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

POLISHED STAINLESS STEEL

<table>
<thead>
<tr>
<th>Frames</th>
<th>Aquariums</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 x 15 x 12</td>
<td>£ 7 70</td>
</tr>
<tr>
<td>30 x 15 x 12</td>
<td>£ 8 80</td>
</tr>
<tr>
<td>36 x 15 x 12</td>
<td>£ 10 100</td>
</tr>
<tr>
<td>48 x 15 x 12</td>
<td>£ 13 130</td>
</tr>
</tbody>
</table>

DISTRIBUTOR OF—
- McLYNN'S FISH FOOD
- ES-ES PRODUCTS
- ELECTRICAL AND GENERAL
- WATER LIFE, AQUARIIST, DITCHFIELD'S AND T.F.H. BOOKLETS
- REJECTORS, SED neat, AND MAINTENANCE EQUIPMENT
- POKER LEER AND SUMMIT AND STAR PUMPS
- CONSTAT THERMOSTATS
- AQUAFERN AND COLONFERN PRODUCTS
- HYFLO PRODUCTS
- LIVERINE PRODUCTS
- STOKES FOUNTAIN
- WINDMILL PRODUCTS
- ROCK GRAVEL AND STRATA ROCK WORK
- STUDENTS' MICROSCOPES
- ALL FEEDING AND AERATING APPLIANCES
- MERCURY, SPIRIT AND DUMPY THERMOMETERS
- STUART TURNER WATER PUMPS
- ZOOGEBOK AND BIKO PUMPS
- VI-FIT FISH FOOD
- BLACK MAGIC GLAZING COMPOUND
- GLASTILON '30' AQUARIUM SEALER
- AQUAMASTA GLAZING COMPOUND
- LIQUIFIRE AND INTER-PET PRODUCTS
- FIBRE GLASS PONDS
- OTTER WATERFALL AND FOUNTAIN KITS

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

Retail Price List 6d Inc. Postage
Wholesale List to bona-fide Traders on application
Prices closed Sunday and Monday throughout the year

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

presents

Over 120 varieties including Marine Tropicals on show and for sale. We stock Eheim Filter, Ozonator, Oron Reactor, Wilo pumps, Automatic Fish Feeder, Metalframe tanks etc.
And now Gro-Lux tubes in various sizes.
(cannot be sent by post)
466 PAISLEY ROAD WEST, GLASGOW, S.W.3

Telephone: INNIS 3413
--- Open Sundays 11 a.m.—5 p.m. ---

24-HOUR COLOUR T.V.

WE HAVE IT! WE CALL IT
AN AQUARIUM
AND THE SECRET OF THE FULL, VIVID, NATURAL COLOUR IS IN THE SPECIAL ATTACHMENT—A TIN OF ELITE FISH FOOD

ELITE (TROPICAL) 2/- and 5/-
ELITE (COLDWATER) Large Tin 2/6

Trade Agent:
Barry M. Austin, 220 Staines Road,
Twickenham, Middx.

Or Post Free direct from the makers:
DERHAM'S FISH FOOD LTD.,
Roxton Dene, South Road, Chorleywood,
Herts.—Phone: Chorleywood 2386

WALTER R. SMITH LTD.
39 Tib Street and 16 Whittle Street
(Off Fri Street)
Manchester 4
Telephone: Deansgate 2061 and 2220
Breed your fishes **NOW** using **LIQUIFRY** as a first food

Mr. A. Boarder, well known writer on aquatic topics and show judge says

"I have started my goldfish on nothing else but Liquifry since it first came on the market. I would not be without Liquifry and never use infusoria now."

The unique liquid containing (a) particles of immediate food value to the fish and (b) substances to produce natural infusoria in the minimum possible time. The product is in liquid form to ensure the correct particle size and to give rapid dispersion throughout the tank with minimum disturbance to the delicate fry.

**LIQUIFRY**

No. 1 for fry of Egglayers

Price 2/6 per tube.

**LIQUIFRY**

No. 2 for young Livebearers

START YOUR BABY FISH ON LIQUIFRY AND WATCH THEM GROW!

Exported to 50 countries

**INTER-PET — DORKING — SURREY**

Sales Division of Liquifry Co. Ltd., Tel. 2566

Please write for our new catalogue
OWEN REID'S
UNSURPASSED FOR TROPICAL FISHES

EVERYTHING FOR THE
GARDEN POOL

EVERYTHING FOR THE
TROPICAL AQUARIUM

VISIT THE MOST COMPREHENSIVE
COLLECTION OF TROPICAL AND
COLDWATER FISH IN THE MOST
BEAUTIFUL SHOWROOM IN
LONDON

Where you are assured of prompt and courteous attention. Large stocks are held of all the better makes of Heaters, Thermostats, Aerator's, Piston Pumps, Filters, Tanks, Stands, Light Hoods, Books and Publications, etc. Live foods fresh daily.

12 - SPRING BRIDGE ROAD
EALING BROADWAY
LONDON - W5

Phone: EALING 3239

HOURS OF BUSINESS—
Monday to Saturday, 9 a.m. to 6 p.m.,
Early closing day Wednesday (1 p.m.)

FOR YOUR WATER GARDEN
IT'S SO EASY

WITH THE

'DIAL-O-MATIC'

THERMOSTATIC HEATER

★ The perfect aquarium heater.
★ The natural choice of the discriminating.
★ The result of 30 years experience from the originators of glass-cased aquarium heaters.
★ It is one of a range of twenty first-class products to suit all pockets.
★ Products with those extra touches of craftsmanship — Made to a high standard — Safe to use — Dependable — Durable — Different. All guaranteed.

YOU CANNOT GO WRONG WITH 'Es-Es'

PRICE
40/10
(Inc. P./T.)
100w 150w
10" 12"

View of Control Head with Condensation Cover removed. Note the Neon Indicator and the Calibrated Control Dial affording immediate visual selection of temperature between 60°—90°F. To prevent accidental alteration the dial is recessed and its movement requires the insertion of a ball-pen point into the cavity provided. The required temperature numeral should be aligned with the raised arrow point against the cable inlet recess.

SINGLETON BROS. (Electronics) LTD.
55, VICTORIA STREET • LONDON • S.W.1.

June, 1966
## TROPICAL FISH

**POSTAL SERVICE**

### Interesting fish this month

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Length (cm)</th>
<th>Price (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nassa</td>
<td>Nassa nassa</td>
<td>10-15</td>
<td>1.50</td>
</tr>
<tr>
<td>Beryx</td>
<td>Beryx splendens</td>
<td>15-20</td>
<td>2.00</td>
</tr>
<tr>
<td>Carassius</td>
<td>Carassius auratus</td>
<td>5-10</td>
<td>0.50</td>
</tr>
<tr>
<td>Fundulus</td>
<td>Fundulus heteroclitus</td>
<td>5-8</td>
<td>0.80</td>
</tr>
<tr>
<td>Gasterosteus</td>
<td>Gasterosteus aculeatus</td>
<td>3-5</td>
<td>0.50</td>
</tr>
<tr>
<td>Hexagrammos</td>
<td>Hexagrammos capito</td>
<td>6-8</td>
<td>1.20</td>
</tr>
<tr>
<td>Phalloceros</td>
<td>Phalloceros albovittatus</td>
<td>8-10</td>
<td>2.50</td>
</tr>
<tr>
<td>Poecilia</td>
<td>Poecilia reticulata</td>
<td>3-5</td>
<td>0.80</td>
</tr>
<tr>
<td>Pimelodidae</td>
<td>Pimelodidae spp.</td>
<td>10-15</td>
<td>1.50</td>
</tr>
<tr>
<td>Xiphophorus</td>
<td>Xiphophorus helleri</td>
<td>5-7</td>
<td>1.20</td>
</tr>
</tbody>
</table>

**LIVEBEARS**

<table>
<thead>
<tr>
<th>Genus</th>
<th>Species</th>
<th>Length (cm)</th>
<th>Price (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geophagus</td>
<td>Geophagus brasiliensis</td>
<td>3-4</td>
<td>0.50</td>
</tr>
<tr>
<td>Callichthyidae</td>
<td>Callichthys callichthyus</td>
<td>5-8</td>
<td>1.00</td>
</tr>
<tr>
<td>Hoplias</td>
<td>Hoplias malabaricus</td>
<td>10-20</td>
<td>2.00</td>
</tr>
<tr>
<td>Pimelodus</td>
<td>Pimelodus maculatus</td>
<td>5-10</td>
<td>1.50</td>
</tr>
</tbody>
</table>

**SWALLOWTAILS**

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Length (cm)</th>
<th>Price (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characidae</td>
<td>Characidae spp.</td>
<td>3-5</td>
<td>0.80</td>
</tr>
<tr>
<td>Dodelinae</td>
<td>Dodelinae spp.</td>
<td>5-7</td>
<td>1.20</td>
</tr>
<tr>
<td>Elassoma</td>
<td>Elassoma aureum</td>
<td>8-10</td>
<td>2.50</td>
</tr>
<tr>
<td>Lebiasinae</td>
<td>Lebiasinae spp.</td>
<td>3-5</td>
<td>0.80</td>
</tr>
</tbody>
</table>

**CHILLIES**

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Length (cm)</th>
<th>Price (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poeciliidae</td>
<td>Poeciliidae spp.</td>
<td>5-10</td>
<td>1.50</td>
</tr>
<tr>
<td>Fundulus</td>
<td>Fundulus grandis</td>
<td>5-8</td>
<td>1.00</td>
</tr>
<tr>
<td>Gasterosteus</td>
<td>Gasterosteus aculeatus</td>
<td>3-5</td>
<td>0.50</td>
</tr>
</tbody>
</table>

### Catalogue and Lists

Catalogues and Lists sent by request, or come along and see the best display of fish in the North.

KEITH BARRACLOUGH
215 GREAT HORTON ROAD - BRADFORD 7 - YORKSHIRE

Telephone: BRADFORD 73572
The Windmill Breeding Trap

Price 19/6

1. Grilled top, base and interior partitions allow water flow and movement of fry.
2. Easy-fit interior fry separators can be positioned if required.
4. Provision for internal aeration to encourage water flow through the trap.
5. Fixed base provides exit for fry but not of adult.
6. Legs on which trap can stand on the bottom of a tank, or rubber suckers by which trap can be adhered to the side of tank.
7. Upper compartment divider enables two adults to be accommodated or can be used to limit movement of a single female.

WINDMILL PRODUCTS
244 Vauxhall Bridge Road, London, S.W.1

June, 1966
SPRING TIME IS POND TIME!
STOCK UP NOW! WITH FISH, AND PLANTS, FROM THE LARGEST SELECTION IN N.W. LONDON
STOCKISTS OF PLASTOLINE AND JUROLINE PLASTIC SHEETING FOR PONDS.
SPECIAL—FOR TROPICAL TANKS "GROLUX FLUORESCENT TUBE LIGHTING UNITS" NEW FILTERS NOW IN STOCK. DYNOFLO TURBO FILTER £2.50 EHEIM COMPACT FILTER 383 £9.12-50 INCLUDING RACK. EHEIM STANDARD KL2-150 INCLUDING RACK.
"GREEN SHIELD" STAMPS GIVEN (PERSONAL SALES ONLY)

POND FISHES
Golden Orfe 6"-7" £2.50
7"-8" £2.95
8"-10" £3.65
Green Tench 6" £2.00
Large Goldfish 7"-8" £2.95
6"-7" £2.60
Small Goldfish 5"-6" £1.50
Small Goldfish 6"-7" £2.00
ALL POND FISHES STOCKED

THERMOSTATS
Pondstat 36" £3.00
Constant Temperature Control New Model £2.50
Wired Temperature Control 25" £3.00

AERATORS
Jet-Air 32" £3.80
Jet-Air "Popular" 36" £4.30
Pressurizer 36" £4.30
Wizard 36" £1.50

GARDEN PUMPS
Onza 48" £7.10
Sikes 48" £7.10

PISTON PUMPS
Hy-do Junior New Super £1.97

Thermometers
Merry 9" £2.30
Blue Glass 5" £2.50
Dunlop 4" £2.90

Sundries
T-Plane 100" £1.50
Cham 1/2" £1.50
Gas Containers £1.50
Fishing Wire £0.60
Sight Glass 1/2" £1.00
Glass Wool £1.00
Filter Cartridges £1.50

Aquariums 1/2" £2.60
All Aquariums £3.95

PLANTS
Sagittaria £0.90
Vallisneria £0.90
Hydro-Orches £0.90
Vallisneria £1.30
Bladderwack £1.50
Elodea £1.30
Water Lettuce £1.50
Water hyacinth £1.30
Cattails £1.30
Water Lettuce £1.50

By post, add 1/4d. Minimum order 1/4d.

HEATERS 26w to 2500w
Add 1/2 up to 125w; 1/2 up to 250w to £2; 1/2 up to £2 over £5.
CARRIAGE AT COST CHARGED ON WAREHOUSE, PLANTS, AND TANKS. CREDITS NOT ENTITLED AT OWNER'S RISK.
(Obligatory postage envelope please) Terms, Cash or orders.

THE CENTRAL AQUARIUM
Situated on the A4 Route, opposite Hendon Central Station
391 HENDON WAY, HENDON CENTRAL, N.W.4 Phone: HEN 9700
OPEN 8.00a.m.-6.00p.m. Sundays 9a.m.-1p.m. Emergency Phone: HEN 9700
ONE OF ENGLAND'S FOREMOST AQUARISTS

WE ALWAYS GIVE 100% SATISFACTION
WHY NOT PAY US A VISIT AND SEE FOR YOURSELF?

ALWAYS ARRIVING REGULARLY
RARE SPECIES FROM ALL OVER THE WORLD
INCLUDING MARINE TROPICALS

WHOLESALE ORDERS EXECUTED IMMEDIATELY

SPECIALISTS AND BREEDERS OF TROPICAL AND COLDWATER FISH.
LIVE FOODS, PLANTS, ACCESSORIES, BIRDS, BIRDCASES.
EXHIBITIONS AND INSTALLATIONS.

CHISWICK AQUARIA
136, CHISWICK HIGH ROAD, LONDON, W.4
TELEPHONE: CHISWICK 6549 CABLES: CHISAQUA, LONDON, W.4

June, 1966
FOR ALL YOUR COLDWATER FISH USE

SUREGOLD
Goldfish Food
BITE SIZE PELLETS
POND SIZE PACK

THE FINEST PELLETISED FISH FOOD AVAILABLE
POND PACK 4/-
SMALL PACK 1/6

SUGEGROW
Brine Shrimp Eggs

LIVE FOOD FOR TROPICALS
THE NEW "SUREGROW"
BRINE SHRIMP EGGS

Create a Boiling action with aeration, not allowing the eggs to settle in the solution as per the instruction. Will give you satisfaction every time. In four sizes:
No. 1 3/9 No. 2 6/6 No. 3 12/6
No. 4 25/-

Used exclusively in our own fish houses

For illustrated brochure on these and many other quality products write
SOUTH COAST AQUATIC NURSERIES LTD.
OLD BATH ROAD · COLN BROOK · SLOUGH · BUCKS
GOLDWATER FISH

NOW IN STOCK

<table>
<thead>
<tr>
<th>Fish</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Fantail</td>
<td>6/6</td>
</tr>
<tr>
<td>Calico Fantail</td>
<td>7/6</td>
</tr>
<tr>
<td>Comets</td>
<td>3/6</td>
</tr>
<tr>
<td>Nymphs</td>
<td>3/6</td>
</tr>
<tr>
<td>Golden Orfe</td>
<td>3/6</td>
</tr>
<tr>
<td>Goldfish and Shubunkins</td>
<td>1/6</td>
</tr>
</tbody>
</table>

POND FISH

<table>
<thead>
<tr>
<th>Fish</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldfish and Shubunkins</td>
<td>5—6&quot;</td>
</tr>
<tr>
<td>Golden Orfe</td>
<td>7—8&quot;</td>
</tr>
<tr>
<td>Nymphs</td>
<td>9—10&quot;</td>
</tr>
<tr>
<td>Calico Comets</td>
<td>5—6&quot;</td>
</tr>
<tr>
<td>Higoi Carp</td>
<td>5—6&quot;</td>
</tr>
</tbody>
</table>

Minimum Order for Fish £2
Plus 15/- Carriage, Packing etc.

