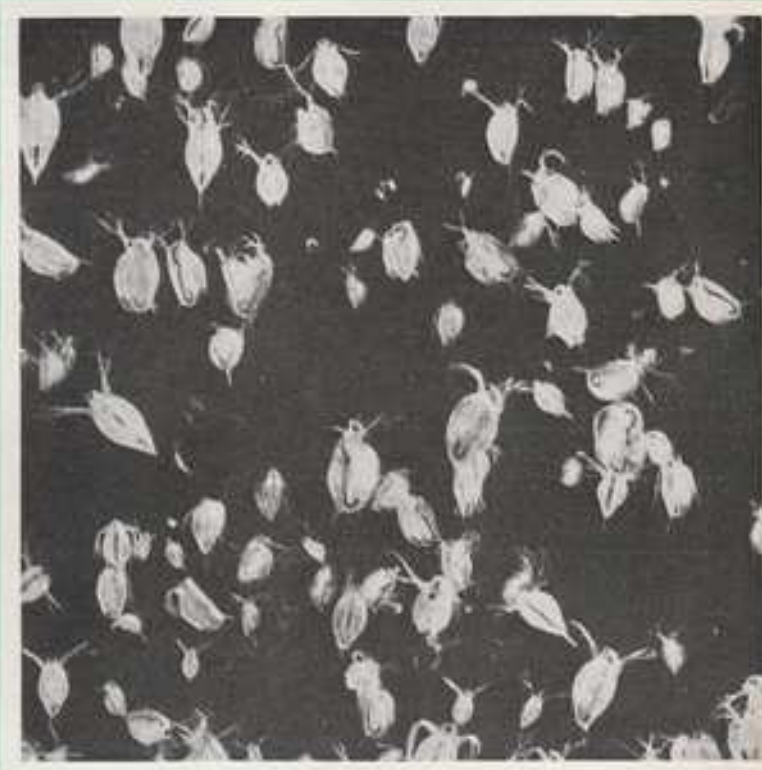


# The Aquarist

and Pondkeeper

JUNE 1965



MONTHLY  
Vol. XXX No. 3

**TWO SHILLINGS AND SIXPENCE**

## WALTER R. SMITH LTD.

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

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

### DISTRIBUTOR OF—

- McLYNN'S FISH FOOD
- ES-ES PRODUCTS
- ELECTRICAL AND GENERAL
- WATER LIFE, AQUARIST, DITCHFIELD'S AND T.F.H. BOOKLETS
- REJECTORS, SEDUJETS, AND MAINTENANCE EQUIPMENT
- PROCKTER, SUMMIT AND STAR PUMPS
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- GLASTICON '300' AQUARIUM SEALER
- AQUAMASTA GLAZING COMPOUND
- LIQUIFRY AND INTER-PET PRODUCTS
- FIBRE GLASS PONDS
- OTTER WATERFALL AND FOUNTAIN KITS

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

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

**WALTER R. SMITH LTD.**  
39 Tib Street and 16 Whittle Street  
(Off Tib Street)  
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Telephone: Densgate 2761 and 2523

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

presents



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

466 PAISLEY ROAD WEST, GLASGOW, S.W.1  
Telephone: 1880X 3613 Open Saturdays 11 a.m.—3 p.m.



## IS OUR BUSINESS

16 years' practical experience ensures that our products have reached a high standard of perfection. Heaters 9/6, and Thermostats 18/-.

Generous Trade Terms.



**EVANS** ELECTRONIC DEVELOPMENTS LTD  
Evans Works, Study Lane, Birmingham 22A  
Telephone: Great Bar 1740

**Breed your fishes  
NOW using  
LIQUIFRY  
as a first food**

Mr. Y. W. Ong, the well-known writer on aquarium topics from Singapore, says "Many breeders of Siamese Fighting Fish use LIQUIFRY as the first food. LIQUIFRY is also used for raising and breeding brine shrimps."



The unique liquid containing 10 particles of immediate food value to the fish and 10 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  
LIQUIFRY No. 2 for young Livebearers } 2/6d per tube

**START YOUR BABY FISH ON LIQUIFRY AND WATCH THEM GROW!**

Exported to 47 countries

**New!**

**TORFIN**

A natural water conditioner.  
Maintains the pH at optimum level.  
Inhibits growth of algae and bacteria.

**A new and invaluable aid to the aquarist.**

Price 3/6d for 50 c.c.s.—enough for 25 gallons.

Fungus and Finrot?

**LIQUITOX is the cure**

Colourless—effective—harmless to plants

Price: 1/9d for 2 capsules

6/9d for 12 capsules.

Each capsule sufficient for 4 gallons of aquarium water.

**BIOL Dried Plankton**

Growth food for young fish.

Conditioning food for adult fish.

Contains over 70% protein.

Standard size (7 grams) 2/6d. Breeders Pack (28 grams) 5/3d

Please write for details of these and our many other quality products

**Inter-Pet Supplies Company**  
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Sales Division of Liquifry Co. Ltd.

We invite you to VISIT OUR WINDOW DISPLAY OF FIBRE GLASS WATERFALL & POOL, SEE THE OTTER PUMP COMBINED FOUNTAIN & WATERFALL UNIT IN OPERATION

REVISED PRICES OF POLYTHENE COATED TANKS  
 14x8x8 21/-, 16x8x8 23/6, 18x10x10 29/6, 18x10x12 34/-, 24x12x12 49/-

SPECIAL! ONE 27" CAIMEN ALLIGATOR £5 TAME  
 "GREEN SHIELD" STAMPS GIVEN (PERSONAL SALES ONLY)

**NEW ARRIVALS**

Golden Orfe 9"-7" 8x9"	15/- & 22/6
Parrotfish	4/6 to 7/6
Green Tetra	3/- & 4/-
Large Goldfish 7"-8", 8"-10" 10"- & 12/-	
Small Orfe & Bicolor	2/-
7" & 4" Fan Tails	15/- & 25/-
Medium Goldfish	2/- to 7/6
Small Goldfish & Shrim	1/- to 2/6

**THERMOSTATS STOCKED**

Procton	each
Constant Electrical	35/-
Constant New Rational Type OK	25/-
Wired Rational	25/-
Inter-Fit	22/6, 28/6
UNO	
Out/Adl.	18/-
In/Adl.	12/-
In/Adl. "Poplar"	10/-
"Poplar" with neon indicator	12/6
Preset Matic	24/6
Wired	18/-, 12/6, 18/-

**AERATORS**

Jet	20/-, 28/6 & 32/6
Et. Summit	22/-
Quick	25/-
Rena	48/6
Montrose Major	24/-
Montrose Minor	21/-
Procton	80/-
Dynas Mk. I A.C./D.C.	19 0 0
Dynas Mk. D A.C. only	29 0 0

**GARDEN PUMPS**

Over	12 2 0
Stokes	17 19 0

**PISTON PUMPS**

Hy-Bo Junior New Super	107/6
Hy-Bo "A"	120/-
Hy-Bo "B"	162/-
Hy-Bo "C"	220/-

<b>Thermometers</b>	<b>Filters</b>
Mercury .. 4/6	Hydro Outside
Etot Gem .. 4/6	Cartridge .. 4/6
Mercury Gem 6" .. 6/6	Dustless .. 12/6
Dunlop .. 6/6	Windmill Head .. 15/-
Sundries	Waterco .. 15/-
T Pieces .. 16d.	Windmill Air .. 12/-
Clamps .. 1/3	Receptor .. 12/6
Aerators	Comert .. 12/6
Tubing 3d. p.c.	Premier Bio-logical Sub-
Ribbon	Gravel Filters
Tubing 1/8 yd.	12/6, 15/-
Glass Wool 1/-	Sealings .. 6/-
Filter Carbon 2/-	Slit Jim .. 17/6
Isolamid .. 2/-	Klax Ring 27/6
Aquariums 2/6	Screen Filter 3/3
	Book Filter .. 17/6

**TROPICALS**

Needs 3 for £1 : 2/6 each

Roseates	4/-	Pleurostoma 18/-, 18/-
Angels	2/6 & 3/6	Large Green Sulfur
White Cloud		Mollies .. from 5/-
Mimosa	2/6	Black Angels .. 7/6
Floras	2/6	Black Lace
Bacoras	2/6	Angels 4/- to 7/6
Black Widows	2/6	Tiger barb 2/6 & 3/6
Platy various		Glowlights .. 3/-
	from 2/6	Pompano .. (each) 2/6
Seventails		Shuttle Box .. (each) 2/6
Various, from 2/-		Mollies, Black
Schubert barb 2/-		Emu .. 3/6 & 2/-
Silvertail .. 2/-		Lemon tetra .. 4/-
Oguzin pair 1/6, 2/-		Glossy Adult .. 4/6
Halterina .. 2/-		African Cat .. 6/6
Cherry barb .. 2/-		Ocellular Cat .. 7/6
Nigger barb .. 2/-		Figures .. 18/-, 12/6
Charger barb .. 2/-		Sarpei .. 4/-
Red eyed Tetra .. 3/-		

Think up 2/-, Jewel or Jewel 2/6, Kissing 4/-, Opaline 2/6, Gouramis.

**"SWHILL-AWAY"**

Aquarium Vacuum Cleaner	46/6
Super Model	34/6

**BOOK CASE BOW-FRONTED AQUARIUM**

48 x 18 x 15	£25 10 0
39 x 12 x 15	£24 10 0
Standard Bow	£27, £37, £33 0 0

**PLANTS**

Sagittaria	6d. each
Valis. Turp.	6d. "
Valis. Sprada	6d. "
Anubias	6d. "
Loebelia	6d. "
Cryptanthus	6d. "
Cryptanthus	2/- & 3/-
Wisteria	1/6 & 2/-
Green Hyacinth	1/6 & 2/-

By post, add 1/6d. Minimum 7/6d.

**HEATERS 25w to 200w**

Inter-Pat	16/6
Two & Wizard	8/6
F.S. Standard	7/6

**ADULT BARE FISHES**

Polyosteorhynchus Kribiaensis	7/6 & 10/- each
Elephant Nose Fish	20/-, 25/-, 30/-
Hemiflex Loach	4/6
Epimodola	2/-
Kribia Fish Nigerian	7/6, 12/6
Black Cardinal	7/6 each
Scout Dons	7/6 to 20/-
American Goby	5/- & 7/6
Malayan Angelfish	7/6 to 15/-
Black Veil Angelfish	5/- & 7/6
Tin Foal Barb 3" - 4"	6/- & 7/6
Silverstark 2" - 3"	20/-, 25/-, 30/-
Firemouth	4/-
Red Veilhead Guppy	18/- & 33/- pair
Red Tail Shark 2" - 3 10/-	Large 18/- each
Butterfly Fish	16/-

Our assistance order for fish is £7, a charge of 13/- is made for container. Carriage charges by fast passenger train and telegram rating sent at arrival. Give phone number if possible.

**NYLON COATED AQUARIA, STOCK SIZES**

24 x 12 x 12	45 5 0
18 x 10 x 12	42 0 0
White or black covers	18/6 & 25/-

Large sizes on quotation

**STANDARD AQUARIUMS (Light Gauge) (Angle Iron)**

24 x 8 x 6	19/6	24 x 12 x 12	55/-
18 x 8 x 6	15/6	24 x 12 x 15	60/-
14 x 8 x 6	12/-	30 x 12 x 15	60/-
18 x 8 x 8	17/6	30 x 12 x 15	67/6
18 x 10 x 10	23/6	48 x 12 x 15	130/-

**COVERS STANDS**

18 x 12	16/-	18 x 10 x 36	35/-
24 x 12	22/-	24 x 12 x 36	50/-
30 x 12	25/6	30 x 12 x 36	55/-
30 x 12	27/6	36 x 12 x 36	60/-

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

**FOODS**

Exotic Flakes	1/6
Hydro Flakes	1/-
Bronias	1/6 & 2/6
Bovine	6d. to 2/6
Dry Daphnia	2/-
Lilyfish	2/-
Infusyl	2/6
Hydro	2/6 C.W. 2/- & 3/-
Hydro	2/- & 3/-
McLern's	1/6, 2/6, 6/6, 17/6
Brine Shrimp	2/-
Tetra Mix Growth Food	4/-
Wardley's	8/-, 4/6, 2/6, 2/3, 1/3
Fantasy	2/-, 1/6
Tetra Min.	1/10, 2/-, 6/6, 22/6, 70/-
Surgeon	1/6, 2/6
Yankoff	1/6, 2/6
Shal	1/15 & 5/6

Add 1/- up to 16/-; 1/6 up to 20/-; 2/- up to £1; 3/- up to £1 over Free CARRIAGE AT COST CHARGED ON AQUARIUMS, STANDS, AND TANKS. SENT AT OWNER'S RISK (Inquiries stamped envelope please) Terms, Cash with Order

# THE CENTRAL AQUARIUM

Situated on the A41 Route, opposite Hendon Central Station  
 391 HENDON WAY, HENDON CENTRAL, N.W.4 Phone: HEN 9700  
 OPEN 8.00a.m.-7.00p.m. Sundays 9a.m.-1p.m. Emergency Phone: HEN 9700

THE AQUARIST

SPECIALISTS AND BREEDERS  
OF TROPICAL AND COLD-  
WATER FISH. LIVE FOODS.

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

PLANTS, ACCESSORIES.  
BIRDS, BIRDCAGES.  
EXHIBITIONS AND  
INSTALLATIONS.

**WE ARE KNOWN ALL OVER THE WORLD TO HAVE ONE  
OF THE LARGEST VARIETIES OF TROPICAL AND  
COLDWATER FISH.**

**YOU CAN ALWAYS BE ASSURED OF SOMETHING NEW.**

WHY NOT PAY US A VISIT AND SEE FOR YOURSELF!

**STILL ARRIVING REGULARLY  
RARE SPECIES FROM ALL OVER THE WORLD**

WHOLESALE ORDERS EXECUTED IMMEDIATELY

**CHOOSE**

**FROM**



**THE**



**'Es-Es' RANGE**



**AND BE WITH IT!**

**14 OTHER PRODUCTS TO CHOOSE FROM**

**SEND FOR COMPLETE LIST**

**AND BROCHURE FROM — SINGLETON BROS (Electronics) LTD  
53 VICTORIA STREET, LONDON, S.W.1**



The most scientifically balanced diet ever offered for feeding all types of goldfish and coldwater fishes in pond or aquarium

No dust to go to waste

Will not cloud the water

Easily measured bite size pellets

Contains over 20 ingredients

It floats

Available in two sizes  
Small Pack 1/3  
Pond Pack 3/6

**AVAILABLE FROM YOUR DEALER TODAY**

## "RENA" SUPER PUMP

The most powerful Air Pump at its price

**48/-**

Whatever your needs the "Rena" Super will give you complete satisfaction



*If you have difficulty in obtaining any of the above products write direct to*

**SOUTH COAST AQUATIC NURSERIES LTD., Old Bath Road, Colnbrook, Slough, Bucks**



POSTAL SERVICE



# TROPICAL FISH

## Interesting fish this month

Black Hole Fighters .. 12/6 each	King Size Neons .. 3/6 each	Red Wagtail Swords .. 12/6 pair	Bleeding Hearts .. 12/6 each
Canton Cats P .. 2/6 ..	Orange Chromides .. 8/6 ..	Parigold Variatus .. 1/6 ..	Corydoras Rebeccae .. 12/6 ..
Combedown Cats .. 12/6 ..	Discus 3" .. £8.50 ..	Phox .. 1/6 ..	Adult .. .. 12/6 ..
Delta Guppies .. 19/6 pair	Stack Yelltail Angels 9/6	Golden Guppies .. 4/- ..	Red Fish 12" .. 40/- ..
Hills Flat Variatus .. £8 10 0 ..	Caroline Tetras (New) 12/6	Red Swords .. 12/6 ..	Medium Tiger Barbs .. 3/6 ..
2 1/2" Yellow Moilies .. 30/- ..	Platy Variatus .. 7/6 pair	Nanoatomus Anemata .. 37/6 each	Walkerii Cichl .. 12/6 ..
Adult Cardinals (excellent) .. 12/6 each	Large Tail Pin Black Moilies .. 37/6 ..	Pomacentrus Headstanders .. 12/6 ..	Simpson Red Wagtail .. 12/6 ..

