5 5 0 |
| 18 × 10 × 12 | £3 0 0 |
| White or black covers | 18/6 & 25/- |

*Larger sizes on quotation*

### STANDARD AQUARIUMS

| (Light Gauge) | | (Angle Iron) | |
|---|---|---|---|
| 12 × 8 × 8 | 10/6 | 24 × 12 × 12 | 55/- |
| 10 × 8 × 8 | 10/6 | 24 × 12 × 15 | 60/- |
| 14 × 8 × 8 | 13/- | 30 × 12 × 15 | 80/- |
| 16 × 8 × 8 | 17/6 | 36 × 12 × 15 | 87/6 |
| 18 × 10 × 10 | 22/6 | 48 × 12 × 15 | 130/- |
| 18 × 10 × 12 | 30/6 | | |

### COVERS

| | |
|---|---|
| 18 × 10 | 16/- |
| 24 × 12 | 23/- |
| 30 × 12 | 32/6 |
| 36 × 12 | 37/6 |
| 48 × 12 | 42/6 |

### STANDS

| | |
|---|---|
| 18 × 10 × 36 | 23/- |
| 24 × 12 × 36 | 30/- |
| 30 × 12 × 36 | 55/- |
| 36 × 12 × 36 | 60/- |
| 48 × 12 × 36 | 82/6 |

Aquarium covers sent by post only at customer's risk.

### FOODS

| | |
|---|---|
| Exotic Flakes | 1/6 |
| Hykro Flakes | 1/- |
| Brosiam | 1/9 & 2/9 |
| Biawic | 8d. & 1/6 |
| Dry Daphnia | 6d. to 3/6 |
| Liquifry | 2/6 |
| Infusyl | 2/6 |
| Rims | 3/- C.W. 2/6 & 5/6 |
| McLynn's | 1/6, 2/6, 4/6 |
| Brine Shrimp | 2/-, 2/6 |
| Tetra Min Growth Food Hahnel | 5/- |
| Wardley's Hi Glo | 5/- |
| Tetra Min | 2/3, 3/10, 6/11, 28/-, 104/- |
| Wunderbar Food | 2/6, 6/9, 22/6 |

**Postal Charges Add 2/- up to 10/-; 2/6 up to 20/-; 3/- up to £2; 4/- up to £3; (Exception Tanks etc.)**

CARRIAGE AT COST CHARGED ON AQUARIUMS, STANDS, AND TANKS, SENT AT OWNER'S RISK

**(Enquiries stamped envelope please) Cash with Order please**

# THE CENTRAL AQUARIUM

**(HENDON LTD)**

**Situated on the A41 Route, opposite Hendon Central Station**

**391 HENDON WAY, HENDON CENTRAL, N.W.4 Phone: HEN 9700**

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## 26, WESTBURY LANE, BUCKHURST HILL, ESSEX

It is quite easy to get to Buckhurst Hill. By tube train on the Central Line thirty-five minutes from West End, and we are three minutes from Buckhurst Hill station. Or by bus routes 20, 20A, 167 to Bald Faced Stag, five minutes walk from there.

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### LIVEBEARERS

| | |
|---|---|
| Veiltail Guppies | from 5/6 pair |
| Snakeskin | 7/6 " |
| Black Mollies | 3/- each |
| Lyretail | 3/6 " |
| Velifera | 4/6 " |
| Liberty | 3/- " |
| Speckled | 3/- " |
| Red Swordtails | 3/- " |
| Green | 3/- " |
| Yellow Wagtail Platys | 3/- " |
| Blue | 3/- " |
| Moon | 3/- " |
| Sunset Variatus | 7/6 pair |
| Marigold Variatus | 8/- " |

### CHARACINS

| | |
|---|---|
| Neons 8 for £1 | 3/- each |
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| Splash | 4/- each |
| Cardinals | 5/- " |
| Anostomus Anostomus | 20/- " |
| Rummy-nosed Tetras | 5/- " |
| Silver Hatchets | 4/6 " |
| Marble Hatchets | 4/- " |
| Nannacoumus Espei | 4/- " |

### LABYRINTH

| | |
|---|---|
| Fighters Male | 7/6 up |
| " Female | 3/6 each |
| Snakeskins Gouramis | 3/- each |
| Leeri | 3/- " |
| 3 Spot | 3/- " |
| Opaline | 3/- " |
| Jewel | 3/- " |
| Dwarf | 8/- pair |

### RASBORAS

| | |
|---|---|
| Harlequins | 3/- each |
| Fireasil Rasboras | 3/- " |
| Green eyed Ras. | 3/- " |
| Urophthalmis | 3/6 " |
| Silver Rasboras | 3/6 " |

### BARBS

| | |
|---|---|
| Tigers | 3/- " |
| Albino Tigers | 3/6 " |
| Fasciatus | 4/- " |
| Barbus Callipterus | 6/- " |
| Nigger Adult | 6/- " |
| Clown Barbs | 4/- " |
| Half Banded | 3/- " |
| Cumingi | 4/- " |
| Checker | 3/- " |

### DANIOS

| | |
|---|---|
| Zebra | 3/- " |
| Glass | 3/- " |
| Pearl | 3/6 " |

### CICHLIDS

| | |
|---|---|
| Nannacara Anomala | 4/- " |
| Firemouths | 4/- " |
| Nigger Cichlids | 3/6 " |
| Blue Acars | 3/- " |
| Orange Chromide (adults) | 8/- " |
| Brown Acars | 3/- " |
| Pel. Kribensis (adult) | 8/6 each |
| Jewels (adult) | 8/6 " |
| Angels | 3/- " |
| Black Angels | 5/- " |
| Black Veil Angels | 7/6 " |
| Ap. Ramirezi | 4/6 " |
| Ap. Reitzigi | 6/- " |
| Geophagus Jurupari | 18/- " |
| " Cupido | 15/- " |
| Pterophyllum Altum (large) | 30/- " |

### EGGLAYING TOOTHCARPS

| | |
|---|---|
| Aph. Bivittatum | 15/- pair |
| Aph. Calliurum (new name) | 15/- " |
| Cyno. Whitei | 20/- " |

### CATFISH

| | |
|---|---|
| Cory. Paleatus | 4/6 each |
| " Arcuatus (Adult) | 6/- " |
| " Spilurus | 4/6 " |
| " Melanistius | 3/6 " |
| Clarius Cazo 4" | 4/- " |
| Loricaria Parva | 8/- " |
| Upside-down catfish | 8/6 " |
| Hoplosternum (6") | 10/6 " |

### A.O.V.

| | |
|---|---|
| Sucking Loach | 3/- " |
| Bumble Bees | 3/6 " |
| White Clouds | 3/6 " |
| Scats | 9/- up |
| Malayan Angels | 5/- up |
| Knife Fish | 9/- each |
| Reed Fish | 20/- " |
| Butterfly Fish | 6/- up |
| Elephant Fish | 15/- up |
| Freshwater Stingray (12") | £10 each |

## MARINE FISH IN STOCK

Butterfly, Clowns, Damsels, Triggers, Anemones, Hermit Crabs, Angels, Chelmons, Box Fish, Scorpions, Wrass, Batfish, Puffers.

### Minimum order 10/-

| | |
|---|---|
| Ambulia | 8/- doz. |
| Cabomba | 8/- " |
| Hygrophila | 8/- " |
| Vallis (Twisted) | 8/- " |
| Ludwigia | 8/- " |
| Elodea Densa | 4/- " |

### PLANTS IN STOCK

| | |
|---|---|
| Crypto. Affinis | 2/6 each |
| " Ciliata (Broad Leaf) | 3/- " |
| " Nevillii | 3/- " |
| " Lingua | 6/- " |

### Post Paid

| | |
|---|---|
| Water Wisteria | 1/6 each |
| Amazon Swords | 4/6 " |
| Sagittaria Subulata | 6/- doz. |
| Aponogeton Undulatum | 4/- each |
| " Crispus | 4/- " |
| Lagenandra Ovata | 8/- " |
| Malayan Swords | 4/- " |

Please send S.A.E. for price lists.

Please address all correspondence as address above.

# QUEENSBOROUGH FISHERIES

111 GOLDHAWK ROAD, SHEPHERD'S BUSH, W.12
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**ALL POST ENQUIRIES TO HEAD OFFICE AT WRAYSBURY**

## SPECIAL PLANT COLLECTIONS (post only)

**All post enquiries to Head Office at the Wraysbury address. 2s. post and packing on all collections**

*It may be necessary to substitute certain plants owing to the time of year*

**TROPICALS** — **A** — £1
50 plants including Dwarf Lily Cryptocoryne Wisteria etc.

**B** — £1
12 Vallisneria
12 Hygrophila
3 Micro Sagittaria
6 Ludwigia
6 Elodea Densa

**C** — £1
12 Vallisneria
6 Micro Sag.
6 Ludwigia
6 Elodea Densa
6 Bacopa
1 Amazon Chain Sword
1 Portion Clover

**D** — £1
1 Nymphea Stellata
1 Giant Hygrophila
3 Aponogeton
1 Wisteria
1 Giant Sagittaria
1 Cryptocoryne
1 Indian Fern
1 Portion Clover

**E** — 10/-
6 Vallisneria
6 Micro Sag.
6 Hygrophila
6 Elodea Densa

**F** — 10/-
3 Cryptocoryne
1 Portion Clover
6 Micro Sagittaria
6 Bacopa

**G** — 10/-
9 Vallisneria
9 Ludwigia

**H** — 10/-
6 Vallisneria
6 Hygrophila
6 Ludwigia

**J** — 10/-
2 Water Wisteria
6 Micro Sagittaria
6 Bacopa

**K** — 10/-
2 Clover
2 Chain Swords
6 Bacopa

**TROPICAL OR COLD**

**L** — £1
12 Sagittaria
6 Micro Sag.
6 Ludwigia
6 Honeywort
1 Portion Riccia
3 Portions Clover

**M** — £1
50 Plants for your Aquarium—Value 30/-

**N** — 10/-
6 Vallisneria
6 Honeywort
6 Elodea Densa
3 Hornwort
3 Portions Clover

**P** — 7/6
Giant Amazon Sword Plants 6-8 inches

**Q** — 2/6
Water Lettuce
Very beautiful plants or 5 for 10/-

**S** — £1
6 Ludwigia
6 Cabomba
6 Ambulia
6 Vallisneria

**T** — 10/-
2 Hartellana
1 Cordata
1 Willisi

### THERMOSTATS

| | |
|---|---|
| Constat External | 36/- |
| Springfield Ex. | 25/- |
| Springfield Ins.(Ad). | 15/- |
| Springfield Ins.(Ad). | 10/- |
| UNO Ins.(Ad). | 15/- |
| UNO Ins.(Ad). "Popular" | 10/- |
| "Popular" with neon indicator | 12/6 |
| Rapid (with Neon) | 21/- |
| "Ex-Ex" Sentinel | 26/6 |

### AERATORS & PISTON PUMPS

| | each |
|---|---|
| Monsoon | 21/- |
| Monsoon | 24/- |
| Fairy | 27/6 |
| Star | 40/- |
| Rapid | 50/- |
| Zoobeka Total | 75/- |
| Hy-flo Junior | 107/6 |
| Hy-flo "A" | 130/- |
| Hy-flo "B" | 165/- |
| Hy-flo "C" | 250/- |

### THERMOMETERS

| | each |
|---|---|
| Mercury | 4/6 |
| Gem | 4/6 |
| Plastic Backed | 4/6 |
| Spirit Blue Gem | 5/- |
| "Ex-Ex" Dumpy | 6/6 |

### FILTERS

| | each |
|---|---|
| "Windmill" Plastic Outside Filter | 19/6 |
| "Windmill" Biological Aquarium Filter | 12/6, 15/- |
| "Windmill" Regent Inside Filter | 10/- |
| Corner Filter | 6/- |
| Air Lift | 2/6 |
| "Slow Jon" Outside Filter | 17/6 |
| "Kleer King" Outside Filter | 22/6 |
| Bottom Filter | 8/3 |
| Uno Polyfilter | 3/9 |
| Gro-Well Bubble-up | 35/- |

### HEATERS

| | each |
|---|---|
| "QUEENSBOROUGH" 25w, 40w, 60w, 75w,100w,120w, 150w | 18/- |
| Rena (75—200w) | 18/- |
| "Ex-Ex" Flexible Heaters (100w) | 19/- |
| "Ex-Ex" Thermostatic Heaters, 100w and 150w | 36/- |
| Pressi-matic | 34/6 |
| Inter-Pac Thermostatic Heaters | 25/- and 35/- |
| Heater Holders | 2/3 |

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**STRATA ROCKWORK**
**SEA & SHORE**
**BLUE SKYS**

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

Book Case Bow Front Aquarium
3 ft.—£22 4 ft.—£33

Bow Aquarium with Plain Stand
2 ft.—£12 – 10s 3 ft.—£16 – 10s 4 ft.—£24
In white, black, gold and penny bronze

Fully Glazed Aquariums

| | Tank | Hood | Stand | Complete |
|---|---|---|---|---|
| 18×10×10 | 22/6 | 15/- | 37/6 | 75/- |
| 24×12×12 | 52/6 | 22/- | 47/6 | 122/- |
| 24×12×15 | 57/6 | 22/- | 47/6 | 127/- |
| 30×12×15 | 95/- | 36/- | 55/- | 186/- |
| 36×12×15 | 97/6 | 38/6 | 57/6 | 193/6 |
| 48×12×15 | 137/6 | 48/6 | 67/6 | 253/6 |

**Now available**
Aquariums with marine-proof frames £1 10s. 0d. extra on standard tank prices e.g. 36×12×15 £4 17s. 6d. + £1 10s. 0d. = **£6 7s. 6d.**
Aquariums with rust-proof frames, £1 0s. 0d. extra on standard tank prices e.g. 24×12×12 £2 12s. 6d. + £1 0s. 0d. = **£3 12s. 6d.**
Special size tanks with marine or rust-proof frames made to order.
*Please add 2/6 extra postage on appliance orders up to 10/-, 4/- up to 20/-, 5/- up to 30/-.*
Glass, China, Shells and Live foods sent at purchasers own risk.

# The AQUARIST
## AND PONDKEEPER

*Founded in 1924 as "The Amateur Aquarist"*

Vol. XXXII No. 11 February, 1968

THE BUTTS, HALF ACRE, BRENTFORD, MIDDLESEX

**Telephone: 01-560 6221**

**PUBLISHED MONTHLY**

**SUBSCRIPTION RATES**

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Editor: Laurence E. Perkins

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**The Editor accepts no responsibility for views expressed by contributors.**


## Contents



# A cheap fish house for the amateur

**by M. Grayson**

AT some time or another we have all envied the professionals of our hobby with their beautifully designed and equipped fish-houses. Unfortunately such establishments are far out of the scope of the average aquarist. However, a little over a year ago, at the age of fourteen, I was one of the many aquarists with tanks standing around the house and so I decided to build a small fish-house to accommodate them. Using second-hand materials, building was cheap, but if I had used new materials I am sure that the total cost would have been many times greater.

### Siting and base construction

The first problem is the siting of the building but this can quickly be solved by the use of a little common sense. The biggest expense of running a fish-house is heating and so a sheltered position is obviously the best. If it can be built as a lean-to on the house then there are the advantages of heat insulation on the house side and convenience for water and electricity. I decided to build my particular building in the corner of the garden where the garden wall sheltered it on two sides and the garage wall on the third side. This latter became one side of the actual fish-house. Unless the building is to be very large, then foundations will not be needed. Second-hand concrete flags can be obtained very cheaply but I preferred to utilise a concrete base.

If concrete is used, a first layer of broken stones is layed and then about three inches of thick concrete is added and smoothed out as required.

### Wall and roof construction

Once the base is completed and allowed to get very hard, work can be started on the walls. I used old bricks (obtained for nothing from a demolition area) to build the walls up to a height of about four feet at the side and end and to a height of about three feet at the front. As I pointed out earlier, the third side is in fact the garage wall. The walls were completed with timber and in the end I installed two windows. This was done to save money as all the wood which I had acquired had been used but I did have some spare glass. The roof was easily the most expensive and difficult part of construction.

Continued on page 308

# Our three British newts


by
**Bill Simms**

**Top**
The smooth newt near some *Potamogeton crispus*

**Left**
A male palmate newt swimming near some *Ranunculus aquatilus*

A FRIEND who lives deeper in the country than I do, has kept his garden pond exclusively for native British creatures such as newts (in their season), sticklebacks, and the many kinds of water insects and their larvae. It is fairly large and is planted with really good specimens of British freshwater plants so that I am always able to obtain a good sample for a drawing—most convenient. But it also makes an ideal spot for studying water life in a natural state away from interruptions by passers-by.

Some few years ago he started his newts off by installing a number of Palmates which he transported from another district early in spring. I helped him with this, and it was easy to pick out the species he wanted by the webbing on the hind feet.

This webbing is more pronounced on the males and is shown clearly in the drawing of a male palmate newt swimming near some *Ranunculus aquatilus*. In late summer and autumn, when the adults climb out to spend the autumn and winter ashore, this webbing practically disappears, and at that time it is difficult to distinguish them from Smooth newts.

There is one other characteristic feature, however, and that is the thread-like ending to the tail. Many aquarists use this thread-like ending alone to identify the palmate, but it can be misleading for the young of smooth newts also have this same spike.

Altogether, the identification of our native newts is not easy at any time when they are out of the breeding dress, and in the case of the females at all times it can be more than just difficult—except that size can help a little.

There are three kinds of newts in Britain. The Crested Newt, (*Triturus cristatus*), reaches six inches; the Smooth Newt, (*T. vulgaris*), is about four inches; and the Palmate Newt, (*T. helveticus*), averages three inches.

During autumn and winter, when they are ashore hiding in damp spots, both males and females of all three kinds are alike in appearance, being slightly mottled on a muddy drab colour. It is at this time that size is about the only practical means of distinguishing them; but because there are size differences between individuals in each of the species, this method should not be relied on too completely.

In spring, identifying the males of all three species is simple. The crested newt has a large jagged crest which stands up proudly in the water though being soft and flimsy, it droops somewhat when the newt is taken out of water.

The crest of the male smooth newt is not jagged, but smoothly wavy. The drawing of the smooth newt near *Potamogeton crispus*, shows this clearly. In addition, the smooth newt, which is orange below, marbled with darker spots like the crested newt, has a pale blue band along the tail base.

The male palmate newt has a crest similar to that of the smooth newt, and here the most certain way to differentiate between palmate and smooth newts is the webbed hind foot and spiky tail of the palmate, mentioned earlier.

Telling the difference between females is not so easy, even in the breeding season. They all are brighter in colour, like the males, but to a lesser degree. After much comparison and experience the expert can frequently tell the difference, but he, also, will sometimes be baffled.

The usual way is to scoop a few more out of the pond, and if a male is caught the females can be presumed to be of the same kind, for, normally, different species do not live together. Again, this is not certain because there are exceptions to this rule. In one large pond I visit I have found males of both smooth and palmate newts at times.

All the newts have similar breeding habits except in small details that will be described in their turn. In spring, early April usually, the adult newts enter the ponds, slow-moving streams, or canals, and there they acquire their very much brighter colours, and the males develop their crests.

The courting display of the male is very demonstrative. He alternates between graceful manœuvres around the female, and gentle caresses with his head and tail. Apart from this there is no actual coupling between the sexes. At the height of their mutual excitement the male emits his sperm in a little package shaped roughly like a cone. This lies on the gravel or mud at the bottom of the pond.

The female swims down, and grasps this package of sperm with her vent, and there absorbs it. By this means the eggs inside her are fertilised.

When it later comes to the actual egg-laying there is a slight difference of behaviour. The female crested and palmate newts lay their eggs singly, inside the rolled-up leaf of a water plant, or stuck singly on to a stone, but the female smooth newt is more careless. She may lay two or three eggs together and just allow them to lie loosely in the stem junction on a plant, without any protection.

The eggs take about a fortnight to hatch out, and the young larvae, though something like frog tadpoles, have a more graceful shape, with a longer tail, two rudimentary front legs, and some gills around a smaller head.

These larvae are somewhat transparent and for some weeks this lack of colouring is retained while the small creatures develop. The front legs become longer and in five to seven weeks the hind legs appear. After ten to twelve weeks the general colour becomes olive green dotted with black spots, while the small crests they have developed, and the tail edges, are golden. At this stage, having red, plume-like gills, the young newts are most colourful.