WATER LILIES:

- White: 5/-
- Red: 15/-
- Yellow: 15/-
- Pink: 12/-
- Exotic Japanese: £1.0-2.0
- Spatter docks: 4/-

Minimum order for Plants 5/-

LIVE FOODS

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

Post Paid

NEW FROM VITAKRAFT

FILTRA PEAT FIBRES FOR USE AS FILTER MEDIUM OR SPAWNING MEDIUM. WE ARE NOW USING THIS SUCCESSFULLY WITH OUR "KILLIES".

3/-

FOR VERY MUCH IMPROVED FILTRATION, THE "EHEIM SU-R" RECHARGEABLE RESIN. THIS CAN BE USED IN ANY FILTER AND IS PARTICULARLY SUITABLE FOR BREEDING PURPOSES. THIS DOES NOT AFFECT THE pH LEVEL IN FRESHWATER.

40/- p.p.

WE ARE NOW STOCKISTS OF THE STAINLESS STEEL 'META FRAME' AQUARIUMS

<table>
<thead>
<tr>
<th>Aquarium Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 x 8 x 10</td>
<td>39/-</td>
</tr>
<tr>
<td>20 x 10 x 12</td>
<td>45/-</td>
</tr>
<tr>
<td>24 x 12 x 12</td>
<td>79/-</td>
</tr>
<tr>
<td>24 x 12 x 16</td>
<td>150/-</td>
</tr>
<tr>
<td>30 x 12 x 12</td>
<td>150/-</td>
</tr>
</tbody>
</table>

Stowaway Hoods

- Full Hood: 16 x 8: 42/3
- 20 x 10: 54/6
- 24 x 12: 72/-

KNOCK DOWN STANDS FOR ALL SIZES

£5-9-6d

SEE ONE SET UP AND FURNISHED AT EALING

J. T. HUNT (AQUAPETS) LTD

17 LEESLAND ROAD, WEST EALING, W.13
Tel. Ealing 3748

Opening Hours 9.30—5.30. Half-day Wednesday

382 EWELL ROAD, TOLWORTH, SURREY
Tel. Elmbridge 9678

WE CATER FOR THE NEW AND FOR THE EXPERIENCED AQUARIST

BUSES: 307, 307A, 355, 89

June 1966
Next time try "WUNDERBAR" Wardley's new high quality flake food at the economical price.

Look for the NEW WUNDERBAR display stand in your shop.

Wunderbar™
Imported flake food

Full 1oz pack 3/6
(Bottom row)

2oz pack 6/9
(Middle row)

8oz pack 22/6
(The big one on top)

Sold U.K. Distributors of all WARDLEY'S Products
T.F.H. Publications (London) Ltd 13 Nutley Lane, Reigate, Surrey

THE BRIXHAM BIOLOGICAL SUPPLIES
Specialists in the supply of REPTILES and AMPHIBIA from all parts of the world.

THE BRIXHAM BIOLOGICAL SUPPLIES,
12 Elliot Grove,
Brixham, Devon.
Brixham 65188

HARDY EUROPEAN SPECIES: Common Lizards 2/- each; Slow-worms 3/-; Wall Lizards 6/-; Green Lizards 10/6; Grass Snakes 10/-; Spanish Terrapins 7/6;
Horsfield's Tortoises 7/6; Netterjack Toads 5/-; Green Toads 3/-; Tree Frogs 2/6; Salamanders 12/6; Great Newts 2/6 and many other varieties now in stock,

TROPICAL SPECIES include Nile Monitors; various Skinks, Geckos & Chameleons; Agamas; Plated Lizards; White-tipped Snakes; Leopard Tortoises; Clawed Toads; Elegant Terrapins & Painted Frogs.

We also stock a wide variety of TROPICAL AQUARIUM PLANTS including Vallisneria; Buceph; Myriophyllum; Sagittaria etc., etc.

FULL DETAILS OF THE ABOVE ARE GIVEN IN OUR FREE CATALOGUE—SEND FOR A COPY NOW!

For details of GARDEN POOLS, water lilies, marginal aquatics, cold-water oxygenating plants, planting baskets and all pool accessories write for separate list.

PROMPT DESPATCH TO ALL PARTS OF THE BRITISH ISLES.

THE AQUARIIST
QUEENSBOROUGH FISHERIES
SEE OVERLEAF FOR FURTHER INFORMATION
THOUSANDS OF POND FISH IN STOCK

SPECIAL PLANT COLLECTIONS (post only)
All post enquiries: 111 Goldhawk Road, W.12. 2s. post and packing on all collections

<table>
<thead>
<tr>
<th>TROPICALS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12 plants including Dwarf Lily, Cryptocoryne, Wintera etc., £1</td>
</tr>
<tr>
<td></td>
<td>12 Vallisneria</td>
</tr>
<tr>
<td></td>
<td>12 Marimophyllum</td>
</tr>
<tr>
<td></td>
<td>5 Micro Sagittaria</td>
</tr>
<tr>
<td></td>
<td>8 Ludwigia</td>
</tr>
<tr>
<td></td>
<td>6 Elodea Canadensis</td>
</tr>
<tr>
<td></td>
<td>£1</td>
</tr>
<tr>
<td>B</td>
<td>12 Vallisneria</td>
</tr>
<tr>
<td></td>
<td>6 Marimophyllum</td>
</tr>
<tr>
<td></td>
<td>8 Ludwigia</td>
</tr>
<tr>
<td></td>
<td>6 Elodea Canadensis</td>
</tr>
<tr>
<td></td>
<td>6 Bacopa</td>
</tr>
<tr>
<td></td>
<td>1 Amazon Chain Grass</td>
</tr>
<tr>
<td></td>
<td>1 Portion Hair Grass</td>
</tr>
<tr>
<td></td>
<td>£1</td>
</tr>
<tr>
<td>C</td>
<td>1 Nymphaea Stellata</td>
</tr>
<tr>
<td></td>
<td>1 Giant Hygrophyllum</td>
</tr>
<tr>
<td></td>
<td>1 Apium</td>
</tr>
<tr>
<td></td>
<td>1 Giant Sagittaria</td>
</tr>
<tr>
<td></td>
<td>1 Cryptocoryne</td>
</tr>
<tr>
<td></td>
<td>1 Indian Fern</td>
</tr>
<tr>
<td></td>
<td>1 Portion Hair Grass</td>
</tr>
<tr>
<td></td>
<td>£1</td>
</tr>
<tr>
<td>D</td>
<td>6 Vallisneria</td>
</tr>
<tr>
<td></td>
<td>6 Marimophyllum</td>
</tr>
<tr>
<td></td>
<td>6 Hygrophyllum</td>
</tr>
<tr>
<td></td>
<td>6 Elodea Canadensis</td>
</tr>
<tr>
<td></td>
<td>£1</td>
</tr>
<tr>
<td>E</td>
<td>1 Portion Hair Grass</td>
</tr>
<tr>
<td></td>
<td>1 Portion Cleaver</td>
</tr>
<tr>
<td></td>
<td>6 Micro Sagittaria</td>
</tr>
<tr>
<td></td>
<td>6 Bacopa</td>
</tr>
<tr>
<td></td>
<td>£1</td>
</tr>
</tbody>
</table>

| L | Cream and Yellow Water Lily—Princess Alba £12/6 2 for £1 |
|   | Marimophyllum |
|   | Ludwigia |
|   | 6 Elodea Canadensis |
|   | £2 |
| M | Water Lilies £7/6 |
|   | 1 Pink |
|   | 1 Red |
|   | 1 Cream |
|   | 5-year-old plants |
| N | Willow Trees £7/6 |
|   | 1 Portion Hair Grass |
|   | £1 |
| AQUARIUM OR POND | 12 Sagittaria |
|   | 6 Marimophyllum |
|   | 6 Ludwigia |
|   | 6 Elodea Canadensis |
|   | £1 |
| P | 1 Portion Hair Grass |
|   | 1 Portion Cleaver |
|   | 6 Micro Sagittaria |
|   | 6 Bacopa |
|   | £1 |
| O | 50 Plants for your Aquarium—Value 30/- | £1 |
|   | 6 Vallisneria |
|   | 6 Marimophyllum |
|   | 6 Elodea Canadensis |
|   | 3 Portion Hair Grass |
|   | £10/- |
| Q | 50 Plants for your Aquarium—Value 30/- | £1 |
|   | 6 Vallisneria |
|   | 6 Marimophyllum |
|   | 6 Elodea Canadensis |
|   | 3 Portion Hair Grass |
|   | £10/- |

TROPICAL OR COLD

| R | Giant Amazon Sword Plant 8.5 inches £7/6 |
|   | 1 Portion Hair Grass |
|   | £1 |

| S | Water Hyacinth 8.5 inches Floating Plant £7/6 |
|   | 1 Portion Hair Grass |
|   | £1 |

| T | Water Lettuce £2/6 |
|   | Very Beautiful plants £3/6 |
|   | £5 for 10/- |

| U | Water Hyacinth £7/6 |
|   | 8.5 inches Floating Plant |
|   | £1 |

| X | Spaciodactyl £3/6 |
|   | 1 Portion Hair Grass |
|   | £1 |

Owing to Popular Request our Wraysbury Branch will be open on Saturdays as well as Sundays from 10 a.m.—4 p.m.

Queensborough House, Ferry Lane, Wytham End, Wraysbury, Nr. Staines
Special News

See Page xi

VISIT OUR WRAYSBURY BRANCH ON SATURDAYS & SUNDAYS 10 a.m. to 4 p.m.

80F AQUARIUMS

STANDS

30ins. x 12ins. x 15ins. low-priced aquarium with weighted twomonkey stand £18/18. complete.

48ins. x 12ins. x 15ins.—39 gns.

BACKING PAPERS STRATA ROCKWORK SEA & SHORE BLUE SKY SAND & SHELLS BENTONITE BLACK & GOLD, and cream, also plate stands per sheet, or 5/6 per foot.

FULLY-GLAZED AQUARIUMS

Press Steel Angle Iron

111 GOLDHAWK ROAD, QUEENSBOROUGH FISHERIES
SHEPHERD'S BUSH, W.12
(1 minute from Shepherd's Bush Market)
Telephone: 5497 2720
Hours of Business: MON. to SAT. 9 a.m.-6.30 p.m. CLOSED THUR.

QUEENSBOROUGH HOUSE, QUEENSBOROUGH FISHERIES
Ferry Lane, Rythe End, Wraybury Nr. Staines
Telephone: WREAYSURY 2883
Saturdays and Sundays only

15 PITCON PLACE, LONDON, W.1
(1 minute from Shepherd's Bush)
Telephone: WELBEC 6638
Hours of Business: MON. to FRI. 9.30 a.m. to 6 p.m.
SAT. 9.30 a.m.-5 p.m.

THE AQUARIAN
Cryptocoryne blassii

by B. FRY

AMONG the very best of the larger Cryptocorynes to my mind is C. blassii. This species was first introduced into Europe from its native Thailand about six years ago, and in its mature form is one of the loveliest plants imaginable for adding foliage beauty to the tropical aquarium.

The glossy-surfaced leaves are roughly ovate in shape and average 4 in. to 6 in. long and about 2 in. wide. They are brownish green above and rich crimson red tinged with a suspicion of violet below. The stout stems which hold the leaves aloft grow to about twice their length and are deep purplish in hue.

Once established in a favourable situation (though, as in other Cryptocorynes, a month or two may elapse after uprooting and replanting before any new growth is made) this species is not backward in making a clump of fine proportions and grandeur for subterranean runners are sent out in all directions from which numerous progeny arise. When these have reached a height of about 3 in. they are ready to be detached from the parent plant and grown on afresh.

C. blassii is not difficult to cultivate. All it needs to prosper are sufficient head and root room (obviously it is not suited to a small tank); a growing medium richer in chemical constituents than sand alone; a position in partial shade; water that is neither unreasonably hard nor alkaline; and, naturally, a temperature in the neighbourhood of 75°F (24°C).

A growing medium which suits C. blassii very well may be made of a mixture of equal parts (by volume) of loam, or clay, coarse sand, granulated or crumbled peat, and wood ash. Sufficient of this mixture to layer the bottom of a suitable container—a glass fish-dish, for instance—to a depth of about 1 in. is all that is required. After the roots have been spread out fan-wise and pressed carefully but firmly into place, a top-dressing of well-washed sand should be added. This will serve the double purpose of keeping the plant anchored until a roothold has been made and the soil from working out and muddying the water.
Interesting pond-dwellers
by BRENDA BARNES

While the fish fancier and breeder may need to exclude most "foreign bodies" from his pond, the rest of us may be well advised to risk a little degradation among our fry for the sake of deriving more interest from the garden pond.

Initially, when once a pond has been constructed and filled with water, it is stocked with the bare framework of plants and a nucleus of young or breeding adult fish. It is not long, however, before other water-dwelling creatures find their way to such a virgin site and while some come overland like the frogs and newts, others arrive in the eggs deposited by winged insects. Some may be introduced in the eggs attached to aquatic plants and others arrive on the wing to take up semi-permanent residence beneath the surface. The habits, structure and adaptability of the numerous and varied water-dwellers is of the greatest interest to the student of nature and one's own garden pond can be quite a happy hunting ground and laboratory.

The majority of our pond visitors will be insect species of which the commonest will be mosquitoes. More spectacular and less unpleasant are the dragonflies which are absolutely harmless. Their appearance at the pond is usually motivated by a desire to mate and lay eggs and these operations can be watched in comfort from a pondside seat. The male and female will be seen flying in tandem around the pond with frequent pairings and subsequent visits on the part of the female to the water surface where she either deposits her eggs in the water or upon a plant according to her species. When hatched the larvae commence an underwater life of stealthily stalking their prey which consists of any fairly soft-bodied creature which can be captured and manacled by the powerful jaws. Any losses to young fish may be partly compensated by the pleasure of witnessing the eventual emergence of the adult insect from the pupal case when the time comes for the transition from an aquatic to an aerial existence.

Usually arriving under cover of darkness, the great diving beetle (Dytiscus marginalis) quickly spreads fear and alarm among the lesser beings in the pond. A fast and active swimmer, this handsome insect of 1½ in. in length chases its prey which may consist of tadpoles, newts, snails, young fish, water-slaters, etc., and savagely cuts them up with its large jaws. The female lays her eggs in the stems of underwater plants in which she first makes an incision for the purpose. The larvae which result from the hatchings are more voracious than their parents and feed continuously during this phase of their existence.

The water scorpion (Nepa cinerea) is not a common visitor to garden ponds but if it puts in an appearance it is worthy of study. Its body is so flat that it seems incredible that wing cases, wings and internal organs can be housed in so little thickness. Its front legs are claw-like and the second joints can be folded to fit into the first which makes escape impossible for any prey upon which the insect obtains a grip. Whilst held in this embrace the "beak" is brought into play and, in true bug fashion, the victim's intestines are sucked from the carcass. From the tail end protrudes a sting-like filament of equal length on the body and this is pushed above the water surface to replenish air supplies for underwater breathing.