### TROPICAL FISH LIST JUNE/JULY REGULAR STOCKS ARRIVING WEEKLY

LIVEBEARERS		LABYRINTHS		LABYRINTHS		LABYRINTHS		LABYRINTHS	
Guppies .. 10/- pair	Assorted .. 2/- ..	Lace Guppies .. 6/- ..	Red Standard .. 2/6 each	Red Large .. 3/6 ..	Green .. 2/6 ..	Albino .. 2/6 ..	Red Wagtail .. 2/6 ..	Tuxedo .. 2/6 ..	Red Eye Red .. 4/6 ..
Swordtails .. 2/6 each	Red Standard .. 2/6 each	Green .. 2/6 ..	Albino .. 2/6 ..	Red Wagtail .. 2/6 ..	Tuxedo .. 2/6 ..	Red Eye Red .. 4/6 ..	Simpson Reds .. 12/6 pair	Green Lyretail Moilies 7/6 each	Platies .. 2/6 each
Black .. 2/- each	Black .. 2/- ..	Tuxedo .. 2/- ..	Canton Tail Yellow .. 2/- ..	Red Wagtail .. 2/- ..	Yellow Wagtails .. 2/- ..	Lemon .. 2/- ..	Vertigo .. 7/6 pair	Moilies .. 5/- each	Black Lyretail .. 5/- each
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**KEITH BARRACLOUGH**  
 215 GREAT HORTON ROAD - BRADFORD 7 - YORKSHIRE  
 Telephone: BRADFORD 73372  
 (TRADE SUPPLIED)



# QUEENSBOROUGH FISHERIES

SEE OVERLEAF FOR FURTHER INFORMATION

## SPECIAL PLANT COLLECTIONS (post only)

All post enquiries: 111 Goldhawk Road, W.12. 2s. post and packing on all collections

TROPICALS	POND PLANTS	AQUARIUM OR POND
No. 1 30 plants including Dwarf Lily Crystosperma Wateria, etc. £1	No. 7 30 plants including Marginals £1	No. 14 12 Sagittaria & Pterisphyllum 6 Ludwigia 6 Moneywort 6 Hornwort 1 Portion Root 3 Portions Hair Grass £1
No. 2 12 Vallisneria 12 Myriophyllum 3 Micro Sagittaria 4 Ludwigia 4 Elodea Densa £1	No. 8 20 Pond Plants 1 Cream Water Lily (Princess Alice) £1	No. 15 30 Plants for your Aquarium—Value 30/- £1
No. 3 12 Vallisneria 4 Myriophyllum 4 Ludwigia 4 Elodea Densa 4 Bercea 1 Amazon Chain Sword 1 Portion Hair Grass £1	No. 9 2 Bull Rush 3 Iris 3 Burr Rush 3 Forget-Me-Not 3 Water Plant 10/-	No. 16 4 Vallisneria 4 Moneywort 4 Elodea Densa 3 Hornwort 3 Portions Hair Grass 10/-
No. 4 1 Nymphaea Solfata 1 Giant Hygrophila 1 Apogonacum 1 Wateria 1 Giant Sagittaria 1 Crystosperma 1 Indian Fern 1 Portion Hair Grass £1	No. 10 12 Marginals 4 Oxygenating Plants 10/-	<b>TROPICAL OR COLD</b>
No. 5 4 Vallisneria 4 Myriophyllum 4 Hygrophila 4 Elodea Densa 10/-	No. 11 Cream and Yellow Water Lily—Princess Alice 2 for £1 12/6	No. 17 Giant Amazon Sword Plants 6-8 inches 7/6
No. 6 1 Portion Hair Grass 1 Portion Clover 4 Micro Sagittaria 4 Bercea 10/-	No. 12 Water Lilies 1 Pink 1 Red 1 Cream 3-year-old plants £2	No. 18 Water Lettuce Very beautiful plants or 3 for 10/- 2/6
Cultures of pure Infusoria for your Fry 5/-	No. 13 Willow Trees Foliage 2/- 7/6	No. 19 Water Hyacinth 6-8 inches Floating Plant 7/6
	Lilies	No. 20 Spatterdock 3/6
	Dark Pink Tuber Rose 15/-	Lily Daphnia 2/-
	Black Pink Marianne Carnes 15/-	Tubifex 1/6 2/6
	Yellow Marianne Ceromastix 15/-	Microworm 3/-
	White Nymphae Alba 12/6	White worm (Post Free) 3/-

Algae eating Pond Snails: 6d each

14"-16" Hygol Carp: £15 per pair. Limited Number Available.

Large Stocks of Coldwater Fish—Thousands of Tropical Fish in Stock

Stocks of all Ponds, Fountains, Statues, etc.

FULL CATALOGUE ON APPLICATION S.A.E.

# NOW OPEN

## OUR NEW HATCHERIES AT WRAYSBURY

SUNDAYS & THURSDAYS  
10 a.m. to 4 p.m.

### SPECIAL FISH BARGAINS

THOUSANDS OF PLANTS

#### THERMOSTATS

Constat External	23/-
Constat New External	23/-
Type OK	23/-
UNO	18/-
Out/Ad	18/-
In/Ad	18/-
In/Ad "Popular"	10/-
"Popular" with alarm	11/6
Reck (with hood)	21/-
"Ea-Ea" Standard	24/6

#### THERMOMETERS

Mercury	each
Open	4/6
Plastic Backed	4/6
Swiss Blue Glass	5/-
"Ea-Ea" Dummy	6/6

#### FILTERS

"Windmill" Plastic	each
Outside Filter	19/6
"Windmill" Biological	15/-
Aquarium Filter 12 1/2"	15/-
"Windmill" Regent	15/-
Inside Filter	15/-
Corner Filter	4/-
Air Lift	4/6
"Star Jet" Outside	17/6
Filter	23/6
"Klear King" Outside	8/3
Filter	23/6
Bottom Filter	8/3
Ornamental Rack	17/6
Filter	23/6
Use Polyfilter	2/6

#### AERATORS & PISTON PUMPS

Medusa	each
21"	21/-
24"	24/-
Fairy	27/6
Star	34/-
Rena	50/-
Zeebeek Total	75/-
Hy-Go Junior	107/6
Hy-Go "A"	130/-
Hy-Go "B"	145/-
Hy-Go "C"	150/-

#### HEATERS

"QUEENSBOROUGH"	each
22", 40w, 60w	18/-
70w, 100w, 120w	18/-
150w	18/-
Rena (75-200w)	18/-
"Ea-Ea" Flexible Heaters	18/-
(100w, 1)	18/-
"Ea-Ea" Thermostatic	18/-
Heaters, 100w, and 150w	36/-
Proton-Quartz	24/6
Inter-Pet Thermostatic Heater 22 1/2" and 29 1/2"	21/-

#### BACKING PAPERS

STRATA ROCKWORK	SEA & SHORE
24in. long x 20in. high. 2/6 per sheet, or 2/3 per foot. (Great Aes)	

#### SEDIMENT REMOVERS

"Windmill" Air	each
Selector	13/-
"Windmill" Hand	13/-
Selector	13/-
Patrol	2/-
System Toting	72/8
Hand Type Plastic	4/6
Swirl Away	46/6

#### PLANTS

Fulleriana Sebale	each
Elodea Densa	3/6
Oxyphila	3/6
Sagittaria minima	3/6
Sagittaria minima	3/6
Fulleriana acuta	3/6
Ludwigia	3/6
Myriophyllum	3/6
Cryptocoryne Beckhamii	3/6
"Pistol" 1 1/2 and 5"	3/6
"Cordata" 1 1/2 and 5"	3/6
Herposiphonia	3/6
Water Hyacinth	3/6
Green Hygrophila	3/6
Glass Sponges	3/6
Najas Alveolata	3/6
Amazon Chain Sward	2/6
Duckweed per portion	1/-
Algae per portion	2/-

#### FOODS

"Queensborough" Tropical Fish Food	1/6 and 2/6
Scotic Flakes	1/6
Hyko Flakes	1/6
Bronson	1/6 and 2/6
Bronson Fryballs	1/6
Liquidry Nos. 1 and 2	2/6
Infant	2/6
Eggs	2/- and 4/6
Dried Daphnia	Our 4d.
Ground Shrimp	1/-
Fish Food	each 1/6
in 3 sizes	
Acne Eggs	4d.
Wardley's Trout Pac.	8/6
7 kinds of food	8/6
Hi-Glow	4/6
Red	2/6
G. Barmann	3/6
Foodies	5/-
Supremat	2/6
Terramin Flakes (all sizes) 1/10, 3/-, 6/6,	
22 1/2 and 28/-	
Eurogrow 1/- and 2/-	
ifry food	1/3
Vitakraft 1/10, 6/9 and 22/6	

#### FULLY-GLAZED AQUARIUMS

Pressed Steel	Angle Iron
Aluminium	
12 x 6 x 6	10 1/2
14 x 8 x 8	13 1/2
16 x 8 x 8	15 1/2
18 x 10 x 10	17 1/2
24 x 12 x 12	22 1/2

#### ANGLE IRON

12 x 12 x 15	57/6
14 x 12 x 15	77/6
16 x 12 x 15	97/6
18 x 12 x 15	137/6
24 x 12 x 15	177/6

#### CARRIAGE EXTRA

Glass, China and Shells sent at purchasers' own risk.

#### LIVE FOODS

Brite Shrimp Eggs	2/6 and 4/6
Cultures of	
Neat Worms 1 oz.	7/6
"2"	13/6
White Worms	3/-
Micro Worms	3/-
Tubifex worms 1/8 and 2/8	

#### BOOKS

Tropical Fish in the Aquarium	17/6
Aquarium Plants	34/6
Freshwater Fishes of the World	84/-
Diseases of Fishes	15/6
All about Tropical Fish	77/-
Encyclopedia of Tropical Fishes	42/6
Electricity in your Aquarium	8/6
Illustrated Dictionary of Tropical Fishes	47/6
Exotic Tropical Fishes	150/-
A.B.T.F.H. Books 2/- each	
The Book of the Garden Pond	18/6
A Manual of Aquarists Plants	17/6
Garden Ponds & Fish 12/-	
Pond Life	6/-
Aquariums & Fishponds 2/6	
Postage included	

#### SUNDRIES

Snodding Trap	each
Snodding Trap	15/-
Snodding Trap or Shovel	4d.
"Double"	6d.
Planting Sucker	1/3
Dry Flooding Rings	1/-
Sponges	1/6
Hyko (4 in. one) Feeder	2/6
Worm Floating Feeders	1/6
Worm Cradle with Sucker	1/6
"Windmill" Diffuser	1/6
Snoses	1/- to 1/6
"T" Piece	1/-
Aerator Tapping	8d.
Rubber	8d.
Plastic	9d.
4 Way Piece	1/-
Clamps	1/-
Carbon	1/-
Glass Wool	1/2
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# The AQUARIST AND PONDKEEPER

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## Breeding Emperor Tetras

I OBTAINED some of these handsome fish about 2 years ago. Although it is quite a pretty fish it does not seem to be plentiful, which is a great pity as it is of a very undemanding nature and well suited to the community tank. It grows to a little over 2 inches in length.

The colouring is a brownish to olive on the upper sides with a metallic blue-green line running the length of the flanks and a thick velvety black longitudinal band which continues on to the middle fin rays of the caudal fin. The belly is a pearly white; fins are colourless with a metallic blue-green sheen reflected in the light.

The iris of the eye is also a shining blue-green. Colouring of this fish is further enhanced by a dark tank bottom and plenty of plant life.

Sexing is quite simple in mature fish because the female is fuller bodied and deeper bellied than the male. The male has the middle rays of the caudal fin produced into a very pronounced spear point, which barely shows in the female.

The temperature range is from 72°F (22°C) to 80°F (27°C). When spawning I use the following procedure. A 36 in. tank is filled to about 6 inches with well matured tap water, with a bottom covering of boiled peat. Shallow water is essential as the fish are very partial to the eggs. For plants I use plenty of *Myriophyllum* or *Najas*. The temperature is 80°F (27°C) and the tank receives a fair amount of sunshine.

The breeding pair are placed in late at night and left to settle down. Spawning follows within the next 2 days, with the male driving the female round the tank with a side by side head-down position. The eggs are scattered anywhere about the tank. After spawning the parents are taken out of the tank and malachite green is added to a concentration of one gram to 4 gallons of water to eliminate fungus. The fry hatch in about 24 to 30 hours and are free-swimming after about 2 days. The fry soon begin to grow and after about a month are unmistakable miniatures of their parents and make a lively show swimming together.

I then add Infusoria from apple snails. There is also a large amount of *Cyclops nauplii* in the breeding tank.

Unlike some tetras, which seem to need soft acid water for breeding, this tetra does not; the pH of my tank is 7.2 and the hardness is 12 degrees D.H.

I. Goatcher

# Our School Aquarium



View of the School's main aquarium unit

by H. LOVATT

ONE of the biggest problems a science teacher has to face is that of keeping livestock in schools. Mammals, in particular, require a constant care that is not always possible, especially during the long school holidays and at week-ends. Nevertheless, I consider the study of some form of animal life essential, and it was with this in mind that I formed the Vivarium Society at the Central School for Boys, in Macclesfield.

Fishes, reptiles and amphibians seemed the obvious choice, not because they are any easier to keep than mammals, but mainly because they can be left for comparatively long periods without coming to serious harm. At the school, at the moment, we have nine fish tanks, and two terraria for reptiles and amphibians.

Besides being a fascinating hobby, I have found the keeping, breeding and study of fishes one of the most useful and instructive of pursuits I have ever carried out. An aquarium embraces so many scientific principles that I wonder how I ever did without it. Yet it is never boring; there is always something new going on and my boys are absolutely delighted with it. Above all, they learn, and learn in a pleasant and satisfying manner.

Since the inception of our Society, I have learnt so much from a practical aspect that I feel it worthwhile to pass on my experiences. The biggest obstacle is finance, and as it can cost about six pounds to set up a 24 in. by 12 in. by 12 in. tank, there are not many local education authorities who would be prepared to supply many tanks at that price! I began by canvassing the boys. I asked them if they had

any old tanks, broken tanks etc., or knew of anyone who had. Over a period of a few months I had quite a good response. I received an amazing medley of old tanks, heaters, thermostats and filters. Most of the heaters and thermostats were usable. I discarded the filters, and found only one of the tanks serviceable. This was a blow, yet later it proved a good thing.

To get things going, I rigged up the good tank, stocked it with a few fishes and plants, then formed my Vivarium Society. I placed the facts fairly and squarely before the first dozen members; money was our immediate need. We formed a committee with treasurer and secretary, and all members agreed to pay sixpence per week, and we were away.

To keep an interest alive we stripped all the remaining tanks to the bare frames and cleaned, painted and glazed them in the approved manner. This was good experience for the boys and I thoroughly recommend that all tanks should be at least glazed at the school.