But this is not for long. About a week later the gills and crests disappear and this is a sign that the lungs have now developed, so that the youngsters are air-breathing. They must rise to the surface at intervals for air. This they do with a resounding plop—quite startling if heard in a quiet room containing an aquarium with some of these youngsters.

Normally, at this stage, the young newts leaves the water and find some damp spot ashore to spend the winter. But a few that are not so well developed—possibly through a shortage of suitable foods—remain in the water in the larval state throughout the winter.

Newts of any of these three species are ideal inmates for indoor vivariums—provided these are large enough, and have provision for a deep aquarium section in spring. The food of newts is always animal matter, usually small water creatures, including tadpoles, when in water. On land they eat worms, small snails and slugs, and insects of many kinds.

If you manage to get them to take small pieces of raw meat, make sure that you always clear away any debris for it can cause troubles in many ways if left to rot. Also be sure to supplement this with plenty of insects for they provide vitamins not obtainable in meat.

I am not aware of the newt's true life span, but like many amphibians they can live for many years. One crested newt male I know of has led a solitary life in a large vivarium for eight years, and he was fully developed when caught. It would be interesting to know if any readers possess older ones than this.

# What is your opinion? No. VIII

**by B. Whiteside**

WHAT is the best live food for adult fishes? And what are the most suitable plants for the coldwater aquarium? These were the subjects posed for discussion in the last article.

A regular writer, **Mr. D. R. Hubble,** of Sheppey, Kent, was first to send his opinion. He questions the word "live" and asks if we consider freshly ground earthworms to be live, as the cells are. Mr. Hubble goes on to say that the livers of freshly killed white mice are also live and these if one has them, are one of the most excellent protein diets and in his experience, are more easily ground down to size than other meats. Such a diet, varied of course with any good carbohydrate is, to Mr. Hubble's mind, amongst the best. A certain rice cereal is eaten by all the inmates of his house and its tanks. Mr. Hubble continues by saying that liver is unlikely to carry any specifically aquatic disease as could *tubifex* or even the good old *daphnia* (for all their shells). His fish thrive on a great variety of human foods, including any lean meat, egg-yolk, peas, lettuce and cereals, in addition to more conventional foods. Mr. Hubble does not keep coldwater plants. (One might assume that supplies of the livers of white mice would be rare unless one had access to the aftermath of a school biology laboratory, a medical laboratory, or some such place.)

**Mr. C. Harding,** of Cardiff gives his fish *daphnia* once a week but when this is not available he gives them raw meat hung on a piece of cotton, and he finds that they love it. The meat is cut into one inch cubes and is left hanging in the tank for a few hours. Mr. Harding finds it as good as any live food and his fish are in good condition and breeding well.

**Mr. K. Brown,** of St. Helens, Lancs., finds that *daphnia* are best when available and that large fish can be fed on them all summer without much other supplementary food. He finds that *tubifex* is all right if it is thoroughly washed before use and fed in small quantities. Large brine shrimp he considers fine if it can be reared in large quantities. Mr. Brown considers white worm good because they are easily obtainable throughout the year. His friend, Mr. N. Casson, feeds his fish on *daphnia*, blood worms and glass worms, but Mr. Brown finds that these worms are not eaten by some fish because they are very tough.

"I do not think that there is one food which is much better than another", writes **Mr. T. J. Barclay,** of Chigwell, Essex. His adult fish are fed on *tubifex* and *daphnia*. *Daphnia*, dispersing around the tank, ensures that most fish receive some, but Mr. Barclay finds that although *tubifex* is fine for the community tank, some of the more timid fish get left out in the rush to be the first customer at meal times. He thinks that there is less chance of pollution with *daphnia* because uneaten *tubifex* left in the gravel will eventually turn sour. The letterwriter's answer to this problem is to have one or two catfish in the tank which, he finds, take care of the leftovers. Never having had any trouble from diseases from tubifex, Mr. Barclay does not bother about disinfecting his *tubifex* worms. He finds that the fish get a bit sluggish after a feed on these worms, and possibly a bit constipated. He has not found this as pronounced with *daphnia*.

Of all live foods, **Mr. D. B. Barker,** of Chatteris, Cambs., finds *cyclops* the easiest to store. He has had some in the same tanks for six months now. He finds that a tea cup full can be kept in a two feet tank, with aeration, at 75°F, for ages and that they breed quickly under these conditions. Mr. Barker finds that *daphnia* seem to die off quickly at high temperatures and soon contaminate a tank if fed heavily. He does not get on at all with *tubifex* and finds adult brine shrimp too expensive. Mr. Barker tried an experiment to compare the food values of cyclops and *daphnia* by putting fifty *Tilapia* in each of his two 35 ft. × 1½ ft. × 8 in. rearing troughs. One lot was fed on cyclops and the other on *daphnia*, twice weekly. On other days a flake food was used. After twelve weeks there was no difference in the size of the fish. He goes on to tell of a useful way in which cyclops can be used. A fine nylon net is fixed to a rigid frame which is placed over a fry tank. A teaspoonful of cyclops is placed in the net. The cyclops breed quickly and the young ones find their way through the net to the fry. The fry all wait around the net.

Mr. Barker, on the question of cold water plants, finds that there are quite a number that will do well but these need a little more care than tropical plants. *Acorus*, the Japanese rush, makes an attractive plant and will not be eaten by coldwater fish. The plant will not grow very well but will remain fresh and alive for many years if planted in the gravel. The common spatterdock, *Nuphar luteum*, and *Villarsia nymphaeoides* are two lily-like plants which grow well but must be potted. The writer of the letter uses a 3 in. pot, three quarters filled with yellow clay and topped with gravel to keep the clay in. He also recommends *Ceratophyllum demersum* (Hornwort), in large bunches held in place with rocks or gravel as the plant has no roots. *Mentha aquatica* (Water Mint), *Lysimachia* and *Veronica beccabunga* do well in plain gravel. *Stratoites aloides* (water soldier) does well if taken young in the spring. *Aponogeton distachyon* grows well in a pot of clay. Mr. Barker states that the above plants are not eaten by coldwater fish. Other plants which grow in the coldwater aquarium but which goldfish will not leave alone include *Vallimeria*, Hair grass, *Sagittaria*, *Elodea*, *Callitriche*, *Fontinalis*, *Ludwigia*, and *Potamogeton*.

Mr. Barker says that *Villarsia nymphoides* is a plant which is not usually found in plant lists but he grows thousands of this plant and would send readers a root of it for the cost of postage, in February or March, when the new leaf buds begin to grow.

For the next article we would like to have your views on (1) **What have been your experiences with postal services for the aquarist? and** (2) **What filter media do readers use, and why?**

The second of the two questions was sent by the writer of **one** of the above letters, **Mr. K. Brown.** Perhaps other

Continued on page 301

# Herpetological notes

**by M. Peaker B.Sc.**

## SALMONELLA

A recent paper[1] has drawn attention to an ever increasing number of cases of terrestrial and freshwater chelonians carrying bacteria of the *Salmonella* group—the organisms responsible for food-poisoning. In this paper, Drs. Mann and Bjotvedt report the presence of a number of different *Salmonella* types in water collected from containers in which terrapins were kept for sale in New York. These workers reached the conclusion that, ". . . pet turtles are an important reservoir of salmonellae and as such constitute a definite public health problem."

It is therefore the responsibility of keepers of tortoises and terrapins not to allow themselves or others to become infected by ingestion of these bacteria. Not only is the disease extremely unpleasant but it can apparently be dangerous in some individuals. Besides this obvious motive it is not desirable to create a public-health "scare" since if it were to be established that terrapins are a causative factor in large-scale food-poisoning epidemics then it is possible that the public-health authorities would press for legislation to limit their importation to herpetologists in Britain.

The usual precautions should be taken to ensure reasonable safety and in fact, many animal keepers already employ such measures which are really a matter of simple hygiene, for example, not allowing anything which has been in contact with the animals to touch human or other animals' foodstuff or handling equipment; washing hands after handling or servicing the animals, etc. In the same vein, it will be realised that children should be instructed to take similar precautions. In other words, reptile-keepers in Britain have to ensure that they do not lay themselves open to charges by the public-health authorities as being hazards to public health.

This, the herpetologist may well say, is all very well but what about members of the public who buy baby elegant terrapins (*Pseudemys*) from the local pet-shop—how are they to know? This really leads me to say that baby terrapins, all of which require specialised care should not be sold by the average pet-shop but only by specialist reptile-dealers. They are not suitably cared for, usually I will admit through ignorance, and the death-rate in the first few months after sale must be almost one hundred per cent.

If the pet-trade is to guard itself against severe and destructive criticism it must in the first instance attempt to put its own house in order—a sentiment expressed by a well-known birds fanciers' weekly on a similar subject. An indiscriminate loss-of-life on this scale cannot be permitted to continue. In a main article I shall describe methods by which baby terrapins may be correctly cared for—and this does not mean housing in the plastic "turtle-bowls" which have found their way onto the market.

## REEVESI

It is often stated that the hardy and popular Reeve's terrapin (*Chinemys reevesi*) rarely exceeds six inches in length. However at least in the southern part of its range it is not unusual to see much larger specimens. Several weeks ago I saw a very large individual in Hong Kong's Central Market—the carapace was over nine inches in length and the whole animal was relatively more bulky for its size than smaller specimens. This large individual was of the light phase and I get the impression that those of the black form do not reach the size of the more-normally coloured types. Perhaps the black ones do not live long enough since they would presumably be more easily seen by predators. This species is only one of those which reach the markets of Hong Kong from the provinces of South China. The others include the gold-coin box-terrapin *Cuora trifasciata*; two attractive species of *Clemmys* (*bealii* and *mutica*) and the big-headed terrapins, *Platysternon megacephalum*.

## AGGREGATES

It is well-known that many terrestrial salamanders tend to group together in the wild or in the vivarium, in fact it is a disadvantage in the latter case, allowing infection to pass rapidly through the stock. The reason for this clumping behaviour has never been clear but in a recent study[2] Dr. R. H. Alvarado of the Oregon State University has concluded that aggregation in ambystomid salamanders is of adaptive significance in preventing dehydration of the individual animals by reducing the surface area exposed to the air. Moreover, it is likely that the air in the immediate vicinity of an aggregated group is more humid than that surrounding an individual so that the humidity gradient and therefore evaporation is decreased.

1 *Canadian Journal of Comparative Medicine and Veterinary Science*. 31, 43-45. (1937).

2 *Copeia*, 1967, No. 3, 607-608.

# What is your opinion?

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readers with general questions suitable for discussion would like to submit them for inclusion in future articles. Have you sent your opinion on any topics yet? Some readers seem to think that this series is only for the expert. This is not the case at all. Even though you may think that your views are of little importance, they could still contribute something of importance to others, so please let us have your opinion. One other point: if you have written before, please do not think that we do not want to hear from you again. We would like your views as often as you care to write. Several of the above letters come from regular letter writers.

# Marines—The Natural Method

**by Graham Cox**

Continuing from last month's article Marines *aux naturel*

Before going into this section in detail, it should be stated that the information which follows has been gleaned over the last nine years since the day I set up my first tropical marine aquarium. Using the version of the Natural Method which follows, I have, for example, kept four small Sergeant Majors (*Abudefduf spp.*) in the same sea water for nearly two years, before I had to give them to a friend on returning to the U.K. At that time my sea water just had to last since I was living some thousand miles from the nearest coast, and to the best of my knowledge there were no synthetic sea water preparations available then.

At the present time one of my marine aquaria, measuring 30 in. × 15 in. × 12 in., contains a community of four different *Amphiprion* species (Clownfish). The water in this tank has never been changed and is now eleven months old.

Below then, is a list of the conditions which occur in my tanks, and which I believe approximate closely to those on the coral reef.

### Tank Floor Covering

For this I use medium-fine beach shingle with an average particle size of ¼ in. to ⅛ in., and boil it for ten minutes in fresh water before placing it in the tank. I use this gravel for preference, not convenience, since in the area where I collect it many tiny particles of crushed mollusc shell are mixed in with the shingle and, I believe that this material, which is largely calcium carbonate ($CaCO_3$), is instrumental in buffering the sea water, and therefore helping to maintain a pH of about 8.2 to 8.4.

The mixture is very natural-looking in colour as you would expect, and matches in well with the patina which is aquired by the coral after a few months. Another reason why I use this particular size will be realised when reading the section on Filtration.

### Coral and Shells

These I cure personally, never relying on the tropical exporter's assertion that they are safe as bought. The curing process is simple. I stand them in a solution of a household bleach in water, made by adding one cupful of the bleach to two gallons of tap-water. Here the coral and shells are left for a week then removed to a large iron saucepan and boiled for two hours. Finally they are kept in cold tap-water for a further week, with a total change of water after three days. This is an irksome business but since the alternative may be a tank full of evil-smelling, polluted water, with several expensive fish dead or dying, I see no way of avoiding it.

After curing, the shells and coral are left in position in the tank and never bleached again as a consequence of which they quickly begin to take on a green or buff patina which looks very natural and is made up of microscopic living organism which I believe to be of great value in the aquarium. (*See* section opposite on Ozone).

### Decorations

Other than the effects which can be produced by the skilful placing of rockwork, coral and shells, I use no other embellishments but the startling colour and immense variety of form of the animals themselves.

In my opinion, the rather vulgar colours of plastic flowers, plastic caves, etc., no matter how realistic in appearance, can only detract from the beauty of the animals in the aquarium.

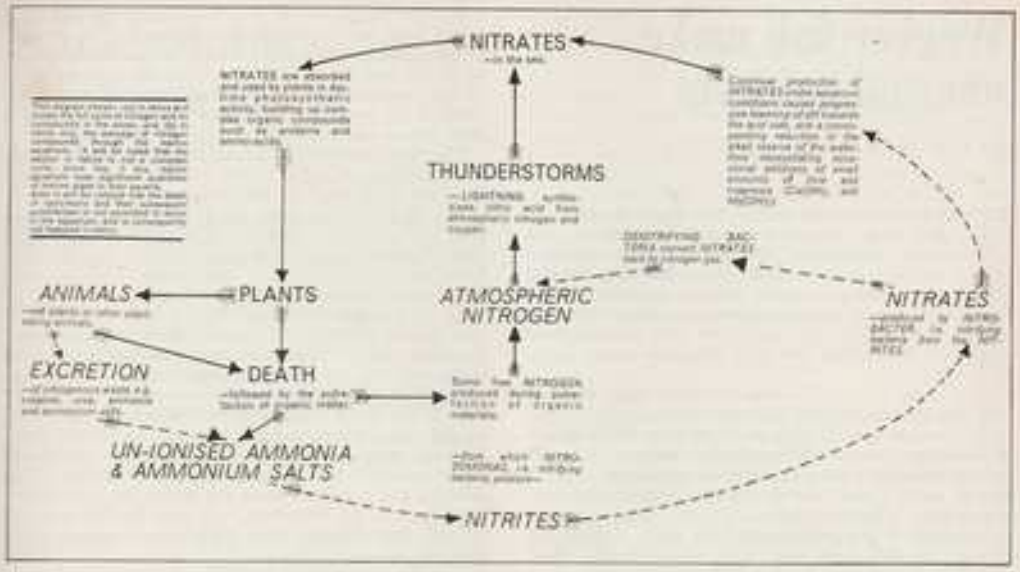
I am at present carrying out controlled experiments in the use of marine algae (i.e., "seaweeds"), such as *Caulerpa*, *Ulva* and *Enteromorpha*, in the aquarium. I am not so much interested in their decorative value—although this mustn't be underated—as in their value as removers from solution of nitrogen-containing salts in the water. This collects and removes most of the floating matter. Of these two, it is the under gravel filter which I believe to house a large population of denitrifying bacteria. In the previously-mentioned Clownfish tank, the bottom has never been siphoned off since it was set up and yet as I look at the tank now, there is no sign of any mulm on the bottom and the water is crystal-clear. The four Clownfish are in perfect health and are bobbing up and down near the surface in anticipation of a feeding.

### Seawater

The water in all my tanks was collected from the beach at Black Rock, Brighton, and, after being left to stand for 24 hours to allow a slight sediment to settle, it is siphoned straight into my tanks, heated to 75°—78°F. and used immediately. The S.G. as collected, is a little low (about 1.021) and I bring it slowly up to 1.025 by the addition of crude salt (sodium chloride—NaCl). However, for most species, the value of the S.G. of the water itself is not nearly as critical as was once thought. The S.G. of the seawater in my tanks varies from 1.030 to 1.021, which shows that the fishes' tolerance of varying S.G. is quite high. I have even found that to suddenly effect a large change in S.G. by adding fresh water at about 80°F., is a considerable help in treating certain diseases, although this rather dangerous technique should not be practised unless the fishes' condition is critical and all other cures have failed.

I realise that the collection of seawater is not a practical proposition for everyone, but for those of you who can get to the coast once or twice a year to collect sea water, I suggest, quite seriously, that you choose a piece of rocky shore where the water left behind in rock-pools has plenty of time to settle before the tide fills them again, and collect from the top two or three inches of the pool-water only.

I have tried to describe the two rival techniques of marine fishkeeping as accurately as I can. Since the natural system requires no expensive filtration plant or expensive ozonisers or skimmers, I leave my reader to make his own decision as to which system to adopt when he is converted to the fascination of coral fish-keeping.




**Ozone**

I don't use ozone in my tanks, and never have done, since I believe that the very bacteriacidal properties which make ozone ($O^3$) suitable as a cure for certain diseases, would bring about the breakdown of the natural system of aquarium keeping.

It is my belief that the success of my system hinges on the continuation at all times of the *Nitrogen Cycle* within the aquarium. Explained very simply, what this implies is that in the tank simple inorganic nitrogen compounds—mostly nitrates, are absorbed from the water and built up into complex organic compounds by *autotrophic* (1) plants (in this case, algae and diatoms). These plants ultimately die or are eaten by animals, and the nitrogen they contain, still as organic compounds, is returned to the water in their (i.e., the animals), excreta or by their death and subsequent decay. More bacteria then convert them back into inorganic nitrite salts and later nitrate salts which are then converted into organic compounds by autotrophic plants and so on. However, if this were the whole of the cycle my theory would be untenable since the aquarium is not a closed system like a *Wardian Case* (2). Every time the aquarium's animals are fed, fresh organic matter, and therefore ultimately more nitrates, are introduced into the system.

It is a well-known fact that in the soil, certain types of bacteria, respiring *aerobically* (3) are able to obtain their metabolic energy by the *denitrification* of nitrates and nitrites, i.e., they decompose the nitrate radicals ($NO_3$) in the presence of oxygen and alkaline conditions into free gaseous nitrogen which is released into the atmosphere. I believe that these bacteria, or more-likely, related species, exist in natural seawater, and so I provide them with the right conditions (*see* below "*Aeration and Filtration*") for the de-nitrifying process to occur. If the above theory is accepted, it follows that the introduction of such an efficient bacteriacide as ozone would work actively against the system killing the beneficial *and* detrimental organisms.

It should be clearly understood here, that it is not being said that ozone is of no value. In certain cases, it is probable that, in a tank which simply quarantines fishes, it *is* a very useful prophylactic measure. It is also very likely that, in a tank which is badly overcrowded and containing large fishes excreting wastes at a faster rate than the tank's de-nitrifying bacteria can get rid of it, ozone used in a skimmer would be very helpful in removing nitrogenous matter from out of the water and into the overflow cup, although an ordinary air supply will also function quite well in a skimmer.

**Aeration and Filtration**

These two items, after feeding, I consider to be the most important topics in marine biology as practised by the Natural School.

Aeration must be much fiercer than in the freshwater aquarium. The animals we keep in our tanks have evolved on the coral reef where the water is constantly moving and is permanently agitated by wave action. It is not surprising therefore that marine fishes and invertebrates need approximately 250 per cent. more oxygen than tropical freshwater fishes. In addition the colonies of denitrifying bacteria present in the water and in the gravel

Continued on page 320

For the saltwater aquarium

# Weever fish make unusual subjects

by Eric Hardy, F.Z.S.

THE fear of keeping weever fish in the aquarium is based largely upon the seaside fishermen's nicknames of poison-spine and stinger, and the occasional patient in the cottage hospital who indiscreetly handled one in his shrimp-net or trod upon it barefooted on the beach. Of course they are venomous, and for this reason should be handled with care; but they are no more dangerous than adders and other poisonous snakes in the vivarium.