Allied to the water scorpion is the water tick-insect (Rhonea lamarri) another bug which is rather local in distribution. This creature, too, has an incredibly snake-shaped body which is attenuated and bears a very small head at the end of a long "neck." The front legs in this
The water-hummingbird (Nectera) is a small insect that lives near water. Its body is covered with tiny hairs, and it has a long, thin beak. During the day, it feeds on nectar from flowers and drinks water. At night, it rests on a branch or a raft of leaves, covered with dew. It is called the water-hummingbird because it can hover over the water surface and drink drops of dew during the night.

The water-hummingbird has a unique method of breathing. It does not need to touch the water to get air. Instead, it pushes its beak into the water, dips it up, and brings the air trapped in the beak to its mouth. This process allows the water-hummingbird to breathe while floating on the water's surface.

The water-hummingbird is also known for its ability to catch insects. It uses its long beak to probe into water plants and flowers to catch small insects. It is a valuable addition to the ecosystem as it helps control insect populations.

Although the water-hummingbird is small, it is an important species because of its unique adaptations and role in the ecosystem. It is a symbol of the importance of biodiversity and the need to protect and conserve our natural resources.
A FAMILY of four baby puff adders has been presented to the London Zoo by the Chester Zoo. These snakes were only about 8 inches long, and only a few weeks old when presented to the Zoo; they should grow to about 4 feet.

This poisonous African species derives its name from its habit, when angry or alarmed, of drawing in its breath and causing the body to swell visibly. The young of this viviparous species are venomous at birth, and whilst they are becoming accustomed to dead rather than live prey, their food is offered to them on forceps and the keepers wear gloves.

The Terrace Station in Rome is so vast that it takes some time to explore it—and a tour of exploration reveals some unexpected features to divert travellers for an hour or so. A station is about the last place one would expect to find a Zoo-Aquarium, but one is included, and is a very good position being just between the main exit from the Metro and the stairs and escalators leading up to the central hall.

The price of admission is 200 lire (about 2s. 6d.) and one will find the place spotlessly clean. Most interesting exhibitions are arranged and presented in a most interesting and attractive way. By each tank or cage is a notice giving the number of the species in Latin, Italian, English, French, German and Spanish, and, in Italian only, details of where it comes from, what it eats, its normal dimensions, etc.

At the entrance soft music plays, and there is a large tank of spectacle goldfish and a gaily coloured toucan to welcome visitors. Once inside, there is a large hall, dimly lit. The sides are lined with glass tanks for the fish, and glass-enclosed cages for the animals. There are plenty of spectacular, brightly coloured fish, some quite large pythons, and many species of the lizard family, including iguanas.

The choice of species has clearly been made with great care and only those that can thrive in artificial light have been included. Also, colour has been considered—an important factor in a small exhibition.

The number of visitors to the London Zoo during 1985 was higher than any previous year since 1954. The figure was 2,126,000, about 300,000 more than the previous year. The number of visitors to the Aquarium and the Children's Zoo also increased considerably.

In the Freshwater Hall of the Aquarium there has been an increase in the number of species of British freshwater fish exhibited, the most notable addition being some Burbot which have not been seen in the collection for many years. Other additions include a number of species of Cottarichidae, a family confined to North America. There have been several improvements in the Seawater Hall, mostly concerned with the design of the tanks. New methods of circulation and filtration are being tested experimentally.

The number of pupils attending lecture-demonstrations organised under the Society's education programme continues to increase each year. During 1985 attendance were as follows: Spring Term—Regent's Park (Secondary Schools), 10,492. Summer Term—Whipsnade Park (Secondary Schools), 3,107. Autumn Term—Regent's Park (Primary Schools), 12,681. Total, 37,706.

At the end of 1985 the permanent staff of the Society totalled 574. Of these 142 were employed at the headquarters of the Society, 43 in the Research Institutes, 275 in the management and Manpower of the London Zoo, and 114 were employed at Whipsnade Park.

Australia has 10 per cent. of the world's total of women taking the pill. But at Sydney's Taronga Park Zoo they have used a fertility pill to create the Zoo's biggest-ever baby population.

Sir Edward Hallstrom, the director, started the experiment several years ago on giraffes and the zoo soon had as many baby giraffes that some had to be given away. This season's baby arrivals include a bird of paradise, a lion, a rhino, an orang-outang, tigers, giraffes and several birds. The powdered pill is taken with meals.

When the Bristol Zoo's 600 gallon water tank is loaded on a lorry it is a sign that replenishments for the Aquarium are due. Bristol Zoo's Aquarium keeper, Alf Elliot, does his angling for more fish the easy way. He loads up the tank and drives down to a fishing village in Cornwall. Here friends of the Zoo have offered to go fishing in Cornwall. Here friends of the Zoo have collected a big family of interesting marine life. The fish, anything from bass to starfish, are decanted into the tank now filled with sea water, and the whole affair travels back to Bristol.

New arrivals at the Bristol Zoo include two monitor lizards six feet long, with dragon-like heads, sharp teeth and claws and powerful tails. They are now settling down happily on the rock ledges of their new home in the Repulse House. A couple of snakes have also arrived at the museum.

Llanerch Deer Park, N. Wales has now been changed to Llanerch Zoo Park. Already Wales' largest zoo, over 200 acres, the rapid growth in attendance coupled with its complete change in function has necessitated this change in name.
Readers of The Aquarium visiting the zoo this season will find a big change in the Aquarium. This has been enlarged and will now include a collection of marine specimens in a newly opened section of the 15 century Hall Cottages. A new and a much larger reptile has also been constructed in one of the largest cellars and the old reptile house has been converted to house cold water fish and the caiman family in large concrete tanks.

Now let's take a look at the new Flamingo Park. This Bird paradise of the North will be found at Kirby Misperton, Nr. Malton, Yorkshire, and what a place it is to visit, with its vast grounds, amusements, boating lakes, exhibition huts and many other items of amusement and interest. Many changes have been made over the winter months and visitors will find the Aquarium most interesting. The biggest venture of all is the new Marineland. This will include dolphins, whales, sea-elephant and, they hope, sea lions. There will also be an exhibition of trained dolphins and performing sea-lions taking place in the building each day. The lay-out of this Marineland will include an 80 ft. by 40 ft. pool where the performing dolphins will be able to jump high out of the water. Other aquatic creatures such as otters and penguins will also be housed in this building.

The old dolphin pools in the Reptile and Tropical Bird House will be used to exhibit Manatees. These strange mammals found in tropical estuaries were once popularly looked on to be mermaids.

The following information about Flamingo Park will I am sure be of very special interest to readers of The Aquarium, who may be on a tour of the district during their holidays, for I am sure some of our readers have a caravan with them on holiday touring around. If so, there is a new caravan site under construction and will, by the time this article appears, be completed and they are also converting an old inn into a large center where caravan owners will find every facility to hand. Owners of touring caravans will be glad to learn that part of the field is to be set aside for them. Bearing in mind the comfort and convenience of their visitors, Flamingo Park has provided a petrol station within the grounds.

---

Pimelodella gracilis
by B. KATTERNS

NATIVE to South America and very plentiful in its natural habitat, it is only in recent years that this fish has been available to aquarists and even now there is sometimes difficulty in obtaining specimens in this country.

Some of the books refer to this fish as the Graceful Catfish, and state that it is quite peaceful. Graceful it may be when at rest but when on the move nothing is further from the truth; it will charge round the tank like a torpedo out of control but strangely enough, no damage results from these mad antics which usually coincide with feeding time.

Normally very peaceful, this fish can have sudden outbursts of fury if robbed of a particle of food by another fish and will savagely attack the thief no matter how large he may be. My own experience has shown that other fish realises this danger and never take liberties at meal times.

Pimelodella has a very large adipose fin and three pairs of barbels, the outer pair being extremely long, in most cases reaching the full length of the body. In general appearance it resembles a pale copy of the coldwater catfish seen in the pet shops and at a quick glance could easily be mistaken. Growth is very rapid indeed. They are one of the fastest growing fish I know and a batch coming into my possession at around 2 inches long were all over the four-inch mark in under three months and that without any special feeding. While on feeding, any type of food is taken although the favourite is any form of live food. If you have a Pimelodella in the tank you need never fear food being left to decompose for it will dig out every particle and will eat until it is blown out like a small balloon. This digging habit I find can be most useful in clearing the bottom of a tank covered with blue algae. I have never seen them actually eat the algae but the constant digging acts the same as a hoe in the garden. Unfortunately they do not extend their efforts to the algae on the plants.

Temperatures around 75°F suit these fish very well and they seem to be all round tough fish but must have plenty of space to get around and I would not advise placing them in small tanks along with other fish for I feel that under such conditions they may turn spiteful as is the case with many other fish having the reputation of being peaceful.

---

Will Mr. JOHN CARTER, late of the late London Aquarium, please get in touch with the editor.

June, 1966
"You could say that I, too, am a young and enthusiastic fish-fancier."—(Common otter)

These pages are addressed to you who are on the threshold of what will grow to be a lifelong fascination with the world of water and the creatures and plants with which it teems. It will be our endeavour to foster the interest this subject has already aroused in you by providing features designed to help your aquatic activities, and by inviting you to submit your own ideas and observations on your own particular aspect of the hobby. Space will also be allotted for your own correspondence columns and letters intended for inclusion should be addressed to:

"The Junior Aquarist",
The Butts,
Half Acre,
Brentford, Middlesex.

Articles of not more than 800 words (as well as photographs and drawings) considered suitable for publication will be paid for at our usual rates. We look forward to hearing from you!

The Junior Aquarist

Collecting Specimens

At this season of the year natural ponds and streams have a magnetic attraction for many of us and a great deal of interest and pleasure may be gained from collecting trips to such waters. The additional interest of housing the catch for observation makes these excursions doubly worthwhile but there are some basic factors which should, at all times, govern these activities. These are times of diminishing numbers among many of our native life-forms due to a variety of different causes—but it is still often possible to come across a particular pond which is very rich in certain species of creatures relatively rare in other regions. On such occasions the temptation to collect many more specimens than is required is often very great but should be resisted if we are to assist in halting the complete disappearance of life-forms which were quite recently very common.

When specimens have been taken from natural waters and kept under aquarium conditions until they have served their purpose, it is always a good plan to return them, whenever possible, to the pond or stream from which they came. Other waters nearer at hand may seem just as suitable but very often there may be unknown factors present which will prevent all chances of survival for the creatures liberated in them. The ecology of one pond, where nature has achieved a balance between the life-forms present, will rarely be exactly the same as another a few yards distant and any attempt to alter the balance established over the course of time by introducing "foreign bodies" will result in failure. Whether the introduced species perish or so thrive that they will threaten the existence of other species native to that locality. A good example of this can be found on the Romney Marsh, where a very small number of laughing frogs (Rana ridibunda) were liberated and have so multiplied and spread that they cover many square miles of this part of Kent where, partly in consequence, the native common frog has disappeared.

The study of ecology and ecological control is now an international science of growing importance and there is no finer vehicle for experiment in this field of research than the home aquarium. The successful aquarium—be it salt-water, tropical or marine—is one where the aquarist has succeeded in assisting a balanced set of conditions to evolve between plants, fishes and other aquatic creatures and this should be the goal when setting up an aquarium. An aquarium is, in fact, a self-contained establishment independent of the outside world except for its need for light and contact with the atmosphere for the exception of oxygen.

THE AQUARIST
The Guppy

by M. PARRY

The Guppy (Poecilia reticulata), which attains a maximum length of 2 inches in the female, and 1½ inches in the male, needs little introduction as it is a fish that is kept by practically every aquarist whether beginner or expert. Indeed, throughout the country, no less than 5000 have been established devoting themselves exclusively to the study of this fascinating species. Its common name is derived from that of its founder, Dr. R. L. Guppy, a Brontos, who collected them on a large scale in Trinidad around 1899. It has, since that time, been introduced into many countries as an anti-malarial measure, including Barbados, Dutch Guiana, the Leeward Islands, West Indies, and Venezuela.

The guppy is a prolific breeder, young being brought forth every four to six weeks. In addition it is a very active fish; seldom contracting disease. The female is generally of a plain-greyish colour, totally different from the male, whose body colouration reflects every shade of the rainbow. It is a fish ideal for those aquarists who wish to attempt live-breeding, many well developed varieties of the fish having been produced. Those interested in aquaculture breeding should approach either of the specialist societies, the Federation of Guppy Breeders' Societies, or the Fancy Guppy Association. Amongst varieties recognized by the former of these bodies are Bottom-Sword, Yolotl, Pintail, Roundtail, Searfowl, Spearfowl, and many others.

June, 1966

Frog Spawn

Did you collect any frog-spawn this spring and if so, how are the tadpoles getting on? Every year keen young collectors gather jars of spawn and eagerly carry them home in the hope that they will successfully rear hundreds of little frogs. Alas, something so often seems to go wrong, and few, if any, are the frogs which result from so many tadpoles.

The first secret, of course, is not to collect too much spawn. A few dozen tadpoles, when they emerge, will stand a better chance of reaching "froghood" than a few hundred. The second tip for success is correct feeding after the tadpoles have ceased to browse off the algae and other aquatic plant-life. Once they are seen to be actively and ceaselessly swimming around their container, it's time to start them on a diet of fish in the form of chopped garden worms. Small pieces of cooked meat from the dinner plate may also be fed them but in moderate quantities, care being taken to ensure that all has been consumed before further helpings are given. This diet will see the tadpoles through to their complete metamorphosis.

With the appearance of the forelegs and the shortening of the tail which soon follows, we enter the final and most difficult stage of rearing young frogs. Even when all facilities are provided for the emergent froglings to leave the water, many of them die from drowning and one wonders how they survive this stage of their development in the wild. Well, of course, very many of them don't but we should be able to ensure their survival since we are setting out to do just this. If possible it's advisable to remove them at this stage from their aquarium and house them in something more like a wide, shallow dish at one end of which rocks, gravel, clay or soil has been formed into a sloping "beach" up which the terrestrial-bound frogs can roam into the wide world of your garden.

If losses are still seem to occur, make a daily inspection and note those specimens whose tails have almost vanished. These can be released with safety in some convenient corner of the garden which offers cover from questing birds of the thrush family whose liking is for such juicy morsels as these.
The freshwater crayfish

by G. N. DOWNS

Female crayfish with young (bottom left)

The crayfish is the largest, most highly organised and probably the most interesting British freshwater crustacean.

It is an Arthropod belonging to the order Decapoda, which means ten legs, of which the pincers are the first pair. There are two species to be found in Britain, but I intend to deal with the only indigenous species, Potamonius pallipes, or "white claw" although except for its smaller size and different colouring on the underside of the pincers it is similar to the continental species, the "red claw."

The usual adult colouring is very dark, greenish grey, but the colour is extremely variable and some specimens are yellow or even an attractive brick red. The undersides of the pincers, abdomen and cephalothorax are off-white. The cephalothorax refers to the head and the thorax which are fused together in this species. Small specimens are paler and have a semi-transparent appearance. Potamonius grows to a length of four inches or more and the large specimens are usually males. The crayfish can be sexed with certainty by inspection of the pair of appendages located under the first section of the abdomen. In the male these are deeply grooved and are used for passing the sperms to the under side of the female.

Although crayfish are not common, where they do occur they are usually abundant. They usually inhabit the slack water of fast clear streams but moving water is not essential to them and many reservoirs and gravel pits contain crayfish.

There has been much literature published which describes the crayfish as an aggressive predator, but I have kept crayfish with native fishes for several years and I have found them to be perfectly trustworthy.

These lobster-like creatures make interesting and unusual additions to the aquarium but they should be obtained during the cooler part of the year and acclimatised to room temperature gradually. Warm water and overcrowding is fatal to newly-caught crayfish.

When setting up an aquarium for crayfish, a hiding place should be provided for each specimen and rocks should be placed so that the inhabitants will feel secure when taking refuge while giving, at the same time, a clear uninterrupted view of the crayfish to the observer.