I think that a standard size of tank should be adopted, or at least a standard depth and width. A 12 in. by 12 in. and section 1a, in my opinion, ideal and in our main aquarium this is the standard we use. The three tanks at the top are 27 in., 36 in. and 30 in. respectively, and the bottom four are all 24 in. long.

Tropical fishes are the best kind to keep in the early stages because (a) they are generally more colourful and active, (b) they are not as difficult to look after as cold-water types, (c) they are less susceptible to disease and (d)

they need some form of heating, which is helpful from a science point of view.

Each tank should be set up by the pupils; in the first instance under the guidance and supervision of the teacher. Later they will be able to do it themselves quite easily.

If a number of tanks are contemplated, as they should be, then a stand to contain them all should be made. Our stand was made by a local engineer and cost five pounds including the wooden frontage. The overall measurements are 8 ft. 6 in. by 6 ft. 3 in. by 1 ft. 1 1/2 in. The top, sides and doors are of hardboard pinned and glued to cheap wooden frames, then finished in Fablon. They could, of course, be painted.

Personally, I do not think aeration by means of a stone is desirable or essential. Its oxygenating properties are doubtful, and it stirs up sediment and keeps it in a constant state of suspension. On the other hand, I am a firm believer in filtration, and outside filtration at that. I would have liked to use the gravel bed of each tank as the filter, but this would have defeated the object of visible scientific principles, so I use outside filters. These filters are modified by the insertion of an open topped box of stainless steel gauze to contain the medium. This simplifies cleaning. The box is just lifted out and emptied of the old material, the new medium is put in and the box replaced in the filter.

We do not use glass wool. We make up our filters in the manner of the filter beds used in water-works. In the bottom is placed a layer of charcoal, about an inch, then a layer of coarse sand, then on top, a layer of medium gravel. I find this just as effective as glass wool and the water in our tanks is crystal clear. If the tank contains fish that need soft, acid water then a layer of peat is placed between the charcoal and the sand. All materials except the peat are reclaimed by washing and drying, and for the charcoal, baking at 300°F (149°C) for an hour. This recovers the charcoal and filter costs are reduced drastically.

The tank bottoms are first covered with a half-inch layer of the sand sold for John Innes compost, then a layer of the gravel sold for aquarium use. We never wash any of this material, nor do we, when placing in the first lot of water, take any particular care how it goes in. The effect of leaving the finer sands in between the larger pieces of

gravel seems to be beneficial to plant growth. We place in any rocks and stones needed, then let the tanks stand for 4 or 5 days. Heater and thermostat are then placed in and then the filter. We see them ready for planting. The majority of plants are just placed on the tank bottom and held down with small stones. Such plants as *Cabomba*, *Myriophyllum*, *Anubias*, even *Sagittaria*, *Ludwigia*, *Vallisneria* and pygmy chain sword, are treated in this way. Larger plants, with strong root systems, are planted in the normal manner.

I find aquatic plants to be the best material for teaching vegetative reproduction. Indian fern is a beauty for this. Some books state that the new plants form on the stems and stalks of Indian fern. We have found this definitely not so. There is no doubt that the new plants form on the veins of decaying leaves. All we do is to place a dying leaf that has new plants on it on the surface of the gravel, weight it down with a small stone, and in a couple of weeks we have about a dozen strong, new plants.

Water condition has a high priority with us. Hardness tests are made regularly; this gives a purpose to what otherwise might seem aimless experiments in class. The younger boys use the Wanklyn test and the older ones the Schwarzenbach method, and the results are recorded both as calcium oxide and calcium carbonate for comparison purposes. Occasionally, as an exercise, we adjust hardness, either by the addition of lime water or by changing some of the tank water for water from the rain-water butt. pH is treated in the same way, as an exercise, found by the bromothymol blue method; as with hardness, we occasionally adjust pH with sodium bicarbonate or sodium dihydrogen phosphate. Our tap water is about pH 7.4, which makes it a very useful water to have. Generally, we find that once in the tanks it tends to go acid after a time, but only just so. As the equipment for these tests is part of the laboratory equipment there is no outlay here.

With regard to snails we have one rule . . . 'See a snail—kill it'. We regard them as pests. They are not worth the little work they do as scavengers as they exact too great a price in ruined plants. We find cutfish (*Corydoras*) do as good a job on the bottom, whilst such algae-eating fish as *Gyrinocheilus* find a place in every tank to keep down algae.

For a time we were troubled by plants not thriving until

The label over this 36 in. aquarium in the School's unit reads 'Community Tank; Oviparous Fish'. Strip labels above and below the tank name the fishes by both common and scientific names. Anabantid fishes such as the gouramis predominate in this aquarium.





Water testing is done regularly. Here a pupil is seen estimating water reaction by a bromothymol blue test.

we realised that no light on Saturdays and Sundays, and often over holidays, was having a detrimental effect on them. The lighting is now automatically controlled by a time switch and is on for 11 hours every day. Our lighting is simple but effective; 100 watts of tungsten lighting per foot of tank. The tanks are bright but not excessively so, and both plants and fishes thrive. Any excess of algal growth is kept to a minimum by well planted tanks, by the *Gyrinocheilus* and by systematic elimination.

Naturally, electricity and heat play a large part in our aquarium set up. Thermostats are of the bimetal strip in glass tube type, and we use the large ones which can be adjusted from above the water surface. Thus the boys have a visible practical example of expansion, particularly unequal expansion. The heaters are useful for illustrating the heating effect of a current, although as yet we have done no quantitative experiments on this. The filters are operated by air lifts, the air being supplied by a synchronous motor-operated piston pump.

#### Fishes by Families

Now to the fishes themselves. Community tanks, containing many types of fishes, are all right for decoration, but for serious study are useless. As scientific classification is important we separate our fishes according to their families. At the moment we keep only five groups: Cyprinodontidae, sub-family Poeciliidae; Anabantidae; Cyprinidae, genera *Barbus*, *Brachydanio*, *Danio* and *Rasbora*; Characidae; Callichthyidae. There are also the one common genus of Gyrinocheilidae and a few loaches of the family Cobitidae. The last-named three families are distributed among all the tanks as scavengers. Of the livebearers, *Labiatus* and *Mollisensis* are kept together but the sexes are segregated. The same applies to all the *Xiphophorus* species. Of the anabantids we keep only gouramis (five species). The sexes are not separated at the moment as we have not the room, but later we are going to put in a further six tanks, then sexes of all fishes will be segregated. This also applies to the characins, rasboras, danios and barbys.

Boys are encouraged to learn scientific names of fishes for the obvious reasons, but I must admit they prefer the common names. This also applies to plants. All tanks are labelled with the contents and a full list of plants and fishes is posted on the classroom wall.

At the moment we breed only livebearers selectively, although we have had indiscriminate breedings of gouramis and barbys. When we have the use of our new tanks we shall tackle selective breeding of all types. Strict genetic principles are followed in breeding, and we have succeeded in fixing characteristics in both guppies and platy fish, although they are not characteristics that would create a stir in the aquarium world. The important thing from our point of view is the knowledge gained. We get quite a large number of young fishes, the sale of which augments our meagre income.

#### Feeding and Maintenance

Feeding is no problem. We use two dried foods which we have found the best. We use the two to provide a change of diet, and we feed small quantities three or four times a day, sprinkling the food all over the water surface. For live food we use white worm (our only culture), cheese on a piece of string, and cold boiled liver rubbed through a flour sieve, and made into a paste. We feed live food about once a week and, despite what the pundits say, our fishes really thrive.

Owing to the large number of plants we get little mud and we rarely have to clean tank bottoms. *Gyrinocheilus* (wonderful fish these) keep the glass clean. Any other maintenance necessary is carried out on club nights. We have developed a routine so that I rarely have to give orders. Any new members are instructed by the old hands. I have no holiday problems apart from too many boys wanting the job of looking after the livestock. A rota is made out and I can honestly say that I have never been let down.

We have few health troubles, due no doubt to our scrupulous cleanliness, and the fact that we keep a hospital tank wherein all new fishes are quarantined for 10 to 14 days. This proved itself when on one occasion we did not quarantine a batch of half a dozen fish. White spot ran riot. We beat it with methylene blue used in the hospital tank so that the water was almost opaque. One tank of fish was treated at a time in the hospital tank for 14 days. Tanks that were awaiting treatment were treated with two drops per gallon of 5 per cent methylene blue per day. We lost 17 fish, all *Xiphophorus*, out of a total of about two hundred. Moral: always quarantine new fishes!

In conclusion, let me say that from a scientific viewpoint, there is no better hobby than fish-keeping. What else could give the teacher Chemistry, Botany, Zoology, Genetics, Electricity, Heat and Light, and Mechanics and Hydrostatics in so small a compass?



Liver paste food is made in a mortar

# An Unusual Aquarium Tank

by NEIL WAINWRIGHT

FROM time to time *The Aquarist* has published articles on the making of various types of aquaria. Most of these tanks have been of angle iron or solid wood construction.

There is a lot to be said for the use of plywood for tanks, but it needs to be of "exterior grade" quality. Such plywood is bonded with a synthetic resin glue, and is readily obtainable at all woodworkers' supply stores. Resin-bonded plywood stands up well to the conditions experienced in an aquarium tank, and test samples have been kept submerged in water for 15 years without showing signs of peeling; interior quality plywood would soon delaminate under such treatment. There is nothing in the wood or glue that can wash out and cause harm to fishes or plants.

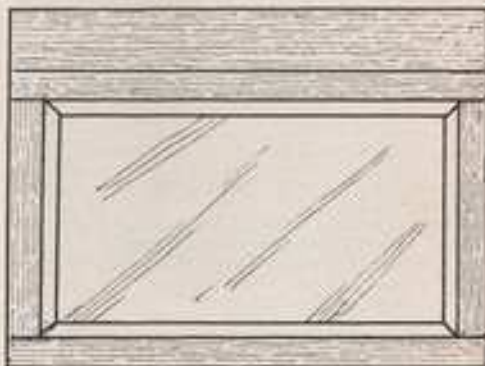
For equal thicknesses plywood is stronger than solid timber, and it requires fewer tools and less skill to work. The only drawback is that the laminated edges do not look attractive, but these are easily concealed with a thin solid wood (or plastic) beading.

Perhaps the chief advantages of plywood are the way in which it can be handled to produce tanks in quantity or those of unusual size or shape. Breeders, for example, will find that a number of tanks can be quickly assembled from plywood. This can be an important factor both for the making of breeding tanks and for additional tanks in which the fry can be brought along to maturity.

Here is an example of the use of plywood for an unusual form of tank. The tank had to stand in a corner, so its plan it was of triangular shape. This caused no problems apart from the fitting of the glass, and when planted out it formed an unusual and attractive feature. By the use of rockwork and plants of suitable size the tank was given the appearance of unusual depth from front to back, so that there was a visual impression that the tank actually passed right through the wall and into the next room.

Plywood of  $\frac{1}{2}$  in. thickness was used for the sides, which were both 1 ft. 2 in. high; one was 1 ft. 3 in. wide and the other 1 ft. 2½ in. wide.

The longer side was glued and screwed at right-angles



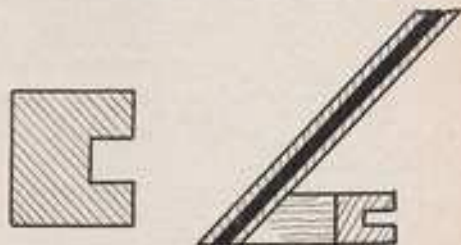
Front appearance of the completed plywood aquarium

to the shorter. A synthetic resin glue was used, this being waterproof. There are several suitable proprietary brands on the market, most of them demanding that the glue be applied to the two surfaces and allowed almost to dry before the two pieces of wood are brought into contact. Holes for screws had therefore to be made before gluing. A hand-drill with a small bit was used for this job, and on the longer panel the screw-holes were countersunk so that the heads of the screws would come well below the surface of the wood. Brass screws, 1½ in. long of small gauge, were used at approximately 2 in. apart; galvanized or other non-corrosive screws would have served equally as well.

The front edges of the sides had to be taken off at an angle so that they would match up with the front edge of the base; the surplus wood was taken off with a Surform tool. The base itself was simply a triangle of plywood,



Plan view, showing the top plywood strip and the base



Sectional view of wood or plastic channel and plan to show shaped strip behind the channel

glued and screwed to the bottom edges of the sides, level with their outside faces.

Two strips of plywood, 1½ in. wide, were then prepared to fit between the sides at the front at top and bottom of the tank. This was done by marking off the angles at the ends while the strip was laid in place, and sawing them rather "full". One such strip was glued and screwed (from beneath) on the baseboard, but the other was not fitted at this stage.

The glass was fitted into prepared channelling of the type shown in end-section on the drawings, and came from the same source as the plywood. It was possible to buy this in wood or plastic but the latter was preferred. Synthetic resin glue was used for fixing it in place.

It was easy enough to fix the channelling at top and bottom as it was only necessary to cut the ends at the same angle as that on the wooden strips. On the sides the grooves would not have been at the proper angle if the channel had been simply laid in place, so it was necessary to take a strip of wood and angle it off on the back edge so that the groove would be brought into the right position, as shown on the drawings. Two strips were prepared, to fit between the top edge of the bottom cross rail and the bottom edge of the top strip, and they were glued into place.

Before proceeding further, a thin bead of aquarium cement was put along the inside meeting edges of all plywood members, and the holes above the screw-heads were similarly treated.

To make neater corners in the channelling the ends of the strips were cut across the face (in a mitre box) at an angle of 45 degrees. After testing the joints for fit the bottom and upright strips were glued into place, the remaining strip being glued to the edge of the top cross rail.

When the glue had set the glass was slid into the front channelling and was bedded down into aquarium cement. The wooden ends of the top cross strip were then glued, it was put in place on top of the glass and was held by a screw at each end.

After a short interval the tank was filled with water to test it for leaks while work proceeded on the hood.

This was a plywood box made on much the same lines as the tank and fitted exactly on top of it. The sides were 3 in. high and the top was of ½ in. thick plywood. To prevent an accidental knock causing part of the hood to slip into the tank three strips of ½ in. square wood were glued round the inside of the tank, level with its top edges. This provided a firm base for the hood.

The tank was emptied and holes were drilled in this (and the hood) so that the heater and wire for the strip lighting unit could be inserted; rubber grommets through the holes kept them watertight.

Strips of ½ in. thick solid wood were then glued round the front edges of the tank and across the front of the hood. These covered the raw edges of the ply, and being highly polished added a decorative touch to an unusual tank. The finished item was placed on a table of solid construction that was also of triangular shape.

## BREEDER'S RECORD

# Success with the Bumble Bees

by J. LEE

I AM a tropical and coldwater fish breeder. In my fish house (8 ft. by 7 ft.) I've been breeding fishes now for 15 to 16 years, over which time I have successfully bred a long list of species: egg-laying tooth-carp, killifish and characins. Fishes in my collection I've bred are neon and cardinal tetras, blue gularis, yellow gularis, bleeding-heart tetras, many of the barb family and a lot more cold-water fishes such as goldfish and shubunkins, sticklebacks, blue bitterling and a few more.

But recently I've achieved the greatest success of all with a fish you will agree is a very difficult subject for any aquarist; according to the books its breeding in aquaria is a very rare feat so you can tell how happy I was to produce young from my bumble bees. I would like to pass the information on to other aquarists who may hope to breed these difficult fish.