The lesser weever (*Trachinus vipera*) is easily obtained in a few minutes pushing a shrimp-net along the shallow, sandy beaches from Norfolk to Morecambe Bay. A visit to the shrimp fishermen's boats as they return to riddle and unload their catch will always provide specimens. As the weever partly buries itself in the thin sand to prey upon the shrimps, it figures prominently in the captures, and we usually pick it out with an old fork when riddling the shrimps to their legal size. The quickly-erected *black* dorsal fin is a quick field-clue for recognition, as well as the proportionally large head end. Not usually more than six inches long, and usually much less in young specimens, this fish should be given a tank with three or four inches of sandy-gravel on the bottom, as it spends much of its time partly buried there with its dorsal fin protruding.

For this reason the eyes are near the top of its head, to see at sand-level, and the mouth is also raised upwards like a surface-feeder, though it is, in effect, a bottom-feeder. Although fishermen flick it by the tail out of their riddles, it is best handled in a small hand-net, for the poison in the spines or rays of its dorsal fin, as well as in the spines on the operculum covering the gill-opening in its neck, is a virulent one quickly causing painful repercussions. I haven't heard of it being bred in captivity, because the eggs, laid in summer and which hatch in nine or ten days, into a black-eyed, hump-backed, bull-headed larva, drift in the sea. The much rarer greater weever, which is twice its size and more brightly coloured, is more difficult to handle as it is very agile; yet we see it offered on the Paris fish-market with the dangerous fins cut off. These are amongst the few fish in the world with a true venom.

The weever's venom consists of two different substances. One influences the nerves without causing pain, while the other causes the pain without producing any other symptoms. The Ministry of Health states that this does not cause serious effects, though it can incapacitate a person for 24 hours, requiring ice-packs and rest to overcome the shock. Ammonia or similar alkali is a first treatment for wounds. For this reason, shrimping should not be carried out in bare feet, or during darkness without a torch. In fact I've done it more on the night tide's ebb than by day, but always with a torch when riddling the catch.

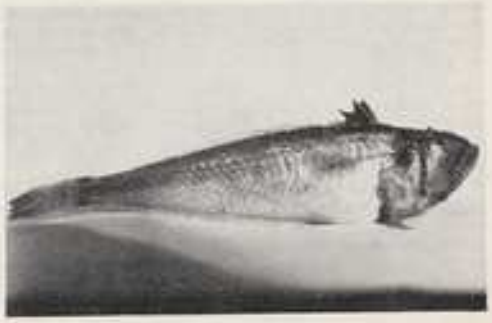
With its bright, silvery skin and grey-tinted body, the plump little weever makes an attractive exhibit, actively pursuing any shrimps or other small crustaceans provided for it. It should not be handled by the tail as it can swing its body around and bring its poisonous spines into action. Most of the wounds it causes are accidental and even a dead weever can hurt anyone pricked by its spines.

The name weever is derived from the Anglo-Saxon wiver, or viper, or rather wivere, a serpent or wyvern, and along our south coast the fish is sometimes called the sea-viper. It has a very long, low second dorsal fin, and a long, low ventral fin. The wivern was an heraldic monster with wings and tail, yet lacking hind-limbs. The weever's Latin name *Trachinus*, like the Italian Trascina, is a corruption of Dracaena, meaning a dragon.

An old Lancashire nickname for this fish, "atterpie," has now died out in the Formby district, where few professional fisherman remain. The great weever has sometimes been nicknamed the sea-cat. It haunts deeper waters, and comes to us as a migrant from the south so that it is usually taken in the trawls a little offshore and is never more than an odd record or two in a year along the Lancashire coast. This fish grows up to 15 inches long, whereas the largest lesser weever I have known measured 7 inches. The common sole is said to mimic the weever by lying mostly submerged in the sand flats, with only its dark pectoral fin and eyes showing, thus frightening predators from attacking it.

Even the quarter-inch larval lesser weever has characteristically black pectoral fins, distinguishing it from the larval bullhead or *Cottus*. Tropical members of the family are often rather repulsive, with bulldog-like heads and upturned eyes, like the star-gazers. They are feeble swimmers, depending for the satisfaction of their carnivorous habits upon ambushing their prey in hiding. The star-gazers from the Indo-Pacific have modified the muscles of the eyeball to serve as an electric organ.

Inland aquarists may find difficulty in obtaining a regular supply of fresh shrimps to feed weevers and may have to dangle dead shrimps just over their heads to get the movement which impels them to strike. Otherwise small worms, water hog-lice (sea-slaters) and small moving prey may be tried.



# The First National Furnished Aquarium Exhibition

**June 13th, 14th, 15th, 16th, 1968**

We have been provided with the following details on the First National Furnished Aquarium Exhibition which is being organised by Mr. Keith Barraclough.

**JUDGES** Mr. B. Pengilley, Lancashire
Mr. G. Skinner, Yorkshire
Mr. A. J. Jessop, London
Mr. G. Reid, Scotland

Judging will be to F.B.A.S. standards.

Full press previews have been organised for immediately after Judging and it is also hoped to get T.V. coverage.

**CATERING** Catering has been arranged for two days prior to the exhibition and throughout the exhibition.

**ENTRIES** Entries will be accepted from the 1st March, 1968 and entry forms will be printed in *The Aquarist and Pondkeeper*.

Entry fee—25s.

A 24 in. by 12 in. by 12 in. stainless steel tank and hood plus thermostat, heating and lighting will be provided by the organisers and all exhibits are standard size and lighting in accordance with the regulations, which will be printed with the entry forms.

# A cheap fish house for the amateur

continued from page 297

In my case, half of the roof is P.V.C. sheeting and half is asbestos. Both are of the corrugated type. The P.V.C. should be of the heavy type as the cheaper, thinner type is of very little use. Glass could be used instead of the P.V.C. as it is much cheaper but it is also very easily broken and frequent repair bills may make it more expensive in the long run.

**Basic construction completed**

Once this stage has been reached, the whole thing can be neatened off with beading, etc., and it can be given several coats of good quality paint. The size of the building is for the individual to decide upon. Mine is only 9 ft. × 5 ft., but it serves my purpose very nicely indeed. The staging for the tanks is made from 2 in. × 3 in. Canadian redwood and I have found this to be of ample strength for its purpose, but at about 10d. per foot it is rather dear when about sixty feet are required. In two tiers, the top row of tanks is set back from the bottom row so that natural light is allowed to reach the bottom row. At this point I will mention that I use daylight exclusively and use artificial only for use after dark. The light entering through the P.V.C. is sufficient to make the plants in the top tanks grow very well but the bottom tanks are a little too dim to allow proper plant growth. However, these tanks house cichlids and are not supplied with plants.

**Notes on insulation**

This is a very important factor in the building of a fish-house and I have used expanded polystyrene wherever possible. The following points may be worth noting:

(1) The wooden parts of the walls are double and are thermally insulated.

(2) A double door is employed. The outer one is of thick wood and the inner door is made of hardboard. It is also quite small to allow minimum heat loss.

(3) The glass is lined with polythene sheeting.

(4) The asbestos half of the roof is lined with hardboard and is thermally insulated.

(5) The tanks are surrounded by expanded polystyrene and at night pieces of polystyrene are fixed to the tops and fronts.

(6) All small cracks are filled and the whole thing is almost impregnable to draughts.

**Final notes**

The set-up has been in use for over a year and it has proved to be very economical to run. If anyone is contemplating a small fish-house then I hope that these notes will be helpful. Before starting on any actual building, plan everything because once faults are introduced during the construction they will be very difficult to rectify later on.

However, to all aquarists who have at one time or another thought about owning a fish-house but have decided against it, take my word for it—it is very much easier to build a fish-house than it may at first seem and if a little trouble is taken to look for good second-hand materials then it can also be very cheap.

## Dow Corning

The Editor regrets that the above product was referred to as Don Corning in the December issue and extends his apologies for this misprint to the manufacturers of this popular aquarium sealer.

# our readers write

*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**

### Natural hygiene

HAVING read the letter from Robert J. Lord, "Softly, softly" in your December issue, I feel obliged to write, as I was also having trouble with algae. Being of rather a lazy nature, I decided to purchase a fish to do the task of cleaning the algae off the glass and rockwork. For this purpose I chose an inexpensive "sucking loach" which then completely cleared my tank (24 in. × 12 in. × 12 in.) within four days. Since then he has kept it clear and is a constant hard worker. I rate this as far more interesting than a scouring-pad and a better investment for the same amount of money. My father has had the same success with another "sucking loach" since then, although it took a little longer to settle down to some hard work.

Anyway if a "sucking loach" does not keep the tank as clean as one would wish what is to stop the aquarist "tidying-up" after it, although I feel sure there would be no need.

Yours sincerely,
ALAN KEITH BLANN (17),
Bicester,
Oxon.

### Lagging behind

SO from Germany we are now to have available a U.V. filter. This unit will be useful especially among Marine Aquarists. But Why? Oh! Why? is it left to the foreigner to invent power filters and other items of equipment of this nature, which make tank maintenance so simple.

It seems to me that British manufacturers in this field are left out in the cold, beaten to the post every time. With all the talk about Britain's Technological know-how, one would think we would be first in the field with this type of equipment, producing better and more efficient units at a cut under the Foreigner, thus saving imports and adding to the export drive. Perhaps it is that British Aquarium equipment manufacturers are having it too good to bother, not interested, or just plain lazy, or haven't the know-how. The latter I do not believe. It might be that they need a little push from us. I'm sure that we would all prefer equipment made in England to that made abroad or is it that British manufacture leaves much to be desired?

This I know would only be a little saving on our import bill, but little bits add up to a lot.

One other quibble: Why can't all advertisers state their price of the article advertised? It would save much time-wasting writing to ask.

A. WHITE,
Southall,
Middx.

### Mother-to-be freaks out

I HAVE been keeping a "pregnant" Red Sword in a floating jar in a two foot tank with a half inch air-gap between top of jar and portable glass on top of tank. The level of the water in the floating jar was four inches from the top of jar, and I have found that the fish has escaped to reach its mate without the jar sinking.

I wondered if any other readers have had this experience?

Yours sincerely,
D. M. GAIR,
Newcastle upon Tyne,
Northumberland.

### 'Ware Salt

I WOULD like to warn readers about treating plants with salt to rid snails, and snails eggs. Many books say to treat plants in a strong salt solution for an hour. This treatment will often kill plants, or serverly retard their growth; this is especially true of Indian fern, *Aponogetons*, and swords.

I would like to say also that the plants of the *Aponogeton* species are excellent for large aquariums. I have had one six months now, and it has about 40 leaves. Why is it we see so little of them, when they are so cheap? I paid 6d. each.

Yours faithfully,
PETER H. BROWN
Wellington, Shropshire.

### New Society

I AM instructed to inform you of the setting up of a new aquarist society. It will be known as the Hoylake and District Aquarist Society. The inaugural meeting was held on the 4th December, 1967 for the sole purpose of electing a committee and to get to know one another.

Mr. A. J. Bland was set up as chairman, myself as secretary, and Mr. J. Morrison as treasurer, other committee

members are as follows: W. McComb, J. Dooner, W. Davies, and I. Gordon.

We do hope you will be interested in another society and we will be only to glad to hear if you have any ideas and could give us some interesting tips and help in any way.

Our headquarters, by the way, are above the local Pet Shop and Mr. McComb, the owner, has very kindly given us the above room as a clubroom, and meeting venue.

From our first meeting I think that our society will be a very successful one and that we can spend many a debateful night in this very interesting hobby.

Yours faithfully,
D. J. Webster,
West Kirby, Cheshire.

### Instructional Help Wanted

I AM wondering whether *The Aquarist* might be able to help me with a little information, regarding films with sound track, films with taped commentaries, and taped lectures on fish keeping. Our Club as well as being a very young one, is also a very inexperienced group of people, myself included. None of our Club-members have ever bred any egg-laying species, and being quite a distance away from the nearest large club, cannot easily get experienced lecturers to visit us. We are fortunate in one respect; one of our Club members is also a member of a local photography Club which also possesses an 8 m.m. cine camera equipped also for sound track. I shall be glad to learn of any Society which hire any of the above.

Yours sincerely,
H. R. Forward, Secretary,
Shaston Aquatic Society,
7 Pill Meadow,
Kington Magna,
Gillingham, Dorset.

### Big Fish v. Little Fish

I READ with interest of the Champion of Champions which seems to have won dispite damage to the rear of its dorsal! Could some one tell me why fishes which look more like common British cold-water species seem always to win such glory in shows? Surely the essence of tropicals is their small size, bright colour and high activity. Mr. Bourder, himself, seems to disagree with the competing of cold and tropicals and yet as I say, the champ looks far from the epitome of tropical fish keeping.

Another point, does one gain points for rarity on the grounds of no competition? Or is it a coincidence that nearly 200s. worth of large books I have read contain no reference to the lemon-finned barb?

May I nevertheless congratulate Mr. B. Parkin (T.A.B.) and that's another part of my apparent ignorance, what or who is or are T.A.B.?

D. R. Haffey,
6 Clovelly Drive,
Minster, Sheppey, Kent.

Ed. T.A.B.—Tropical Aquarist Breeders.

*Editor:* **The precise identity of the Lemon Finned Barb to which readers have referred above is at present under review. Full details will be given in the next issue.**

# Book reviews

**Enjoy Your Tropical Fish Picture Book,** edited by Earl Schneider, and **Enjoy Your Fancy Guppies,** by Carroll Friswold; both published by The Pet Library Ltd., price 3s. 0d. each.

These are two more books in a series which covers many different pets and many aspects of the aquatic hobby.

The former book contains more than fifty coloured photographs of common and not so common tropical fish. The photographs are large and make identification quite a simple task. With each picture there are a number of lines of information about each fish. Information is given about the source of the fish, its correct and common names, its adult size, differences between males and females, how the young are produced and something about their care in most cases. The book would be useful to the beginner and to the more experienced aquarist who would like some good, inexpensive photographs of fish. It would be particularly good to have near aquaria in schools to allow pupils to identify certain fish for themselves. Sources of such pictures are almost impossible to find unless one cuts up magazines or obtains expensive books.

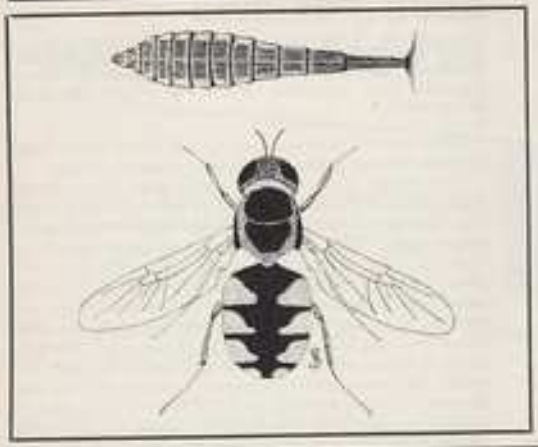
**Enjoy Your Fancy Guppies** is a thirty-two page book which contains some sound information on the development and breeding of guppies. The book contains about twenty coloured photographs of guppies but the standard of the fish in the photographs is lower than that of the better ones available today.

# Fish food review

**Miracle Norwegian Tinned Brine Shrimp,** distributed by T.F.H. Publications (London) Ltd., price 5s. 6d. for 42 gram tin and 11s. 6d. for 110 gram tin.

This recently arrived food comes in a sealed can which is opened with a tin-opener. The can of food will keep indefinitely before being opened but requires to be kept in a refrigerator after being opened. A plastic lid is supplied for closing the can, and a small plastic spoon is used for feeding the shrimp to the fish.

The shrimp, which are *Calanus finmarchius*, did not seem to be as readily eaten as the more commonly hatched live Artemia shrimp, and they seemed to be rather large in size for some of the smaller tropicals. However, the larger tropicals seemed to be keen on them. The shrimp in the can look and smell rather like fish paste and the smaller can contains enough shrimp to feed a quantity of tropical fish for quite some time. There is no indication on the can of how long the shrimp will last in the refrigerator after the can is opened. This food is also suitable for goldfish and marine fish but was not tested with either type.



A soldier fly

# The Junior Aquarist

## Waterlife pests and friends— Soldier flies

**by Bill Simms**

THERE are fifty-three kinds of soldier flies in Britain belonging to the Stratiomyide fmily but most of them are tiny and only a few can be called aquatic. The main characteristic of the adult fly is the feeble flight. They sluggishly hang around the flowers of plants growing in marshy conditions, and do just as much crawling as flying.

In general, the larger members of this aquatic branch of the soldier flies are yellow and black, something like very slow-flying hover flies though much fatter looking. Because of their yellow and black colouring—the warning colour of wasps—they might be thought dangerous, but none of them can pierce the human skin with their *proboscl*.

The title of soldier in the name arises from the group of spines on the back of the thorax. In some species this group of spines becomes a pronounced hump.

From the eggs, which are laid on the water surface or on water plant leaves in the case of the aquatic kinds, are hatched leathery-skinned larvae. The one illustrated here is typical of those living in water.

The tail end has a circle of bristles that pierce the surface skin of the water and hold the creature in position near the surface with the head hanging down. They are greyish-green in colour and from 1-2 inches long when fully grown. It is in this state that they are most likely to come to the notice of aquarists.

Although they live exclusively on other living creatures, the mouth parts are so adapted that they catch and feed on very minute animals and can do little harm in an aquarium.

These larvae have the peculiar habit of closing up the tail bristles when disturbed, and immediately sinking down in the water. The act of closing the bristles traps a bubble of air and it is with the aid of this that they rise up again. Immediately on piercing the water surface these bristles open out, and the larva is once again suspended vertically.

To pupate the creature lies horizontally near the water surface encased in some air trapped inside the final larval skin. Thus it looks exactly like the larva, though inside is the pupa. At all stages of its life the soldier fly needs fresh air and this is shown by the larval and pupa stages very clearly. In addition the larvae can most often be found in those light green masses of algae that occur so often in smaller ponds. These patches of alga are usually full of oxygen and therefore attract the female fly to lay her eggs there.

While many kinds of flies are notorious for the foul conditions in which they live, the aquatic soldier flies are much cleaner, and could turn up in anyone's aquarium.

**FIND THE FISH** — **D. Thiel**

The first is in MARMALADE and also in JAM,
The second is in EWE but not in RAM,
The third is in HINT but not in CLUE,
The fourth is in YELLOW but not in BLUE,
The fifth is in DINNER but not in TEA,
The sixth is in KNUCKLE and also in KNEE,
The seventh is in WINTER but not in SUMMER,
The last is in PIANIST but not in DRUMMER.

*Solution on page 309*

# Watervoles

**by Terry Jennings**

MOST British mammals are difficult to watch since they are either rare, secretive or nocturnal. The watervole is an exception on all three counts, being abundant wherever there is fresh deep water over a muddy bed contained in firm banks fringed with grass and reeds. It is essentially diurnal in its habits and on occasion can be quite fearless, particularly during these hard winter months when food is scarce.

This last statement may come as a surprise to those whose only encounter with the animal has been to hear the characteristic "plop" as it slides into the water, and who see nothing but a smoke-screen of scrabbled-up mud particles as the watervole makes its getaway. The secret is to have that essential requirement of any would-be vole watcher, an apple. This fruit is as irresistible to a vole as a betting shop is to a compulsive gambler, and after pieces of it have been scattered on the opposite bank of a suitable waterway, all that remains is to sit and wait. There is no need for a hide, binoculars or other cumbersome paraphernalia.

Very soon a slight rustling will herald the appearance of the reddish-grey, blunt-nosed watervole, standing high on its hind feet to sniff the air for any scent of danger. Reassured, it makes for the apple. In all probability this vole will be a male, for the female lives the life of a recluse and leaves her burrow only to make quick sorties for food or nesting material. Once the vole is busily engaged in feeding, it seems completely oblivious of the human intruder and one can talk, cough and even sneeze without disturbing it unduly.

It is greatly to the watervole's misfortune that it is also known as a "water rat" for it is by no means rat-like in behaviour, but rather lives a gentle unassuming vegetarian life, far removed from the savage rapacity of its namesake. In fact, even the term watervole is something of a misnomer, for although one always thinks of these animals as being aquatic, there is little in their structure that fits them specially for an aquatic life.

I have watched colonies of watervoles for weeks on end and have noticed certain individual voles that would always seem to walk along the bank, taking to the water only if they were suddenly scared or wanted to across the stream to feed on the opposite bank. Indeed, if one of them, walking along a bank at the edge, missed its footing and fell in, it would scramble hurriedly out of the water again.