Although the size and hard chitinous structure of the crayfish may cause the aquarist some concern for the safety of his plants, provided they are normally well secured they will not be uprooted or damaged. Plants should be arranged so that they do not provide too much cover in which the crayfish can hide.

Continued at foot of page 47.
The Glowlight Tetra

by H. E. R. THOMPSON

A LITTLE gem, without any vices, and suited in every way to the communal life of our aquariums, is the description of the Glowlight Tetra. One of the more beautiful of Characins, it is endowed with an essentially peaceful nature, adapting itself readily to aquarium conditions where it usually leads a long and trouble-free life. As with all our fishes, some pains in providing the correct conditions and setting will show this little beauty off to its best advantage and provide ample reward to its owner.

The aquarium should be clean and set up with soft, slightly acid water (pH 6.7-6.8 is ideal). A well-planted situation with a moderate top light enhances its beauty and we then see a fish with a grey to greenish and somewhat transparent body, silver to white in the belly region and having a fairly broad gold-to-red brilliant longitudinal line running from the upper curve of the eye to the base of the tail where it ends in a wider glowing spot. This brilliant line places it in a class with the Neon and Cardinal Tetras to which it is closely related. The anterior rays of the dorsal fin are gold to red and a trace of red is also visible in the anal fin; the tips of the dorsal, anal and ventral fins are a milky white, more pronounced in the male. Pectoral and caudal fins are colourless; an adipose fin is present in this species. A maximum growth of 2 in. is reached in fine female specimens; males are somewhat larger and slimmer, having a flattened appearance in the underside belly region.

Although the Glowlight Tetra was discovered in the middle 1930's when it was discovered in the Guianas and various areas of the Amazon, there has been some controversy as to its proper name. Some writers quote it as Hologobrycon gracilis, while others name it as Hemigrammus gracilis and again as Hemigrammus erythrozonus. Which of these is correct and if they refer to one and the same fish is open to discussion.

Although the keeping and maintaining of the Glowlight is good health is a fairly simple task, it is a difficult proposition when it comes to breeding. Firstly, this should not be attempted with fish that are under 15 months of age, and secondly, I maintain with most of the “difficult to breed” fishes, pairs should be self-mated. The potential breeder should, therefore, purchase a pair to eight Glowlights and an apt tank and grow them on together until their second year when, by careful observation, a “pair” may be spotted as breeding condition develops.

A scrupulously clean tank must be provided; quite a small tank will suffice, 24 by 8 by 8 in. being ideal, filled to a depth of 5 to 6 in. with soft, acid water over peat. Approximate water analysis: pH 6.6-7.5; of hardness by German table. The spawning medium should not be too thickly as the Glowlight differs from other Characins in that it spawns with a barrel-nut movement and heavy root or plant thickeners would, to some extent, confine its activities. Coconut fibre or Willow serve as excellent egg traps, or finely-leaved plants such as Meliafilium or Anubias may be used. Place the breeders in the tank in the evening and maintain a temperature of 70 to 80°F.

Remove parent fish as soon as spawning is observed; although this fish is not rated as an avid egg-eater, a change in diet of the form of freshly laid fish eggs may prove too much of a temptation! Now cover the tank to shield from bright light and especially sunshine which could prove fatal to any exposed eggs. The babies should hatch in 24 to 30 hours, when they will enter the bed of peat moss. The tinier of infusoria must be provided for about seven days when the fry can graduate to egg yoke and freshly hatched brine shrimp. Once they have reached this size, growth is fairly rapid and partial changes of water will greatly assist growth and prove beneficial to them; and, of course, move the fry to larger growing-on quarters when a size of ½ in. or a little under is reached.

Although I have quoted the Glowlight as a most suitable subject for the community aquarium, a tank containing a dozen or more of these little gems is a sight to behold.

The freshwater crayfish

No more than two or three crayfish should be kept in a twelve gallon aquarium which should be filled with fairly hard water for best results. Slightly green water will be tolerated but it must be stressed that crayfish are very vulnerable to foul water and great care must be taken to remove unmentionable food which should consist of worms, pieces of fish or meat.

If the water becomes too warm or foul the crayfish will try to find a more suitable abode and they can travel considerable distances overland. The water should be a good oxygen content but although artificial aeration is usually described as essential for crayfish, I have found that a well-balanced aquarium contains enough oxygen without artificial aeration, except in warm weather with newly obtained specimens.

The crayfish is well worth obtaining and is quite hardy when acclimatized to life in the aquarium and by adhering to a few simple rules a great amount of pleasure can be derived from keeping this fascinating long-lived and curious creature.

June, 1966
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.

**Cold Water Tropical Fish?**

I have just finished reading your latest edition of "The Aquarist and Pondkeeper" and would like, through its columns, to pass comment on the tropical fish in the canal at St. Helens.

On reading your article about the tropical fish in the canal at St. Helens I would like to give my support to the gentleman who wrote it.

This chance survival of tropical fish in our own waters may be the beginning of a new species of fish if, of course, the perch are not introduced to this part of the canal. In time the tropica ls may breed, spread and eventually adapt themselves to a cooler temperature, possible being able to live in cold water.

Obviously one must consider the safety of the local children and as being more important, but I am sure that once the initial attraction has worn off the fish would be responsible for no more danger than the traffic on the roads. In fact children will always "go playing about on the river!"

If, however, the parents do feel justified in their worry then I would suggest that the F.B.A.S. should try, if possible, to raise enough money to fence off this area and conduct the experiments in a full professional manner in order to help science as well as the ever inquisitive aquarist.

Then maybe, one day, we will have the phenomenon of cold water tropical fish.

B. JOHNSTON, Hounslow West, Middlesex.

**New Names**

I obtain this excellent magazine from my newsagent every month.

In your March 1966 issue in "Fishes of the Characid family (Beginner's Guide)" it states the neoc tetra's Latin name is Hypseleotris innesi, but it is now officially Panaque innesi.

A. COLES, (Age 14)
319, Queens Road, Maidstone, Kent.

[Congratulations Master Coles on being so up to date with nomenclature changes.—Ed.]

**Illustration for Aquarium Studies**

As a teacher of backward children I wish to undertake a project on the setting up of an aquarium but there seems to be a distinct lack of literature on this subject.

I would be grateful, therefore, if you could advise me of suitable books on the subject, and also where I may obtain diagrams or pictures.

Your assistance would be much appreciated.

GEORGE K. MORRIS,

**Jumping Swordtail**

In the April edition of Aquarist I read Michael Hinz's paragraph about his Siamese fighters. I would like to tell you about one of my swordtails. Early in the morning I put a gravid female into a breeding trap measuring 4' x 4' x 8'. Later in the morning, when I went to see her, she had lumped completely out of the trap into the aquarium and from there to another aquarium nearly one foot away.

Could you tell me if this is natural as I did not have any male swordtails in the latter tank?

Graham Featherstone,
11, Templegate Walk,
Whitkirk, Leeds 15.

**Goldfish Classes**

With reference to the letter by Mr. B. Simmans in The Aquarist dated April 1966, I would like to take into consideration the shubunkins in the fancy goldfish class if I had been asked as judge to amalgamate classes. On the other hand, if the judge had been a member of the Goldfish Society of Great Britain, he would have placed them in the single-tail class. When the Goldfish Soc., was formed, the well-known and established varieties of fancy goldfish were ignored and in the first edition of the catalogue, new forms were released for the fancy goldfish class.

Graham Featherstone,
11, Templegate Walk,
Whitkirk, Leeds 15.
The Federation of British Aquatic Societies had standards of the fish and aquaria points to mention the special features which differentiated them from other species.

The Goldfish Society persuaded the Federation to publish this system of pointing to a list so that any feature that could no longer be rewarded. Such features were the colour of the shubunkin, the breed of the goldfish, and the tail of the goldfish. Since the introduction of the Goldfish Society, there has been considerable interest among exhibitors and I have been noticing that a number of exhibitions have been lessening of numbers of goldfish and a great reduction in the quality of the entries.

For example, where you are a class with 53 entries today, as was the case when I was provided at the show in 1950, and I have cards to prove this statement.

A. Bowes, Ruisslip, Middx.

Goldfish Classes

I ENTIRELY agree with Mr. Collett’s letter—“Goldfish Classes”—in the April issue. As exhibitors know, the conditions to be found in Show Schedules are “the choice of the committee.”

The Show Committee do not have any say in the matter and it is up to the exhibitors if they think fit. Conditions may be altered at any time and without notice or warning.

A large number of classes have been added to the list for this year, and the number of classes on offer to the exhibitor is much greater than ever before.

We stick to our guns, and if you think you are going to get away with this method, think again.

R. M. WHITTINGTON

Glass Fry Tubes

REPLYING to Mr. Collett’s letter—“Answer please!”—in the April issue, I am afraid that I do not know if the glass fry catching pipes are still obtainable. I used to use one several years ago, but passed it on as I never seemed to get the hang of it.

Mr. Collett may try the methods I use to turn my tiny goldfish fry into a fancy goldfish fry each summer. If I am only concerned with having a whole spawn of larger fry, I catch the fry in a large net and put them back in the tank. They live on the surface of the water and are not disturbed. If the fry are not going to be kept, I remove them from the tank and put them in a small plastic bag. A better method, though more laborious, is to catch each little fish one by one in a teaspoon, again with the net partially submerged. If the teaspoon were slightly tilted, it would facilitate inspection of the divided tail in goldfish varieties. I have transferred many thousands of 10-day-old fish by this method.

R. M. WHITTINGTON

Dark Planting Medium

I LOOK forward every month to reading your most interesting magazine, particularly the article by K. N. Paleston, in January edition, entitled “Shedding some Light on Aquarium Plants.”

I am in my intention of following K. N. Paleston’s advice, and setting up the same lighting in my 36 by 15 by 15 in. tank. I would also like to change my entire set-up by acquiring some different planting medium. I was interested in your magazine a supplier advertised to send for a free sample of Natural Silica Quartzite gravel, for which I duly sent. I have now received a sample which I find to be the ideal type of gravel except that the colour is not what I expected. What I am looking for is a very dark gravel to enhance the colours of the fishes, etc.

I have tried using sifted coal but it doesn’t appear to be very satisfactory, in that it is too light in weight, and gradually moves to the front of my tank.

I am also aware that one can purchase commercially coloured gravel from pet stores, but upon reading an article by P. M. Fuller in February edition, he states that it is better to avoid all forms of artificial ornamentation, etc., as they often lose their colour with the release of detrimental substances into the water.

Could you please inform me if and where I can acquire some dark gravel and rocks. I was thinking of using granite chippings one finds on the roads, but they are rather too large in size. I believe the correct size is about 1/16th in. diameter. I would be most grateful for any advice and help with this matter.

S. A. GILLINGHAM

30, Queen Street
Upper Woolton, Liverpool.

Calling Mr. Collett

IN reply to the letter from Reginald W. Collett asking about fry tubes, I would agree that there is nothing to equal clear glass.

I am an aquarist of fairly long standing but I cannot remember these tubes. However, if Mr. Collett will send me a sketch and measurements of the tube, I will make him one for just the cost of postage. I have my own design which I am sure will please him more as I can have both for and I would like his comments.

REGINALD G. PULL

24, Northfield Road
Ponders End, Middx.

Blue Carp

I AGREE with Mr. R. Chown of Surrey regarding his notes on blue carp, but would also like to mention another aspect on this colouration which occurred some 30 years ago in a small canal in the Reddish district of Manchester. It was noticeable that the majority of carp caught by line or net had a distinct blue colour. I obtained a couple of these specimens and placed them in an aquarium. They were dark on the sides but more blue when seen from above. I talked with several interested persons at the time and we formed the conclusion that a number of black moor had been released in the canal by the owner of the fishing rights who also had a fishing tackle and aquarists shop in the district. The canal water was heated by the local mill and the moor survived and interbred with the Crucian or Prussian carp already established in this water.

FRANK BRADDOCK

Flixton, nr. Manchester.
Informal pond with surrounds incorporating numerous varieties of ornamental dwarf conifers
Conifers at the pondside

by JAS. STOTT

Among these subjects, collectively known as conifers, are to be found quite a number which rate high for inclusion in the planting scheme of the pondside or some garden. They are capable of providing varying shades of green or tinted colour masses to the surround at a time of the year when there are few flowers and foliage for they are, in the main, evergreen. By virtue of the differing shapes, styles and sizes there are varieties suitable for both formal and informal design and the large or small garden. Some do well among the rocks in an alpine setting for a pool while others, with their symmetry and grace, are ideal for tub planting or pockets in the paved surround of the formal pond.

Chosen as the first choice must come from the family formerly known as Cupressus but now by the more popular name of Chamaecyparis. It contains many delightful species and varieties both large and small; in fact, the range is very wide but thinking in terms of the average sized gardens, I have selected three of the smaller species.

Offering an ultimate height of some four to five feet of dome, pyramidal shaped blue-greyish-green foliage C. Lawsoniana nana var. Fastigiata is one of the best conifers for it is seldom choosy, even tolerating industrial grime better than most conifers and seems to do well in most parts of the country. Shape and outline make it an excellent choice for the informal design.

For inclusion in one or two pockets in the paving of the formal pond surround C. obtusa var. nana arbus is a grand subject. It is compact in growth eventually reaching a maximum height of three to four feet. The foliage is golden-green and the overall shape of the conifer is conical.

Another for the alpine surround is C. obtusa var. pygmaea. It is somewhat fan-topped with horizontal, fan-like branches and bronze-green foliage with an eventual height of 1½ to 2 feet. This particular conifer looks well with limestone rockwork.

There are several attractive forms suitable for the pond surrounds among the junipers and two come to mind immediately from personal experience. One is J. squamosa atrovirens, an ideal outlined conifer for the formal surround with grey-green foliage and graceful, sweeping lines. The ultimate height is around five to six feet. The other is J. procumbens for the informal setting. It bears grey-green foliage and a creeping, wide spreading habit of growth with a maximum height of twelve to fourteen inches but it can spread to cover an area of some four to five square feet.

Another juniper which always looks well when placed among rocks close to the edge of the water is J. horizontalis, also flat growing but with an attractive blue-green foliage that turns plum coloured in the Autumn. The maximum height is even less than that of procumbens for it seldom exceeds twelve inches and frequently matures at around six to eight inches but it is also a greater spreader.

There are several charming small growing subjects among the Taxus species ideal for the informal lay-out and they offer the advantage of a change of colour in Autumn and Winter although none are deciduous. Without a doubt, to my mind, T. occidentalis nana var. “Rheingold” is the most beautiful. It has brownish-green foliage in Spring changing grey-green during the Summer months and turning to a lovely golden-brown in the Winter. Another variety is T. occidentalis var. viviparae, the variety name meaning beast-like. It forms a pyramid-shaped bush of farm foliage which turns a dark bronze in Winter and, although not as intense as “Rheingold,” is worthy of consideration as a background subject. It is also a taller growing variety.

Two Japanese Cedars, Cryptomeria japonica, can also be found suitable; one for formal designs the other for the informal surround and given in that order. C. jap. globosa nana is a rounded, dense-growing bush with bronze-green foliage and a matured height of four to five feet. The other is C. jap. yuhinoshima somewhat smaller both in height and depth but a dark, richer green.

Conifers are, but for a few exceptions, fairly hardy although they never give of their best when they are compelled to endure heavy industrial air pollution. The best time for planting is in the late Autumn but most nurserymen sell pot grown plants and these can be planted out at any time of the year providing the ground is open and not frozen and the plants are fully hardened off. There are many more to choose from than those mentioned in this article suitable for pond surrounds but care should be taken, when making the choice, to determine the mature height if bought as young plants. Some are very slow growing but may eventually end up quite large trees.
OUR EXPERTS' ANSWERS TO TROPICAL FISH-KEEPING QUERIES

Please tell me whether a pair of Apistogramma haematina would be easy to keep and breed in a 24 in. by 12 in. by 12 in. tank maintained at a temperature range of 75°F (24°C) to 80°F (27°C)? Is the species quarrelsome by nature? Also, what foods suit it best?