I followed the books' recommendations with only one difference, and that was the size of the tank. Being stuck for room and big tanks, instead of using a 10 or 12 gallon tank I used a small (18 in. by 10 in. by 10 in.) perspex tank with bottom and sides painted black but one end clear. I disinfected the tank with potassium permanganate and strong Dettol solution and swilled it out well. I included a 3 in. flower pot, which I scalded with boiling water and placed on its side just off the centre of the tank on a ½ in. layer of deep red sand collected from the canal bankside some weeks ago. I had boiled this and rinsed it very well until perfectly clean. I used the water out of the tank

where the fish were kept (aged tap water, which here where I live is just about neutral), topped up to not quite a third with fresh from the tap to make 4 in. depth, covering the flower pot by ½ in. Thus there was about 2 gallons of water in the tank, to which I added three level teaspoonsful of sea salts. I let the water clear for about 3 days and then planted some fresh young Indian ferns from a big tank. These were about 4 in. tall and I leaved them down thickly all around the flower pot.

I put the pair of bumble bees in at night just before dusk. The female was bulging with eggs and the male looked fit and slim. Next day I saw that the female had made a hole under the pot and had hidden. The male was active at the front of the tank. On the third day I had been out all day and was amazed when I got home to see eggs, not on the roof of the flower pot as it said in the book and as I was expecting to see, but all over the ferns and on the bottom. Some were in little clusters together, and I noticed a very fine thread attached to some of them. Under a strong lens they reminded me of a hen's eggs in shape, with one end tapered slightly. At this stage I added 7 drops of methylene blue to the water. The temperature was 76°F (24°C) although they had spawned at 78°F (25°C). I slipped a piece of brown paper over the tank to darken it and took the female out. I left the male in and waited anxiously. It took 6 days before I saw a few fry moving about, and then I took the male out. Now I'm hoping to rear some young bumble bees.



## Aquarist's NOTEBOOK by P. M. FULLER

It seems that an item in 'Aquarist's Notebook' for March caused at least one reader a little consternation. He was puzzled as to how migrating salmon suddenly took on the attributes of climbing perch, and reached the higher reaches of the river by using a ladder to surmount a dam. Last there should be any other readers who could not visualize how a 'fish ladder' operates, I am supplying photographs this month, which will, I hope, give some indication as to the ingenuity of the construction at Pitlochry.

Photograph 1 shows the higher steps of the ladder. Each stage is connected underwater by large steel pipes, through which the salmon pass. The viewing panel is situated at the highest point of the ladder, before it drops down on the far side of the dam. Photograph 2 shows, on the left, the lower steps, just after the point at which the ladder, doubling back on itself, enters the river. The fish are attracted to it by the strong currents in this area. The salmon hatcheries are situated beneath the metal panels, to the right of the picture, on a level with the dam itself.

A recent article on thermostats in *The Aquarist* raises an interesting point about temperature fluctuation, which is worth noting. The writer explained how the outside thermostat was unreliable because it was affected by external temperature. He rightly pointed out that when the room became cold in the evening, the temperature of the tank rose appreciably, and when the room was warmer, the tank became colder. He then went on to outline an ingenious method of stabilising the temperature so that it would remain constant despite outside conditions.

I have been taking thermometer readings from my tanks regularly and recording them for the past 5 years, and they do in fact verify the author's observations. However, the daily deviation from the temperature at which the thermo-



Photograph 1: a fish ladder

stat is set has rarely, if ever, exceeded 3°F under normal conditions. Now, it has been acknowledged for a long time that in Nature the temperature is far from constant. In running streams and rivers quite wide variations occur in a comparatively short space. Various authorities have pointed out that because of this a temperature cycle should be introduced, if not on a daily at least on a yearly scale, and ideally on both. For the average community tank, and all but the most delicate species, the deviations from the set temperature caused by using an outside thermostat, which are never so violent or sudden as to be detrimental, provide a convenient way of creating such a cycle, without the necessity of intervention on the part of the aquarist. For this reason, I do not think that it is necessary, or even desirable, to take steps to eliminate variations in the temperature when using such an instrument.

I hear that about thirty prisoners in Parkhurst gaol, on the Isle of Wight, have taken to keeping tanks of fishes in their cells. This pursuit apparently has the full sanction of the prison authorities (in fact it is difficult to see how it could possibly function without their co-operation). One warden commented 'They help to brighten up the cells', yes, and I think they probably do more than that. An aquarium needs care and attention; its well-being is directly dependent on its owner. It is in fact a responsibility, and surely, it is beneficial to give prisoners responsibilities, however small such responsibilities may be.

I think this is another field in which there is scope for work by aquarium societies. I mentioned last month the need for closer co-operation between aquarium societies and schools; this recent information seems to indicate that such co-operation could be extended to prisons as well. Why not lectures by leading local aquarists on the various aspects of aquarium keeping that are practical within the imposed prison restrictions? Perhaps even a table show? Who knows, the Home Secretary may soon have to deal



Photograph 2: Pitlochry Dam

with applications for inter-prison aquarium shows, as well as for football matches!

A cartoon in a recent television publication shows a man in front of an aquarium, with a chair in front of it, and he is saying to a second person, 'We had it installed to look at while the television is being repaired'. Humorous, may be, but not as entirely fanciful as it sounds. A picture in an aquarium handbook shows an aquarium within a television frame; the caption underneath the photograph reads 'The show that the fish put on is probably better than the ones that came on when it was stuffed with complicated electronic tubes'—I must admit I'm inclined to agree.

Talking of television, however, one programme on B.B.C. television recently should have been of interest to all aquarists—even those who normally prefer to watch the fishes in their tanks! It was Michael and Armand Denis's visit, in 'On Safari', to the Seaquarium at Miami. The programme gave a very illuminating insight into the largest aquarium in the world, where divers, descending several times a day into gigantic tanks containing fishes of all sorts, including sting rays, to hand feed them for the enjoyment of spectators, had to protect their hands with chain-mail gloves. It makes the private aquarist who



"I've got a piranha in my tank"

boasts of the viciousness of his piranha look rather small, although a case is on record where, as a result of a piranha bite, an aquarist had to have several stitches in his hand!

When it comes to collecting and keeping alive native fishes, one immediately encounters difficulties. Fast swimming fish, such as the minnow, rarely fare well in the confinement of an aquarium. However, there are several species which are more readily adaptable than the average. One such species is the intriguing little stone loach (*Nemacheilus barbatus*). Provided with a cool, shallow and well aerated aquarium it will thrive, although stones should be provided under which it may hide. It is very diverse in its feeding habits, *Daphnia*, *Tubificor* worms and other small aquatic animals being the most suitable food for aquarium kept specimens. Although they can live for some considerable time in captivity, no record exists of their having been bred. Although usually quiet, and a little shy, this fish is very susceptible to climatic conditions, and extraordinary behaviour patterns have been observed during thunderstorms. It is an intriguing fish to keep, but if possible several should be housed together, as they live naturally in shoals.

## ABOUT THE POND THIS

# Hatching, Rearing

MY article last month described how to take the goldfish eggs from the pond for hatching in safety. If the eggs have been kept in a warm place the eggs will hatch in a few days. Although many books on the subject give a definite time for this to happen, it is quite impossible to be able to say with certainty how long the incubation period will be. It all depends on the temperature of the water. At a temperature of 70°F (21°C), eggs will hatch in 4 days; nearer 80°F (27°C), they can hatch in 3 to 3½ days. At a temperature of 60°F (15°C) they will take about 6 days. I consider that 70°F (21°C) is ideal.

During the incubation period it is essential to watch the condition of the water to make sure that it has not become foul. This is best tested by smell. Change a large quantity if it appears bad but see that the water is at about the same temperature as the old. Once the fry hatch do not disturb them for a couple of days. They will hang on to the sides of the tank or water plants whilst they are absorbing the yolk sac with which they are born. They will not feed until they are free swimming and so the time to start feeding will be indicated then. The time taken for them to become free swimming depends again on the warmth of the water. At the ideal hatching temperature they will be feeding in 2 days.

### First Foods

The first food will have to be very small and the best is Infusoria. This can be cultured by adding boiling water to crushed lettuce leaves or hay. After a few days the water will look cloudy due to the presence of thousands of tiny creatures. If a small drop of the water is placed on a microscope of about ×24 magnification, the Infusoria will be seen moving around. This culture can then be allowed to drip into the fry tank at the rate of a drop every few seconds or so. Make sure that the water actually contains live creatures or you will only be adding foul water instead of food. If you cannot make a good culture then there is no need to worry. You can buy tubes of fry food quite suitable for your purpose and I have used such foods successfully for many years. Some of this tube food could be added to the water of the hatching tank whilst the fry are developing in the eggs so that there is likely to be a supply of Infusoria ready for them when they hatch.

There are many types of fine foods which can be used, but take care that too much of dried types are not used in excess can easily foul the water. Mashed earthworm makes a very good food with which to follow on. It should be the task of the aquarist from now on to try to feed with foods of increasing size. Live types are undoubtedly the best but do not despair if they cannot be obtained. It is quite possible to rear fry on dried foods alone. Worms can be mashed whilst the fry are small and then given in larger sizes until they can be fed whole.

Another important thing to watch is that the fry do not become overcrowded in the tank. It is far better to spread them out into several tanks than to try to rear too many

## MONTH and Feeding

### A. BOARDER

in a small tank. Swimming space appears to be almost as important as food in the early stages of development. If the eggs were taken from the pond on water plants it is almost certain that there will be some pests on the plants. Small larvae of insects can hatch out and also the tadpoles of newts. These can be a nuisance in the fry tank when they grow a little. At first these tadpoles are slow moving, but they soon become very active and can eat the fry. Where such creatures are suspected it is advisable to catch all the fry and put them into clear water. This is best done by using a small white enamel saucer. The contents can then be inspected to make sure that no pests are put into the new tank.

From now on, with proper feeding and care that the water does not become foul, the fry will grow rapidly and may need spreading out once more. Then is the time to cull the fry to remove any which are misformed, and it will



Photo: LAURENCE E. PERKINS  
Most batches of water fleas contain a mixture of sizes, as this magnified sample shows. The smallest ones can be stroined off for feeding fry.

also be necessary to sort out for size. It is almost certain that there will be a few which will grow on faster than others. If these larger ones are not removed it is possible for them to be able to eat their brothers and sisters when about a month old.

#### Variety of Food

After this time the food can become more varied and plenty of variety is good for the growth of the fry. Always try to give some form of live food every day and see that as long as the fry are eating well they are not allowed to go without food for long periods. Do not put the youngsters into the pond until they are at least an inch in body length. Fortunately, it is not often that small fish will be eaten by goldfish once they are out of the fry stage.

Meanwhile the fish in the pond must not be neglected. After the spawning they require adequate feeding and should be given as much food as they will eat. Always test their appetites by putting a little food in the usual place. If this is taken some more can be given. Make sure that too much dried food is not given at any one time. One point to remember with goldfish is that they do not have to be fed continuously once they get about 3 months old. It is surprising how long goldfish will go without food, especially in a pond. I have known them go for months without being artificially fed. There is always likely to be a quantity of natural food for the fishes in any well-balanced pond. Remember that there is little in the shape of human food which goldfish will not eat and so it is easy to provide a suitable diet.

As the weather warms up the water may become rather foul through the formation of gases from decaying uneaten food. Some fresh water can be run into the pond, especially during thundery weather. Such fishes as golden orfe are soon in trouble if the water warms up too much.

#### Frog and Toad Tadpoles

I have mentioned before the value of frog tadpoles as food for fishes, but this live food will not be available now as the frogs will have developed. I have written in these columns that although goldfish will eat frog tadpoles they will not eat those of toads. An experienced pondkeeper wrote to me to tell me that his fish did eat toad tadpoles. At my request he made some experiments and found that goldfish would eat toad tadpoles when they were very small but after a time as they grew the goldfish ignored them. This was in keeping with what my brother had told me. My brother found that, after having fed his goldfish with the tadpoles of frogs, when he introduced some toad tadpoles the fish took them in their mouths but immediately spat them out, and they were left alone after that. These would not have been very small tadpoles, for he would wait until they were at least half grown before using them as food. I always wait until they are big enough to make a decent meal. As is well known, the skin of a toad gives a secretion of a kind which is very distasteful to animals. If a dog picks up a toad it will foam at the mouth. It is probable that the tadpoles develop this substance at some stage, and it will be a matter for further experiment to find out at what stage this chemical is present on or in the skin of the toad tadpole.

Once the water plants are growing well it may be possible this month to prune some of those which are too vigorous. At this time of the year it is possible that some pests may have entered the water. These may be water beetles and their larvae, also those of dragonflies. These can harm young fishes. It is a good plan to inspect the pond at night with the aid of a torch, as many pests appear to be much easier to catch then; they often come to the surface of the water late at night.

# A Colourful Native—The Perch



Photo

W. J. Moore

**T**HE common perch (*Perca fluviatilis*) is very widely distributed across Europe (excluding Scandinavia, Spain, southern Italy and southern Greece), northern Asia and the eastern half of North America. It occurs in rivers, canals, lakes and large ponds throughout the British Isles with the exception of northern Scotland.

The general colour is light tan to golden yellow, the back olive brown, the belly silvery white. Six to ten black vertical bars adorn the rather deep and somewhat compressed sides. There are two dorsal fins coloured blue-grey to grey-green, and a yellowish green caudal fin only slightly lobed.

The first dorsal fin has 14 or so sharp-pointed spines, and a blackish blotch posteriorly; the second dorsal fin is soft-rayed and edged with pink to red. The anteriorly spined anal and ventral fins are orange to scarlet; the pectoral fins are yellow. Short spines or prickles project from the gill-covers.

As a rule, the perch attains a length of about 12 in., but much larger specimens are caught from time to time, both in this country and abroad. In the wild the perch frequents woody places, or anywhere else for that matter where it can hover around in wait for its prey—living creatures such as smaller fishes, frogs, worms, insects and

by B. FRY

their larvae. It is almost as savage and voracious as the pike (as in the pike its strong jaws are well supplied with teeth) but unlike that fish it does not live a solitary existence, but shoals, especially in its young state, with its own kind.

Spawning takes place in late spring, when the fish is about 3 years old. After some driving by the brighter-garbed male, the female deposits eggs imbedded in foetling ribbons of what looks like clear jelly. These ribbons are draped over and among the water plants, the submerged roots of waterside trees, waterlogged pieces of wood, craggy boulders and so forth. It is said that a well-grown female can produce about 300,000 eggs. She needs to; for whenever other fishes or water fowl come across the trailing masses of ova they have a Loet Mayor's banquet.

The eggs incubate in 1 to 2 weeks, and the first thing the newly hatched fry set out to do is to fill their swim-bladders with swallowed air. Fry which are too weak to break the surface film, or are prevented from reaching the surface within about 2 days after hatching, soon die.

Baby perch are easy to capture in weedy shallows about July. They make highly interesting and easily tamed cold-water aquarium pets. Those taken from still waters—furn-ponds and gravel pits, settle down best. A captive perch's basic requirements are cool, well-oxygenated water and retiring places behind massed plants. *Daphnia*, chopped earthworms, gnat larvae, tiny gentles, pieces of *rod* cooked or uncooked meat and the like, are a necessary part of its diet. It has a life span of upwards of 5 years (in the aquarium, that is), and the ability to survive out of water, wrapped in wet moss or grass, almost as long as the tench.

## Home-Made Breeding Trap for Livebearers

by F. C. BOUCHER

**M**ODERN household plastics can be put to very good use in the fish house. All that is required to make a breeding trap is a plastic container with lid, about 8 in. long, 4 in. wide and 4 in. deep, a nylon scouring pad, two rubber suckers and an elastic band. The bottom is cut out of the container and two holes are drilled in the side to take the rubber suckers. The nylon pot scourer is then unravelled and a piece cut out that will cover the bottom of the container and extend about an inch up the sides. This is secured in position with the elastic band. The trap is then ready for use, but it is sometimes advisable

to use the lid of the container with a few ventilating holes drilled in it, to prevent the female from jumping over the lip of the trap into the main tank.