A watervole marks its home range with a secretion from glands situated on its flank. This secretion is smeared on to the hind feet and stamped on to the ground at the outposts of the animal's territory; but only in the breeding season does a watervole display any semblance of aggression and then only towards other members of its species. In early spring the male seeks out a female. Together, they leap into the water and indulge in a few moments ecstatic play, diving and splashing noisily. The courtship then progresses with a great deal of snarling, squeaking and tussling. As a prelude to mating, the male demonstrates his mastery by repeatedly knocking his spouse into the water. When she attempts to get out, he nonchalantly throws her in again, with one paw. At last, exhausted, she rests at the water's edge and succumbs to his advances.

About two weeks before the litter is born the female becomes very active and bold as she begins work on the nursery. This is an unpretentious ball of dry grass which is often placed in a rotted tree or in a hole in the bank. However, watervoles frequently construct a platform of water weeds anchored in a thick bed of rushes. To begin with, this is used as a dining table, on to which the voles nimbly climb, dragging along a succulent reed or grass stem, which they devour while sitting on their haunches. Not infrequently this raft later serves as a foundation for the nursery and is much safer than the more terrestrial sites.

In the nursery nest an average of six young are born. It is fortunate that watervoles are gregarious, for by the time the first young are about a month old, another litter is likely to have arrived. Sometimes there are minor scuffles and quarrels among the various sized youngsters, but on the whole they live in harmony, a sight to gladden the heart of any social worker.

Watervoles are not often kept in captivity, although there is no good reason for this. A large, all-metal cage is all that is needed to house them. The bottom of this should be sprinkled with earth or peat, and dry hay provided as bedding material. Fresh vegetables, greenstuffs and fruit, as well as grain, are all suitable foods, and fresh water must always be available to drink. A tank to swim in is not necessary but if given, facilities for tunnelling through dry soil or peat to groom the coat should be provided. The biggest disadvantage with these delightful little animals is that they are short-lived. In the wild, few watervoles survive a second winter, and most of those seen during the winter months are late-born young that have not bred.

Answer: Meryonnis

# Jottings

**by M. J. Parry**

IT would appear that it has been the unfortunate practice over recent months for those persons occupying exalted positions in the organised aquatic hobby to ridicule the current momentum of the marine hobby in this country, and to question, without any apparent foundation, the future for this specialised branch.

The question as to whether marine fishkeeping has a future in this country is one that cannot be truly assessed at the present time, but all indications to date would point to a very rosy future, with greater expansion in the years that lie ahead. In the December issue of this magazine I had occasion to write that perhaps the greatest single influence on the pattern of marine fishkeeping in Great Britain had been the founding in recent years of the International Marine Study Society (formerly the Marine Study Aquatic Society of Great Britain), and it is well worth noting that this society has almost trebled its original membership over the last two years, and now compares most favourably in this respect with that of the Federation of Guppy Breeders' Societies, by no means any small feat. It also has the distinction of having the largest circulation for any British society magazine, which serves to display the enthusiasm of both its directorate and members.

If that in itself were not enough, the society has also set up its own technical advisory panel, its own judging and standards committee, and evolved an original judging system for both marine fish and marine furnished aquaria, with a hope that these will eventually be adopted by other "national" bodies, including the Federation of British Aquatic Societies, Midland Association of Aquarists' Societies, Federation of Northern Aquarium Societies, etc.

Perhaps even more important when attempting to gauge the future for marines is the number of local societies, now catering for the marine hobbyist by providing special classes in their respective open shows. In many ways (although not exclusively) my own society of Newport can be said to have taken the lead in this field, and it is praiseworthy to note that this decision was taken by several other societies, including Bristol, Nottingham, Blackpool and Gorton and Openshaw.

November 1967 saw the publication of the first all British book on marines by a fellow contributor to this magazine, Mr. Tom Ravensdale, (Coral Fish, Their Care and Maintenance, published by John Gifford Ltd. at 50s.). I also have it on good authority that a further but smaller publication is promised from Mr. Ravensdale in due course. This, I feel sure, will not mark the end of such specialist publications, indeed, only the beginning. The advertisement pages of *The Aquarist*, for many years devoid of any announcement regarding the stocking of marine fish and equipment has now suddenly burst into life in this respect, as, for example, the December issue indicates.

The above information will, I hope, provide a better basis for the evaluation of marine fishkeeping, although, of course, only time will tell.

The characin (*Characidae*) group of fishes comprises of numerous species, some of which must be regarded as being amongst the most popular of all aquarium inhabitants, examples being the neon tetra (*Hyphessobrycon innesi*), the cardinal tetra (*Cheirodon axelrodi*), the beacon or head and tail light fish (*Hemigrammus ocellifer*), the lemon tetra (*Hyphessobrycon pulchripinnis*), the bloodfin (*Aphyocharax rubrippinnis*) and the flame fish (*Hyphessobrycon flammeus*). Professor Gunter Sterba, in his excellent work *Freshwater Fishes of the World*, lists over 140 species of characins available to the hobbyist, some of which, although quite often obtainable, do not appear to have achieved the same level of popularity as those aforementioned. In many cases it is difficult to see why, as they often rival, if not surpass, certain of their more popular cousins for colour, and are no more difficult to breed.

A good example of such a fish is the swordtail characin (*Corytopsama rinni*), so named because of the long filamentous extension of the caudal fin in the male. The species is a native of Trinidad, being first scientifically recorded around 1858 by a Dr. Theodore Gill. Maximum length is approximately 2 inches, the basic body coloration being silver, with a dark golden stripe running from the gill plate to the caudal penduncle, whereupon it fades into the tail. Somewhat untypical of the characin family, it posseses no adipose fin. Perhaps its lack of popularity can be attributed to the fact that only adult male fish possess the sword extension, it being seldom found in young specimens. Life span would appear to be upwards of 1½ years.

The black-line tetra (*Hyphessobrycon scholzei*) is yet another quite colourful characin, but suffers badly from its unenviable reputation as a fin-nipper, being particularly aggressive towards those species with long flowing finnage, examples being the veiltail guppy (*Lebistes reticulatus*) and the angel fish (*Pterophyllum eimekei*). I have found, however, that provided great care is taken to restrict it to a near exclusive carnivorous diet, and not to include it in a tank containing such species as those mentioned above, little or no harm will result.

"'Grotesque', 'unusual', 'interesting', 'curious' and 'beautiful'" are just a few of the adjectives used by aquarists to describe a species of fish which must surely be regarded as one of the "oddities" of nature—the blind cave fish (*Anoptichlys jordani*), indigenous to one range of underground limestone caverns in Northern Mexico, where it has lived and bred for countless generations without being subjected to light of any kind. As a result of evolutionary processes the need for the seemingly essential organs of the eyes have diminished, and, today, the species' eyes appear, outwardly, to be without structure, the eye sockets being filled with fatty tissue.

It should be stressed, however, that there is absolutely no cruelty involved in keeping them under domestic conditions. Indeed, it would appear to be under such conditions that they thrive. There is never any collision with rocks or aquatic vegetation, and their extra-sensory

Continued on page 311

# Breeding goldfish—effects of warmth

**by A. Boarder**

IN the December issue I described how I was rearing a few fantail goldfish with warm conditions and reported their growth up to seven or eight weeks old. I continued to use warmth and aeration but spread the fish out more. The water temperature kept at 72°F. and aeration was constant. My reason for using warmth was that the spawning had been so late in the year, 3rd September, and the weather throughout September was so wet and sunless for most of the time, that I considered that it would not be possible to get good growth among the fry without artificial heat.

The youngsters are now 12 weeks old and are larger than my young fantails would have been at about a year-and-a-half. I had never used either artificial heat or aeration before in 30 years of breeding this strain of fantails. The rate of growth was fantastic as I fed them liberally. When they were about five weeks old I placed three indifferently shaped fish in an indoor unheated tank and spread the other 15 into three tanks. These concrete tanks are 24×12×9 in., and taper slightly towards the bottom. This is the outside measurement and the concrete is about half-an-inch thick.

Normally, with no heat, some of the fantails could be expected to start to change colour in about a year but this would be in the summer months when there was some sunshine. The first of the youngsters in question started to change colour when only 53 days old and after that several more also started to change. Another week, eight of the fish were changing colour and the first one was quite gold.

By the time they were 12 weeks old most of them were changing colour and this change was about a year earlier than would have been expected under cool conditions. At the same time the three fish which were kept in a living room grew very slowly and ate very little. They were only just over an inch long over-all whilst the others were three inches long. When 12 weeks old the largest fish was three inches long and had a very deep body. It was then large enough for exhibition purposes as the size limit is two inches of body length. All the other fish except two were just over two-and-a-half inches long and the two smaller ones were in the tank with the largest fish. It is probable that this fish having grown a little larger than the others was able to take larger food and so grew more quickly.

My feeding pattern now had to change as there was no sense in chopping the white worms. The fish could take in a whole bunch of perhaps a hundred at one go and it became rather difficult to get enough white worms as I was giving some every day. I increased my boxes of worms to nine but still had to fill up the fish with plenty of other foods. I know that some breeders do not believe in white worms as a food but after well over 20 years of using them for rearing fry I have no doubt whatever that they are an ideal food and contain much more valuable nutrition than do *Daphnia*. I made an experiment a year or two ago when I fed a number of fantails on white worm alone, they had no other food for nine months other than any Algae they could find in the tank. They not only grew well but kept in perfect condition all the time.

To supplement the live food I tried them with small pieces of garden worm but they did not take this food nearly as eagerly as they did the white worm. I also tried some horse flesh and was rather amused when the girl in the Pet shop asked me if I was keeping Piranhas. I scraped the meat for the fry and although they ate it I found that there was always a quantity of skin or sinew left behind, and so this feeding was discontinued. I was giving Bemax and flaked food every day as well as the live food but found that the 15 fish could dispose of a 3/3 tube of flaked food in one day if given nothing else in the form of dried food. I had stopped using the mixture I had made up previously as goldfish will usually neglect any fine food and go for the larger pieces all the time.

If possible I gave a good feed with white worms last thing in the afternoon as if any were left uneaten they would live in the water and not cause any pollution—they can live in water for over 24 hours.

The fish continued to grow at such a rate that I became certain that they would be large enough to breed next season. I shall continue to keep a fairly steady temperature right through the winter and shall no doubt have to spread the fish out into four tanks. Several have already lost all traces of black and all have started to change with the exception of the three fish I am keeping inside in cool water. These have grown very little although they are perfectly healthy and the others are well over three times as large. There is not a chance of the cold water ones changing colour for a long time, perhaps a year.

Next March I shall gradually reduce the warmth of the water so that the fish are gradually brought to a normal temperature. By next late April or May they should be ready to go into the outdoor pond with the other breeders. Having had fantails breed at 11 months of age when not as big as those in question I am quite certain that the youngsters will be large enough and ready to breed by late spring or early summer.

# Jottings

continued from page 310

powers enable them to locate food as easily as any fish with normal vision. *Tubifex* worms are caught as they sink slowly to the aquarium bottom, with dried food being taken at the surface. Like most cave animals their coloration is pallid. An interesting point to note is that the young of the blind cave fish possess small, but nevertheless functional optical organs, but in the process of time these become overgrown with skin. Its origin has been traced as a sub-species of *Astyanax fasciatus Astyanax fasciatus mexicanus*.

# Extending the philatelic aquarium

**by A. G. K. Leonard**

TROPICAL fish now provide attractive subjects for postage stamps of many countries—not only pictorial issues produced with half an eye on sales to collectors, with whom they enjoy increasing popularity, but also regular series in use for several years, presenting variegated philatelic aquaria in dignified and artistic style to exemplify their country of origin.

The latest and most significant contribution to this expanding theme came in December from Tanzania (the union of the former British colonial territories of Tanganyika and Zanzibar) in the form of a complete set of 14 different stamps, each offering a colourfully realistic miniature of a different species of the many tropical fish that abound among the rocks and coral reefs off the coast of this area of East Africa. Finely produced in multicolour photogravure by the same London firm of specialist printers responsible for British stamps, they have been designed by Mrs. Rena M. Fennessy, an accomplished artist who has provided the artwork for several recent East African stamp series.

The eight lowest values of the new issue from Tanzania are in the usual small size, which somewhat limits their visual appeal, although colours and details are faithful enough, but the top six denominations, from 1s. to £1, are three times the area, in large horizontal format which gives full scope to the artist. All the stamps identify their subjects with Latin scientific name as well as the popular local native name.

The 1s. stamp does full justice to the nightmarish chale, otherwise *Pterois volitans*, the lion or devil fish, always an eyecatcher in the salt-water aquarium, with its distinctive stripes, dermal flaps and poison-bearing dorsal spines. Airmail envelopes from Tanzania to England are likely to bear the companion stamp which pictures *Acanthurus leucosternon*, locally called kangaja and known to aquarists as the powder-blue surgeon fish, one of the most beautiful of the family *Acanthuridae*, about 6 in. in length.

Too large for most aquaria, since it grows to 40 in. or more, but a fine game fish and tasty eating, is the colourful Red Snapper, *Lutianus sebae*, known as totovu to East African fishermen. They show great respect for the kitatange featured on the new 5s. stamp, replacing it in the sea if they happen to catch it. To us, it is familiar as the moorish idol, *Zanclus cornutus*, imported from waters ranging from Zanzibar through the Indian and Pacific Oceans as far as the coast of Mexico, remarkable for its short, high and greatly compressed body, long snout and prominent horn in front of each eye. The stamp picture admirably conveys its delicacy of colour and movement in the water.

The 10s. stamp depicts the trigger fish *Rhinecanthus Aculeatus*, locally called tumbwi, while pride of place on the top, £1, value is given to the squirrel fish *Holocentrus Cornutus*, kifuvu to local fishermen.

For 5 cents (the East African shilling is divided into 100 cents) one can obtain a charming little picture of the cardinal fish *Apogon nigripes* (karange) which usually hides in the hollows of large molluscs and is thought by some to incubate its eggs in its mouth. Other stamps depict the dowe or rock skipper, *Periophthalmus sobrinus*, agile in its movements; *Arothron hispidus* (Shogo) and the Tugua or *Platax pinnatus*, a member of the bat fish family *Platacidae*.

Subject of the 40 cents stamp is *Gazerin gazerinus*, locally mlea, a colourful and hardy fish, good eating and suitable for the aquarium in its juvenile stage. It grows from 3 in. to 20 in. and is a fast swimmer as well as a large eater, needing a tank about ten times its length. These shallow-water fish create confusion and problems of correct identification because of the considerable colour changes they undergo at various stages of their growth.

Another neat little stamp in the 50 cents denomination offers a picture of *Gomphosus coeruleus*, known locally as Tangu Domo and to the aquarist as the Hawaiian bird fish. Found throughout the Indo-Pacific waters, it is a fine fish for the aquarium, growing up to 10 or 12 inches long, but is not easy to catch owing to its habit of tucking itself away in the nooks and hollows of the coral reefs, at


which it constantly nibbles with its tubular snout, in search of organisms, worms and small crustaceans.

The butterfly fish *Chaetodon kleinii*, locally called kitas maremo, is featured on a companion stamp which displays its vivid orange-yellow colouring, with prominent dark purple spot. This graceful fish, which grows to about 5 in., mainly frequents the waters of the East Indies.

The Tanzanian postal aquarium is completed by a miniature of the dodozi, scientifically *Hippocampus hystrix*, the charming little sea horse of fascinating habits as well as voracious appetite—a good choice to begin a marine aquarium, but best kept on its own.

Across in the Caribbean, Barbados included an attractive miniature of the sea horse as one of its stamp series devoted to 14 different forms of marine life introduced in July 1965, as described and illustrated in *The Aquarist* of February 1966. This stamp was re-issued in December 1967, with a correction of the spelling of the scientific name, *Hippocampus*—an error which had somehow slipped through on the original printing and passed almost unnoticed.

Last December also saw the re-appearance in a new value of a pair of stamps inscribed separately in French and English for the Anglo-French condominium of the New Hebrides, presenting the fine picture of the highly photogenic lion fish, *Pterois volitans*, first issued in 1965.

Fiji has in preparation a new stamp series that will include tropical fish among its subjects, while British Honduras and Guyana likewise intend to put fish on their new stamps. Several Caribbean territories have recently made special issues publicising their tourist attractions, but the fish which they have featured are of interest to the game fisherman rather than the aquarist.

Cuba featured various forms of tropical marine life on a set of stamps released last September in connection with the International Skin Diving Championship. The previous month, Hungary paid postal compliments to anglers with an attractive series depicting fish of the Danube, among them the carp, and New Zealand issued a stamp illustrating brown trout, to mark the centenary of its introduction into the country's rivers.

During the summer, North Vietnam contributed half a dozen fish to the philatelic aquarium and Laos offered its quartet to swell the theme. From Somalia in November came four multi-coloured miniatures of *Gaterin gaterinus* —one of the subjects featured a month later by Tanzania —*Chaetodon semilarvatus*, one of the family of butterfly and angel fish; *Epinephelus summana*, a grouper, and *Pricanthus hamrur*.

September saw the release by the African republic of Burundi of another nine pictorials devoted to freshwater fish. For airmail franking, these used the same designs as the April-May issues for ordinary postage. They included the mouthbreeder, *Haplochromis multicolor*; the hardy and attractive one-stripe African tetra, *Nannaethiops unitaeniatus*, a peaceful fish growing to about 3 inches, and the slightly longer and distinctly vicious African jewel fish, *Hemichromis bimaculatus*.

Other fish depicted on these colourful labels from central East Africa were *Ctenopoma acutirostre*, the African climbing perch, and another walking fish, *Channa obscura*, which is hardly an aquarium type.

Another stamp pictured *Phenacogrammus interruptus*, the Congo tetra, a 3 in. beauty for the aquarium, with its shimmering violet sides reflecting all the colours of the rainbow. Slightly longer is the subject of a companion stamp, *Epiplatys sexfasciatus*, the six-banded panchax. The series also includes the cichlid *Trophous duboisi* and *Nothobranchius guentheri*, Gunther's fundulus or nothobranch, one of the so-called "annual" fishes of Africa, which buries its eggs in the mud of dried-up rivers, to lie dormant until brought to life by the advent of the rainy season.

Stamp designers seem to prefer saltwater to freshwater fish for their subjects. A recent production for the Kingdom of Yemen features a range of the former, such as trigger fish, rudder fish, butterfly fish, dragon fish, clown fish and grouper, together with cuckoo wrasse and squirrel fish.

With the continuing boom in stamps, from both the collecting and investment angles, 1968 is sure to see many more tropical fish featured on attractive postal labels from all over the world, still further extending the scope of the already prolific philatelic aquarium.

# The use of chemicals for the aquarist

**by J. D. Loader**

In response to many requests we are reprinting the following article which first appeared in the May 1963 issue of *The Aquarist*.

ALTHOUGH I deprecate the use of chemicals in the aquarium generally, sometimes it is absolutely essential, and then a general guide to doses is useful to the practical aquarist. The Tables with this article give minimum satisfactory doses and a conversion to usual household measures for convenience. It is recommended in all cases of disease that mulm be siphoned from the aquarium before addition of any chemical cures. Aeration is also desirable, as with the increase of temperatures suggested the faster metabolism of the fishes produces more carbon dioxide in the water. Aeration should not be used with unstable compounds such as potassium permanganate, however, because it produces chemical changes in them.

For preference sick fishes should be treated in a bare aquarium, as some chemicals are strong enough to break down the tissues of plants. These are indicated in the column headed "Treatment and Notes." Some fishes are affected by chemicals, notably the scaleless fishes (*Botia* species etc.) and catfishes. As most of the cures call for an increase of tank temperature it is advisable to remove *Corydoras* catfishes from the aquarium being treated to a bare aquarium for a week. To satisfy the aquarist that no trace of disease then exists in the bare aquarium, a very sensitive fish such as the beacon tetra (*Hemigrammus ocellifer*) or ruby barb (*Barbus nigrofasciatus*) should be introduced. These fishes generally show signs of disease within 24 hours of being introduced to a diseased aquarium. Aquarists with only one tank would be well advised to raise the temperature to only 78°-80°F (25.5°-26.5°C).

Glass apparatus used in diseased tanks should be sterilised for 1 minute in boiling water. Plastic apparatus should be sterilised for 1 hour in potassium permanganate solution (one-quarter of a teaspoon to the gallon). Only one chemical cure should be used at any one time. Nets are safe to use when perfectly dry.

It will be noticed that several cures are given for the commonest disease of all: "white spot" or ichthyophthiriasis. The writer's preference is to use methylene blue in unplanted tanks and quinine hydrochloride or T.C.P. in planted tanks, but as this is controversial (as all aspects of fish-keeping seem to be!), several other cures are given. Heat alone was not found to be a satisfactory cure by the writer unless the fishes were transferred to another tank after losing their spots. If a tank is left at 85°F (29.5°C) with no fishes at all for a minimum of 2 days, it can be considered safe to use, as, if the free-swimming parasites do not find a host within this time they will die anyway.