A pair of A. haematina (pulcher) should live and breed quite well in a tank measuring 24 in. by 12 in. by 12 in. Nevertheless, as this cichlid reaches a solid 6 in. in length, more spacious quarters are recommended. A temperature range of 77°F (25°C) to 80°F (27°C) for general maintenance, and up to 82°F (28°C) for breeding is satisfactory. Large specimens are not entirely trustworthy with other fishes, especially those smaller and less sturdy built than themselves. A mixed diet of crunchy dried food, whole or chopped earthworms, and lean meat is all that is needed to keep it in good health.

I have been told that a male Siamese fighting fish will do no harm in a well-planted community aquarium stocked with the usual runs of small fishes. Is this correct?

Provided the fishes living in the tank are alert and always on the go, one male fighting fish should do no harm.

L germane snails are nibbling too many holes in my plants. What can I do to rid my tank of these pests?

1. Remove all the large snails you can see from the aquarium and then introduce a non-predatory cichlid such as Apistogramma marieni or a couple of young paradise fishes—harmless in their smaller sizes—to kill off the rest.
2. Every time I feed my neon tetras with a well-known brand of dried fish they lose their balance (temporarily) in the water. Please tell me the reason for this.

Neon tetras are hearty eaters and the dried food they gobbled up so giddily swells up in their insides. This causes them to swim about for a time in a jerky, head-down position. The best thing you can do is to soak the dried food in a small quantity of tepid water before introducing it into the aquarium.

I have heard that acid water is not the ideal medium for the development of microscopical aquatic life. Is this true?

It is true that acid water is not the ideal medium for the development of microscopic aquatic life. This is the reason why there are fewer algal growths and few bacteria in an acid water aquarium than in an alkaline one.

Please give me the names of some plants that should do well in a shady aquarium.

Cryptocoryne affinis, C. blani, C. willsi, C. gibbsii, Sagittaria subulata, Didiplis diandra and Vesicularia dubyana are among the plants that usually grow well in a peetish light.

What is the life-span of Corydoras paucipinnis? Furthermore, what conditions and what sorts of food are most certain to help it attain a long and healthy life?

C. paucipinnis lives for upward of ten years. It lives longest and usually enjoys good health if given a sandy floored tank filled with water that is neutral to alkaline. It is not particular about temperature, but the middle sixties to low seventies (°F) appear to suit it best. Meat and worms should make up the bulk of its diet.

I would be grateful for any information you can give me regarding the peppermint catfish, which I cannot find mentioned in any of my aquarium books.

The so-called peppermint catfish is known to science as Loricarius nigromaculatus. It is, as its trivial name suggests, a native of South America, and it contains about 6 in. in length and was first introduced to tropical aquarists in 1936. It is a bottom-feeder and thrives best on tiny pieces of meat, worms, Daphnia and the regular live dried foods. It flourishes well at the usual range of temperatures and is not out of place in a community tank. So far as we know it has not bred in captivity.

I bought two small Squalophyerus argus a week ago. Dried food they will not touch. Nor will they eat fresh food. Yet in a book I have just read, the author states that these are gourmet for food and will eat anything. May I have your comments please?

It is not unusual for newly imported scats to be fussy about their food. In all probability the sudden change in their living conditions (mainly marine or brackish in the water) robs them of their appetite. The best thing you can do is to tempt them to eat tiny worms (red in water) dispensed from a perforated feeder just submerged in the water. If these worms are taken freely (as they usually are) throw pellets of crushed lettuce into the aquarium. sit in their natural state the Scaphirhynchus include a lot of vegetable matter in their diet. A very small quantity of evaporated sea-salt added to their aquarium water may help to restore their lost appetite.

I am a comparative newcomer to the tropical fish-keeping hobby and would be obliged if you can tell me the names of a few small freshwater fish which are suitable, attractive to look at, hardy in your experience, well-suited to life in a community tank.

Callichthys callichthys, Lepidorhynchos lepidus, T. microphthalmus, and Macropodus opercularis (not to be confused with opercularis, though the albino form of the type is quite docile) will meet with your requirements.

Continued on page 52.
COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

There are not likely to breed many fish in your tank as goldfish eat many of their eggs and fry if any batch. It is safer to hatch and rear the fry in a separate container. You will find all you want to know about breeding goldfish in "The Aquarist, and the Philatologist," a book I suggest you read. You will then find all you want to know about breeding goldfish with the three tails is what is known as "tri-tail". Fishes such as this often appear in pet shops but they are not what is known as "tri-tail".

Have you recently bought a moor for $5 from a private dealer. It is in a perpendicular position with the tail up. What is wrong with it and can it be cured?

This sounds as if the fish has swim-bladder trouble. This has recently been brought on by a chill. Many fancy goldfish, including moors, are bred at a warm temperature, usually up to 70°F. If such a fish is transferred to a cold tank suddenly, it may get a chill and then swim bladder trouble. It may be possible to keep a providing the fish is not inheriting this condition from its parent. If it is, it will not be cured.

Cats fish (goldfish) cannot live in 18 gallon tank. It has developed white spots at the extremities of three of its fins. The tank is in a row and close together and I feel certain that the white spot disease. The fish seem quite healthy and strong. What is the matter with the fish?

The white marks on the edges of the fins may be where no slight damage has been caused in the past. If the fish is not healthy in any way, no more spots do not spread there is no need to take any action. The spots may disappear but they may also remain always.

I have a dozen shubunkins in a 4 ft. tank and am hoping to sell them for breeding. I have read many contradicting statements as to how old or large goldfish have to be before the eggs will stick. What is the correct condition?

The correct condition for breeding is to have goldfish of a sufficient size and age. The correct size is a length of 3 inches, and a weight of about a pound. The correct age is 18 months for males and 24 months for females.

Can you please suggest a waterproof preparation to paint a newly constructed pond? It is made with an outer coating of cement, sandstone and linseed. It is being filled at a fast rate.

The best method is to use a waterproofing compound such as Sylon ortbody. These paints are easily mixed with water and applied with a brush. Other waterproofing compounds that are suitable for ponds are Bituminous and Polystyrene.

Do you recommend any fertilizer for pond plants? The plants are four foot high and grow very fast. The water is clear but I notice a lot of algaes growing in the pond.

The best fertilizer for pond plants is blood meal. It is a slow-release fertilizer that will provide nutrients to the plants over a long period of time. It is available at most garden centers.

I have installed a pond in my garden. 2 feet by 2 feet. I put seven small fish in and two scavengers as well. Three of the fish have died and I am very concerned about the rest.

It is normal to lose a few fish when introducing new fish to a new pond. The death of three fish suggests that there may be a problem with the water quality or the fish are not acclimated to the new environment. You should check the water chemistry and adjust it if necessary.

Your pond is very small indeed and it will be very difficult to keep it in good condition. The smaller the pond the harder it is to keep fishes healthy in it. I doubt if the fishes died because you had too much plant life; the opposite is the usual case. You may have over-fed and the uneaten food has polluted the water. You do not state which scavengers you have in the pond. If they are Carassius (coldwater one), they could have eaten the small goldfish. These Carassius grow very quickly to a large size and as they are long fish they are much more dangerous to include in any pond where there are smaller fishes. I cannot see what good a fountain would be in such a small pond, I imagine that the water would fall mostly outside your pond.

I am interested in keeping some small trout in a large aquarium. Please can you give me some information on this problem?

To keep trout in a healthy condition you must be able to keep a well oxygenated water for them the whole time. A strong aeration must be kept working or the fishes would soon die. These fishes are river fishes and rarely do well in any slow or still water. Most aquarists who are successful with keeping trout have a system whereby the water can be purified as well as oxygenated.

I have trouble with blanket weed in a small pond and have been told that the Great Pond Snail would clear this up. Do you know how many would I need?

The Great Pond Snail is a large snail that feeds on blanket weed. One snail can eat up to 400 branches of blanket weed per day. Therefore, you will need at least 10 Great Pond Snails for a small pond.

I do not think that the small you mention would be of any use in clearing the blanket weed from your pond. They might eat some of the soft filamentous algae but the blanket weed would still thrive even if you put a hundred snails in the pond. There is no chemical which will kill this plant without also killing the water plants which were needed. The best way to get rid of the weed is to have plenty of growing water plants which would choke out the weed in time. You can help by twisting out large masses of it with a broken stick.

I had several goldfish in a pond and brought them with me to my new house where I made a pond with gravel. After a few days the fishes were rolling about and then they started to die off. It is now December and they have no signs of damage either. What do you think is the trouble?

The problem with the goldfish is that they were not acclimated to the new pond environment. The temperature and water chemistry of the new pond were different from the old pond. You should always acclimate new fish to the new pond by introducing them gradually.

It appears to me that the water is impure. The actions of the fishes suggests this. There may be some form of poison in the water. It could have come from copper pipes in the house system or from some external cause such as the use of insecticides. You should test the water for the presence of chemicals.

I have a pair of shubunkins which spawned early last summer. They were pulled out of the pond by a cat but I was able to save them. There were no subsequent spawnsings, perhaps due to the interference. Do you think that I should strip the females of eggs as the looks very full, or would the fish go through the winter all right and spawn in the spring?

Female fishes which still hold some eggs in the winter will continue to do so until the following spring. You should not try to strip the eggs from the fish as you are likely to damage the fish in this way. Although eggs can be taken from a fish when in spawning condition as other times it is dangerous.
Tubifex
by B. FRY

The scores of species of aquatic worms popularly referred to as Tubifex live in the mud and their oxygen-absorbing tails waving incessantly, or almost incessantly, in the water. Running waters over a thick bed of putrefying organic waste suits them best. In fact, the oily-looking sludge that collects near the outlet of a sewer is pasturage dear to their hearts.

It follows, therefore, that these worms must be thoroughly clean before they are introduced into an aquarium. But it is not enough that they look clean when they are obtained from a dealer; you must make certain that they are clean.

Perhaps the best way of riding a tight cluster of tubifex worms of diet is to pull them apart (with two pointed sticks rather than the fingers) and then wash them around in a jar of water.

The healthy worms (liveliness and a beefy red colour are signs of health) will react to this treatment by gaggling appreciably. If the treatment is prolonged, the difference to no point, the worms will avoid the former feeding grounds of the aquariums containing them on a solid floor out of the sun.

It is at the summum that some tubifex worms to shade the mouths of the middle and upper layer swimming fishes burrow and burrow into the compost. If there are no bottom-dwelling catfishes or bottom-dwelling fishes present to ferret them out (for no amount of sieving or spooning out the compost will make any appreciable difference to their numbers), they will continue to wriggle and writh until the unaccommodated warmth and the scarcity of food leads to their gradual extinction.

Insect individualists: Gyronus and its alarm system
by F. WILMOT

The Whirligig Beetle (Gyronus) is a creature of the surface-film, that extremely thin, rubber-like covering that is a natural property of all surface water. But it is also a powerful underwater swimmer. These little beetles (they are only about ½ inch long and have bluish black bodies which glisten like burnished metal) are quite common on ponds, particularly in late summer.

There is really no mistaking them because as soon as one beetle of the little company becomes aware of an intruder (in which category it includes human beings) it commences to dash erratically to and fro like a tiny speed-boat. Once after the other, all the Gyronus in the vicinity start to do the same, having obviously picked up the alarm signal. Then, if one or more beetles judge that danger has become imminent they dive below or scatter, immediately followed by all the others.

The Whirligig Beetles obtain their great speed in swimming mainly from the shape of their middle and back legs which are very short, flat, and wide like paddles. These legs are also fringed with hairs which the beetle can adjust according to whether it is moving its legs backwards or forwards.

In common with nearly all species of aquatic beetles, Gyronus can store a supply of air beneath its wing-case, and also frequently carries a bubble of air attached to its tail. These supplies enable it to stay beneath the surface for quite long periods. It does, however, need its ability to swim strongly and to be able to cling to underwater plants as the air supply makes it extremely buoyant.

One of the most interesting things about the Whirligig Beetle is that its eyes are divided into upper and lower parts. This arrangement is believed to enable it to see both above and below the surface at the same time. Most useful for a fast mover.

Like all aquatic insects, Gyronus was originally a creature of the land, and in its move to the water it certainly appears to have done well for itself.

The Aquarist
Fish diseases (25) Fin and tail rot

by R. E. MACDONALD

Although fin and tail rot is a very common disease it can be contagious and fatal if not treated immediately.

The symptoms are easy to recognize for the tail and fins gradually rot away and blood spots can be seen in the area of infection. The finnage is consumed until eventually the body is reached. When the body of the fish is infected a cure will be almost impossible and death will certainly follow.

Fin and tail rot is a bacterial infection generally solicited by poor living conditions. Although it is a serious condition there are several good cures on the market that can be used successfully or alternatively any of the following treatments can be used with good results.

1. The diseased fins are carefully brushed with a solution of iodine that is prepared by diluting 1 part by volume of iodine with 9 parts by volume of water.

2. 50 cc. of a 1 per cent. stock solution of phenol is added for each Imperial gallon of water in the tank. A 1 per cent. stock solution is prepared by dissolving 1 cc. of phenol in 99 cc. of water.

3. Stock solution of acriflavine is prepared by dissolving approx. 0.46 gram of neutral acriflavine in 330 cc. of hot water. The affected parts of the fins should be brushed with this stock solution and the fish then placed in a tank for 3 days that has been prepared by adding 10 cc. of the stock solution of acriflavine for each Imperial gallon of water in the tank. After this bath, the affected fins are again brushed with the stock solution and the fish returned to a tank that contains fresh, clean water.

A solution that is too strong or a prolonged treatment with acriflavine is found to have an adverse effect on fishes.

(4) As a last resort, surgery may be applied by cutting away the putrefied area of the fins with a pair of scissors so that the infected parts are completely removed. The wounds are then disinfected by first brushing them with a 1 per cent. solution of silver nitrate that has been prepared with the use of distilled water only and then by brushing with a 1 per cent. solution of potassium dichromate. The fish are then placed in a tank, until the wounds have healed, containing 50 cc. cm. of a 1 per cent. stock solution of phenol, which is added for each Imperial gallon of water in the tank.

All chemicals mentioned can be obtained from dispensing chemists.

Automate your aquarium

by P. G. BOND

Although the use of electric or clockwork time switches would seem readily to suggest itself for the control of illumination and aeration or filtration, this does not appear to be so. Illuminators among friends suggest that being a conspicuous daily object, somebody would remember to switch the aquarium on in the morning and the last one up to switch it off at night.

Apart from the obvious use in switching the aquarium or in a pre-determined manner, the time-switch can also be used to perform a dual function of switching on the illumination or aeration pump.

This simple control scheme comprises a time switch, several toggle-switches, indicator-lamps and fuses housed in a small metal box or cabinet. The equipment is connected automatically to switch the light on and the aerator/filter off and vice versa. If under-gravel filtration is used this arrangement has the advantage that, as the filtration unit runs only at night, the controversy as to the desirability of operating the filter during the daily growing cycle is avoided.

The time switch and relay should be connected as shown below. The relay being a small 240 volt A.C. type with at least single pole change over contacts. The time switch could be a 1-2 amp. overrun, this is one of the smaller types available and is suitable for installing within a small case.

Continued on page 37
The black-lined tetra

by JACK HEMS

The black-lined tetra was first collected and made available to tropical aquarium keepers in 1956. It was given the scientific name of *Hyphessobrycon solobetzi* by the late Dr. Ernst Abe, a distinguished German ichthyologist, in the same year. Like so many morrisian characters it is indigenous to the fresh waters of Brazil (the north-eastern half, to be precise) and attains a length of about 2-3 in. It will eat any type of live or dried food and is sufficiently hardy to withstand a temperature range of 68°F (20°C) to 85°F (29°C). For normal maintenance, however, a temperature of 75°F (24°C) or therabouts is recommended.