This idea can be modified to catch the eggs of fish such as zebrafish as they fall to the bottom of the tank. In this case the parents will require the whole area of the tank for spawning, but if a large but shallow plastic container covered by the nylon scourer is used at the bottom of the tank, the fish can effectively be prevented from eating their own eggs.

## OUR EXPERTS' ANSWERS TO TROPICAL FISH-KEEPING QUERIES

I have just bought a pair of live-bearing half-beaks (*Dorosoma cepedianum*). What conditions and food suit this species best?

The live-bearing half-beak flourishes best in rather shallow water to which a small quantity of evaporated sea salt has been added, say, in the proportion of one level teaspoonful to every gallon (but bear in mind that once the initial supply of salt has been added to the aquarium it is asking for trouble to add any more). Plants that float near the surface are essential for the safety of the fry. Tiny worms fed from a perforated feeder, goat weeds, *Daphnia*, and the like, should be offered as food. A temperature range of from 68°F (20°C) to 75°F (24°C) is recommended. If the fish is kept at higher temperatures for protracted periods, there is a tendency for the females to produce deformed or stillborn young.

Is there an easy way of removing chlorine from mains water to make it safe for almost immediate use in a fish tank?

If chlorinated water is allowed to gush violently into a bucket its toxic properties will be lost in the atmosphere as the gas is discharged from the water.

I intend to set up my first tropical tank in a day or two. Do you think anything is to be gained by placing a layer of garden soil or peat on the bottom before adding the sand?

Soft water over a thin layer of peat is ideally suited to the needs of most plants and fishes. But garden soil should be avoided like the plague. The impurities in it soon lead to troubles too numerous to mention in any detail here.

Please tell me the scientific name and how the sexes are distinguished of a fish popularly referred to as the moonlight gourami.

The formal name of the moonlight gourami is *Trichogaster moonlight*. In mature fish the male of the species has bright orange-coloured ventral fins. Further, a female in breeding condition shows fuller sides.

I have noticed some slender bodied creatures with tentacles at the top end adhering to the sides of my aquarium. What are these creatures called, and will they prove harmful to the fish?

The creatures you have noticed in your tank are called *Hydra*, which will catch and eat tiny fry, *Daphnia* and the like, but are harmless to grown fish. Some fishes such as the blue gourami will eat *Hydra*. To get rid of the pests by chemical means it is necessary to remove all the fish from the aquarium, raise the temperature to about 90°F (32°C), and then, for a tank measuring about 24 in. by 12 in. by 12 in., dissolve about 1 ounce of ammonium sulphate in water, stir it into the aquarium, and leave for at least 3 days. At the end of that time, all the *Hydra* should be dead. Before re-introducing any fish, all the water should be siphoned away and the tank re-filled with fresh.

A friend of mine says that the water in my month-old tropical aquarium will soon turn sour and smelly unless I install artificial aeration and filtration. Is this correct?

No, this is not correct. What turns water sour and smelly is not lack of aeration and filtration, but over-stocking with fish, leaving uneaten food to decay on the bottom and not having sufficient light to keep the plants growing.

Is it a fact that the native pond plant called *Potamogeton nodosus* can be grown in a tropical aquarium?

*P. nodosus*, like the fine-leaved willow moss (*Fornaxia angustifolia* forms *granilis*), can sometimes be acclimatized

to temperatures up to about 75°F (24°C). It is, however, far from an easy plant to establish in any aquarium, for among its requirements are a muddy subsoil, and daily exposure to a really bright top light.

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

What causes pop-eye (exophthalmia) in fish?

Unhygienic conditions promoting the growth of certain bacteria which lodge in the eye, too sudden change of temperature or pH value of the water, deficiency in diet, knocks—even excessive artificial aeration. All these and more have been mentioned at various times by various authorities as playing a part in triggering off this disorder, which up to the present writing, usually defies all surgical and medical attention.

What conditions and food are needed for the fish named *Osteogobius lineatus*?

Firstly, this interesting species from Guiana and the Amazon basin needs as much swimming space as you can give it in soft, slightly acid water. Next, a temperature range of about 75°F (24°C) is called for. It is carnivorous by nature, and though a small specimen can be accommodated in a community tank stocked with similar-sized fishes, where it will eat all the regular live foods and meaty substitutes for live food, as it increases in size it will make a meal from almost any living creature small enough to be swallowed.

How can I distinguish the sexes of *Pelmatochromis lineatus*?

In mature fish (that is, fish more than 2½ in. long) the male has handsomer markings, and his unpaired fins are larger and more pointed than those of the female.

On two occasions my angel fish have spawned, then, without any warning, set to and eaten the eggs. I have been told that covering the ends and sides of the tank with tissue paper will put a stop to this behaviour. Is this true?

Sometimes a covering of thin paper, with a tiny peep-hole cut in it for observation purposes, will result in angel fish leaving their eggs unattended; there is nothing more conducive to happy cichlid family life than privacy and a somewhat subdued light.

Will my fishes suffer any harm if I introduce oak wood-bark or halves of coconut shells into their tank for decoration?

Small pieces of oak bark, after preliminary scrubbing and soaking in several changes of water, are quite suitable for decorating an aquarium. So, too, are well-soaked coconut shells rubbed free of all pith and fibre. All the same, it is necessary to point out that such additions to an aquarium will gradually result in a marked change in the pH value of the water—to an acid rather than an alkaline condition.

I am installing a 4 ft. tank in a dark alcove in my living room, and I would like to know how much electric light (in wattage) I will need to maintain the plants and fish in a satisfactory condition. Also, how many hours a day should the light be kept switched on?

Allow roughly 200 watts for your tank. Ordinary clear house lamps, rather than a fluorescent tube, should be used. These should be fixed, several inches apart, in a properly designed reflector hood placed not more than 6 in. above

the surface of the water. The lamps should be kept switched on for at least 8 hours every day.

**Please give me some information on the essential requirements and breeding procedure of the Celebes rainbow fish.**

The essential requirements of this species, formally called *Telmatherina ladigeni*, are a brightly lighted aquarium, alkaline water and a temperature of about 75°F (24°C) to 78°F (26°C). Spawning takes place among plants with finely divided foliage, and the eggs, which are deposited over a period of several days, hatch in about 14 days. Well-fed parent fish seldom trouble to molest their eggs.

**I have never been able to keep the clown loach alive in my**

**community tank for more than a few months. Is this species delicate and/or short lived?**

Given the right conditions, the clown loach (*Betta macracantha*) is neither delicate nor short-lived. What it needs to flourish are plenty of plants to retire into, companions that will neither chey it nor frighten it by dashing boisterously about, a rather subdued light and a temperature in the neighbourhood of 75°F (24°C). Ordinarily, the clown loach has a life-expectancy of about 4 years, but many specimens kept under community conditions die long before their time through lack of food. To guard against the bottom-baiting clown loach being deprived of food, see that some shredded red meat or live food is introduced into the tank last thing at night.

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

**I have a tank 30in. by 15in. by 15in. in which I have plenty of growing water plants and a number of goldfish. The water keeps clear for a couple of months and then suddenly goes all foggy and white. Why is this please?**

I suspect that the white foginess is caused by Infusoria. The Infusoria are encouraged by decaying uneaten dried food as a rule. If a little of the water could be placed under a microscope at this time thousands of tiny creatures would be seen moving around. When this state occurs most of the water can be removed and plenty of the mulm from the bottom of the tank. Refill with fresh water and do not feed again for about 3 days. Often the water will clear if all feeding is stopped. Take care with the amounts of food given during cold weather, as the appetites of the fish will be decreased considerably during such times.

**I have a garden pond about 9 ft. by 3 ft. and 2 ft. 6 in. at one end, running shallow at the other. I have a number of fishes but have lost several during the winter. I covered up part of the deep end with boards and plenty of sacks and the water never froze at all there but did so fairly solidly at the shallow end. I lost several shubunkins, goldfish and golden orfe; the largest ones suffered the worst. Could I install a heater to save this happening another time?**

I think that the covering of the pond was a mistake. I have found that if the water is darkened in any way, either by coverings or by snow lying on ice, the water underneath becomes very foul. I am sure that it is not the cold which kills fishes in a frozen pond but the fact that the water is over-charged with foul, poisonous gases which are trapped under the ice and cannot escape; also fresh oxygen cannot then get into the water. Your larger fishes suffered the worst because when there is a deficiency of oxygen they are the first to die, since they need more oxygen than smaller ones. I have not lost a single fantail goldfish in my pond, which was frozen over about 6 inches thick for several days. I cleared the snow from the ice and made a hole with a water can filled with boiling water. I then slightly lowered the water and this meant that the whole surface of the water could give up any foul gases and take in fresh oxygen. You could install a heater but in a pond the size of yours all that would happen is that you could keep open a hole near the heater, which could, of course, be done each day by the method I have described. One of the best methods of ensuring that the fish come to no harm under ice is to see that the water is fresh and pure at the beginning of the winter by cleaning out the pond and refraining from over-feeding during cold weather.

**I would like to get a container in which I could keep a large number of goldfish. Have you any suggestions?**

There are many kinds of containers which could be used. You apparently do not want a concrete pond, but there are several plastic ponds of various sizes from which you could

choose. Then there is always the discarded bath, which is easily converted into a goldfish tank. On a smaller scale there are coldwater cisterns, which can be suitably cleaned, made water tight and cemented over. I treated a number of such tanks many years ago, before the last war in fact, and they are still holding water and fishes with no trouble.

**I am a coldwater breeder of good stock of shubunkins and vitalls and would like to take up orandas. Can you please recommend anyone who can supply me with these?**

I do not like recommending any particular breeder, as conditions vary from time to time and there are not many breeders of good orandas today. My advice to you is to insert a small advertisement in *The Aquarist*, setting out your needs; you should get in touch with the right fishes in this way. If you are able to do so it is a very good plan to attend shows and then find out the addresses of the successful exhibitors of the variety you want.

**I recently noticed a hi-goi carp in my pond which had one of its eyes protruding. The eye appeared undamaged but was about half-way out of its socket. I have some goldfish, shubunkins and golden orfe in the pond. Do you think that any of these could have caused the damage?**

The fishes you mention would not normally attack the hi-goi, although the orfe might have done this as they are a very quick fish and heavy feeders. Its eye may have been damaged by any rockwork or even against the concrete side of the pond. There is little you can do for the fish. Even if the eye is lost it is quite probable that it will live on apparently unaffected by the loss.

**Could you tell me how to get rid of the blanket weed in my pond? Last summer it covered all the pond plants. I believe I introduced it into the pond with *Lepomis*.**

The blanket weed can be removed from the pond by twisting a broken stick into masses of it. Much of the weed can be removed this way. Some can be pulled out by hand. You must tackle it as soon as possible before it gets a good hold in the summer months.

**I have a male and female goldfish in a tank 10 in. by 7 in. by 4 in., and the female appears to be full of spawns. She chases the male about. Do you think she is ready to spawn and should I remove the male to another tank for a time? The room is centrally heated.**

I do not think that you will have much success at breeding goldfish in your tank. It is much too small for the purpose. Any of the eggs could be eaten and even if some escaped the fry would be eaten by the parent fishes soon after they hatched. Try to get a tank 24 in. by 12 in. by 12 in. at least, when the fishes will have more room to swim about and possibly breed.

*Continued on page 51*

## Around the Aquariums with MIKE SHEEDY

**T**HIS trout fishing season has just started. Many keen trout fishermen are going to the well known trout lakes of the West country to try their luck with a lightning brown or rainbow. But if you prefer to do your "fishing" the quiet way, Bristol Zoo Aquarium may be the answer. For here a family of two dozen fine rainbow trout are settling down in a quiet pool at the bottom of a waterfall.

The big glass-fronted tank in which they live has been ingeniously disguised as a natural riverside scene. The sun of river where any fisherman might cast his lure. But this committed family of trout are safe from angling flies and hooks.

Here in Bristol Zoo also will be found many more kinds of fishes, for the zoo aquaria are well stocked and the tropical fish lover will not be disappointed.

Recently the London Aquarium made some exchanges with the Blackpool Tower Aquarium. Mr. G. J. Ashby, manager of the Zoo Aquarium, brought back to London, six orange eels, six dogfish, seven Ballan wrasse, 12 cuckoo wrasse and 16 young flatfish (plastic) to supplement the present stock of saltwater fishes.

In exchange the London Zoo sent to Blackpool Tower Aquarium a selection of fishes including an electric eel and electric catfish. Blackpool Tower obtain many of their own specimens; about once a year members of its Aquarium staff go fishing in waters off the Isle of Man.

The London Zoo informs me that master keys for the "talking machines" are now on sale at the Zoo Shop (price 5s.). These are in attractive packs, which list some of the "talking labels" to be found in the Gardens. The talking labels, which can be operated by 6d. in the slot or the master key, relay commentaries lasting several minutes giving interesting facts about mammals, birds, reptiles, fishes and insects.

From Vancouver, B.C., I have just received some very interesting news of the very large Vancouver Public Aquarium at Stanley Park. Aquatic specimens from all over the world are yours to marvel at, study and enjoy at the Vancouver Aquarium. It is a public aquarium, built as a joint project of the federal, provincial and civic governments. All operating expenses come from admissions and the membership subscriptions of hundreds of citizens who have joined the Vancouver Public Aquarium Association.

Opened on 15th June, 1956, this is Canada's first major aquarium, and it ranks with the finest anywhere. Four complete water systems operate in the Aquarium to serve the 35 display tanks. The tropical water systems—one salt, one fresh—are kept at about 75°F (24°C); the other two, also salt and freshwater, are kept as cold as their occupants require.

Special displays are featured often during the year. They have included the life cycle of the Pacific salmon, associated with their spawning in the fall, the care of tropical fish by the home aquarist, and the commercial fishes of British Columbia.

The wonderful world of the sea is represented by many beautiful displays of marine life and ever-changing fishes; specimens include the large pink starfish, the Pacific octopus, one of the largest in the world, and lingcod, which are common from California to Alaska and may grow to a length of 4 feet. Also to be seen are the lionfish, native

to tropical Pacific and Indian oceans, electric eels, flesh-eating piranhas, brilliant tetras from the Amazon and Hawaiian coral reef fishes.

I was at the new Marineland in Cleethorpes the other day, and found that very good progress has been made in such a short time. This venture is not yet fully completed, but the sea side is open to the public. When this venture is fully completed it will have a very large selection of marine life to offer its visitors. The curator is Mr. Frank Reitz, who will be always glad to assist anyone needing any kind of information. The head keeper is Mr. Keith Reaney. Chief construction engineer is Mr. Ron Potter. Later I shall be doing a review of this Marineland for *The Aquarist*, which I am sure will be of interest to readers.

Belle Vue Zoo, Manchester, offers some sparkling exhibits in the new Aquarium and Reptilium this season. These range from giant tortoises more than 150 years old to the fantastically colourful and quaintly shaped fishes of the coral seas. The marine show is an astounding experience to visit. A unique feature of the Aquarium is the jungle pool setting. Visitors cross the pool by a wooden footbridge from which it is possible to gaze down on crocodiles and alligators, all in complete safety.

Any readers of *The Aquarist* who visit Belle Vue this year will not be disappointed by the tropical fish display, which I think is one of the finest in the country.