Symptoms are not given in this article as the same symptoms may arise from several causes. Also the aquarist should not rush to his chemicals when he notices symptoms such as folded fins or scratching on the bottom of the aquarium. These may be due only to raised (harmless) bacteria or Infusoria content of the water because of overfeeding and be easily cured by siphoning off half or more of the tank water and replacing with fresh, but mature, water at the correct temperature.

The disease known as velvet (*Oodinium* parasite) in the writer's experience can remain latent in a tank for several months and appears to affect only white cloud mountain minnows, zebras, fighters and gouramis, angels being unaffected. Salt is the preferred cure, seconded by acriflavin. Velvet disease appears to thrive in well-lit tanks, therefore it is suggested that the intensity of lighting is reduced to 20 watts per square foot of surface area and tanks should be shielded from daylight.

Some fishes, e.g. harlequins (*Rasbora heteromorpha*), do not travel well and become susceptible to attack by infective agents, although showing no external signs of disease. When received they may be treated in a solution of the antibiotic animal terramycin, as directed below.

All chemicals must be dissolved and diluted with at least half a pint of water at aquarium temperature before being added to the aquarium. If tablets are purchased containing a certain number of grains of chemical for ease of measurement, these must be uncoated.

### Weights and Measures for the Aquarist

Much misunderstanding with regard to weights and measures is probably due to the fact that there are at least three systems operating in England at the present time. Confusion arises because 1 ounce equals 16 drams (avoirdupois) and 8 drachms (apothecaries). This should be all cleared up when we change over to the continental (metric) system. For the benefit of those who have nothing more than a small eye dropper and a teaspoon (quite accurate enough for our purposes, anyway) the accompanying Table may be of help.

**Equivalent measures**

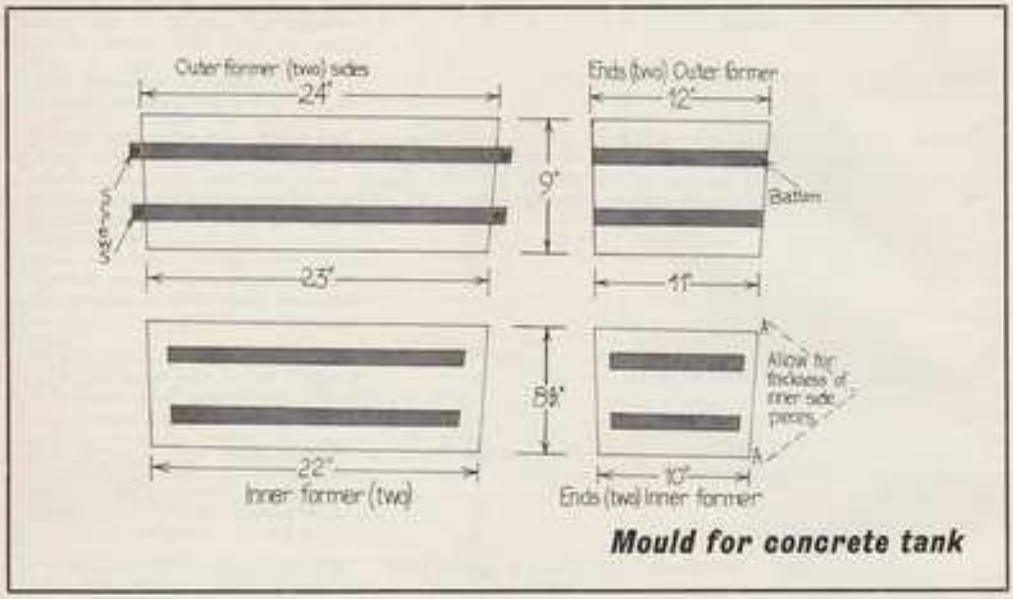
| Spoon measure | Ounces | Drops or minims | Grams or millilitres | Grains |
|---|---|---|---|---|
| 1 Teaspoon | ⅛ | 60 | 3.5 | 55 |
| 1 Dessertspoon | ¼ | 120 | 7.1 | 109.5 |
| 1 Tablespoon | ½ | 240 | 14.2 | 219 |
| 2 Tablespoons | 1 | 480 | 28.35 | 437.5 |

**The following table shows the method and treatment for some common ailments**

| CHEMICAL | APPLICATION | DOSE | TREATMENT AND NOTES |
|---|---|---|---|
| Common salt (lump salt, non-iodised cooking salt, bay salt, broad salt, sea salt). | Fungus and bacterial infections; free-swimming forms of white spot (*Ichthyophthirius*); velvet (*Oodinium*); costiasis. | 1 oz./gallon. | Increase temperature to 80°F (26.5°C) for tropical fishes, to 70°F (21°C) for temperate fishes. Dissolve salt first at concentration of ½ oz. (1 tablespoon)/gallon. After 1 day increase to full concentration and leave for 5 days. Then siphon one-third away, adding mature water over 3 consecutive days. No effect on plants for this concentration and duration. Do not use with *Botia* or *Corydoras*. |
| Methylene blue (methylthionine chloride). | White spot (*Ichthyophthirius*); gill flukes; bacterial infection of fish eggs; velvet (*Oodinium*). | General dose 3 drops of 5 per cent solution/gallon; for velvet use 6 drops/gallon. | Increase temperature to 80°F (26.5°C) for tropical fishes, to 70°F (21°C) for temperate fishes. Leave for 2 weeks. Then siphon off half the water, adding mature water, and run carbon filter to clear dye. Kills duckweed (*Lemna* species) and *Cabomba* but not *Vallisneria*, *Sagittaria* or *Cryptocoryne*. Do not use with transparent fishes (*Ambassis lala* etc.) or scaleless fishes (*Botia* etc.). |
| T.C.P. (British Alkaloids Ltd.) | White Spot (*Ichthyophthirius*). | See notes. | Add three doses of 2 teaspoonsful each to 10 gallons on 3 consecutive days. No effect on plants. Fishes are clear in 7 days. |
| Neutral acriflavine (½ grain uncoated tablets) or proflavine. | Velvet (*Oodinium*); fin rot and fungus. | One (½ grain) tablet/10 gallons. | Maintain given dose for 3 days then change half of tank water for fresh mature. Repeat dose 2 days later if disease is still present. Then change water for all fresh mature water to prevent temporary sterility. |
| Dettol. | Gill flukes. | 1 drop to 1 pint of water at tank temperature. | Bathe fish (in net) for 10 seconds only—then return to tank. Mollies, angels and fighters are susceptible. Goldfish very prone, especially fry. |
| Quinine sulphate or hydrochloride (5 grain) uncoated tablets are suitable). | White spot (*Ichthyophthirius*); velvet (*Oodinium*); costiasis. | ½ grain/gallon. | Quinine hydrochloride dissolves more readily than quinine sulphate. Aeration is essential; darken tank. Repeat dose after 24 hours. No need to increase temperature. Maximum dose: 2 grains/gallon. Change water 1 week after all spots have disappeared. Do not use with barbs. |
| Potassium permanganate. | Sterilising tanks; gill flukes. | See notes. | Use no aeration. For sterilising use 4 grains/gallon for 2 hours (no fishes). For gill flukes in planted tanks use ½ grain/gallon. In unplanted tanks use ¼ grain/gallon. Move fishes to clean tank after 3 hours. Repeat treatment if required 6 days later. |
| Animal terramycin. | Antibiotic to decrease disease risk after travel. | 300 units/10 gallons. | Use plenty of aeration. Loses half of its efficiency in 2 weeks. |
| Phenoxetol. | Fungus and fin rot. | 1 part to 10,000. (1 teaspoon to 10 gallons tank). | Fishes usually cured in 3 days. No effect on plants. |
| Mercurochrome. | White spot (*Ichthyophthirius*). | 2 drops of 2 per cent solution/gallon. | No effect on plants except *Cabomba*, *Hygrophila* and *Aponogeton*. Change all water 2 days after spots clear. |

# Concrete hatching and rearing tanks

by A. Boarder




**Mould for concrete tank**

## How to make them

I HAVE often been asked how I made the concrete and hatching tanks which I have in use. For the benefit of the enquirers and those who would like to do the same I will describe the method I have adopted. The measurements I shall give are those which I have used but they may be altered to suit individual requirements. I made my tanks about twenty years ago and they have been in use ever since. They are still completely watertight and as far as I can make out they are ever-lasting.

It has often been said that concrete is porous but I can state quite definitely that if the tanks are filled with water for a year, the outside is still dry. No reinforcement is used and so the cost of making the tanks is very small. My tanks measure 24 × 12 × 9 in. They are slightly wider at the top than the bottom and are half an inch thick. I find that the size I have used is a very useful one and the tanks are not too heavy to move about when empty. At a rough estimate I think they weigh about the same as a glazed iron framed tank of similar size.

The first and most important task is the making of the mould. The better this is made the more likely is one able to construct a good job. I used a fairly strong ply wood but this was reinforced in places to keep it more rigid. Some years ago I saw an article on making concrete tanks but found that if I followed the instructions I had difficulty in getting the inside mould out and often the concrete tank was cracked during the efforts. I then found that the easiest way was to make the inside former in four separate parts and this has made the task so much easier.

To make the outside former it is necessary to make two sides and two ends of the sizes you need. When the pieces are cut, measure off half an inch at each end of the base. This will give you the taper. I used 1 × ½ in., batten to strengthen the former ensuring that those on the sides protruded so that a screw or other fixing could be added to keep the frame together whilst the tank was being made. The outer former can now be assembled and measurements taken for the inside formers. These must be half an inch less in depth than the outer and small enough to allow a half an inch clearance all round when inserted in the outer former. The sides should be of the necessary length and the ends must fit inside them. This will ensure that when the concrete mixture is being worked in, the sides cannot move inwards. A temporary strut or two can be placed inside to keep the ends from moving in.

No base is necessary as the former can be stood on a level surface such as a sheet of glass. A piece of newspaper

on this will stop the concrete from sticking to the glass. The mixture must now be obtained and I used three parts sharp sand to one part cement (ordinary type will do). The sand must be clean and that known as washed-river grit or sand will be best. The cement must be fresh with no lumps. Before use the components can be sifted to make sure that all is free from lumps.

The next stage is to oil the former. That is, all that which will come in contact with the cement must have a thin film of oil. I used old car engine oil and found it ideal. The film must not be applied so thickly that it can run down, but must be the slightest covering.

The outer former only is assembled on the glass and the mixture made up and wetted. Do not use too much water but have it Puddingy. Wet a little at a time so that the remainder does not go off when left for a time. With a trowel drop some mixture on the bottom and spread it to half an inch in depth. A rough measure can be made with wood to see that the depth is right. By measuring from the top this can be ascertained. The next stage is to get the inside formers into position. First place a good lump of concrete at one side and press the inside former to it so that it stands in position. Now do the same the other side. The end pieces can now be placed in with some concrete to hold them in place. The stretchers can now be placed inside to stop the ends from coming in as one works. Now make up some more mixture rather softer than the first and with the small trowel work this into the half inch opening all round the former. Keep working as quickly as possible filling the side parts first. Then work on the ends until the top has been reached all round. If it is necessary the base can be smoothed over again.

The tank can now be left for a couple of days when it will be ready for removal from the former. First take a table knife and run it carefully along the top of the concrete where it joins the end inside former. The end can then be pushed in and withdrawn. The sides are now treated in the same manner. If the inside formers were treated correctly with oil they will come away with no trouble. If the concrete appears to be set well enough, the outside former can be removed by removing the end fixing screws. Do not try to pick up the tank at this stage but if the glass base is required to make another tank place another sheet of glass against the first and the tank can then be slid off on to it.

After three days the tank will hold water and if the weather has been dry the tank will benefit from the moisture as concrete should not dry too quickly. The formers can now be cleaned for another time. I made many tanks by this means, as once one has the former it is easy to make as many tanks as may be required. Before using these I painted them all over with bituminastic paint as a preservative. It will be noted that no reinforcement need be used and the only point to watch when making is that the mixture is pushed well down at the corners before the rest of the concrete is added. Before use the tanks must be well soaked and scrubbed to remove any free lime. They will then give years of service with only an annual scrubbing.

**Complete tank**

# *Cryptocoryne longicauda*

**by B. Fry**

*Cryptocoryne longicauda* is a tropical plant from Borneo, suitable only for a largish tank; for, given a position in partial shade (a basic requirement for this plant, anyway), a rooting medium of lime-free grit or sharp sand with a little clay to enrich it pushed down among the unravelled roots, and a soft neutral to acid water kept clear of pore-clogging floating sediment, the stems bearing the heart-shaped and slightly wavy-edged leaves will sometimes exceed 12 in. in length. The leaves themselves are green on both sides and measure about 6 in. long by about 4 in. wide.

*C. longicauda*, when once established, will make a splendid feature plant or centrepiece for a decorative tank housing a collection of fishes not interested in leaves however tempting they may look as food. To show this plant off to the best advantage it is necessary to surround it with a forest of darker greens such as may be supplied by shade-growing plants of the same genus. *C. affinis*, *C. willisii* and *C. blassii*, which is hardly green at all but more of a rich purplish brown, leap immediately to mind. Long strands of Java moss (*Vesicularia dubyana*), set up against an undisturbed rear glass will, in time, grow all over it, and make a wonderful olive-green background. It will tolerate a lot of shade.

*C. longicauda* increases by runners that spread in all directions under the compost. The offspring arising from these runners should not be cut away from the parent plant too early in life. If they are they will have a great struggle to survive unless they are nursed along for several months in very shallow water.

# Our experts' answers to tropical fish-keeping queries

*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.*

**Is the clown barb easy to breed and what size must it be before a spawning can be expected?**

The clown barb is an erratic breeder. In some tanks it will breed quite freely, but in others it will breed only rarely or not at all. Ordinarily the fish reaches breeding size at 3 in. A bright light, plenty of plants growing in soft acid water, and a temperature in the neighbourhood of 78°F (26°C) are among the essential requirements.

**At what age does a female molly become sexually mature?**

This depends on the growth the fish has made and the temperature of the water. As a rule, a normally developed female molly kept at a temperature of 75°F (24°C) reaches sexual maturity at four months. Naturally, insufficient and/or poor quality food, lack of adequate swimming space, and a low temperature retards development and makes a poor breeder anyway.

**Could I spawn the one-line tetra** (*Hemigrammus unilineatus*) **in a tank measuring 18 - 10 - 10 in.?**

You could spawn *H. unilineatus* in so small a tank but a larger one is recommended because the fish needs plenty of room for chasing (the male is a vigorous driver) and a large female sometimes produces hundreds of eggs.

**How can one clear planarian worms from a tank?**

The first thing to do is to siphon the bottom clear of all dirt. Planarian worms only flourish where there is plenty to feed on (decaying fish food, too much fish excreta, unabsorbed by the plants, and plant life in the process of decay). If you cannot wait for the planarians to die down of their own accord, then, after removing the fishes, stir in sufficient crystals of permanganate of potash to tint the water a rich burgundy red and maintain a temperature of about 86°F (30°C) over the next four or five days. Siphon away about a ½ gallon of water from the bottom and top up with fresh before returning the fish.

**Would worm casts gathered from a well-tended lawn make a good growing medium for potted-up water plants?**

Worm casts from a lawn which has not been treated with a weed-killer or chemical fertiliser would make a good growing medium for most, if not all, water plants. The casts should be dried, powdered, and then mixed with a small quantity of peat and well-washed fine grit.

**I have just purchased half a dozen cardinal tetras for my community tank. Kindly tell me, a beginner, if this lovely little fish needs anything special in the way of food and temperature.**

The cardinal tetra will eat anything normally given to a non-faddy aquarium fish. All the same, it is always advisable to include plenty of live food and tiny pieces of red meat in its diet. The usual range of temperature for the general run of tropical fishes suits it well. One thing you should know is this: the cardinal tetra is a fish from very soft and acid waters. Therefore an aquarium filled with hard and alkaline tap water is not the place for it.

**A** *Cryptocoryne affinis* **that I rooted in my tropical aquarium six months ago has thrown out baby plants from several points along two stolons or runners. Would it harm the parent plant if I cut the runners into pieces in order to plant out the baby** *cryptocorynes* **in another tank?**

It will do no harm to the parent plant to remove the runners. But do not do this until the baby plants have put out three or four leaves. Neglect of this advice might result in the loss of all the young plants. At the best it would result in no growth of the baby plants for a very long time.

**I should appreciate some information on the aquarium set up most favourable to a spawning of** *Hemigrammus rhodostomus*.

The basic requirements are soft water giving a pronounced acid reaction and a temperature of from 78°F (26°C) to 82°F (27°C). A forest of plants to tone down top and side light is another essential. But do bear in mind that *H. rhodostomus* is not a ready-breeder and even if eggs are laid and hatch out the fry are not too easy to raise to maturity.

**I should like to grow a variety of moisture-loving plants just above but leading down to the water level of my tropical aquarium. Can you give me any ideas how this ambition could be accomplished?**

You would need some strong glass, a tube or two of one of the new aquarium sealants, and the skill and planning ability to devise and construct a sort of miniature greenhouse to rest on top of your aquarium frame. Apart from a lipped shelf or shelves to accommodate the plants above the water surface, easy access to the aquarium itself would be essential. Another point. To guard against any crisping and scorching of the aerial foliage, the preferred form of lighting would be from one or two suitably placed fluorescent tubes.

**I have just acquired a greyish yellow fish called a long-nosed loach. Please can you give me the scientific name of this fish and any information you have about its care in captivity?**

The long-nosed loach, more often called the horse-face loach, is *Acanthopsis choirorhynchus* from south-east Asia. This species is a light-shy burrower and should be housed in an aquarium containing plenty of plants rooting deep (to keep them in position) in soft sand. To keep this loach well nourished tiny worms or a suitable substitute such as scraped red meat should be dropped close to where it is lying last thing at night. A temperature in the upper seventies (°F) suits it very well. Specimens averaging 4 to 5 in. in length may worry or eat much smaller fishes.

**Why is** *Gyrinocheilus aymonieri*, **the algae-eating loach from Thailand, sometimes called the Chinese algae-eater?**

We can only guess that when this fish was first made available to aquarists, some wholesale or retail dealer wrongly assumed, or was led to believe that it hailed from China and gave it the common name of Chinese algae-eater. This name, however, is seldom used today. By the way, though this fish looks and behaves like a loach it is not a member of the loach family (*Cobitidae*): it belongs to a family called the *Gyrinocheilidae*, which has only a few representatives distributed, as far as we are aware, over a rather restricted range of south-east Asia.

**Is the gundak of Pakistani loach** (*Botia lohachata*) **good with other fishes and what temperature range suits it best?**

In its smaller sizes *B. lohachata* is well-behaved, but in its larger sizes (3 in. and above) it tends to chase after other fishes to nibble or suck at their sides.

# Coldwater fish-keeping queries answered by A. Boarder

**I have a golden orfe in my tank which has a red lump on its side. Can you tell me what it is and a cure?**

The lump may be a cyst or there may be a parasite underneath. If a thread-like protrusion comes from the lump it could be Anchor worm. Treat as recommended above. The lump may burst later on when a dab with a disinfectant will help healing. A salt bath would do no harm.

**I am hoping to breed veiltail goldfish and have an outdoor pond. Are there any special conditions I should note?**

Most veiltail goldfish on sale these days have been bred under almost tropical conditions and so require a higher water temperature than ordinary goldfish. If they are purchased in warm weather they could no doubt go straight into the pond. Test the temperature of the water in can and pond and get them fairly equal. You will be well advised to take the fish indoors for the winter as their tails and fins are liable to congestion or rot during very cold weather.

**I have just built a pond, 4 ft. × 1 ft. 6 and 1 ft. 2 in. deep. How many fish can I keep in it?**

This pool is small and you must not try to keep too many fish in it. It will be very liable to rapid change of temperature, getting too warm in summer and too cold in winter. Such a pool could freeze almost solid in bad weather. I suggest you start with four goldfish about three inches long over-all. They would then have a chance to grow but larger fish may not live for long.

**I find that my goldfish pull up the water plants in my tank. Is there any way to prevent this?**

One way is to lay stones over the stems of the water plants when they will root well beneath them. Or you can root cuttings in small plastic pots stood in a large jar. The whole can then be set in the tank so that the small pot is hidden by gravel near the back of the tank. It is always better to get the water plants established well before adding any fishes.