By nature it is a schooling fish (a dozen or more playing follow-my-leader in a large tank is a pleasing sight) that frequents the middle and upper levels of the water. Clear, soft water giving a neutral to slightly acid reaction suits it best. It has a reputation (sometimes exaggerated) of nipping at the fins of fishes less active than itself. But provided fishes with voluminous or thread-like fins are excluded from a community tank in which it is placed no harm will be done.

The general colour is olive on the back, metallic brassy yellow to green on the upper sides, and silvery white on the throat and belly. A black line (hence its common name), accompanied above and below by a thin ribbon of gold, extends along the centre of the body, from just behind the head to the base of the forked caudal fin, where it expands into a diamond-shaped marking. In the main the fins are yellowish to red, except the pectorals which are unpigmented. The posterior edge of the anal fin and the anterior edge of the dorsal fin are prettied with black, sometimes enlivened with a touch of white. The two sexes are similar in appearance, but in well-grown specimens the female is noticeably fuller, and slightly longer, in the body than the male. Also, the colour in her fins tends to be less bright. Given the right conditions, *H. solobetzi* usually proves a ready and easy breeder.

Before introducing a pair of these fish into the tank intended for spawning—a 24 in. by 12 in. by 12 in. tank is perfectly satisfactory—they should be separated for about a week to a fortnight. For separation of the sexes, combined with a rise in the temperature to about 80°F (27°C) and a diet rich in live food and shredded red meat (uncooked), helps to bring them into tip-top physical condition.

As soon as the female shows a marked fullness in the lower sides and abdomen and the male assumes brighter tints and a livelier manner, it is time to bring them together. If this is done last thing at night it is not unlikely that they will spawn before the following afternoon is out.

There are two points connected with the transferring of the conditioned fish from one tank to another (the spawning tank) which must be observed. Firstly, do not subject them to any sudden change of temperature. Secondly, see that there is no appreciable difference in the quality of the water. Thus fish removed from soft or well matured, acid water must be reintroduced into a similar type of water and not water drawn a few hours previously from a tap.

Reverting to the spawning tank; this should be furnished with bunches of feathery-leaved plants (well-washed and cleared of any snails) massed at one or both ends of the aquarium. The plants, which are necessary to trap the eggs, can be kept in position on the compost—only a thin layer of this is necessary to cover the shiny glass there—with lead weights.

The mating act is nothing more elaborate than a series of excited chases about the aquarium. During moments of pauses in the plant life, the female releases her underwater eggs. The male is not at all gentle in his approaches and the female takes a lot of punishment.

Immediately spawning is over both fish should be removed from the aquarium for they are avid eaters of their own eggs. As a rule, the eggs hatch out within the space of two days and roughly two days later the minute fry become free-swimming.

It goes without saying that they need plenty of microscopic live food (*Infusoria*) for the first nine days of their lives. After that, larger foods such as micro-worms, Brine shrimp, Artemia salina, *Daphnia* and powdered dried food should be placed on the menu.

Growth is quite fast, and provided there is no overcrowding or lack of oxygen in the water (guard against possible pollution by slip-tubing the bottom fairly frequently) the young *H. solobetzi* develop most of their colours in their fourth to fifth week, and attain full size in nine months to a year.
Ozone in the aquarium

by KEITH A. PULESTON

A number of devices for introducing ozone into the aquarium are available on the British and European markets, and for those aquarists who know little or nothing about this chemical, the following notes may be of some interest.

Ozone is a tri-molecular form of oxygen and, in layman’s terms, could be described as concentrated oxygen. The production of ozone is that form of a gas, although it can be manufactured into a liquid and in this state is highly explosive. As a gas, it is a powerful oxidizer and is used as an antiseptic or a disinfectant for oils and textiles, and for controlling bacteria in cold-storage rooms and air-conditioning systems. In Philadelphia water authorities use ozone for purification in place of the cheaper chlorination processes due to its superior ability to eliminate objectionable tastes and odours.

In this antiseptic purification property that can be used in aquariums to rid the water of harmful bacteria and, in some cases, to treat infected fishes. The artificial manufacture of O₃ normally employs one of two methods of production. If air or oxygen is exposed to intense ultra-violet radiation, ozone is formed together with heat. The method and the apparatus are essentially silent electrical discharge methods, and a typical “Ozonizer” produces enough ozone for every small fish tank. Air from a vibrator or piston pump is passed through the instrument before it enters the aquarium.

Safety must be exercised in the use of ozone as a concentration of one part ozone to one million parts of air can be considered hazardous to man and smaller dosages cause irritation to the respiratory tract. Of course, ozone is only very slightly dissolved in water, and in this state is highly explosive. It is impossible to determine the exact times of treatment as so many factors are involved. The types of algae, their age and condition should all be taken into account. However, for healthy fish the treatment should not exceed two hours, but it may be repeated several times in a day. It will be found that one two-hour session of ozone-bearing air fed through a diffusing stone will be sufficient to produce a crystal clear tank, completely devoid of bacteria.

Continuous use can be made of the instrument if the ozone is placed in the clean water chamber of an outside aerating filter unit, or the dirty water chamber of an inside filter. The ozone will then only oxidise the bacteria in the filtered water and the fishes will not be exposed to the direct ozone supply. Ozone is only very slightly dissolved in water and the danger lies more in fishes swimming through bubbles of ozone-bearing air for long periods, than ozone actually dissolving in the water.

Live food can be effectively sterilised by passing ozone-bearing air through the Tubifex or Daphnia for a few minutes. Using the instrument carefully, sick fish can benefit from short periodic treatments but the usual chemical treatments may prove more reliable and effective.

In conclusion, the exploitation of Nature’s methods of producing ozone offer some interesting comparisons. The two commercial methods already mentioned are closely related to natural production. Lighthing forms small quantities of ozone in a similar way to the electrical discharge employed in aquarium “Ozonizers”; but large quantities are formed in the Earth’s upper atmosphere where the photochemical action of uninterrupted sunlight and oxygen in the air creates, not only the ozone, but considerable heat which has a worldwide effect on winds and weather. It is rather an interesting point to ponder when you consider that it is only the almost total absorption of ultra-violet radiation by the ozone that prevents this lethal short-wave radiation from killing all life on our planet, but instead, allows just sufficient through to give us a sun-tan.

Automate your aquarium

The operation of the device is simple and adjustable. However, by using one time switch to control two functions, reduction in the illumination period corresponds with the filtration period. Therefore, if, say, a ten hour lighting is adopted starting at one p.m. until eleven p.m., by setting the time switch accordingly, the relay is de-energised and automatically starts the aerator or filtration unit which runs until one p.m. the following day.

Override switches are fitted for manual control to enable either of the periods to be varied, perhaps at week-ends, without altering the time switch. The simplest method of effecting this is by the use of two single-pole toggle-switches, one connected in parallel with the time switch contacts and the other in series with it. When connecting the time switch override, ensure that it is on the same pole and does not bridge the supply causing a short circuit.

Two small mains neon indicator lamps are used, one in parallel with each switch to indicate if the switch is open or closed. Each section of the circuit is separately fused with miniature panel mounted fuses, 1-2 amp. for the lighting and pump circuit and a 500 milliamp. for the relay circuit. The equipment can all be housed neatly and conveniently in a small box with the neon indicator, fuse and toggle-switch in line with each other. If, however, a metal box or case is used, it is essential that it be effectively earthed.

The installation could be completed by the addition of an electric fish-feeder and a couple of Sucking Liosch, thus making the set-up virtually independent of human interference or attention particularly if the aquarium is stocked with the slower growing varieties of plants.
Gas embolism

by R. E. MACDONALD

IN my article "Winter Sickness" (February, 1960) I described the conditions present in a tank that is deprived of an adequate supply of oxygen and how seriously fishes can be affected by the resultant unbalancing of the biological equilibrium. If the circumstances are reversed, however, and the supply of this most indispensable gas becomes too great, an undesirable state will form that proves to be just as dangerous and can affect either pond or aquarium fishes. Too much oxygen in the water will cause an illness known as "gas embolism".

Fishes absorb the soluble atmospheric oxygen found in water through their gills. If there is an excessive amount of oxygen in the water the blood will become over-saturated to such an extent that gas bubbles form in the blood vessels. Should these bubbles reach the main vessels the blood circulation may be seriously impeded or perhaps even stopped. If the blood circulation of a fish is stopped it will die.

No difficulty should be experienced in diagnosing gas embolism for in practically every case it is possible to observe the presence of small bubbles of air either on the surface of the gills, fins or bodies of the affected stock. These gas bubbles generally become apparent well in advance of the really dangerous stage. The fishes will most probably lose their colour and swim quite frantically about the tank, spending perhaps some considerable time near the surface of the water.

If the conditions that produce gas embolism are allowed to develop the general health of the stock will deteriorate until, one by one, the fishes begin to die. To the unsuspecting aquarist it will appear as if some deadly contagious disease is rampant.

Gas embolism in fishes is caused mainly by allowing the water in the pond or aquarium to be exposed to direct sunlight for excessive periods. The effects of this will be noticed particularly during the summer months when the hours of sunlight are prolonged. Not only will the fishes be affected by the high oxygen content of the water but certain chemical changes occur which provide extremely adverse conditions for the fishes. Excessive exposure to direct sunlight causes the vegetation present to produce vast quantities of oxygen through photosynthesis. As a result, the plants will begin to assimilate rapidly and take in relative amounts of carbonic acid (carbon dioxide) from the water. If the carbonic acid content of the water is insufficient for the needs of the vegetation the extraction of carbonic acid from the bicarbonates present will begin. This will cause the bicarbonates to be converted into carbonates (i.e. salts of carbonic acid) which precipitate in the form of a white encrustation on the leaves of the plants. Following this, if a sufficient amount of carbonic acid is not found in the bicarbonates, the vegetation will finally begin to extract carbonic acid from the remaining bicarbonates. When this happens the water will become dangerously acid with a pH value reaching perhaps pH 3.5 in a very short time and the skin of the fishes will subsequently begin to corrode.

The dangers of a high oxygen content will obviously be greater if the pond or tank is over-planted with vegetation. The more plants there are, the greater will be the photosynthesis and resultant chemical change.

The way to prevent an occurrence of gas embolism in ponds is to ensure that the water receives shade of some sort during the most dangerous hours of the day (i.e. the afternoon period). The most natural shading medium is provided by the use of surface plants with very wide leaves (e.g. the water lily).

With aquariums the answer is simple. Never place the tanks where they are exposed to the direct rays of the sun (e.g. by a window), and never over-plant with vegetation. A 24 in. by 12 in. by 12 in. tank should not contain more than 30 small plants.

Providing that serious damage has not already been caused the fishes will soon recover from the consequences of gas embolism or alkaline water if the water is changed immediately with fresh water as soon as the symptoms are noticed and the causal faults remedied.

continued from page 52

Tropical aquarium queries

How much and what type of salt is needed to give an attack fish a medicinal bath?

Some fishes can endure a greater concentration of salt in the water than others. Be that as it may, a level teaspoonful of salt to every gallon of water in the treated tank is about right for most species, with the exception of catfish and losochus which are best kept away from salt unless it is known for certain that the species involved are neither distressed nor injured by it. The salt to use is ordinary block or cooking salt, or sea-salt, and not table salt which has chemicals added to it for easy running.

Recently I brought an African fish called Cobaltus chongus. I have not been able to find any information about this species in my books. Can you give me any details as to its temperature and feeding requirements and maximum size attained in the aquarium?

C. chongus is quite comfortable at a temperature in the lower to middle seventies (°F). It takes live food and dried food quite freely. In the natural state it reaches a length of about 17 in. It is reasonable to assume that given plenty of swimming space it could exceed 12 in. in captivity.

THE AQUARIST
Monthly reports from Secretaries of aquarists’ societies for inclusion on this page should reach the Editor by the 12th of the month preceding the month of publication.

The AQUARIST Crossword

Compiled by L. BRADLEY

CLUES ACROSS
1. Put the box back with the French in between (4, 4).
2. The fruit that the English have (3).
3. The one that the French have (3).
4. The one that the English have (3).
5. The one that the French have (3).
6. The fruit that the English have (3).
7. The fruit that the English have (3).
8. The fruit that the English have (3).
9. The fruit that the English have (3).
10. The fruit that the English have (3).
11. The fruit that the English have (3).
12. The fruit that the English have (3).
13. The fruit that the English have (3).
14. The fruit that the English have (3).
15. The fruit that the English have (3).
16. The fruit that the English have (3).
17. The fruit that the English have (3).
18. The fruit that the English have (3).
19. The fruit that the English have (3).
20. The fruit that the English have (3).
21. The fruit that the English have (3).
22. The fruit that the English have (3).
23. The fruit that the English have (3).
24. The fruit that the English have (3).
25. The fruit that the English have (3).
26. The fruit that the English have (3).
27. The fruit that the English have (3).
28. The fruit that the English have (3).
29. The fruit that the English have (3).
30. The fruit that the English have (3).

CLUES DOWN
1. The one that the French have (3).
2. The one that the French have (3).
3. The one that the French have (3).
4. The one that the French have (3).
5. The one that the French have (3).
6. The one that the French have (3).
7. The one that the French have (3).
8. The one that the French have (3).
9. The one that the French have (3).
10. The one that the French have (3).
11. The one that the French have (3).
12. The one that the French have (3).
13. The one that the French have (3).
14. The one that the French have (3).
15. The one that the French have (3).
16. The one that the French have (3).
17. The one that the French have (3).
18. The one that the French have (3).
19. The one that the French have (3).
20. The one that the French have (3).
21. The one that the French have (3).
22. The one that the French have (3).
23. The one that the French have (3).
24. The one that the French have (3).
25. The one that the French have (3).
26. The one that the French have (3).
27. The one that the French have (3).
28. The one that the French have (3).
29. The one that the French have (3).
30. The one that the French have (3).

Solutions on page 62.
to British Railways Social Club, Edgerton Road, Wakefield. More members will be made more welcome. Anyone requiring further information please contact either Mr. J. L. Irwin, 13 Trowell Drive, Chellaston, Derby (chairman) or, 17 Ashton Avenue, Chaddesley, Cheltenham (secretary).

AT a recent meeting of the Southend, Leigh and Banana A.S., members were entertained by D. M. Cheesewright, who gave a talk on the breeding of members of the banana family. To improve the theme of palms a table show was held for these interesting palms. The results were as follows: 1st. E. W. Wright; 2nd. J. D. Hazell; 3rd. J. M. Rich; 4th. W. A. Apps (vegetables). The judges, Mr. H. J. Bunten and Mr. J. E. H. J. Mawson, were invited to the secretary, M. J. W. Dell, 17 Ashton Gardens, Walsall.

The chairman, Mr. R. Nicholls, entertained the club with a lecture on "the palm" to an enthusiastic audience. White spot. The second meeting of the month was a business meeting in a civil way. The results were as follows: 1st. R. G. Gwillim; 2nd. R. M. Nicholls; 3rd. G. M. O. Rowe; 4th. F. P. O’Byrne. Three of the members entered the palm section with the result that there was a wonderful sight of young palms in the coldhouse when Mr. R. Barrow, who had a first and second in common gold medal, and a fourth in exhibition. Mr. Denton had a third in exhibition, and Mr. Barrow also had a fourth in exhibition.