At Pan's Garden (Zoological and Botanical Gardens), Ashover, Derbyshire an entirely new approach to labelling fishes on display has been put into practice. A large coloured model of the species concerned surmounts a great deal of detailed information about it, and this approach serves a dual purpose: (a) it provides a sure means of identification where several species are confined in one tank and (b) as models are "larger than life" they show great detail not normally noticed—in fact they may almost be said to be under the microscope.

### Readers' Queries Answered

(continued from page 50)

I have an old bath sunk in the garden for a pool and it has become overgrown with plants. Can I clean it out now and take out the plants? I would like a water lily when I replant. Will the fishes be all right in an old galvanised tub whilst I clean out the pool?

You can clean out the pool any time during the spring. You will only be able to have a small water lily as the bath is so small. The fishes should be all right in the tub provided that the galvanising is not new.

I have a coldwater tank which is infested with *Hydra*. How can I get rid of them?

It will not be easy to get rid of the *Hydra* whilst you have fishes in the tank. The usual way is to raise the temperature of the water to about 70°F (21°C) and add some ammonium sulphate dissolved in water. A quarter of an ounce to a 24 in. tank will do. The fishes will have to be removed while this is being done.

## our readers

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



## write

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

### Starting Right

ALTHOUGH I enjoyed the article (*The Aquarist*, April) "Starting right with the Aquarium", I am not too agreeable with the title.

It would appear from the photograph (3) that the permanent position of the tank is on top of a refrigerator (I may be wrong). This seems to me to be a very undesirable location when bearing in mind that the motor of the refrigerator is regularly switching on and off automatically. The sudden noise and vibration would surely frighten the fish, especially during the night when everything is quiet.

G. E. STORER,  
London, N.5.

We agree that a refrigerator top would be a bad permanent site for an aquarium. The aquarium depicted was, in fact, moved to an aquarium stand before filling was completed.—**ERROR.**

### School Aquaria

I READ, with interest, the comments of Mr. T. Rolan in his letter in the April issue. Having removed pennies, old ball-point pens and lumps of soil from school aquaria, as well as the occasional unfortunate dead fish, I must agree that a non-opening tank top would be ideal. Even in the class laboratory, when the teacher's attention is diverted during practical work, it is easy for the unwashed pupil to add to the tank anything from the above to half a tin of dried food. Can any readers suggest suitable, inexpensive ways of making non-opening tank tops?

Mrs. Carrington's letter regarding the use of a garden hose to fill indoor aquaria brings to mind an occasion when the union of hose and tap became partially unstruck, producing disastrous results in the kitchen.

These are all part of the game of fishkeeping, with its attendant thrills and spills!

H. WHITEHEAD,  
Larne, Co. Antrim.

### Angels on the Move

AFTER experiencing some difficulty in moving large angels I now find the following method most successful. Bring the two tank temperatures as near as possible (to a degree or two), then catch the fish with two large nets and

transfer straight into the new tank. Last week I moved 11 large angels into a new 4 ft. tank. There were five of them caught together in the first netting and I am pleased to say only one tail fin was slightly split. This week there are three pairs busily clearing and we trust there will soon be some eggs.

I hope this suggested method will be of future help, as I think that these fish are scared by being placed in a small container.

A. W. SKINNER,  
Birmingham, 24.

### Tough Fancy Guppies

I HAVE read with considerable interest and a little indignation Mr. Jenno's article "Natural and Planned Breeding" (*The Aquarist*, March).

I wonder whether this article was based entirely on Mr. Jenno's own practical experiences in the development of the strains mentioned therein? While I agree with much he has written with regard to inbreeding, there are a number of points with which I disagree.

Firstly the article gives a very incorrect impression of the methods applied by the fancy guppy breeder. I have been a breeder of guppies, to the P.G.B.S. standards, for 8 years, and have had considerable success in the development of new lines, and on the show benches throughout the country. I have never used this continuous close inbreeding, which he so rightly states "is against all the laws of Nature".

Mr. Jenno states that "fancy guppies and many strains of fancy goldfish are sluggish and inactive and cannot stand cold weather as the common goldfish can"; surely the author is a little confused? The former being a tropical species, there can be no comparison between those mentioned. I would suggest that Mr. Jenno refers to the series of articles by Peter Dendy, entitled "The Guppy, King of Tropical Fishes", published in *The Aquarist* commencing June, 1960.

To illustrate the toughness of this modern line-bred guppy: on 1st March, 1964, I travelled from Birmingham to Glasgow taking along some of my best exhibits in glass show jars, and packed in insulated boxes in the boot of an unheated car (cruising at 80-90 miles per hour, I would imagine it was, to say the least, a little draughty back there!).

I lodged the fish at a friend's fish house overnight.



They were put on exhibition the next morning, still sluggish and very active. We returned home to Birmingham that evening, the fish suffering no ill-effects from this rough treatment. At a later date I won "Best Fish in the Show" award at Nottingham with one of these fish. Surely this proves that this little fish is quite hardy.

I would suggest that Mr. Jenno takes the trouble to visit some of the many serious guppy breeders; I assure him that he will not find any of the sluggish and inactive freaks that he writes of.

P. W. JENKS,  
Show secretary,  
Federation of Guppy Breeders' Societies,  
Birmingham, 25.

In past months I have read and enjoyed the articles by your contributor Mr. A. Jenno, but in his article on "Natural and Planned Breeding" (*The Aquarist*, March) he most surely gets out of depth, when he mentions the "cultivated guppy". He confuses line-breeding and inbreeding and also says that these fish are delicate, sluggish

and so on. Let us first take the original wild type guppy. This is an insignificant grey fish, whose finnage shows no regular shape or fixed coloration, except the occasional "sport" (not "freak"). Over the years serious aquarists have "bred" various characters, caudal shapes, colours etc.;

all are the result of man-made matings, and, I think Mr. Jenno will agree, a decided improvement.

These results are not brought about by inbreeding but by line breeding, and continual outcrossing within that particular type. To explain more fully: inbreeding is mating brother to sister, or father to daughter etc. (this the serious breeder needs to do once, simply to get a certain character "fixed"); line breeding is never closer than cousin to cousin. But, flock breeding—never! this is the way to reduce prized stock to rubbish in one generation.

Anyone who regularly attends the open shows can verify that these "cultivated guppies" are amongst the most active fish on the show bench today (indeed, they must be, to compete with the bigger fishes). Department is also something that must be bred into the guppy.

K. G. PEARCE,  
Birmingham, 7.

#### An Apology

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## The AQUARIST Crossword

Compiled by M. W. SAUNDERS



#### CLUES ACROSS

1. More commonly, the wraith (7, 8).
2. *Alouatta palliata* (6, 5).
3. Suitable for testing water temperature (3).
4. Merring glory, arriving soon by the sound of it (3).
5. Descriptive of STD pain (3).
6. A tree in south America (3).
7. British bird from Morocco (3).
8. A letter (2).
9. Common name for *Alouatta palliata* (11).
10. Hang out (3).
11. To do so, might leave managers with an empty building (7, 8).
12. Frozen water mice, usually (3).
13. Part of a circle (3).
14. Agreement which began yesterday (3).
15. Might give you a lift (3).
16. Constant (1).
17. Part of a cookery's show? Something fishy here! (3).
18. Descriptive of a certain type of barb (4, 7).
19. When spoken, may be plain to all (6, 9).

#### CLUES DOWN

1. For 24 down, these have slipped out of fashion (7, 6).
2. Useful for catching crabs? (3).
3. In this painting about Yoga (7, 6).
4. The building variety, maybe (4).
5. Belonging to you and me (3).
6. Might the fish settle in a tree? (3).
7. Tamed (3).
8. This snake might be useful in a school (8).
9. Common name for *Alouatta palliata* (5, 8).
10. Similar comparison (3).
11. 16 down to a soldier (3).
12. Pair part (3).
13. A short street from the stage at this time (3).
14. Occasionally mutated in fathoms (3).
15. Weep (3).
16. Looking in—at your tank perhaps (7).
17. Not your trust I share for this (3).
18. The backward French fish part is gromme-like (5).
19. Taken all round, a neat mountain (4).
20. The small army must stock up with weapons (2).
21. About some years (3).

Solution on page 56



## from AQUARISTS' SOCIETIES

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

**THE Weekoap Aquarist & Zoological Society** held its second Open Show recently. This was well supported by the following twelve societies—Bradford, Cresswell, Gosh, Halifax, Huddersfield, Leeds, Nottingham, Peterborough, Sheffield, South, Tadworth, and Thorne. Judging was by F.N.A.S. standards and a F.N.A.S. Diploma was awarded for the Best Fish in show together with a Plaque. This was won by Mr. Mills of Nottingham. The results were as follows: Guppies: 1, Mr. Thompson; 2, Mr. Bradford; 3, Mr. Allen. Swordfish: 1, Mr. Dennis; 2, Mrs. Cohen; 3, Mr. Machin. Molluscs: 1, Mr. Bradford; 2, Mr. Williams; 3, Mr. Stanforth. Platies: 1, Mr. Williams; 2, Mr. Machin; 3, Mr. Wilkinson. Characins: Larges: 1, Mr. Machin; 2, Mr. Williams; 3, Mr. Hudson. Characins: Small: 1, Mr. Gervener; 2, Mr. Dennis; 3, Mr. Stanforth. Beta Lags: 1, Mr. Dennis; 2, Mr. Hudson; 3, Mr. Stanforth. Beta Small: 1, 2, and 3, Mr. Pith. Carps and Minnows: 1, Mrs. Cohen; 2, Mr. Gervener; 3, Mr. Mason. Flying Foxes and Shanks: 1, Mr. Bean; 2, Mr. Bradford; 3, Mr. Pratt. Fishers: 1, Mr. Townsend; 2, Mr. Branson; 3, Mr. Eccles. Antaquarists: 1, Mr. Machin; 2, Mr. Cohen; 3, Mrs. Dennis. Angels: 1, Mrs. Dennis; 2, Mr. Pratt; 3, Mr. Wick. Dwarf Cichlids: 1, Mr. Dennis; 2, Mr. Wick; 3, Mr. Waddington. Large Cichlids: 1, Mr. Knowles; 2, Mr. Gervener; 3, Mr. Stanforth. Egg-laying Tooth Carps: 1, Mrs. Dennis; 2, Mr. Bean; 3, Mr. Wick. Catfish and Loach: 1, Mr. Bradford; 2, Mr. Wick; 3, Mr. Bradford. A.D.V. Tropical: 1, Mr. Mills; 2, Mr. Bean; 3, Mr. Mills. Breeders: Livebearers: 1, Mr. Dennis; 2, Mr. Thomas; 3, Mr. Mason. Breeders: Egg-layers: 1, Mr. Dennis; 2, Mr. Wick.

At the April meeting of the **Elford and District Aquarists' and Pondkeepers' Society** an auction of fish, plants etc., was held for the benefit of members, 10% of the proceeds being allowed to club funds. A new set of Table Shows has now been introduced providing for three classes at six of the Society's meetings during the year and 2 classes March and October, the months of November, December, January and February being excluded due to the dangers of exposing tropical exhibits to rapid temperature changes. The winning entries at the April meeting were as follows: Fancy Goldfish: 1 and 4, Miss Rita Berger; 2 and 3, Mr. H. Berger. Platies: 1 and 3, Mr. Sampson; 2, Mr. Bell. Characins: 1 and 4, Mr. Sampson; 2, Mr. Bell; 3, Mr. Loring.

The newly formed **Gorton and Openshaw A.S.** held their first members' table show recently. There were 31 entries in five classes and judging was conducted by Mr. C. Walker, F.N.A.S. who also gave a lecture on Judges and Standards. Coming activities for the Society include two first shows with Herwood A.S. and Orton A.S. and a visit to Chester Zoo with a conducted tour of the Aquarium. Anybody interested in joining the Society should contact the secretary, L. Moxon, 26, Railway Street, Gorton, Manchester or attend the meetings which are held on the second and fourth Wednesdays in the Angel Inn, 37, Wellington Street, Gorton, Manchester, where they will be made most welcome.

The Annual General Meeting of the **Isle of Wight A.S.** was held recently at the Leigh Richmond Hall, Newport. A very good attendance heard the retiring Chairman K. Stevens report a year of progress in the Club and also social. The new Secretary reported the bulk of entries over the year in Table Show classes had come from 3 members and he looked forward to stronger competition in the next year. E. T. Davison the Hon. Treasurer was pleased to report a small increase in cash in hand and with regard to the amount of money paid out the result was satisfactory.

The Secretary, R. L. Nutter looked forward to more members making suggestions and raising criticisms and said that the Officers had worked hard with Committee members to make a success of the year. Results of Show Fish of the Year—Tropical: 1, A. Parker; 2, R. Davison. Fish of the Year—Coldwater: 1, R. Chapman; 2, R. Fagan. Best Plant: 3, Stevens. The officials elected for the year were:—Chairman: 1, Davies, Vice-Chairman: C. Pery, Hon. Treasurer: E. T. Davison, Hon. Secretary: R. L. Nutter, 3, Hill. Prize Lion, Trophy, Yarmouth Show Trophy: H. Bamford. Curator: S. Stevens, Committee Members: Messrs. Sharp, Williams, Jones, Nolan. The Annual Dinner and Dance was held at the Grandium Hotel, Cowes when 41 members and guests enjoyed an entertaining evening and were awarded an extraordinary evening and saw Mr. C. Pery present the awards in under—Challenge Cup (most points): E. T. Davison. Runner up: L. Davison. Best Tropical Fish: A. P. Parker. Runner up: E. T. Davison. Best Cold Water Fish: R. Chapman. Runner up: R. Fagan. Best Plant: A. V. Stevens. Garter Cup (best Green): S. Stevens. Cup (best Yucca): L. Davis. Ladies Cup: Mrs. Davison. Novus Cup (Tropical): N. Walker. Hova Shield (Furnished Aquarium): David J. Roper; 1, Davis. Medal (winner of 3 or more first awards): Messrs. Stevens, Davison, Walker, Davis.

The **Enfield and District A.S.** has recently re-elected the officers elected for 1965 were as follows:—Chairman, Mr. C. Watts; Treasurer, Miss Collins; Secretary, Mr. T. Robinson, 224, Carterbank Road, Belsize, Middlesex. Show Secretary, Mr. D. Burnell, 24, Tunnel Gardens, Roade Green, Middlesex. The meeting for 1965 will be held on the third Wednesday of the month at Greer's Spices School, Southbury Road, Enfield, Middlesex. New members are welcome and should contact the secretary.

The **Mossfield Aquarium Society** held the last of their six monthly table shows, for the best aquarist of the year, also the aquarist of the year husband. Results: Best Aquarist of the year—1, H. and E. Wilson; 2, T. Mitchell; 3, N. Rogers. Results of the aquarist of the year husband: 1, T. Mitchell; 2, H. and E. Wilson; 3, N. Rogers. At the May meeting a film on marine fish was shown by Mr. J. Kilbride of Gately. At the 3th July meeting a lecture on Live foods will be given by Mr. P. Partington, of Middlesbrough. The annual show is on the 10th, 11th of September.

The **Harlow A.S.** were held recently in members of the **Enfield and District A.S.** The programme for the evening was a film show on the breeding habits of Siamese fighting fish, Papyrus, manila-pondweed and two species of British fish. The table show for A.V. pairs was won by Mr. J. Soames (Singapore barbs); second, Mr. E. Spry (Siamese croaker); third, Mr. B. Grogan (carnet platies). The society meets in March, Handwriting School, Bath Place, Harlow, on the first and third Wednesdays of the month and visitors are always welcome.