**Please could you tell me an oxygenating plant suitable for growing in a well-shaded pond?**

The best plant for you is Hornwort, *Ceratophyllum demersum*. This will thrive in a shaded pond.

**One of my goldfish has gone very red about the gills and bubbles are coming from them occasionally. What is the trouble?**

The gills are inflamed through the incidence of a disease or pests. Sometimes parasites get into the gills and cause irritation. As the membranes inside the gills are very thin and tender they are easily damaged. You had better keep the fish in a separate container. Give fresh water for a time and add a very little salt after a day in this fresh water. If the fish could be kept a little warmer it would help it to recover more quickly.

**I have a 30 × 15 × 12 in. tank in a glass roofed shed adjoining my house. In it I had seven fantails, a moor and two silver orfe, also a shubunkin. This fish contracted white spot disease as did an orranda which I bought later. I lost all the fish and a dealer told me that I should have given them warm water. Is this so?**

It is probable that the fish you bought had been imported and bred under tropical conditions with a water temperature of at least 65° F. As your tank was only about 40–45° F, this could have given them a chill. They would have then been in a low state of health and their mucus covering would have been upset. They would then have been a prey to the parasites of white spot. A chill alone would not give a fish white spot disease as this can only be through the presence of the parasites either in the adult or larval stage. When buying fancy goldfish it is important to find out at what temperature they have been kept and it is almost certain that any such fish offered for sale at a pet shop have been bred and accustomed to warm temperatures and so it could be fatal to put them into cold water right away. They could be gradually acclimatised to the cooler water but unless this was done very gradually it is probable that the fishes would not live for long.

**I have tried to get aquarium compost at pet shops and they have never heard of it. Is it the same as aquarium gravel?**

Compost is the same as gravel and is the name given to it by most aquarists.

**Is it possible to clear a fairly large pond which has blue-green Algae? It would be difficult to empty it and clean it out?**

The water has probably become foul through too much dried food feeding and too little growing water plant life. At the beginning of the growing season the water plants are not sufficiently active to keep the water pure. To help them in the early part of the year it would be well to remove most of the water and refill with fresh. Then stop all feeding for a fortnight, then give live food only. This should clear up the trouble. More water plants should be added if there appears to be too few. There is no doubt a lot of mulm on the bottom if the pond has not been cleared out for some time but sufficient water plants would help to keep the worst effects from this to a minimum.

**Two of my goldfish in a tank seem to be fighting. Is there anything I can do apart from separating them?**

I have never found goldfish to fight, normally they are very placid and even if another fish takes the food from under its nose a fish will never retaliate. It is quite probable that the fish which is worrying the other is a male and is in breeding condition and the other is a female. When trying to encourage a female fish to lay its eggs a male will continually chase it and nudge it about. If there are plenty of water plants in the tank there is no need to worry as eggs may be laid and the chase end.

**I have had two golden orfe in my pond for two years and recently found them on their sides at the top of the pond water. What was wrong?**

This is a typical sign that the water had become impure. Golden orfe are among the first types of fish to be in trouble when the water becomes foul or lacking in oxygen. It is usually during hot or thundery weather that this can happen and although goldfish in the same pond may not be adversely affected the orfe are soon upset and unless fresh water is run into the pond they would die. Unless already dead when discovered, they would soon revive when the fresh water was added and could be swimming around within minutes as if nothing had gone wrong.

**If fish have been attacked by flukes and cleared from them would it be safe to breed from them?**

As flukes are a parasite and not any disease which might be passed on to the young, I see no reason why the fish should not breed successfully.

# The Red-Eyed Tetra

**by M. J. Parry**

A FISH which does not seem to enjoy a great deal of popularity amongst British aquarists, probably due to its reputation of being a fin-nipper is the so-called Red-Eyed Tetra (*Moenkhausia oligolepis*) a member of the Characin family, which is native to Guiana, and which attains a maximum body length of approximately 4 inches. The "common name" quoted above does not seem to be wholly approved of, however, as I have heard it called by several names, including the Glass Tetra and the Giant Beacon.

Certainly, it is not unlike the Beacon Fish (*Hemigrammus ocellifer*) in general appearance, but differs greatly in both temperament and feeding requirements. It is almost exclusively a carnivorous fish, *tubifex*, white worm, scraped loaf, etc. suiting its diet excellently. Its basic body coloration is of a whitish-silver, with a black spot at the caudal pendunclc. The scales are edged with black, which contrasts well with the Red eye and adipose fin. Like all members of the Characin group, it has a distinct preference for water of an acid nature (p.H. 6.2-6.5) which does much to keep the fish in the best of health.

Sexing of the species is not an easy task, the plumper appearance of the female not always being a reliable indication. Once two fish are seen "going through the motions", therefore, it will be found a wise policy to keep them apart in isolated aquariums, in order that they can be identified easily when required for breeding. The breeding tank, preferably no smaller than the standard 24 × 12 × 12 in., should be set up to include acid water (p.H. around 6.4), the bottom being carpeted with bushy aquatic vegetation, a good example being *elodea crispa*. Water temperature should be maintained at 80° F.

After the fish have been introduced into their breeding quarters it is quite possible that neither male nor female will show any interest in spawning. The breeder should not be discouraged by this, however, but should separate them once again, "conditioning" them on such delicacies (to fish) as *daphnia*, shredded earthworm, white worm (an excellent fattening food), *tubifex*, etc.

Once more upon introduction they may show no interest and they should of course, be separated again and tried a week later. This may happen many times but provided that the breeder has patience (and a true pair of fish) they should eventually reward him by spawning.

Breeding commences with the male chasing the female around the aquarium, through the plants, until, when exhausted, both fish come to rest, quivering side by side, the female expelling several eggs, which are immediately fertilised by the male. Spawning continues for a further hour, when approximately 100 eggs will have been released and fertilised. Both parents should now be removed. The eggs hatch in about 30 hours, when the minute fry will be seen clinging to the plants. The fry become free-swimming on the third day, and for the first fortnight their diet should consist of infusoria, the finest dried food or newly-hatched brine shrimp. As they grow, micro worm and finely sifted *daphnia* can be added to this diet, and within six months the fry will have grown sufficiently to be given the usual adult foods.

# Marines—the Natural Method

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must have plentiful supplies of oxygen if they are to function as denitrifiers. In order to secure this large amount of air, I use the output from a large Rena vibrat—or pump or a piston pump to supply the airstone with a little air left over for operating the filtration system. For filtration, I simply use a good undergravel filter to catch the heavier *detritus* (4) and mulm which sinks to the bottom, and a cheap plastic corner filter on the opposite side to the under-gravel filter.

*Explanatory Notes*

**(1) Auto trophic.** Plants which can assimilate simple inorganic compounds like water ($H_2O$), carbon dioxide, nitrate, phosphate and potassium salts, etc., and synthesise such complex organic compounds as sugars and starches, fats and oils and proteins. The energy for this chemical activity is light, and the chemical carrying out the processes is *Chlorophyll*—a green pigment. However, there are brown plants (containing the pigment—*Xanthophyll*) which can also carry out photosynthesis, e.g., the Brown Seaweeds and Diatoms.

**(2) Wardian Case.** A totally enclosed botanical system which is self-maintaining and cut off from the atmosphere. Today these systems usually take the form of a large ornately-shaped bottle, probably 3 feet tall and about 2 feet in diameter, with soil and water-loving plants like ferns and mosses which can stand the humid atmosphere inside the container. As the plants produce oxygen by photosynthesis, the enormous microscopic animal-population living in the soil removes the oxygen for respiratory purposes, replacing it with $CO_2$, which the plants utilize in photosynthesis. This cycle, usually called the Carbon Cycle, is supplemented by the Nitrogen Cycle (*See* diagram).

**(3) Aerobic Respiration.** A type of energy releasing chemical process which requires *oxygen* for its successful completion, as opposed to the *Anaerobic Respiration*, practised by several types of decay-producing bacteria during which the organisms, producing the decay, do not require oxygen for the release of energy during their metabolism.

**(4) Detritus.** Small particles of organic waste matter, such as excreta, rotting plant parts, etc.

# The American catfish

**by B. Fry**

THERE are several species of catfish widely distributed across the USA but the one most frequently seen in the dealers' shops—in the British Isles, anyway—is the one commonly called the coldwater or American catfish. This species—*Ameiurus nebulosus*—is extensively found in the eastern states, where it is popularly known as the brown bullhead or horned pout.

The most characteristic features of the *Ameiuridae*—the family to which *A. nebulosus* belongs—are a broad head, a naked body tapering away to a compressed tail, a long-based anal fin, and a small dorsal fin supported by a movable anterior spine. There are four pairs of barbels on the mouth. The barbels on the upper jaw are short and project upwards; those on the sides of the mouth and lower lips tend to project backwards.

*A. nebulosus* averages some 10 to 12 in. in length and is blackish on the back shading down on the sides to a greyish white or silvery white belly. A greenish to lavender-blue sheen is present on the flanks, though this is not apparent unless the fish moves about under and behind a strong light. The fins incline to black. The anal fin has more black in it than the other fins. Externally there is no difference in the shape or size of the fins or coloration to distinguish the sexes.

In the wild state *A. nebulosus* favours waters that have little or no movement and are deep. It is a light-shy species and does not normally vacate the floor of its lake or pond until dusk, when it moves off in search of food. It is carnivorous by nature and lives on such things as tiny fry, swallowable crustaceans, tadpoles, and various larvae. It eats a lot.

Breeding takes place in sun-warmed shallows in the Spring. It is said that both sexes make a saucer-shaped depression in the fine shingle or sand to receive the eggs. Then, spawning over, the parent fish mount guard over the eggs (the female is the more watchful and less likely to stray away of the two) until they hatch out in about eight or nine days. For a few days more the black fry are watched over by the female, then, as they seek pastures new amid the mud and debris, the female, her task completed, returns to deep water.

*A. nebulosus* makes an interesting aquarium pet. It demands little more than the right sort of food (earthworms, tubifex, tiny pieces of meat, and the like) and sufficient swimming space to move about in comfort. Unless the aquarium it is introduced into is artificially aerated, it is advisable to allow twenty-four square inches of surface area to every inch of fish, not counting the tail-fin.

*A. nebulosus* will stand a wide range of temperature. All the same, it will not stand an English winter outdoors unless its pond is deep and situated in a sheltered position in a favoured part of the country. Even then a severe winter, such as we experienced in 1963, is likely to kill it. Ordinary living room temperature suits it best. A so-called tropical temperature of from 72°F (22°C) to 75°F (24°C) will increase its need and intake of oxygen and food and result in rapid growth.

A young (small) *A. nebulosus* can be introduced into a tropical tank, provided the change from coldwater to warm-water is brought about very gradually, but as the fish increases in size it will become an increasing danger to smaller fishes. In a word, then, the American catfish is best kept out of a tropical tank unless it is a large tank stocked with heavily built fishes too large to be looked upon as food.

One of the interesting things about *A. nebulosus* is that, though retiring at first, it soon learns to recognise the sounds (vibrations) and shadows that signify feeding time and will swim to the front of the tank and wait for the anticipated worms or piece of meat. In point of fact, *A. nebulosus* is credited with more "knowing" than the general run of aquarium fishes, and can be trained to respond to the ringing of a bell or the whistle of its owner.

In conclusion, it must be mentioned that not all American catfish sold in this country are certain to be of the species *A. nebulosus*; a congener, *A. melas*, found in and around the Great Lakes, and further south, is easily confused with *A. nebulosus* on account of its similar coloration, size and outline. There are, however, slight differences, not apparent to the average aquarist, which enable the ichthyologist to distinguish between the two. According to Professor Günther Sterba, the possibility of cross-breeding between the two species where they meet, so to speak, in the wild, must not be ruled out.

# *Saintpaulias*

**by D. M. C. Jones**

THE *Saintpaulia ionantha*, or African Violet, was discovered in East Africa by Baron Walter Von Saint Paul-Illaire and was first introduced in to country in 1894.

The flowers look like rather large violets and usually appear during the spring and summer. They come in shades of white, blue, purple and pink. The leaves grow in the form of a rosette and are dark-green in colour.

This is a difficult plant to grow but it will do well in the humid atmosphere of the fish-house as long as it is kept in a warm, steady temperature. The *Saintpaulia* dislikes draughts and needs a well-lighted position which is not in direct sunshine.

A *Saintpaulia* has to be watered very carefully otherwise it will soon die. The safest method is to stand the pot in a deep saucer of tepid water. When the surface of the soil appears to be damp the pot should be removed and allowed to drain before placing it on a dry saucer. (Never allow it to stand for long in a pool of water.)

The pot must never be allowed to dry out completely, but nevertheless it must not be overwatered and care must be taken to ensure that water does not fall onto the hairy leaves which are liable to rot.

In the spring the plant can be re-potted into a smallish, well-drained plastic pot filled with John Innes potting compost No. 2.

The *Saintpaulia* can be fed with a liquid fertiliser used in accordance with the manufacturer's instructions (never give an overdose) and dead flowers should be removed frequently.

# Added attractions for pondside

**by Jas. Stott**

FOR those pondkeepers who have as part of their pond surround, an area of marsh or a bog edging offering irregular levels the plants discussed in this article, if not already tried, can provide added charm and interest to the pondside, for they possess attractive foliage either in colour or shape along with the bright colouring of their flowers.

The white flower spathes of the Bog Arum (*Calla palustris*) are well-known but there is another variety which bears lovely golden-yellow spathes and far more attractive foliage. It grows to a height of some eighteen inches, requires moist conditions but where the crown can be clear of water. The name of this variety is *Calla elliottiana* and is at its best through May and June.

A touch of vivid scarlet to the Pondside gives added attraction and the Cardinal flower (*Lobelia cardinalis*) will do just that. Although in some districts it may not be quite hardy enough to withstand local weather conditions in winter, it is sufficiently attractive to warrant extra attention during the winter months either with cover in the form of a cloche or lifting and given the protection of a frame. It is a subject for the higher regions of the bog for it must have rich, moist soil but the crown should not be covered with water. The flower spathes reach a height of around thirty inches and bloom during June and July. There is another species *L. fulgens* which can be differentiated by its purple tinted leaves. One of the best varieties is Huntsman bearing rich, red flowers.

Although not as attractive as the other two species *L. syphilitica* is by far the hardiest and appreciates really wet conditions so may be used in the deeper areas of bog. The flowers are blue and grow to a height of twenty-four inches. All species mentioned are best planted in Spring and increased by division in autumn.

The Cimicifuges are ideal plants for marginal grouping at the pondside either in full sun or partial shade providing its roots are in moisture. They are hardy and bear their flowers in compact plumes during July and August. Two of the best varieties for our purpose are *C. dahurica* forty-two inches and *C. simplex* White Pearl forty-eight inches both carrying ivory coloured flowers.

Now for a subject which is mainly appreciated for its handsome foliage capable of providing considerable added charm as a pond marginal. I refer to the Hostas, sometimes called by the popular name Plantain Lillies. There are several species which vary a great deal in the shape and colouring of their leaves. The one most frequently encountered is *Hosta fortunei* having broad, pale blue-green leaves and bearing the usual lilac coloured flowers, common to all species, and attractive though it is, I feel, the blue-grey foliage of *H. glauca* looks far superior in close contact with the waterside. A later blooming species is *H. undulata* which has the leaves flecked with silver white.

The Loosestrifes offer some charming subjects among the species for pondside planting. Most pondkeepers know the old fashioned Creeping Jenny (*Lysimachia nummularia*) a trailing plant with yellow flowers useful for planting along the edge of the bog or marsh, but there are the taller growing species from which have been developed several much improved varieties ideal for marginal planting. *Lysimachia clethroides* offers lovely spikes of white flowers from twenty-four to thirty-six inches tall in August while the garden variety of our native purple Loosestrife (*Lythrum salicaria*) named Lady Sackville, a delightful bright rose colour, and the variety called the Beacon which is rose-red, are worth a place at any pondside. Both varieties grow to a height of thirty-six inches and flower in July and right through to early September.

Finally the Trilliums, excellent subjects for the drier reaches of the marsh or bog edge and, therefore, suitable for the higher levels or at the base of rock areas. Because the petals and leaves occur in threes these plants are often called Trinity flowers and in some places the Trinity Lily. In other parts it gets the name of Wood Lily, but whatever it is named by popular local opinion it is, undoubtedly, a charming subject and can do much to enrich the pondside planting. While many people say that *Trillium grandiflorum* (white) is the most attractive of the Wood Lilies I must say I have a great liking for the pink form *T. grandiflorum roseum* which to my mind is much daintier, *T. erectum* has purple, white and yellow varieties. All the species and varieties flower during April and May.

## News from AQUARISTS' SOCIETIES

AT the annual general meeting of the **Lanarkshire A.S.** the officers elected were as follows: Chairman, S. Naismith; Vice-chairman, P. Haggarty; Secretary, E. Watson, 8 Westmoreland Street, Glasgow, S.2; Treasurer, A. Anderson; Show Managers, S. Marshall and H. Christie; Social Secretary, J. Smith. Committee members, A. Sharp, O. Sharkie, R. Paterson, R. Wood, T. Seymour, A. Anderson Jnr., A. McDonald, W. Hamilton, Mr. Mead, G. Steel, R. Hamilton, M. Kellok, J. Jamieson. F.S.A.S. delegate P. Haggarty. Breeders delegate S. Naismith and P. Haggarty. The position of Honorary member was conferred upon Mr. R. Wood in recognition of his past services to the club and hobby.

The final results of the club's League Table were as follow: P. Haggarty 42 pts, H. Christie 35 pts, R. Paterson 29 pts, O. Steel 27 pts, J. Smith 17 pts, A. Watt 16 pts, J. McDonald 12 pts, S. Thomson 12 pts. Meetings are held on the first Friday of the month in the Airdrie Community Centre, Airdrie, commencing 7.30 p.m. and visitors are assured of a warm welcome from club members.

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RECENTLY the **Trowbridge and District A.S.** heard a fine talk by Mr. Wheeler on fish keeping in general and livebearers in particular. A furnished fair competition was held and placings were 1., Mr. Pattrick; 2., Mr. Bull; 3., Mr. Jones. The December meeting took the form of a social evening where a "guess the baby" photo competition caused much amusement. The club continues to grow and meetings of over 40 are now usual. Visitors and new members are always welcome and details can be obtained from the secretary Mrs S. Scudamore, 48 Trowbridge Road, Bradford on Avon, Wilts. The 1968 Open Show will be held on Saturday, 4 May.

AT the December meeting of the **Macclesfield A.S.**, Mrs. E. Wilson, Glen Cottage, Fiton Avenue, Macclesfield was elected the new Club Secretary. The Inter-club shield competition with North Staffs was won again by North Staffs, but the Best Fish in Show award was won by Macclesfield. It was decided to have a trip to the Pantomime with dinner afterwards in February. The monthly meetings are held on the first Monday evening of each month at the Boys' Club, Oxford Road, Macclesfield.

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NEWS from the **Hull A.S.** indicates that the Society has had some full programmes over the last few months. There have been talks by Miss Wardlow and Mr. Boyes on goldfish and cold water fish. Mr. Banks judged one of the larger table shows and gave plenty of advice on judging of fishes and Mr. Mackrell of Goole gave a talk on the more unusual fish of the aquaria. His talk was very interesting and gave members room for thought when choosing fish for their tanks.

The Society staged an exhibition at the City Hall, at The Hull and East Riding Chrysanthemum Show and the best fish in the exhibition was a rainbow belonging to Mr. Collingwood. The furnished tanks of Mr. Hall, Mr. Mitchell and Mr. Peacock were of a very good standard. At the Fish of the Year Show in December, Mr. H. Watson who judged gave the first award to Mr. Bukish who entered an Angel fish. Mr. Watson afterwards gave a talk on the fish and said they were the best fish he had seen in a long time. At the Annual dinner and award night the President, Mr. Robinson, presented the following awards: Mr. Bukish, Fish of the Year; Mr. A. Douglas, Aquarist of the Year; Master Rowley, Junior Aquarist of the Year; Master P. Tyson, Furnished Aquarium; Mrs. Shepherdson and Mrs. Chapman who tied for the Furnished Aquaria; Mrs. M. Lee, Home Breeders Gouramis; Mr. E. Storey, Table Breeders Guppies.