The annual general meeting of the Winchendon and Marton A.S. was held recently, when the following officers were elected: Chairman, Mr. T. B. H. Totton; vice-chairman, Mr. W. F. G. M. H. H. T. B. H. Totton; secretary, Mr. W. R. H. T. B. H. Totton; treasurer, Mr. R. H. G. T. B. H. Totton. The following members were elected: Mr. W. H. T. B. H. Totton, Mr. T. B. H. Totton, Mr. W. T. H. Totton, and Mr. R. G. H. T. B. H. Totton. The meeting was well attended, and a most enjoyable time was had by all.

The Cambridge and District A.S. held their first show of the year on 17th May. It was very successful and a good start was made for the rest of the season. The prizes were awarded by Mr. H. A. Smith, F.B.A.S., F.L.A., and presented the trophies. The show was a success, and about 400 people attended. The best-in-show went to Mr. A. M. B. H. T. B. H. Totton, with a very nice palm. The judges were Mr. T. H. B. H. Totton, Mr. W. R. H. T. Totton, and Mr. R. J. H. T. B. H. Totton. The results were as follows: 1st. Mr. T. H. B. H. Totton; 2nd. Mr. W. R. H. T. Totton; 3rd. Mr. R. J. H. T. B. H. Totton. The meeting was well attended, and a most enjoyable time was had by all.

At a recent meeting of the Southend, Leigh and Banana A.S., the evening’s entertainment consisted of a slide show, with slides provided by Mr. R. Lampson and Mr. P. M. Jones of their own tanks and of the open show. The slides were all in colour and of high quality. The show was well attended, and a most enjoyable time was had by all.

At the May meeting of the Southend, Leigh and Banana A.S., the evening’s entertainment consisted of a slide show, with slides provided by Mr. R. Lampson and Mr. P. M. Jones of their own tanks and of the open show. The slides were all in colour and of high quality. The show was well attended, and a most enjoyable time was had by all.

The membership of the Mid-Herts A.S. now stands at over 250, an excellent start for a new society. Meetings have been held at intervals with lectures on various aspects of aquatic life, and excellent displays and displays. Future events on the calendar include a visit to a fish farm, and a trip to the London Aquarium. With a good attendance and a high level of interest, it is hoped to see more meetings in the future.

The results of the show were as follows: 1st. Miss H. J. Bunten; 2nd. Miss E. J. Bunten; 3rd. Miss J. M. Rich; 4th. Miss W. A. Apps. The judges were Mr. H. J. Bunten and Mr. J. E. H. J. Mawson, and invited to the secretary, Mr. H. J. Bunten. The meeting was well attended, and a most enjoyable time was had by all.

RECENTLY, the eighth annual open show, sponsored by the Aquarist’s Association of Southend-on-Sea, was held at Galleywood, and was organized by the Southend and District Aquarist Society. There were 237 entries from 22 societies, and it was a pleasure to welcome visitors from all over the country.

The main events were as follows:

- Liverworts: 1. C. C. Beissner (Bradford); 2. W. T. Ashman (Sheffield); 3. E. C. Beissner (Bradford); 4. J. A. Beissner (Bradford).

The results of the show were as follows:

The Crossword Solution

```
  STICKLEBACK  S
  T I N G A  U D U L O  R
  L I G N I A  R M A N S
  D I A N O R P
  T I L L I D  D  T H I C E
  R  X  H  E  A
  H  E  S  A  I R  O  R
  B  I  R  R  A  R  O  S
  P  A  R  R  O  T  S  L  S  E  E  D  G  E
  A  N  K  E  R
  Y  H  A  N  T  E  L  L
  B  O  W  E  R  B  O  N  A  N
  S  U  N  B  U  R  N  R  E A C H
  T  C  E  S  I  U  L  R
  I  I  L  T  E  N  I  M  A  N  A
  S  M  O  U  T  H  S  T  P  U  P
  I  R  E  A  S  C  H  E  R  S
  Y  N  K  S  R  E  N  P  E  T  E  R

  THE  AQUARIST
```

was a cheepach bar entered by Mr. A. F. Hen (Bradford).

11th June: Brighton and Southern A.S. Ball, Town Hall, St. Leonards-on-Sea. Details from Mrs. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

12th June: Dartford A.S. Open Show. Details from Mrs. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

13th June: Abergavenny A.S. Open Show. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

14th June: Swindon A.S. Open Show. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

15th June: Cartersville, Georgia, USA. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

23rd June: Bristol Aquarium Fish Club Open Show at Congregational Church Hall, Newton Street (off Bridge Road, Bristol). Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

27th June: Dunkirk, France. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

28th July: Basingstoke and District A.S. Annual Open Show at Victoria Hall, Basingstoke. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

5th August: Bristol A.S. Annual Open Show. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

9th August: Dagenham Town Show. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

10th August: Portishead A.S. Open Show. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

24th August: Middlesbrough Open Aquarium. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

15th September: Newport A.S. Open Show. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

20th September: Basingstoke and District A.S. Annual Open Show at the Dell Hall, Durrington, West Sussex. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

15th October: Norwich A.S. Open Show at the Royal Horticultural Hall, Croydon. Details from Mr. J. S. Brown, 17 Ridgeway Avenue, Eastbourne.

The Crossword Solution

```
  STICKLEBACK  S
  T I N G A  U D U L O  R
  L I G N I A  R M A N S
  D I A N O R P
  T I L L I D  D  T H I C E
  R  X  H  E  A
  H  E  S  A  I R  O  R
  B  I  R  R  A  R  O  S
  P  A  R  R  O  T  S L  S  E  E  D  G  E
  A  N  K  E  R
  Y  H  A  N  T  E  L  L
  B  O  W  E  R  B  O  N  A  N
  S  U  N  B  U  R  N  R  E A C H
  T  C  E  S  I  U  L  R
  I  I  L  T  E  N  I  M  A  N  A
  S  M  O  U  T  H  S  T  P  U  P
  I  R  E  A  S  C  H  E  R  S
  Y  N  K  S  R  E  N  P  E  T  E  R

  THE  AQUARIST
```

62
SOME PEOPLE TRY THEM ALL

-MOST COME BACK TO THE WINNER

The reason, of course, is TetraMin's premium quality. Other flake foods may look, smell and even feel like TetraMin. But none combine TetraMin's extra high protein content and natural fish foods that tropicals thrive on.

It's made by TetraKraftWerke, West Germany, world's largest and most experienced fish food manufacturer. Among experts that's the name for premium quality. You can rely on it for scientifically balanced feeding—the finest diet for your fish. TetraMin: It never clouds water. In 10 varieties and many sizes for every feeding need.

FREE FULL-COLOUR FEEDING BROCHURE
Send a stamped addressed envelope for the newly available full colour tropical fish feeding guide complete with feeding and temperature tables to:
Herb-Royal Ltd., Dept A4
Colley Lane Estate, Bridgwater, Somerset.

Herb Royal
NATURALLY the BEST!
HERB-ROYAL LIMITED, Colley Lane Estate, BRIDG Water, Somerset. Tel: BRIDGWATER 8323
New from Denmark

Vacation Food. When taking your holiday, drop one Hykro Vacation Block in your tank. This will feed your fish in an average size tank for at least 2 weeks and does not foul the water.

Also New. Nylon Clamps, Tees and 4 ways. These are as strong as metal, do not wear or rust: obtainable at all good Aquarist and Pet Shops.

The New Hykro Variety Food is here. After careful tests and experiments, we claim to have here one of the finest, if not the best Fish Food on sale today. It only costs 3/- per Drum and I feel sure one trial will prove our claim. Will shortly be obtainable at all good aquarists and Pet Stores. Also new: 2 way, 3 way, and 4 way GANGED valves.

JOE GRASSBY
The Hykro Depot, Mobberley, Nr Knutsford, Cheshire
STAPLE FLAKE FOOD
BY GERMANY'S LEADING
PRODUCERS

Vitakraft
Regular Food for
all Tropical Fish

VITAWIL
Never Clouds Water

Standard size 2/-
Double size 3/-
Breeder's Jar 6/-
1 litre tin 22/6
Gallon tin 70/-

COMPARE THE QUALITY—VITAWIL compares with any other food available

COMPARE THE PRICE—We minimise advertising and other selling costs—thus you get TOP VALUE

CHANGE TO VITAWIL Join the ranks of other aquarists. You will be delighted

INTER-PET - DORKING - SURREY
Fantasy
Regular Grade for Adults
Fine Grade for Fry
1/- 2/- 5/- 10/-

The professional food that wise amateurs prefer
It contains all essential ingredients to keep fish in peak condition and
colour and to ensure rapid growth. A superb basic diet for Coldwater,
Tropical and Marine fish.
Available at your local stockist now

Fantasy Pet Products Ltd
13, Nutley Lane,
Reigate, Surrey.

MARSHALL’S AQUARIA
26, WESTBURY LANE, BUCKHURST HILL, ESSEX
Phone: BUC 4708
OPEN SIX DAYS A WEEK 10.00 A.M. TO 5.30 P.M. (CLOSED TUESDAYS)
A WIDE RANGE OF TROPICAL FISH IN STOCK
OVER 120 TANKS TO VIEW
A FEW GOOD QUALITY FANCY GOLD FISH IN STOCK
ALSO A VARIETY OF POND FISH
PLANTS, TANKS AND ALL EQUIPMENT AVAILABLE

Please send S.A.E. for price lists.
For wholesale plant list, TRADE headed paper please.
Please address all correspondence as address above.
CLUBS WELCOMED BY APPOINTMENT
SPECIAL NOTE: As from May 3rd we are closed every Tuesday

THE AQUARIST
News from America!

Finest quality brine shrimp products now available!

Brine shrimp (Artemia salina) are now available from America! Yes, Longlife Fish Foods now can ship both Frozen Brine Shrimp and Brine Shrimp Eggs to you. For the first time, finest quality Brine Shrimp Eggs are available in large quantities the year around... and of the most reasonable prices ever.

Write today for our export price list or for the name of our distributor nearest you.


Brine Shrimp Eggs in 4-lb. 6-oz. (Approx. 3 U.S. Qts.) and 1-lb. 4-oz. (Approx. 1 Qt.) vacuum packed cans and also 25 cc. viol. In complete 9.9-gm. “Hatch-Pack™”. (0.3-oz. Avoir.) The world’s most nutritious tropical fish food. Guaranteed to hatch live shrimp in 24 hours.

For further information write:

LONGLIFE FISH FOOD PRODUCTS
Division of Sterno Industries, Inc.
50 Cooper Square, New York, N. Y., U.S.A.
...but the better aquariums are glazed with

**ARBOLITE Q.S.**
Aquarium Glazing Compound

This versatile, watertight compound is now available in a range of pleasant shades: grey, cream, red, green, and blue.

Packed in 1 lb; 2 lb; 4 lb; 7 lb; and 14 lb tins and in 1/4 cwt., 1/2 cwt. and 1 cwt. kegs.

**ADSHEAD RATCLIFFE & CO. LTD.**
Belper • Derby • Tel: Belper 2891 (3 lines)

---

**1966 HULL SHOW**
29th & 30th July
East Park, Holderness Road, Hull

Principal attractions include:
- Agriculture, Horticulture, Cookery, Handicrafts, Bees & Honey, Home-Made Wines, Dogs, Rabbits, Cages, Poultry, Cages, Birds, Show Jumping, Entertainments and more

**Open Competitive Aquaria Section**
(Saturday 30th July only)

**16 Classes – A.Y.A.S. Judges**

Schedule and entry forms from:
Mr. S. Cable, 4 Crystal Avenue, Hewsthorne Avenue, Hull

**ENTRIES CLOSE: 2 p.m., 20th JULY**
(Judging commences 3 p.m.)
Entry fees 1/- per entry

---

**ADD BEAUTY TO YOUR GARDEN POOL WITH A WATERFALL OR FOUNTAIN**

- Hippo Pump Waterfall or Fountain £4.10-0
- Otter Pump Waterfall or Fountain £9.17-6
- Otter Pump Waterfall and Fountain £10.10-0
- Stokes Garden Fountain £7.19-6
- Dynaflo Tank Filters £5.17-6

And now the new

**Eheim Compact 388 Power Filter**
£9.12-6
Add 5/- P&P

- Fibre Glass Ponds, Pools, Cascades, Pool Liners
- Water Lilies: from 7/6 to 36/- Iris, Rushes, etc.
- Many types of Goldfish and Fancy Coldwater Fish
- 50-litre tanks of Tropicals, ranging from Golden and Snakeskin Guppies, all types of Platy, Elephant Fish, Large Discus, Reedfish, etc., and Tropical Marines.

All at

**BROAD GREEN AQUARIUM**
250 London Road, West Croydon, Surrey,
opp. ABC Cinema car park. Phone Croydon 9165
Late closing Friday 7 p.m.
HEWISH AQUATIC NURSERIES LTD.
HEWISH Nr. BRISTOL
Yatton 2078

Breeders and direct Importers of Exotic Fish and Aquatic Plants. A quarter Acre of interest to Aquarists. Thousands of Fish and Plants in stock including many rare species. Consignments arriving weekly from all over the world. Situated 15 miles from Bristol on the main A370 Bristol to Weston Super Mare Road.
Open all week including Sundays.

THE 23rd ANNUAL
MIDLAND OPEN SHOW

Featuring
THE 1st INTERNATIONAL
KILLIEFISH SHOW
and
THE MIDLAND OPEN GUPPY SHOW

AUGUST 24th-27th
BINGLEY HALL,
BROAD ST., BIRMINGHAM, 1

51 Open Classes, 19 Killiefish Classes, 26 Guppy Classes, Trade Stands, Exhibits, Films, Talks, Bar & Buffet.

Scheduler etc. Pres.: Mr. J. Edwards, 34, Verenica Close, Selly Oak, Birmingham, 29

June, 1966

CHELTENHAM AQUATICS
WATER GARDEN SPECIALIST

Visit our Water Garden Showroom and Showgarden and choose from a complete range of Equipment, Healthy Fish and Water Plants. If this is not possible, send for our Illustrated Catalogue “W” and be assured of a first class Postal Service conducted from our streamlined Mail Order Department.

CHELTENHAM AQUATICS
REPTILES & AMPHIBIA

Interesting stock of European and Exotic Reptiles and Amphibia. Vivariums. Send for List “R”

TROPICAL FISH

4 Showrooms containing 60 Aquaria stocked with rare and common Tropicals. Complete range of Equipment. Aquatic Plants freshly picked from our Plant House. Send for List “T”

CHELTENHAM AQUATICS
11 SUFFOLK PARADE
CHELTENHAM
Tel: CHLT 24949
CLOSED ALL DAY MONDAY
BUYERS’ GUIDE

The firms listed are wholesalers or retailers or both in fishes, tanks, plants, appliances and accessories, reptiles and amphibia. Abbreviations: W.—Wholesale only. R.—Retail only. WR.—Wholesale and Retail. C.—Coldwater. T.—Tropical. P.—Plants. AA.—Appliances and accessories. R. & A.—Reptiles and Amphibia. E.C.D.—Early closing day.

HERTFORDSHIRE

The Reading Aquarist
64, King’s Road, Reading
Telephone: Reading 53653
E.C.D. Wednesday. R. C.T.P.A.A.

CHESHIRE

Grassby, Joe, F.R.H.S.
“The Glen” Fisheries, Mobberley, Nr. Knutsford
Tel.: Mobberley 3272 W. C.T.P.A.A. R.A.A.

CORNWALL

Marine Facilities Ltd.,
Commercial Buildings,
Custom House Quay, Falmouth
Telephone: Falmouth 88
E.C.D. Tuesday (in winter only) WR. T. P. AA.

DEVON

Plymouth Tropicals
North Hill Nurseries, Tavistock Road, Plymouth
Telephone: Plymouth 62663
Closed Wednesday. R. C.T.P.A.A.

DURHAM

The Fish Bowl
Burton Road, Sunderland
Telephone: Sunderland 71026
E.C.D. Wednesday (All day). WR. C.T.P.A.A. R.A.A.