At the May meeting of the **Coalville and District A.S.**, Messrs. Harry Williams and Paul Stokes, representing the Waterhammer Study Group, gave an excellent talk and film slide show on "Tooth Carps". This is a programme well worth putting on during a society meeting (a tape about two hours and in easy where speakers cannot attend a tape recording is provided). Societies interested should contact Mr. P. Stokes, 4, The Mead, Notting, Worcesterhire. Winners of a table show were Mr. H. D. Tapp, Mr. M. Williams; Mr. C. Cresswell, Mr. V. H. Tilley and Mr. G. McMan.

At a meeting of the **Aireborough and District A.S.** over 150 people attended an inter-club show. Members from Aireborough, Bradford, Halifax, Leeds, York, Rotherham, Keighley, Featherstone and White Rose belonged between them 150 fish. Plaque winners of the society include a car rally, a day trip to Sharncliffe Aquarist Birmingham, and a social night at a night club. The results of the inter-club show were as follows: Livebearers: 1, Mr. Wilson, (Bradford); 2, Mrs. Cohen, (Featherstone); 3, Mrs. Wiggins (White Rose). Barbs: 1, Mr. Cohen (Featherstone); 2, and 3, Mr. Yeaman (Aireborough). Characins: 1, Mr. Carr (Bradford); 2, Mr. Greenwood (Bradford); 3, Mr. Hampton (Aireborough); A.O.V. 1 and 2, Mr. Chadwick (Aireborough); 3, Mr. Greenwood (Bradford); Catfish and Loach: 1, Mrs. Ringham (York); 2, Mr. Hampton (Aireborough); 3, Mrs. Dickson (Aireborough). Cichlids: 1, Mr. Watts (Aireborough); 2, Mr. Saltus (Rotherham); 3, Mr. Yeaman (Aireborough). Anabantids: 1, Mr. Greenwood (Bradford); 2, Mr. Bradley (Featherstone); 3, Mr. Saltus (Rotherham). A.V. Plants: 1, Mr. Cohen (Featherstone); 2, Mrs. Holt (Aireborough); 3, Mr. Moonhouse (Bradford). Best fish in show, Mr. Chadwick (Aireborough). Society prizes: 1, Aireborough (118 pts.); 2, Bradford (137 pts.); 3, Featherstone (143 pts.).

A meeting was held at Edgou recently of the **Three Counties Association** and an inter-league battle competition took place, with each club putting up six fish. Individual results were: 1, A. Williams (Dulock); Jack Dempsey; 2, E. Pitts (Reading); Camd; Tull; 3, V. Lavery (Basingstoke); Farncombe; Club placings were: 1, Reading (93 pts.); 2, Dulock (78 pts.); 3, Basingstoke (68 pts.); 4, Reading (59 pts.). About 90 people were present and the Abingdon Cactus Society put on a splendid slide show.

AMONG recent events of the **East London Aquarist & Pondkeepers Association** has been a talk by Mr. C. Cross on the "Setting up of a Furnished Aquarium". This was most interesting and informative as Mr. Cross explained what lights would look for and what could live tanks, he also pointed out, that last the stress, the aquarist must create a picture-like world but whereas the artist uses paints, the aquarist used Rocks, Plants and Fish to complete the picture. The first meeting of May was a Table Show for Characins, Barbs, Danios and Junior Guppy Competition. The results were as follows:—Characins—1, Mr. F. Vicker (Cardinal); 2, Mrs. J. Burroughs (Consett) Tet. Breeders: 1, Mr. F. Vicker (Newn); Barbs—1, Mr. D. Mayhew (Dagen); 2, Master S. Mayhew (Cherry); 3, Mr. Green (Tilley); Danios—1, Mr. W. Barrage (Pearl); Breeders: 1, Mr.

W. Bunnage (Zebra), Justice Guppy (1st and 2nd, Master P. Corby).

During the judging members discussed the sale to Southern Aquarists and all agreed that this had been a really worthwhile trip, although a long way to travel.

**THE Annual General Meeting of the Scottish A.S.** was held on 6th April and the following officers elected: President, Mr. E. Woods, Vice-President, Mr. N. McKinnon, Hon. Secretary, Mr. I. Lusk, 249 Byres Rd., Glasgow, W.I. Asst. Secretary, Mrs. McArthur, Hon. Treasurer, Mr. R. Dick, Show Manager, Mr. J. Miller, Asst. Show Manager, Mr. E. Daly, Council Members, W. O'Neill, K. Brown, Dr. A. Young, A. Patrick, J. Connolly, G. Thomson, S. Thomson, J. Hamon, J. McKinlay, Delegate to the Federation of Scottish Aquarists Societies, G. Thomson, Delegates to the P.S.A.S. Breeders Committee, S. Bates, S. Thomson. Auditors, K. A. M. Robertson, S. Horn.

Meetings are held on the first Tuesday of each month at 534, Stanchell St., Glasgow at 7.30 p.m. new members are welcome. After a very successful Annual Show in McLellan Galleries the Scottish A.S. acted as hosts for the P.S.A.S. at a show held in March. This was a very fine show with over 300 entries and well supported by societies from all parts of Scotland. The society looks forward to a new season with renewed vigour and is gratified by the increasing interest of judging societies. The Annual Show will be held again in McLellan Galleries, Glasgow on October 7, 8 and 9.

At a recent meeting of the **Thames Aquarist Club** the show secretary Mr. E. Nicol gave a most instructive talk on breeding the egg-layers, which also included his own breeding experience with the corydoras species and the Jewel cichlid. The talk was enjoyed by all club members. The May meeting was devoted to practical judging and a table show. Results: 1, Mr. R. Nicholls, W.C.M. Minnow, (62 pts); 2, Mr. R. Nicholls, Harlequin, (80 pts); 3, Mr. D. Dumas, Zebra danos, (38 pts). There were 17 entries. The club meets on alternate Mondays at 8 p.m. at Gipsy Lane Hall, Geary.

The meetings of **Basingstoke & District A.S.** are being well attended, due, no doubt, to an interesting programme arranged by the Committee.

Recently the club visited Dulwich for an inter-club show and an excellent evening was enjoyed by all. The bottle show resulted in a show. The club has been favoured with a visit from W. Foster, Esq., from Portsmouth. His talk on Goldwater, topics proved very interesting together with slides which have given most members something to think about.

THREE new and valuable trophies were awarded for the first time at **Derby Regent A.S.** third Open Show, held early in May. Two of them, the **First Show Trophy for Best Fish in Show**, and the **Emerald Wilkinson Trophy for the worst fish**, Prize Winner, went to Mr. T. F. Jordan, Secretary of the Society, for a pair of Tinfoil Barb. With 64 points they topped the exhibitor Prize class and were the only fish to pass the 60 mark in a show notable for few points. Nearly 200 entries were received in a very wide area. The third new trophy, a **Silver Tankard for the Best Fish**, First Prize Winner, went to Mr. P. Bunnage (Creswell A.S.) with a Cherry Barb scoring 78 points. Mrs. Pussie Hanks, wife of the popular former Chairman of the Society, who has been ill the same time, presented the awards.

Class winners were: Guppies, 1, 2 and 4, Mr. J. Allen (Nottingham and Dist. A.S.); 3, Mr. Lawson (Woking). Livebearers, 1, Mr. and Mrs. Pearson (Rugby A.S.); 2, Mr. M. G. Davis (Nottingham A.S.); 3, Mr. M. G. Davis (Derby Show Group); 4, Mr. M. G. Davis (Derby Show Group); 5, Dennis; Barbours and W.C.M.M.; 1, Mr. A. Widdowson and Mr. P. Kesteven (Derby Regent A.S.); 2, Mr. M. G. Davis (Derby Show Group); 3 and 4, Mr. R. H. (Nottingham Dist. A.S.); 5, Anad Barb; 1, Mr.

P. Bunnage (Creswell A.S.); 2, and 4, Mr. R. H. (Nottingham); 3, Mr. G. Swain (Nottingham Tropical); A.O.V. Barb; 1, Mr. I. Horn, (Tuesdall); 2, Mr. M. G. Davis; 3, Mr. J. Dennis; (Woking A.S.); 4, Dr. P. Hammett (Society of Aquarists, South Staffs.); Cichlids, 1, Mr. J. Dennis (Woking); 2, Mervyn Kendrick and Widdowson (Regent); 3, Mr. I. Horn (Tuesdall); 4, Mr. G. Swain (Nottingham Tropical); Characins, 1, Mr. G. Swain; 2, Mr. G. Gadd (Tipton A.S.); 3, Mr. M. G. Davis; 4, Mr. J. Dennis (Woking); Fishes: 1, Mr. R. Asherson (Nottingham A.S.); 2, Mr. M. G. Davis; 3, Mr. T. F. Jordan; 4, Mr. Taylor (Woking A.S.); Anabantids, Mr. J. Dennis; 2, Dr. P. Hammett; 3, Mr. Tye (Woking A.S.); 4, Mr. R. F. Hallam, (Derby Regent); Catfish and Loaches, 1, Mrs. G. Mason, (Derby Regent); 2, Mr. G. Gadd (Tipton A.S.); 3, Mr. G. Bullerston, (Nottingham A.S.); 4, Mr. M. G. Davis, Livebearer Pair; 1, Mrs. B. Widdowson (Heywood A.S.); 2, Mr. W. Homan (Aberdeen A.S.); 3, Mrs. Marston (Woking A.S.); 4, Mr. M. G. Davis, Egglayers Pair; 1, Mr. T. F. Jordan; 2, Mr. M. G. Davis; 3, Mr. D. Wain (Thames A.S.); 4, Mr. Knowles (Creswell). Breeders Livebearers: 1, Mr. J. Dennis; 2 and 4, Mr. M. G. Davis; 3, Mr. W. Gadd (Derby Regent). Brandy Egglayers: 1, Mr. J. Dennis; 2, Mr. D. Wain (Thames); 3 and 4, Mr. M. D. Louches (Society of Aquarists, South Staffs.); A.O.V. Tropical: 1, Mr. M. G. Davis; 2, Mr. G. Gadd; 3, Dr. P. Hammett; 4, Mr. J. P. Worley (Harrow A.V.); Coldwater: 1, 2 and 4, Mr. C. Hill (Nottingham A.S.); 3, Mrs. B. Widdowson (Heywood).

THE fifth Annual Open Table Show of the A.V.A.S. was held at Scathra. There was a good attendance with 169 entries from Yorkshire and County Durham, the results being as follows: Livebearers: 1, Mr. C. R. Wilson, Bradford (Black Guppy); 2, Mr. R. Wilkinson, Halifax (Black Guppy); 3, Mr. Chamberlain, Middlesbrough (Finnish Guppy); Barb: 1, Mr. Furb, Bradford (Albino Tiger); 2, Mr. Whitecock, Tadcaster (Tiger Barb); 3, Mr. Furb, Bradford (Tiger Barb); Characins: 1, Mrs. E. M. Smith, Scathra (Silver Tern); 2, Mr. D. Carr, Bradford (Aberdeen); 3, J. I. Barford, Bradford (Aberdeen); Anabantids: 1, Mr. Gratton, Middlesbrough (Blue Gourami); 2, Mr. H. Greenwood, Bradford (Combat); 3, Mr. J. Barford, Bradford; Fishes: 1, 2, and 3, Mr. J. Bates, Tadcaster; Cichlids: 1, Mrs. Furb, Bradford (Agassiz); 2, Mr. Rowson, Middlesbrough (Blue Acara); 3, Mr. Cranwick, Ivartharstone (Ramsay); Breeders Livebearers: 1, Mr. Walters, Huddersfield (Guppy); 2, Mr. Wilson, Bradford (Guppy); 3, Mr. Walters, Huddersfield (Guppy); Breeders Egglayers: 1, Mr. Patcliffe, Tadcaster (Callisoma); 2, Mr. Gratton, Tadcaster; Carps and Minnows: 1, Mr. D. Carr, Bradford (Fawn Fox); 2, Mr. C. R. Wilson, Bradford (Black Tailed Shark); 3, Mrs. E. M. Smith, Scathra (Black Tailed Shark); Catfish and Loaches: 1, Mr. Holdsworth, Bradford (Myxoc); 2, C. R. Wilson, Bradford; 3, C. R. Wilson, Bradford (Crown Loach); Goldfish: 1, Mr. Booth, Bradford (B. Nymph); 2, Mr. Booth, Bradford (B. Nymph); 3, Mr. A. Turner, Scathra (Peacock-eyed Bass); A.O.V.: 1, H. Greenwood, Bradford (Spiny Bell); 2, Mr. Haly, Bradford (Elephant Fish); 3, Mr. Greenwood, Bradford (Red Fish); Tinfoil Carps: 1, Mr. Whitecock, Tadcaster (Callisoma); 2, Mr. Gratton, Tadcaster (Callisoma); 3, Mr. Hawkey, York (Blue Parrot); Under 15 Juniors A.V.: 1, Miss E. Wilson, Halifax (Guppy); 2, G. Duffield, Dewsbury (Nematoc); The A.V.A.S. Diploma and Pegasus for best fish in show was awarded to Mr. Gratton of Middlesbrough for his Blue Gourami, and the Shield for Best Fish went to Mr. J. Bates of Tadcaster.

A match in the first round of the **ASLAN** Knockout Competition took place recently between **East Dulwich A.S.** and **Clapham A.S.** The judge was Mr. M. Thomas. Twelve fishes in all variety were booked by each club, and the result of the competition was a win for

Clapham A.S. with 841 points, East Dulwich gaining 677 points.

The first four placings were as follows: 1, Mr. A. Byth, E.D.A.S. (Thicklip Gourami); 2, Mr. P. Saunders, Clapham A.S. (Veilfinn Mollie); 3, Mrs. N. Carter, E.A.D.S. (Ornate); 4, Mr. Fellman, Clapham A.S. (Firemouth). After the results had been given Mr. Thomas commented on each of the fishes booked, and his remarks were greatly appreciated by all present.

APRIL was a busy month for the **Blackpool & Fylde A.S.**, and the Open Table Show was held also in this month.

The show from the club's point of view was a success but the new show committee found a number of things which will require changing for future events. If any person who came from another club has any suggestions or complaints that we can rectify, the club will be only too pleased to receive them.

A social call was made on the Accrington club and a small inter-club table show of six fish from each club was held. Blackpool won by four fish to two.

The meeting held at the usual headquarters, the Veevers Arms Hotel, spotlighted "Any Problems" to finish the evening off after the club's business. This showed that everybody has still plenty to learn on the art of bookkeeping.

RECENTLY, at a Meeting of the **Cardiff A.S.** a "Bring and Buy" Sale was held, the success being Mr. D. Gulligan. There was also a talk given by Mr. P. Bassins on "Breeding the Slender Fighting Fish". At the following evening a table show was held, and the results were as follows: Guppies: 1 and 3, Mr. N. Connell; 2 and 4, Mr. Symonds, A.O.V.; Egglayers: 1 and 2, Mr. Godding; 3, Mr. Connell; 4, Mr. Barnes. The Judge and Speaker for the evening was Mr. R. S. Wagg from Llanwrthwl. Mr. R. Gowers gave a short talk on "Breeding the Roly Barb".

Meetings are held on the second and fourth Thursday of each month at The Old Arcade Inn, Church St., Cardiff, commencing 7.30 p.m. Visitors and prospective members can be assured a warm welcome, and all enquiries should be sent to: Mr. N. A. Connell, (Hon. Sec.), 28, Llanmorlan Rd., Gabaia, Cardiff.