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MEMBERS of the **Bournemouth A.C.** took part in a discussion at the December meeting concerning the Club badges and other items of general interest. The club secretary, Mr. I. Andrews, announced that the Club had been invited to attend the next meeting of the Poole and District A.S. together with other local Clubs. Members also gave their views on various brands of fish foods stating their preferences, and some new ideas were forthcoming on the use of live foods.

Numerous prizes were drawn for at the Christmas raffle, the star prize being a stainless steel aquarium complete with cover which was won by Mr. Lawrence. A special vote of thanks was proposed to the donor of the star prize, Mr. Tony Garcia, of Atlantic Aquarium, and to the donors of other prizes. The monthly Table Show was judged by Mr. R. Morley, the results of which were as follows: A.O.V. Coldwater fish: 1, Mr. Travers, Common Goldfish, 70 pts.; 2, Mr. Travers, Common Minnow 65 pts.; 3, Mr. Hillier, Sun Bass 60 pts.

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AT the annual general meeting of the **Wakefield and District A.S.** the officers elected for this year were as follow: Chairman, J. Carter; Vice-Chairman, G. Gledhill; Treasurer, T. Moseley; Show Secretary, G. Boulby. Committee J. Grace and K. Collins. The society will meet in future at the Central Youth Premises, Zetland Street, Wakefield, on second and fourth Tuesday each month.

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THE news from **Warrington A.S.** shows that this Society has been well to the fore with a good programme. In October Barry Pengelley gave his usual excellent performance with his slide show "Cichlids and Characins" and can be sure of a further invitation to the Club during 1968. In November Ron Tench illustrated his talk "Foods and Feeding" with numerous samples, display boards and cultures and had obviously received a very co-operative response from the trade in his efforts to make his talk so informative and comprehensive. This programme is also available to any other interested Societies.

The Annual Hot Pot Supper held in December was enjoyed by 120 members and guests. The December club meeting was held in festive spirit with Ron Tench and Arthur Addison presenting a "Take Your Pick" programme which proved thoroughly enjoyable.

New headquarters have been acquired at the White Hart in Sankey Street, Warrington and this ideal location in the town centre should increase the attendance which continues in the region of sixty to seventy members.

The club is busy preparing for its first Open Show which is due to take place on 8th September 1968 and already suitable premises have been obtained.

For details of programmes, and membership, telephone Warrington 32639 or write to the secretary, Mr. Howard Benbow, 24 Crofton Road, Runcorn for further details. Meetings are held at four weekly intervals on a Tuesday evening and old and new members and their friends can always rely on a lively programme and a warm welcome.

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AT the annual general meeting of the **Bristol Tropical Fish Club** the following were elected to the committee for this year. Chairman, L. Linnecor; Vice-Chairman, F. Barry; Treasurer, M. Taylor; Hon. Secretary, W. Holland; Assistant Secretary, C. McGrath; Reporting Secretary, P. Wright; Programme Officer, G. Stone; Librarian, Mrs. P. Wright; Auditors, G. Dyer, T. Kitcher.

Following the tremendous success of the three day show of 1967, Bristol Tropical Fish Club will again hold a three day show in 1968 on 27th—29th June. Further details will be issued in the near future.

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MEMBERS of the **Brighton & Southern A.S.** have been privileged to hear some very good lectures during recent meetings. The first, given by Mr. A. Riley, of Worthing, an aquarist of some twenty years experience, gave details of his methods of breeding firstly with angels and secondly neons. He emphasised in the former the importance of changes of water once the fry were free-swimming to prevent bacteria build-up, which he said appeared to attack the young and cause multiple deaths. In the latter he went to great lengths to emphasise the importance of exactly producing water of the correct hardness as a few degrees either way appeared to stop the eggs hatching.

A fortnight later Mr. Cox of Woodingdean, Brighton, well known for his recent article on breeding discus gave the members an interesting talk on the keeping of tropical marines which he has done over the last eight years. He emphasised that expensive equipment was not necessary, provided care was taken to feed the correct food in the right proportions. This was followed by a cine-film on coral fishes of the Barrier Reef.

Two Club table shows were held in December the first of which was for Guppies in competition for the Dave Harris Trophy. Nineteen entries were benched; from these, unfortunately, being from only two members—Mr. D. Soper and Mr. T. Croucher—the latter taking all awards. The Chairman expressed the desire that more members should take an interest in this species so that more competition would be available next year. The Fish of the Year show held just before Christmas attracted a fair number of entries and in the absence of Mr. Jessopp, Mr. R. Browning and Mr. P. Pavey agreed jointly to judge the entries and made the following awards: 1, E. Cunsolin (Laboo bicolour); 2, V. Aldis (Malayan Angel); 3, E. Cunsolin (Severum); 4, D. Soper (Guppy). The Club is looking forward to another successful year and invites any interested parties to its meetings which are held on Wednesday evenings once a fortnight over the Prince George, Trafalgar Street, Brighton.

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TABLE show winners at **Nottingham and District A.S.** monthly meeting were as follow: Tropicals: 1, Mr. G. Bulleyment; 2, Mr. M. Selwood. Catfish: 1, Mr. C. Hill; 2, Mrs. I. Bulleyment; 3, Mr. G. Bulleyment. A presentation was also made to Mrs. S. Barber of the Home Aquaria Trophy and the Ladies' Cup.

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IT was announced at the November meeting of the **Barry A.S.** that Mr. B. Light, Chairman, had been accepted as a Cold Water Judge by the F.B.A.S. This means that the Club now has two F.B.A.S. Judges, as Mr. A. Ibbertson, Show Secretary, was made a Tropical Fish Judge earlier on in the year. Mr. Clive Barber, Secretary of the Bridgend Aquarist Society, was one of the members present to watch a Slide Show/Tape Lecture called "An Introduction to the Cichlids."

The Club's Annual Trophy Show was held with results as follow:—Best Egglayer: 1, A. Ibbertson (Dwarf Gourami); 2, Mr. Harding (Moonlight Gourami); 3, A. Ibbertson (Shubert Barb); 4, A. Ibbertson (Three Spot Gourami). Best Livebearer: 1, S. Nelson (Molly); 2, A. Ibbertson (Molly); 3, Mr. Harding (Molly); 4, S. Nelson (Molly). Best Junior Exhibit: 1, Master Johnson (Pelmatochromis Kribensis); 2, Master B. Curran (Thick Lip Gourami); 3, Master B. Curran (Green Line). Breeders Livebearer: 1, A. Ibbertson (Swordtails); 2, A. Ibbertson (Swordtails); 3, P. Pitter (Male Guppies). Breeders Egglayers: 1, A. Ibbertson (Pelmatochromis Kribensis); 2, A. Ibbertson (Pelmatochromis Kribensis); 3, E. Clark (Angel Fish).

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THE **Yate and District A.S.** have moved to the Horse Shoe Inn, Dowsend, and are now meeting on the first Monday of each month. At the annual general meeting in December the committee for 1968 was elected as follow: Chairman, J. R. Powell; Vice-Chairman, D. Walsh; Treasurer, G. Smith; Hon. Secretaries, Mr. and Mrs. P. Wright, 4, Chestnut Way, Kingswood, Near Bristol; Programme Officer, D. Singer; Floor members, T. Green, J. Willett, A. Snell.

The open show for 1968 will be held on 7th September and further details will be issued later.

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THE trophies for the leading "Aquarist of the Year" were awarded at the annual general meeting of **Pontefract and District A.S.** The positions were: 1, Piper and Goodhall, 49 pts.; 2, D. Cohen 41 pts; 3, G. P. Nash 40 pts; 4, B. Cohen 39 pts; 5, A. Town 35 pts; 6, T. Tranter 24 pts. Members elected for the forthcoming year were Chairman, J. Goodall; Vice-Chairman, J. Thompson; Hon. Secretary, A. Town, 49, Grafton Street, Glasshoughton, Castleford, Yorks; Treasurer, T. Tranter; Ombudsman, R. Hunt; Show Secretaries, D. Cohen and B. Cohen; Librarians, P. Gates and T. Piper; Committee, P. Ludwell, M. Lauther.

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THE **Thorne A.S.** held their annual general meeting recently when the following officers were elected: Chairman H. Crandow; Treasurer R. Duffield; Secretary T. Dickens, 26, North Eastern Road, Thorne, Near Doncaster, Yorks; Committee, C. from Green, H. Green, R. Snowdon.

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IN his annual report at the annual general meeting Mr. Coombes, chairman of the **Bournemouth A.C.** spoke of his sixteen years' association with the Club, and said that in recent years the membership had rapidly increased after changing the venue to Pelhams Park. He concluded his report by remarking that the success of the 1967 Open Show gave indication of the great enthusiasm which members had shown that year.

Mr. I. Andrews, Secretary, then spoke of various show successes that the club had enjoyed, and he hoped for continued success in 1968. In June, 1967, a new association was formed, known as the Association of Southern Aquatic Societies, in which the Club was one of the founders. During the year, the Club had had several outings, the one to Downton Salmon and Trout Hatcheries being particularly well represented. The Treasurer, Mr. L. James, giving his report, stated that during the year the Club had shown a substantial profit.

After these reports, a general discussion took place, and it was proposed that Mr. J. Scott-Morgan should be made President of the Club,

a position that was at that time vacant. Mr. J. Scott-Morgan ("Jim" to his many friends) has been an enthusiastic and devoted aquarist all his life, despite a severe handicap; and although seldom able to attend meetings, he regularly enters fish in the Society Shows, and in other Shows throughout the country as a Bournemouth Club member, with outstanding successes.

The Election of Officers was held, and the following appointments were announced: President, J. Scott-Morgan; Chairman, B. Coombes; Secretary, I. Andrews, 17, Pleasure Close, Parkstone, Dorset; Treasurer, L. James; Show Secretary, J. V. Jeffery, 30, Braemar Ave., Southbourne; Committee, R. Manley, H. Earl, B. Hillier, J. V. Jeffery; Librarian, D. Hagg; Publicity, J. V. Jeffery.

During the interval, Championship show of the year was judged by Mr. Jeffery. The results were:—1, Mr. Hagg (Apistogramma Ramerizi), 87 pts; 2, Mr. Hagg, (Moonlight Gourami), 82 pts; 3, Mr. Poole, (Platy Variatus), 81 pts. The Annual Points Trophy was awarded jointly to Mr. Hagg and Mr. Earl both having gained equal points throughout the year.

At a Committee meeting later in the week, J. V. Jeffery was elected Show Secretary for 1968.

Club meetings are held at Kinson Community Centre, Pelhams Park, Kinson at 7.30 on the first Monday of each month and anyone interested in fishkeeping is cordially invited to attend.

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THE **Tottenham and District A.S.** held its annual general meeting recently and the Committee for this year is as follow:—Chairman, F. Williams; Secretary, B. Field; Show Secretary, S. Mooney; Treasurer, R. Mottram. The club also has great pleasure in announcing the post of pessimist has been accepted by Mr. Harris.

The open show will be held on 23rd March subject to official confirmation and all enquiries should be sent to the Show Secretary, Mr. S. Mooney, 44, Common Road, Muswell Hill, N.10.

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AT a recent inter-club show **East Dulwich A.S.** entertained Croydon A.S. During the judging a quiz was held, which was won by Croydon, with Mrs. Spencer of Croydon as the individual winner. East Dulwich take this opportunity of thanking Croydon for the splendid support from their members, and thank also Mr. A. Jassopp, F.R.A.S., for undertaking the judging. The results were as follow:—C—Croydon, E—East Dulwich. Livebearers: 1, K. Dryden (C), Black Mollie, 79 pts; 2, Mrs. D. Dunstan (E) Merry Widow, 78 pts; 3, A. Gale (E) Veldfire Mollie, 77½ pts; 4, K. Dryden (C) Mosquito, 77 pts. Labyrinths: 1, M. Todd (E) Moonlight Gourami, 77 pts; 2, Mrs. D. Dunstan (E) Siamese Fighter, 76½ pts; 3, G. Livesey (C) Lace Gourami, 76 pts; 4, A. Tucker (C), Moonlight Gourami, 74 pts. Tooth carps: 1, G. Lockwood (E) E. Chaperii, 82 pts; 2, G. Livesey (C) American Flag 79 pts; 3, D. Jones (E) A. Australis, 78½ pts; 4, A. Tucker (C), A. Nigrofasciata, 76 pts. Barbs: 1, A. Waters (E) Tiger Barb 76 pts; 2, P. Bowerman (E) Tiger Barb, 77 pts; 3, D. Smith (C) Cherry Barb, 76 pts; 4, A. Waters (E) Rosy Barb, 75½ pts. Best Fish in the Show was Mr. G. Lockwood's E. Chaperii.

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THE annual Open Show of the **Portsmouth A.S.** will be held at the Portsmouth Community Centre, Twyford Avenue from 3—10 August. Schedules are available from Mr. W. Ryder, (Show Secretary) 493, Commercial Road, Portsmouth.

At a recent meeting, members of the Winchester A.S. were the guests of Portsmouth for an Inter-Club Table Show. The classes were for Characins, Cichlids, Catfish and the judge was Mr. R. Manley. While judging was taking place, Mr. Evans gave a very interesting Lecture on Coldwater fish, and a practical demonstration of the method of hand spawning of the Shubunkins. The Table Show results were:—Catfish: 1, 2, E. Binstead (Portsmouth); 3, N. Franklin (Portsmouth). Characins: 1, H. Armitage (Portsmouth); 2 and 4 D. V. Jones (Winchester); 3, Mrs. K. Hatcher (Winchester). Cichlids 1, R. Hatcher (Winchester); 2, D. V. Jones (Winchester); 3, P. Bennett (Winchester). The Plaque for the highest points was awarded to Winchester with 17 points, Portsmouth scoring 13 points. The November Table Show was for Breeders classes, Tropical and Coldwater being well supported in the Tropical classes. The Judge was Mr. G. Marks. While judging was taking place a very interesting lecture was given by Mr. C. Croucher F.G.A. on the Fancy Guppies. Results of the Breeders classes: Tropical egglayers: 1 and 2, H. Armitage; 3, Miss M. Webb; 4, Mrs. J. Stillwell. Livebearers: 1 and 2, C. Beere; 3, Mrs. J. Stillwell; 4, S. D. Fotte, Coldwater: 1, V. Hunt; 2, P. Wylie. Best fish in the Show was awarded to H. Armitage.

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THE results of the **Aireborough and District A.S.** Annual Open Show were as follow: Section A: Guppies: 1, Mrs. P. McCourt (Leeds); 2, Mr. and Mrs. Cohen (Pontefract); 3, P. Reynolds (Swillington). Platies: 1, T. Tranter (Pontefract); 2, H. Gardner (Independent); 3, Mr. and Mrs. R. Megson (Aireborough). Mollies: 1, C. J. Burrup (Aireborough); 2, G. Garforth (Mirfield); 3, W. Parkin (T.A.B.). Swordtails: 1, F. Ledger (Huddersfield); 2, G. Orchard (Leeds); 3, Mr. Duncan (Barnsley). Siamese Fighters: 1, Mr. Baxter (Tadcaster); 2, G. W. Holmes (Tadcaster); 3, H. Cranswick (Featherstone). A.O.V. Anabantids: 1, A. E. Whitelock (Tadcaster); 2, Mr. Fairclife (Tadcaster); 3, P. Barrit (Bradford). Dwarf Cichlids: 1, H. Cranswick (Featherstone); 2, Mrs. Whitfield (Keighley); 3, I. and H. Dereu (Worksop). Angel fish: 1, G. Scarth (Cleveland); 2, G. Orchard (Leeds); 3, Mr. Rush (Halifax). A.O.V. Cichlid: 1, Mr. Thompson (Mirfield); 2, R. and L. Taylor (Bradford); 3, G. Orchard (Leeds). Toothcarps: 1, H. Cranswick (Featherstone); 2, Mr. Greenall (Tadcaster); 3, Mrs. J. W. Holmes (Tadcaster). Rasboras: 1, Mr. and Mrs. Cohen (Pontefract); 2, W. Naylor (Aireborough); 3, P. Barrit (Bradford). Danios and Minnows: 1, Miss B. Kaye (Huddersfield); 2, P. Reynolds (Swillington); 3, J. Whiteley (Aireborough). Catfish and Loach: 1, Mr. and Mrs. Anson (F.G.A.); 2, Mr. and Mrs. Standen (Leyne); 3 P. Reynolds (Swillington). Flying Foxes and Sharks: 1, P. Barrit (Bradford); 2, A. Hirst (Chapletown); 3, J. Whiteley (Aireborough). Livebearers (pairs): 1, A. Hirst (Chapletown); 2, Mrs. M. Bone (Huddersfield); 3, R. Stringer (Swillington). Egglayers (pairs): 1, W. Parkin (T.A.B.); 2, Mr. Hannell (Mirfield); 3, G. W. Holmes (Tadcaster). Breeders:—Six Fish (Livebearers): 1, R. Stringer (Swillington); 2, Mr. and Mrs. Standen (Leyne); 3, Mrs. Barry (Swillington). Breeders:—Six Fish (Egglayers): 1, A. Beasley (Otley); 2, Mr. and Mrs. Standen (Leyne); 3, Mr. Stray (Halifax). Ladies:—A.V. Fish: 1, Mrs. P. McCourt (Leeds); 2, Mrs. Cohen (Pontefract); 3, Mrs. Goodall and Piper (Pontefract). Juniors:—A.V. Fish: Master A. White (Keighley); 2, Master G. Nash (Swillington); 3, Miss Wiggins (White Rose). Furnished Mini-Jar: 1 and 3, R. Stringer (Swillington); 2, Mrs. Barry (Swillington). Aquarium Plants: 1, Mrs. J. Gresp (Aireborough); 2, A. Beasley (Otley); 3, Mr. and Mrs. Cohen (Pontefract). Small Barbs: 1, Mrs. Barry (Swillington); 2, A. Beasley (Otley); 3, Mr. Horton (Mirfield). Large Barbs: W. Parkin (T.A.B.); 2, F. Ledger (Huddersfield); 3, L. Kaye (Huddersfield). Small Characins: 1, P. Bone (Huddersfield); 2, Master A. Kaye (Huddersfield); 3, Master D. Lacey (Aireborough). Large Characins: 1, J. Whiteley (Aireborough); 2, Mr. and Mrs. Cohen (Pontefract); 3, N. Turner (Mirfield). A.V. Marine: 1, W. Parkin (T.A.B.); 2, Mrs. P. McCourt (Leeds). A.O.V. Tropical fish: 1, R. and L. Taylor (Bradford); 2 and 3, P. Reynolds (Swillington). A.V. Goldfish: 1 and 2, Mr. Eadon (Sheffield); 3, Master A. Kaye (Huddersfield). A.V. Fancy Goldfish: 1, 2 and 3, A. Phillipson (East Lancs.). A.O.V. Coldwater Fish: 1, A. Tretter (Cleveland); 2, R. Bramley (Pontefract); 3, Mr. Utley (Aireborough). Best Fish in Section A:—"Oranda" (A.V. Fancy Goldfish Class) 91 pts. Owned by Mr. A. Phillipson of East Lancs. Section B (Novices Only): Livebearers: 1 and 2, Mr. Robinson (Aireborough); 3, Mr. Duncan (Barnsley). Barbs: P. Carey (York); 2, Mr. Hennell (Mirfield); 3, Mr. Audsley (Horsforth). Characins: 1, Mr. Hennell (Mirfield); 2, Master K. Lister (Aireborough); 3, Mr. and Mrs. R. Megson (Aireborough). Cichlids: Mr. Scothern (Barnsley); 2, P. Carey (York); 3, Mr. Goodall and Piper (Pontefract). Anabantids: 1, J. Hayley (Cleveland); 2, Mrs. M. Kaye (Huddersfield). Catfish and Loach: Miss V. Lewandowska (White Rose); 2, Mr. and Mrs. R. Megson (Aireborough); 3, Mr. Lees (T.A.B.). Any Other Variety: 1, Mrs. L. Whiteley (Aireborough); 2, Miss V. Lewandowska (White Rose); 3, N. Bowland (Aireborough). Any Variety Breeders Six Fish: Mrs. Goodall and Piper (Pontefract). Best Fish in Section B:—Mr. Hennell (Mirfield), Characin 81 pts. Section C: Inter-Society Furnished Aquaria: 1 and 2, Swillington and District A.S.; 3, Aireborough and District A.S.