METCALF, G. R.
187, Northgate (near Minories Garage)
(On A1 road) Darlington
Telephone: Darlington 5997

ESSEX

Goodmayes Aquarium
70 Grove Road, Chadwell Heath
Telephone: Goodmayes 2594
E.C.D. Thursday. R. C.T.P.A.A.

Skilton, C. J., Aquarist
139, Galleymoor Road, Chelmsford
Telephone: Chelmsford 56878
E.C.D. All Day Saturday. W. C.T.P.A.A.

Stan’s Aquarium
66, Southchurch Road, Southend-on-Sea
Telephone: Southend 67859
E.C.D. Wednesday R. C.T.P.A.A. R.A.A.

GLOUCESTERSHIRE

Cheltenham Aquatics (Prop. Mr. R. R. James)
10 & 11, Suffolk Parade, Cheltenham
Telephone: Cheltenham 24099
Closed all day Monday R. C.T.P.A.A. R.A.A.

HAMPSHIRE

Arundel Aviaries & Fisheries (Taylors)
241/243, Arundel Street, Portsmouth
Telephone: Portsmouth 43047

Bridgwater Pet Stores
25, Gregson Avenue, Gosport
Telephone: Fareham 4781
E.C.D. Wednesday. R. C.T.P.A.A.

Wingate Zoological Supplies
7, Market Street, Winchester
Telephone: Winchester 2406

KENT

Gillingham Pet & Aquatic Centre
(Proprietors F. & E. Alderman)
125, Canterbury Street, Gillingham.
Telephone: Meadway 52409
E.C.D. Wednesday. R. C.T.P.A.A.

Kingfisheries Aquarium
138, Croydon Road, Beckenham
Telephone: Beckenham 3716
E.C.D. Wednesday (all day). R. C.T.P.A.A.

Sherwood Pet Stores
(Proprietors, Fairbanks Aquaria, Ltd.),
352, Sherwood Park Avenue, Sidcup
Telephone: Bexley Heath 7217

LANCASTER

Hornby’s
Trinity St, Old Trafford,
Manchester, 16
Telephone: Trafford Park 2069

Liverpool Aquarium Company
25, Sir Thomas Street, Whitechapel, Liverpool, 1
Telephone: Central 4001
Open Monday to Saturday 9 a.m. to 6 p.m. R. C.T.P.A.A. R.A.A.

LONDON (East)

Wade Aquatics
333, High Street North,
Moor Park, E.12
Telephone: Grangewood 6333

LONDON (North)

Phillip Castang Ltd.
75, 91, 95, Havenshield Hill,
Hampstead, N.W.3
Telephone: Primrose 1842 and 9452
Gould, K. T.
30, Hewitt Avenue, Wood Green, N.22
Telephone: Beaver Park 6786
Weekends only
R. T.P.A.A.

LONDON (South)
Fairburnia Aquarium, Ltd.
15, Well Hall Parade, Eltham, S.E.9
Telephone: Eltham 5859
E.C.D. Thursday
R. C.T.P.A.A. R.A.A.

South Western Aquarists
2, Glenburnie Road, Trinity Road, Upper Tooting, S.W.17
Telephone: Ballam 7334
E.C.D. Wednesday
WR. C.T.P.A.A. R.A.A.

Taffbrook Tropica Ltd.
244, Vauxhall Bridge Road, Victoria, S.W.1
Telephone: Victoria 5179
(Open all week except Sundays)
WR. C.T.P.A.A. R.A.A.

Windmill Products
244, Vauxhall Bridge Road, London, S.W.1
Telephone: Victoria 5179
(Open all week, except Sundays)
W. A.A.

LONDON (West)
Aquanets
17, Leeland Road, West Ealing, W.13
Telephone: Ealing 3748
E.C.D. Wednesday
R. C.T.P.A.A. R.A.A.

Chiswick Aquarium
19, Chiswick High Road, London W.4
Telephone: Chiswick 6549
WR. C.T.P.A.A. R.A.A.

Owen Reid's, Aquarium Dept.
12, Spring Bridge Road, Ealing Broadway, W.5
Telephone: Ealing 3259
E.C.D. Wednesday
R. C.T.P.A.A. R.A.A.

NORTHAMPTONSHIRE
The Aquarium
192, Wellavingthorpe Road, Northampton
Telephone: Northampton 34610
E.C.D. Thursday
R. C.T.P.A.A. R.A.A.

The Pet Shop
120, Kettering Road, Northampton
Telephone: Northampton 38841
E.C.D. Thursday
R.C.T.P.A.A.

OXFORDSHIRE
The Goldfish Bowl
9, East Avenue, Cowley Road, Oxford
Telephone: Oxford 41825
E.C.D. Thursday
W.R. C.T.P.

STAFFORDSHIRE
Wolverhampton Aquarists
147, Horsley Field, Wolverhampton
Telephone: 24147
E.C.D. Thursday
R. C.T.P.A.A.

SURREY
Aquanets
1, Grand Parade, Tolworth
Telephone: Elmbridge 0678
E.C.D. Wednesday
R. C.T.P.A.A. R.A.A.

Thameside Tropica and The Pet Shop
Braeside House, New Zealand Avenue, Walton-on-Thames
Telephone: Walton 24076
R. C.T.P.A.A. R.A.A.

SUSSEX
Dowling, Conrad A.
1, St. John's Terrace, Lewes
Telephone: Lewes 3970
E.C.D. Wednesday, Open until 8 p.m. Fri. & Sat.
R. C.T.P.A.A. R.A.A.

Preston Aquarium
44, Beaconfield Road, Brighton
Telephone: Brighton 581602
(Open all week)
R. C.T.P.A.A.

Regency Pets Aquarium (Prop. R. A. Bassett)
29, Surrey Street (outside Brighton Station), Brighton
Telephone: 20940
R. C.T.P.A.A. R.A.A.

WARWICKSHIRE
The Coventry Aquarist
43, Melbourne Road, Coventry
Telephone: Coventry 72772
E.C.D. Thursday
R. C.T.P.A.A.

WORCESTERSHIRE
The City Aquaria, Bird and Pet Supplies
Mrs. M. Hemming
34/36, Friar Street, Worcester
Telephone: Worcester 22005
E.C.D. Thursday
R. C.T.P.A.A. R.A.A.

YORKSHIRE
The Corner Shop (Prop. J. Wilde)
526, Abbeydale Road, Sheffield, 7
Telephone: Sheffield 54712
E.C.D. Thursday
R. C.T.P.A.A. R.A.A.

SCOTLAND
Aquarists' Rendezvous
164/166, Albert Drive, Pollokshields, Glasgow, S.I
Telephone: South 4258
R. C.T.P.A.A.

P. N. Greening
176, Backlock Road, Dundee, Co. Angus
Telephone: Dundee 6649
E.C.D. Wednesday
R. C.T.P.A.A.

NORTHERN IRELAND
Ulster Aquatics
15, Montgomery Street, Belfast
Telephone: Belfast 27144
E.C.D. Wednesday
R. C.T.P.A.A.

June, 1966
FOR SALE

CALLING ALL AQUARIUMS!

J.R. LLOYD offers the largest selection of Tropical and Coldwater Fish, Plants in variety. We also stock all accessories at “Wholesale Prices.”

PHONE 36410.

GUARANTEED Wood, heater and thermometers. 20% post, paid.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.

STEEL FISHING RACKS.
**PREPAID ADVERTISEMENTS—continued from page 311**

TAYLOR’S AQUARIUM, 76 Manchester Road, Bury. Tel: 282 643. Quality aquarium plants our speciality. Complete selection of all kinds of cold water plants, driftwood, shells, etc. Rare varieties tropicals available.

AQUARIUM FRAMES. For quality and accuracy buy direct from the manufacturers. 1 x 1 ins, stock angle: 36H x 35 x 15 ins, 40H x 35 x 15 ins, 45H x 35 x 15 ins, 50H x 35 x 15 ins, 60H x 35 x 15 ins. All stock angle and all sizes ground flush. Carriage paid. Any order made up on C.W.O. Money refunded if not satisfactory. For complete list, send stamps, etc., to J. E. Hughes, 52 Chester Street, Austin. Phone: Austin 3485.

CALLING all Aquarists in the South West for the best in Tropical Fish, Plants and equipment. Also large selection of Arbe and tropicals. All sizes. All stocked. F. W. Treacy, 3 Market Place, Bridgwater. Tel: 6738.

WATER LILIES (White): 5s. 6d. post paid. Good strong plants. Ray Jackson, 16, Kerry Drive, Smethwick, Staffs.

**VARIOUS LIVESTOCK**

BUYING A PET. We have the largest selection of Birds, Animals, Reptiles in the country, all at bargain prices. S.A.E. for list. D. J. Taylor, Mill Lane Bird Farm, Chet Lane, Clayton, Cheadle, Derbyshire.

**PLAQUES, SHIELDS, ETC.**

B. HOLT & SON, 509, Oldbury Road, Sandwell, 60. Plaques, Shields, Medals. Cages and Equipment for Aquariums and Bird Reptiles. Tropical and Coldwater fish centres in full colour. Write for details to above.

**REPAIRS**

GUARANTEED WATER HEATERS, 5s. 6d. each. Send old heaters and make new ones required. New heaters, your guarantee, 5s. 6d. All by return. J. Weir, 7, The Drove, Westlea.

**BUSINESS**


---

**W. HAROLD COTTON**

F.R.S.

**ICHTHONYNOTOMIST**

**POST MORTEM EXAMINATION**

of Tropical and Coldwater Fishes

Specimens should be wrapped securely and very well in greaseproof paper, surrounded by a damp cloth and then re-wrapped in dry, greaseproof paper and sent in a strong container. Attach your name and any relevant details should be given. No negotiations please.

Examination fee 1s.

39, BROOK LANE, KINGS HEALTH, BIRMINGHAM 14

Phone: Highbury 1689

Visit...

MRS K. COOPER
Bean Hatchery
Bean, Nr. Dartford, Kent

(Just off A2 Trunk Road, few doors from Black Horse P.H.)

Large selection of TROPICALS, PLANTS, ACCESSORIES

Call anytime including Sundays

---

**VISIT THE SPECIALISTS FOR ONE OF SCOTLAND'S LARGEST DISPLAYS OF TROPICAL FISH AND PLANTS, ALL OF OUR FISH ARE FRESHLY QUARANTINED FOR AT LEAST SEVEN DAYS PRIOR TO SALE.**

WE ARE MANUFACTURERS OF AQUARIUMS AND STANDS. SPECIAL SIZES MADE TO ORDER AT NO EXTRA COST.

Half Day: Wednesday Sunday Opening 12-5.30 p.m.

**AQUASCENE INSTALLATIONS**

61 Calder St., Blantyre, nr. Glasgow Tel: 2307

---

**I've Got Million!**

WORMS! FOODS! COMPOSTS! RESULTS!

**EUGLENA**

MICROGASTERIUM

GRANDALWORMS

GRANDALWORMS

GRANDAL FOOD

GRANDAL COMPOST

WHITE WORMS

WHITE WORM FOOD

WHITE WORM COMPOST

1kg. With 4 page Instructional Booklet

2kg. Complete with feeding powder

2kg. Specialised compost for Tropical

2kg. Platinum/Brass Easy to breed

2kg. Natural cultures in wooden boxes

1kg. High protein expert. Rapid results

2kg. Fully ground with organic base

2kg. With complete instructions

1kg. Natural cultures in wooden boxes

1kg. Exclusive formula. No milder

2kg. Composted for quicker breeding

Breader's packs: five times 2kg. quantity for 7.5

Ask your dealer, or free delivery from

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

---

**PHILLIPS FISH FOOD**

Fine Grade for Tropicals and Coarse Grade for Cold-water Fish

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

For all Cold-water Fish - 1/16d

For Tropicals - 1/6d

*Phillips Cold-water Fish Food contains SAPROLEGNIL to prevent the growth of "cotton wool" funguses.

PHILLIPS YEAST PRODUCTS LIMITED, Purk Royali, London W.10
### TACHEBROOK TROPICALS

**Location:** 244 Vauxhall Bridge Road, London, S.W.1

**Telephone:** VICTORIA 5179

**POSTAL CHARGES**
Aquariums, Stands, Grants, Mists and Rockwork to owners risk. Carriage at cost invoice after despatch.

<table>
<thead>
<tr>
<th>Angle Iron</th>
<th>Stainless Steel</th>
<th>3-D Backgrounds</th>
<th>Filters</th>
<th>Whiteworm Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; x 10&quot;</td>
<td>18&quot; x 12&quot;</td>
<td>24&quot; x 12&quot;</td>
<td>36&quot; x 12&quot;</td>
<td>36&quot; x 12&quot;</td>
</tr>
<tr>
<td>20&quot; x 10&quot;</td>
<td>24&quot; x 12&quot;</td>
<td>36&quot; x 12&quot;</td>
<td>48&quot; x 12&quot;</td>
<td>48&quot; x 12&quot;</td>
</tr>
<tr>
<td>24&quot; x 12&quot;</td>
<td>36&quot; x 12&quot;</td>
<td>48&quot; x 12&quot;</td>
<td>60&quot; x 12&quot;</td>
<td>60&quot; x 12&quot;</td>
</tr>
<tr>
<td>30&quot; x 15&quot;</td>
<td>36&quot; x 15&quot;</td>
<td>48&quot; x 15&quot;</td>
<td>60&quot; x 15&quot;</td>
<td>60&quot; x 15&quot;</td>
</tr>
<tr>
<td>36&quot; x 18&quot;</td>
<td>48&quot; x 18&quot;</td>
<td>60&quot; x 18&quot;</td>
<td>72&quot; x 18&quot;</td>
<td>72&quot; x 18&quot;</td>
</tr>
</tbody>
</table>

**Nets**
- Small: 3" - 4"
- Large: 5" - 6"

**Breedings Traps**
- Windmill combined breeding and rearing

**Squash**
- Water hardness testing kit

**Miscellaneous**
- Depending on size and content

**Other Fish Foods**
- Inflatable Powder
- Inflatable Table

**Picture Frame**
- Double-sided with double-sided glass shelves

**Fantasy Gravel**
- Mixed Green, Blue, Gold

**Antifreeze**
- Antifreeze for aquariums

**Power Sockets**
- 240V 50Hz

**Address**
244 Vauxhall Bridge Road, London, S.W.1

**Postal Services**
Carriage at cost invoice after despatch.

---

**The Aquarist**
Tropical Aquarium Plants and Fishes

SALTWATER AQUARIUM FISHES

Britain’s finest display of healthy marine fishes acclimatised to aquaria and easy to feed

"MARINE AQUARIUM MADE EASY"

Send 2s. in stamps for booklet

EVERYTHING for the WATER GARDEN

Over 3 acres of water gardens
OPEN for inspection
1st APRIL — 30th SEPT
Fancy Fishes for cold Aquaria

The Bristol Shubunkin

NEW "TROPIC-MARIN"

The artificial sea-salt sold with guarantee. Made from chemically pure ingredients it is almost indistinguishable from natural tropical sea-water. Even corals and delicate sea animals can thrive in sea-water made from this salt. See the living coral reef on display in our Showroom.

5 gallon size 10/-, 20 gallon size 40/-

Postage as follows:
5 gallons 3/-, 20 gallons 3/6, 40 gallons 4/6, 100 gallons 7/6

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

HOURS OF BUSINESS—Weekdays 10 a.m.—5 p.m., Sundays 10 a.m.—12.30 p.m. (Also Sunday Afternoons May-July Only)

CLOSED ALL DAY EVERY MONDAY

TERMS OF BUSINESS—Cash with order please. Plants by post (minimum order 10/-) please add 1/6 post and packing.

Printed and Published by BUCKLEY PRESS LIMITED, London and Brentford