THE Open Show of the **Hendon and District A.S.** will be held on Saturday, 10th July at its headquarters, The Beethood Hall, The Broadway, Hendon, N.W.5. This departure from the tradition shows of previous years at which several societies were invited to enter a complete decorated stand of furnished aquaria together with specially selected classes of tropical fishes, is brought about by requests from other societies who have expressed the wish to show at Hendon. Unfortunately lack of space and the poor probability of larger show premises in the vicinity have, in the past, necessitated a limit on the number of invitations.

The usual classes of tropical and coldwater fishes are entered for in the one day show. Exhibitors are to be benched in 4' x 4' square units which assure that the fish will be shown in water to which they are accustomed. Provisions will be made for exhibitors who wish to show their larger specimens in the exhibitor's own tank. Tanks will, of course, be provided for the coldwater and breeders' classes. Schedules will be sent to the addresses of all known secretaries of societies in Southern England. Secretaries of other interested societies who do not receive schedules, and aquarists who are not society members are invited to write to the Hendon A.S. show secretary, Mr. G. Heston, 20, Whitebank Avenue, Edgware, Middlesex, who will be pleased to forward schedules. Entertainment in the form of several slide illustrated talks on aquatic subjects is to be featured during the time that judging is in progress and up to prize giving and breakdown at about 7.30 p.m. Refreshments will be available.

**THE results of the most successful annual open show of the **Sheffield and District A.S.** for which there were 300 entries were as follows:**

**Guppies:** 1, J. Allen (North, and District); 2, F. Thomas (Tadcaster); 3, G. Noel (Sheffield); **Breeder:** 1, E. Fairweather (Sheffield); 2, and 3, D. Cohen (Preston); **Fishes:** 1, Ballmann (North, & Dist.); 2, K. Fries (Sheffield); 3, W. Taylor (Ottum); **Molluscs:** 1, A. Mahy (Ottum); 2, W. Bradford (Sheffield); 3, L. Wilson (Workop); **A.O.V. Livestocks:** 1, J. Greenway (Creswell); **Small Characters:** 1, H. Bean (South); 2, A. Watson (Sheffield); 3, J. Dennis (Workop); **Large Characters:** 1 and 2, K. Voss (Sheffield); 3, A. Lindley; **Small Goldfish:** 1, L. McEwen (Manchester); 2, J. Dennis (Workop); 3, A. Hurt (Chapelton); **Large Goldfish:** 1, and 2, A. Bradford (Creswell); 3, J. Mitchell (Sheffield); **Small Barb:** 1, A. Watson (Sheffield); 2, D. Cohen (Preston); 3, K. Riley (North & Dist.); **Large Barb:** 1, J. Dennis (Workop); 2, J. Worley (Derby Regent); 3, W. Taitz (Sheffield); **Earliest Foodstuffs:** 1, J. Dennis (Workop); 2, F. Derby (South); 3, L. Tye (Workop); **Carp & Minnow:** 1, J. Worley (Derby Regent); 2, A. Wood (Barroley); 3, H. Bean (South); **Fighters:** 1, E. Ingle (Workop); 2, E. Townsend (Sheffield); 3, K. Fries (Sheffield); **Labyrinth:** 1, J. Dennis (Workop); 2, L. Tye (Workop); 3, E. Nichols (Ottum); **Danio & Redstart:** 1, A. Stanford (Creswell); 2, L. Tye (Workop); 3, M. Lindley; **Breeder Livestock:** 1, F. Thomas (Tadcaster); 2, J. Shaw (Ottum); 3, J. Dennis (Workop); **Breeder Eggs:** 1 and 2, G. P. Derby (South); 3, D. Wells (Thorne); 4, L. Tye (Workop); **A.O.V. 1st and 2nd in Show:** H. Bean (South); 2, A. Mills (North & Dist.); 3, R. Taylor (South).

**THE Independent A.S.** held another table show in the current quarter of events and this time the classes were Molluscs, A.O.V., Goldfish, Tropical and Coldwater Breeders. The winners were as follows: **Molluscs:** 1, Mr. J. Rucker; 2, Mr. B. Ball; 3, Mr. J. Clarke; 4, Mr. J. Clarke; **A.O.V. Goldfish:** 1, Mr. J. Kerley; 2, Miss A. Kerley; 3 and 4, Mr. R. Giles; **Tropical Breeders:** 1, Mr. J. E. Chapman; 2, and 3, Mr. J. A. Chapman; 4, Mr. P. Tunks; **Coldwater:** 1, Mr. J. Rucker.

The following week the Independent set up a view to the public at Seligman Town Hall, where they arranged a stand in the Arts, Crafts and Hobbies Exhibition. The display entitled "An Independent View for You" depicted an underwater scene, complete with Divers, Mermish, Squids, Galaxies etc. all constructed from hardware so that they gave a three dimensional impression, and neatly covered five furnished racks of tropicals. Once again the Independent Film Unit was working overtime, running colour films on film and film-striping, plus appropriate background music that was appreciated by all, while the Public Relations Department for the second year running gave to anyone interested a small booklet "Book for Beginners" which was full of interesting facts and figures for the summer.

**THE Bathford Green A.S.** presents its Annual Open Show on Saturday 4th Sept, and this will now be a one day show. Entries will be held on on Friday 3rd September. Any further information can be obtained from Secretary: D. G. Allan, 46, St. Peter's Ave., Hackney Rd., London, E.2.

**THE results of the Open Table Show of the Bradford and District A.S. were as follows:** **Livestocks:** 1, Mr. C. R. Wilson, Bradford; 2, Mrs. M. Field, Bradford; 3, Mrs. A. Holdsworth, Bradford; **Barbs:** 1, and 3, Mr. A. Pith, Bradford; 2, Mr. J. Cooper, Bradford; **Characters:** 1, Mr. D. Carr, Bradford; 2, Mr. P. Greenway, Creswell; 3, Mr. D. Priestley, Hildon; **Carp & Minnow:** 1, Mr. D. Carr, Bradford; 2, Mr. K. Riley, Nottingham and District; 3, Mr. E. Swan, South; **Amphibians:** 1, Mrs. J. Dennis, Workop A. and Z.S.; 2, Mr. H. Greenwood, Bradford; 3, Mr. R. Swan,

**South; Fighters:** 1, Mr. A. Maxwell, Workop A. and Z.S.; 2, Mr. J. Baxby, Tadcaster; 3, Mr. I. General, Tadcaster; **Goldfish:** 1, Mr. J. Dennis, Workop A. and Z.S.; 2, Mr. S. Kowalek, Creswell; 3, Mrs. M. Taitz, Bradford; **Coldfish and Loach:** 1, Mr. C. Holdsworth, Bradford; 2, Mr. K. E. Harrison, Ashborough; 3, Mr. C. E. Wilson, Bradford; **Toothstaps:** 1, Mrs. J. Dennis, Workop A. and Z.S.; 2, Mr. H. Wright, White Rose Aquatics Group; 3, Mr. A. E. Whitehead, Tadcaster; **A.O.V.:** 1, Mr. J. Hiley, Bradford; 2, Mr. R. Bean, South; 3, Mr. H. Greenwood, Bradford; **Breeder Livestock:** 1, Mr. J. Dennis, Workop A. and Z.S.; 2, Mr. R. Wilkinson, Halifax; 3, Mr. P. Walters, Huddersfield; **Breeder Eggs:** 1, Mr. R. M. Faircliffe, Tadcaster; 2, Mr. J. Dennis, South; 3, Mr. A. Pith, Bradford; **Coldwater:** 1 and 2, Mr. L. Burch, Bradford; 3, Mr. L. Hooper, Bradford. The best exhibit in the show was an Apistogramma Bicolor belonging to Mr. J. Dennis of Workop A. and Z.S. The show was well supported by starry societies and a total of 168 entries was exhibited.

**THE Weymouth and District A.S.** was treated recently to an excellent talk on Goldfish by Mr. L. G. Emery of Bath. Mr. Emery confirmed himself to the varieties of goldfish normally found in England and brought with him some excellent specimens. Members were particularly taken with a magnificent lion head and a very attractive oriental.

Officers elected are as follows: **Chairman,** Mr. D. Eggers; **Vice-Chairman,** Mr. L. Chivers; **Secretary,** Mr. R. W. R. Cole; **Treasurer,** Mrs. M. Rogers; **Magazine secretary,** Mr. T. Roberts; **Show secretary,** Mr. A. Davies; **Catering officer,** Mrs. Massey.

Good relations continued between the Club and the Bournemouth and Yeovil Clubs and new recruits have been made with the new Weymouth Society. Plans are under way for the Annual summer show and two meetings. Anyone interested in the society should write to the secretary at 2, St. Lawrence Rd., Ipsley, Weymouth, Dorset.

**THE open show of Bristol Tropical Fish Club** will be staged at the Congregational Church Hall, Newton Street, Bristol, S. Dates of the show are Friday 25th June and Saturday 26th June. Entry forms may be obtained from F. Barry, 18 Fossman Rd., Ashton, Bristol, 3.

**THE first Open Show of the Houghton and District A.S. was an outstanding success.** There were 212 entries and the judges were Mr. Johnson Wood of Newcastle-upon-Tyne, and Mr. E. A. Bennett of Sunderland. The best fish in the show was an *Apistogramma zebra* belonging to Mr. J. Hasting of Preston. A new innovation was the Blue Ribbon Trophy, which will be competed for every year, to go to the club whose members gain the highest number of points. This was won for the first time by Sunderland A.C.

The results were as follows: **Guppies:** 1, and 2, Mr. Martin (Dist.); 3, Mr. George (Hillside); **A.O.V. Livestocks:** 1, Mrs. S. Whitty (South); 2, Mr. G. Corke (Sunderland); 3, Mr. Martin (Dist.); **Small Barb:** 1, Mrs. Smith (Stratford); 2, Mrs. E. Moorhead (Glenford); 3, Mrs. D. Atkinson (Sunderland); **A.O.V. Barb:** 1, and 2, Mr. Adamson (Dist.); 3, Mr. J. Hunt (Sunderland); **Sharks and loach:** 1, Mr. M. Cotton (Houghton); 2, Mr. J. Hunt (Sunderland); 3, Mrs. G. Corke (Sunderland); **Small Characters:** 1, Mrs. Smith (Stratford); 2, Mr. T. Adamson (Houghton); 3, Mr. B. Moorhead (Hildon); **Large Characters:** 1, 2, and 3, Mr. A. Bailey (Sunderland); **Dwarf Goldfish:** 1, Mr. J. Hasting (Preston); 2, Mr. J. Robertson (Tyntonside); 3, Mr. A. Land (Southam); **A.O.V. Goldfish:** 1, Mr. A. Land (Southam); **Fighters:** 1, Mrs. Hodgman (Sunderland); 2, W. Nair (Houghton); 3, Mr. A. Bailey (Sunderland); **Barbs and loach:** 1, Mr. J. Robertson (Tyntonside); 2, Mr. J. Hunt (Sunderland); 3, Mr. H. Harriscomb (Houghton); **Egg-laying toothstaps:** 1, Mrs. D. Atkinson (Sunderland); 2, Mr. H. Harriscomb (Houghton); 3, Mr. B. Barnes (Dist.); **Coldfish and Loach:** Mr. Adamson (Dist.); 2, Mrs. Corke (Midfield)

**Houghton); 3, Mr. Clough (Dist.); A.O.V. egg-layers:** 1, Mr. E. Moorhead (Hildon); 2, Mr. A. Land (Southam); 3, Mr. B. Moorhead (Hildon); **A.V. Goldfish:** 1, Mrs. H. Smith (Sunderland); 2, Mr. J. Hunt (Sunderland); 3, Mr. A. Tyton (Stratford); **Breeder Livestocks:** 1, Mr. J. Robertson (Tyntonside); 2, Mr. C. Simpson (Preston); 3, Mr. G. Gifford (Sunderland); **Breeder Eggs:** 1, and 3, Mr. B. Barnes (Dist.); 2, Mrs. H. Smith (Newcastle-upon-Tyne); **Fossillid:** 1, Mr. D. Porter (Hildon); 2, Mr. J. Langham (Houghton); 3, Mr. A. Bailey (Sunderland); **The Blue Ribbon Trophy,** awarded to the Club winning the highest number of points at the show; **Sunderland A.C. Best fish in show:** Mr. J. Hasting (Preston), with an *Apistogramma zebra*.

**AN inter-club show** was held with **Trowbridge A.S.** at the monthly meeting of the **Bath A.S.** and resulted in a win for the visitors with 19 points to 7 points. The results were as follows: **Goldfish:** 1, Mr. Fryer (Trowbridge); 2, Mr. Robinson (Trowbridge); 3, Mr. Overtoun (Bath); **Labyrinth:** 1, Mr. Wheeler (Trowbridge); 2, Mr. Shaw (Bath); 3, Mr. Hurn (Trowbridge); **A.O.V. egg-layers:** 1, Mr. Cather (Bath); 2, Mr. Fryer (Trowbridge); 3, Mr. Longrove (Bath). While the judging was taking place an interesting talk on the showing of fish was given by Mr. Wheeler of Trowbridge.

**THE East Dulwich A.S.** mentioned the Hounslow A.S. recently at an inter-club show. The classes braced were Livestocks, barbs, characters, and catfish and the judge was Mr. R. Isjap. While the judging was taking place the visitors and E.D.A.S. members were entertained with a tape recording by Mr. McInerney of his excellent breeding of minis.

The results of the show were as follows: **Livestocks:** 1, Mr. G. Gale (E.D.A.S.); 2 and 3, Mr. B. Barber (Hounslow); **Barb:** 1, Mr. H. Aves (E.D.A.S.); 2, Mr. A. Gale (E.D.A.S.); 3, Mr. B. Barber (Hounslow); **Character:** 1, Mr. C. Smith (Hounslow); 2, Mr. A. Blyth (E.D.A.S.); 3, Mr. D. Woodhead (Hounslow); **Catfish:** 1, Mr. B. Pratt (Hounslow); 2, Mr. H. Aves (E.D.A.S.); 3, Mr. D. Woodhead (Hounslow).

**THE East Dulwich A.S.** has also held their annual general meeting and Mr. A. Gale agreed to continue in office as secretary for the coming year. The following officers were elected: **Chairman,** Mrs. N. Carle; **treasurer,** Mr. A. Blyth; **show secretary,** Mr. B. Salton; **public secretary,** Mrs. D. Osburn; **committee,** Mr. H. Aves, Mr. D. Barnes, Mr. G. Gale and Mr. S. Swan.

### Crossword Solution

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**Wingate Zoological Supplies**  
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### KENT

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Telephone: Beckenham 3716  
E.C.D. Wednesday (all day). R. C.T.P.A.A.

**Medway Aquariums**  
314, Canterbury Street,  
Gillingham  
Telephone: Gillingham 52158  
E.C.D. Wednesday. R. C.T.P.A.A.

**Sherwood Pet Stores**  
(Proprietors, Fairbairns Aquaria, Ltd.),  
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### LANCASHIRE

**Hornby's**  
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Manchester, 16  
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**Liverpool Aquaria Company**  
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Telephone: Central 4591  
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**Wade Aquatics**  
333, High Street North,  
Manor Park, E.12  
Telephone: Grangewood 6333  
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### LONDON (North)

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### LONDON (South)

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**Tachbrook Tropicals Ltd.**  
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**Owen Reid's, Aquarium Dept.**  
12, Spring Bridge Road, Ealing Broadway, W.5  
Telephone: Ealing 3259  
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#### NORTHAMPTONSHIRE

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

**The Pet Shop**  
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Northampton  
Telephone: Northampton 35841  
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147, Horsley Fields, Wolverhampton  
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#### SURREY

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Tothorn  
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continued on page 211

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