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THE last table show of the year of the **Uxbridge and District A.S.** was for pairs. Mr. Stewart judged the fish and instead of judging them behind locked doors judged the entries in front of the members explaining how each fish was pointed and this met with the approval of all present. Two prizes were awarded, I. McGaw taking first prize with a pair of thick lip Gouramis, the runner-up being Mr. H. Thompson with Golden Tetras. The "bring and buy" show was well supported but a social held on 15th December did not gain the support hoped for, but those who did attend enjoyed themselves. The programme planned for this year is a full one and we hope it will be full of interest. The annual general meeting will be held at the clubroom on Wednesday the 14th February.

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THE result of a table show of the newly formed **Brent A.S.** were as follow:—Guppies: 1, C. Elringham; 2, J. Line; 3, C. Swinburne; 4, A. Benson. Characins: 1, C. Swinburne; 2, P. Shrimpton; 3, M. O'Connell; 4, P. Abel. Best Fish in Show: C. Swieburne with a Red-eyed Tetra.

The Society meets on the 1st and 3rd Tuesday of each month and, anyone interested is very welcome to join. Full details can be obtained from the Society's Secretary at 97, Fleetwood Road, Dollis Hill, N.W.10.

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A TABLE show was held at the January meeting of the **Newport A.S.** in competition for two trophies, A.V. Egglayer and A.V. Livebearer, for which the judge was Mr. Brian Light, chairman of the Barry A.S. Results were:—Egglayers: 1, B. J. Main; 2, A. J. Payne; 3, W. Chapman. Livebearers: 1, W. Chapman; 2, Master A. Berry; 3, D. C. Bishop.

The same evening the presentation of the Society Trophies won during 1967 was made by the chairman, Mr. T. G. Wall to the following: Points Shield, J. Lowndes; Breeders' Trophy, J. Lowndes and W. Chapman (shared); Home Furnished Aquaria Competition (large tanks), J. Lowndes (small tanks), L. Batterman, (ladies section), Miss B. Brown; Cole Trophy for meritorious service, W. Chapman.

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THE result of the **Bradford and District A.S.** Home Furnished Aquaria Competition was as follows:—1, J. Bartlett; 2, P. Moorhouse; 3, J. Hodgkinson. The winner of the "Arthur Thornley Memorial Trophy" was P. Moorhouse.

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THE **Swindon and District New A.S.** is fortunate in having access to a 16mm sound projector, and in the past year have had several enjoyable evenings with coloured film shows. They have shown the Great Barrier Reef from the Central Film Library, The Lonely Places from the Central Electricity Generating Board, and are looking forward to seeing The Ripples Trout from Bristol Water Board. Any information from any other society as to any other source of films of interest to the members would be greatly appreciated.

THE **Winchester A.S.** has been in existence for four months during which time the Table Shows and lectures at each meeting have been very well attended and the membership is increasing steadily. So far the Society has six films to be shown at meetings before June and each meeting will also have a Table Show and lectures. On 27 April the first Annual Open Show is being staged. The results of the two annual Club competitions were:—Home Furnished Aquaria, for the Wingate Cup, V. A. Simmons; Table show Champion 1967 for Des Pope Cup, P. Bennett.

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THE last meeting of the year of the **Airesborough and District A.S.** was Annual General Meeting, when the following were elected to serve the society in 1968:—President, R. Lister; Secretary, G. E. Walker, 2, West End Terrace, Guiseley, Nr. Leeds, Yorkshire; Treasurer, P. Ivison; Show Secretary, O. Flesher; Committee, B. Megson, Master Stretton, K. Emms, K. Bateman, S. Fisher, A. Lawson; Auditors, G. Midwood and N. Hallas. The society now meet in a new venue for their monthly meetings at St. John's Schoolrooms, Henshaw, Yeadon, Nr. Leeds.

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AT the Annual General Meeting of the **High Wycombe A.S.** the following officers were elected:—Chairman, R. Bayman; Vice Chairman, A. F. Wilkinson; Treasurer, A. F. Wilkinson; Secretary, R. Thomas; Show Secretary, Mrs. P. Bayman; Show Manager, C. Pike; P.R.O. C. Pike; Librarian, C. Brevis.; Committee Mrs. S. Thomas, Mrs. V. Pike, R. Cox.

From the various reports read out at the meeting the general feeling was that the Society has had another good year. Comments from both Exhibitors and the General Public on the Annual Open Show were very pleasing.

The Society had the misfortune to lose four members during the past year:—Rose and Ernie Chatfield having retired to Wareham in Dorset, and Valerie and Peter Hallwell having moved to Andover, Hants. for business reasons.

The coming year promises to be at least as interesting as last, with our Open Show on 7th September and various other highlights have been booked for the year. Anyone wishing to join the Society please contact, Mr. R. Thomas, Secretary, Bungalow 8, Finimere Wood Camp, Nr. Marlow, Bucks.

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A SHOW for the best tropical fish bred in 1967 was a feature at a recent meeting of the **Yeovil and District A.S.** The result was, 1, N. Wright; 2, R. Gott; 3, D. Phinn. The judge was Mr. D. S. Langdon of Yeovil. A Slide show of the baths proved most interesting, a commentary on each of over twenty different specimens being given by Mr. Langdon. The secretary is Mr. M. Ibbetson, 100, Mudford Road, Yeovil, Somerset.

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FOR the first six months of this year the **Rochampton A.S.** has a full fortnightly programme of Table Shows, Quizzes, Lectures and Bring and Buy's. The membership is now a steady twenty each meeting, but new members would be warmly welcome. The most exciting venture to be undertaken this year will be the first 'Open Show' in connection with Wandsworth Borough Council at their Wandsworth Show.

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AT the annual general meeting of the **Cheltenham and District A.S.** the following officers were elected:—Chairman, Mr. Barry James; Vice Chairman, Mr. R. Deadman; Treasurer, Mrs. J. Deadman; Secretary, Mr. V. Howes, 19 Dinas Road, Hatherley, Cheltenham; Committee, Messrs. D. Andrews, N. Binding, N. Hughes, C. Surgenor.

The Chairman reported that last year had been the most successful year he could remember. The Society had enjoyed many notable speakers and good contact had been made with other Societies at inter Club Shows. The Society stand had been staged at many local events during the year with great success. Thanks were extended to the committee for their support during the year.

The date fixed for this year's Annual Open Show to be held at Ambulance Headquarters Hall, 86 Gloucester Road, Cheltenham is Sunday 7th July.

Meetings are held at Christchurch Hall, Malvern Road, Cheltenham, Glos. every second and fourth Wednesday in the month and new members will be made very welcome.

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THE officials of the **Wellingborough and District A.S.** are as follow:—Chairman, R. Langley; Vice Chairman, D. Atkins; Secretary, D. R. Lawrence, 88 Albert Road, Wellingborough; Treasurer, P. J. Flint. Meetings of the Society are held on the second Tuesday of every month in the Lounge of the Railway Club, Broad Green, Wellingborough at 7.45 p.m. and visitors can be assured of a warm welcome.

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AT the end of December the **Swillington A.S.** had members of Airebrough and District A.S. as guests. The winners of the table show were as follows:—Livebearer pairs, 1, C. J. Burnup (Airebrough); 2, R. Stringer (Swillington); 3, J. Grace (Swillington). Egglayer pairs: 1, F. Cummings (Swillington); 2, W. Emmett (Swillington); 3, J. Whiteley (Swillington). While the judging was in progress a friendly quiz took place between two teams, each made up of members from both societies.

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OFFICIALS elected at the **Keighley and District A.S.** annual general meeting were as follow:—Chairman, A. White; Secretary, A. Asquith, 46, Dalside Road, Riddlesden, Keighley, Yorks; Treasurer, H. Smith; Committee, Messrs. Eddison, Scaife, French, Cunnama, Crossley, Webber and Bickle.

In his report Mr. Asquith said that a full programme of lectures inter-society competitions and film shows had been arranged for this and he hoped that the society would have another successful year. Membership had increased in 1967 and he welcomed all new enthusiasts to the hobby. The Treasurer, Mr. Smith reported a balance for the year and said that equipment had been bought including a duplicator and considered the balance satisfactory on which to build a sound financial position for the coming year.

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## NEW SOCIETIES

THE **Brent Aquarist Society** has now been formed and the following officers elected: President, Laszlo Pusztai, M.P.; Vice-Presidents, R. O. B. Lias and Bernard Ellison; Chairman and Secretary, T. D. Smith, 97 Fleetwood Road, Dollis Hill, London, N.W.10; Vice-Chairman, C. S. D. Swinburne; Assistant Secretary, T. Butler; Show Secretary, A. Bowen; Assistant Show Secretary, J. Williams; Treasurer, J. Line; Delegate, P. Shrimpton. Committee members, M. O'Connell and B. Shrimpton.

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THE **Galashiels & Aquarist Society** has been formed and meets on the first Monday of each month in the Harrow Inn, Galashiels, 7.30 p.m. Anyone interested is most welcome and should contact M. S. Perez, Secretary, 13 Lintburn Street, Galashiels, Selkirkshire, Scotland.

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## SECRETARY CHANGES

Airebrough and District A.S.: G. E. Walker, 2, West End Terrace, Guiseley, nr. Leeds.

Bath A.S.: Mrs. M. Grogan, Inglescombe House, 135, Wells Road, Bath, Somerset.

Stone A.S.: J. Sanders, 3, Crawford Street, Fenton, Stoke-on-Trent.

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## AQUARISTS' CALENDAR

**24th February:** Hounslow and District A.S. Second Annual Convention at 8 p.m., at Marlborough School, London Road, Isleworth, Middlesex. Guest Speaker, Jim Kelly. Subject: "Aquarist in Wonderland."

**10th March:** Huddersfield Tropical Fish Society 6th Open Show will be held at United Commercial Travellers Club, Manchester Rd., Huddersfield. Benching 12.00—2.15 p.m. Schedules may be obtained from Mr. P. Bone, 1 Bradshaw Drive, Honley, Huddersfield.

**17th March:** Tropical Aquarium Breeders' Annual Open Show at Switchgear and Cowan Social Club, Alderfield Road, Cheetham, Manchester.

**23rd March:** Tottenham and District A.S. Open Show. All enquiries to Mr. S. Mooney, 44, Cranmore Road, Muswell Hill, London, N.10.

**24th March:** Stretford and District A.S. Open Table Show at Switchgear and Cowan Social Club, Alderfield Road, off Edge Lane, Stretford, Manchester.

**3rd April:** Valley A.S. Third Annual Open Show at Civic Hall, Ramsbottom. Schedules are obtainable from Mrs. M. Thomson, Secretary, 88 Summerseat Lane, Holcombe Brooke, Ramsbottom, via Bury.

**20th April:** Thurrock A.S. First Open Show at Gipsy Lane, Grays, Essex. Show schedules can be obtained from D. C. M. Durrant, 22 Kingsman Road, Stanford-le-Hope, Essex.

**21st April:** Stockton-on-Tees A.S. Third Annual Open Show at St. Joseph's Church Hall, Norton. Schedules are now available from Mr. J. Chamberlain, Show Secretary, 15 Tanning Street, Stockton-on-Tees.

**27th April:** Winchester A.S. First Annual Open Show, venue to be announced later. Show Secretary, Mr. R. Hatchett, 234a High Street, Eastleigh, Hants.

**28th April:** York and District A.S. Annual Open Show. M. H. Cooper, Show Secretary, 2 Hawthorn Spinney, Brockfield Park, Huntington, York.

**4th May:** Trowbridge and District A.S. Open Show.

**12th May:** Worksop Aquarist & Zoological Society Annual Open Show. Venue to follow.

**19th May:** Merseyside A.S. Open Table Show at Montrose Athletic and Social Club, 5 Richmond Terrace, Liverpool 6.

**15th June:** Yeovil and District A.S. First Open Show at Grass Royal School, Yeovil. Details from Show Secretary, Mrs. T. Gillard, 42, Crofton Ave., Yeovil.

**16th June:** Lytham A.S. Annual Open Show to be held at Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

**23rd June:** Cambridge & District A.S. Open Show. Details later.

**27th-29th June:** Bristol Tropical Fish Club. Further details available shortly.

**7th July:** Cheltenham & District A.S. Annual Open Show, Ambulance Headquarters Hall, 86, Gloucester Road, Cheltenham.

**14th July:** Medway A.S. Second Open Show at St. John Fisher School, Chatham. Secretary, Mr. K. Brown, 5 Allison Avenue, Gillingham, Kent.

**14th July:** Bournemouth Aquarist Club Annual Open Show at Kinson Community Centre, Pelhams Park, Kinson. Show schedules and entry forms available after 1st May from Show Secretary, Mr. J. V. Jeffery, 40 Braemar Avenue, Southbourne, Bournemouth.

**27th July:** Croydon A.S. Open Show to be held at the Stanley Halls, South Norwood, London, S.E.25. Further information may be obtained from the Secretary, Mr. D. H. Crowley, 180 Harrington Road, South Norwood, S.E.25.

**3rd.-10th August:** Portsmouth A.S. Open Show at the Portsmouth Community Centre, Twyford Avenue. Schedules available from Mr. W. Ryder, Show Secretary, 493 Commercial Road, Portsmouth.

**14th-17th August:** Midland Aquarium and Pool Society Annual Open Show, Bingley Hall, Birmingham.

**7th-8th September:** Rochampton A.S. First Open Show in connection with Wandsworth Borough Council.

**7th September:** High Wycombe A.S.

**7th September:** Yate and District A.S. Open Show.

**8th September:** Warrington A.S. First Open Show.

**21st September:** Newport A.S. Sixth Annual Open Show at the Duffryn Junior High School, Stow Hill, Newport. Details from the show secretary, Mr. M. J. Parry, 45, Western Drive, Gabalfa, Cardiff.

**29th September:** Hucknall and Bulwell A.S. Annual Open Show.

**26th-27th October:** British Aquarists' Festival Belle Vue, Manchester.

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| Pengons | 3/6 .. | 3— 9/- | 8—20/- |
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| Black Line Tetra | 3/6 .. | 3— 9/- | 8—20/- |
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| Black Angels | 12/6 .. |
| Silver Angels | 2/6 .. |
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| Red Swords | 3/- .. |
| Black Tuxedo Swords | 3/6 .. |
| Red Tuxedo Swords | 3/6 .. |
| Green Swords | 3/- .. |
| Blood Red Platies | 4/- .. |
| Red Platies | 3/6 .. |
| Moon Platies | 3/6 .. |
| Black Platies | 3/6 .. |
| Red Wagtail Platies | 3/6 .. |
| Red Wagtail Swords | 4/- .. |
| Blue Platies | 3/6 .. |
| Yellow Wagtail Platies | 3/6 .. |
| Black Mollies (small) | 3/6 .. |
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| Giant Danios 3"—4" | 7/- .. |
| Albino Lyretail Mollies 1" | 5/6 .. |
| No. 8 Puffers | 7/6 .. |
| Nemacheilus Loach 2½"—3" | 5/6 .. |
| Cherry Barbs 1½"—2" | 5/6 .. |
| Elitotris Species 2½"—3" | 7/6 .. |
| Comb Tails 2½"—3½" | 9/6 .. |
| Archers 3"—4" | 40/- .. |
| Tilapia 5"—6" | 40/- .. |
| Palmas Kribensis 2½" | 15/6 .. |
| Tiger Sharks 3½"—4½" | 21/- .. |
| Seven Star Barbs 1½" | 4/- .. |
| Large Orange Dorsal Mollies 2"—3" | 14/- Pair |
| Dwarf Gouramis | 8/- .. |
| Golden Sailfin Mollies | 14/- .. |

### GENERAL LIST CONTINUED

| | |
|---|---|
| Australian Rainbows | 4/- Each |
| Rummy Nose Tetra | 3/6 .. |
| Pulcher | 3/6 .. |
| Black Widows | 3/- .. |
| Firemouths | 4/- .. |
| Keyhole Cichlids (large) | 16/- .. |
| Giant Gouramis | 6/6 .. |
| Blue Gouramis (Large) | 12/6 .. |
| Blue Gouramis | 3/6 .. |
| Thick Lip Gouramis | 3/6 .. |
| Pink Kissing Gouramis | 6/- .. |
| Opaline Gouramis | 3/6 .. |
| Apisto Ramirezi | 7/- .. |
| Apisto Reitzigi | 9/- .. |
| Oscars | 3/6 and 2/6 .. |
| Red Eye Tetra | 3/6 .. |
| Scissortails | 3/- .. |
| Pearl Danios | 3/- .. |
| Aphyosemion (Large) | 3/9 .. |
| Red Tail Black Sharks 2"—2½" | 7/6 .. |
| Silver Sharks | 27/6 .. |
| Tilapia 2" | 3/6 .. |
| Black Sharks 2½" | 7/6 .. |

### TOOTH CARPS

| | |
|---|---|
| Aph. Australe | 12/6 Pair |
| Aph. Vexilifer | 15/- .. |
| Aph. Sporadi | 12/6 .. |
| Aph. Calliurum | 12/6 .. |
| Aph. Berundi | 15/- .. |
| Panchax Dayi | 8/6 .. |
| Panchax Playfairi | 8/6 .. |
| Epiplatys Chaperi | 8/6 .. |
| Aphanius Sophiae | 12/6 .. |
| Epiplatys Annulatus | 50/- .. |
| Cynolebasi Wintei | 25/- .. |

### GENERAL LIST CONTINUED

| | |
|---|---|
| Tiedoli Barbs 3½" | 10/- Each |
| Albino Paradise | 4/- .. |
| Cory. Julii | 4/6 .. |
| Cory. Metae | 13/6 .. |
| Cory. Agassizi | 8/6 .. |
| Cory. Aeneus | 8/6 .. |
| Cory. Elegans | 8/6 .. |
| Cory. Schwartzi | 10/6 .. |
| Cory. Paleatus | 10/6 .. |
| Cory. Arcuatus | 12/6 .. |
| Brochis Coeruleus | 12/6 .. |
| Nigger Barbs | 3/6 .. |
| Titeo Barbs | 3/6 .. |
| Checquer Barbs | 3/6 .. |
| Black Neons | 3/6 .. |
| Large Neons | 3/9 .. |
| Splash Tetra | 4/- .. |
| Severum | 8/6, 5/6, 3/6 .. |
| Fighters Male | 28/-, 15/-, 12/6, 10/- .. |
| Female Fighters | 7/6, 4/- .. |
| Black Lyretail Mollies | 4/- .. |

### PLANTS AND BULBS

Apon. Crispus 1/3 or 3—3/-
Apon. Lindelianum 1/3 or 3—3/-
Nym. Stellata 1/6 or 3—3/9
Nuphar Species 1/6 or 3—3/9
Apon Ulvaeacea Plants 6/- Each
Bulbs
Crypt. Nevillii 4/6 Each
.. Beckettii 4/6 ..
.. Ciliata 10/6 ..
Rare Home grown 15/- and 20/- Each
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Wisteria 1/6 Each 3—3/9. Japanese Fuch 4/6
Indian Fern (large) 3/6 Each

**RAYNER'S FANTASTIC GRAVEL:** Blue, Red, Green, Yellow, Black, White 1/-lb.
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Very large stock of Tanks, Stands and Hoods. **ALL ACCESSORIES.**

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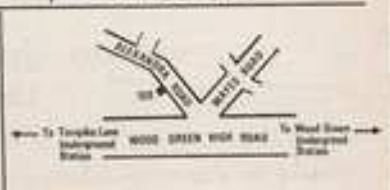

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|---|---|
| White Worm Culture .. | 3/– |
| White Worm, 1 oz. .. | 6/– |
| Grindal Worm .. .. | 3/– |
| Micro Worm .. .. | 3/– |

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★

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| | |
|---|---|
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| White Clouds .. | |
| Black Widows .. | |
| Zebras .. .. | |
| Harlequins .. | |
| Red Platies .. | 4 for 12/6 |
| Red Wagtail Platies .. | 7 for 20/– |
| Red Swords .. | |
| Neons .. .. | |
| Glowlights .. | |
| Cardinals .. .. .. | 5/6 |
| Red Tailed Black Sharks | 3/6 |
| N. Auratus .. .. | 4/6 |
| N. Unifasciatus .. .. | 5/– |

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Clown Loach
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Med. and large Scats
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Albino Corydoras
Moonlight Gouramies
Barilius Barilius
Large Ramirezi
Albino Tigers
Orange Chromides
South American Cats

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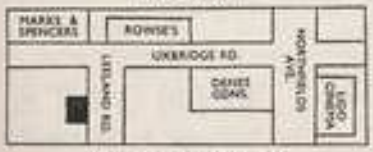


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**A real live-food substitute for MARINES & all other fishes**

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5 GALLON SIZE 9/—POSTAGE 3/- 20 GALLON SIZE 32/6—POSTAGE 4/6

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