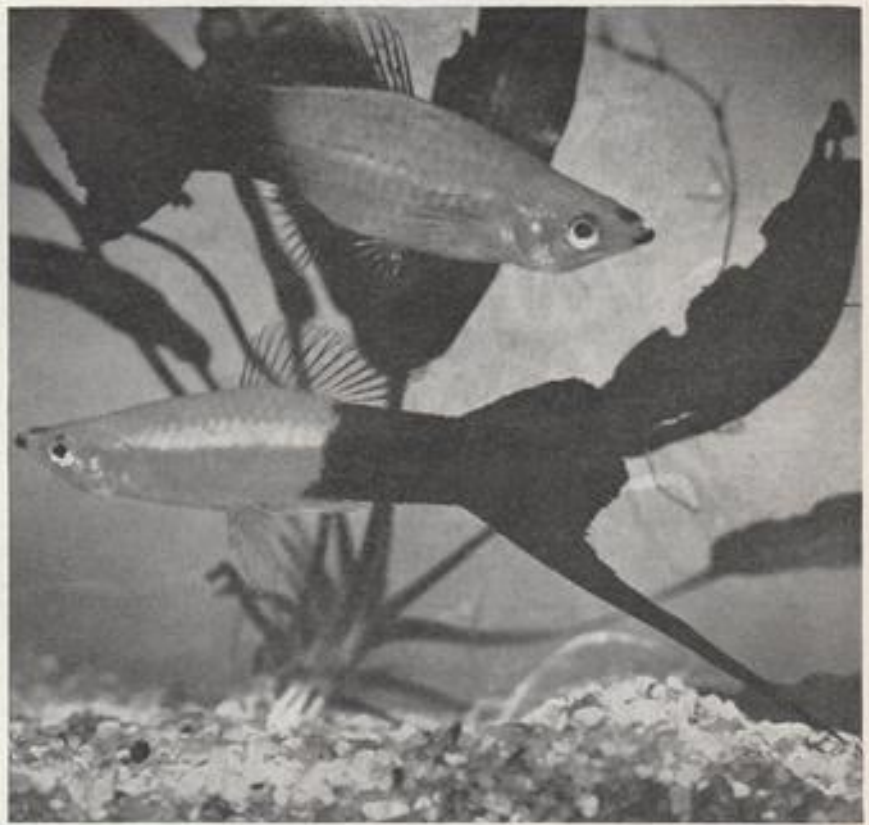


The Aquarist

and Pondkeeper

MARCH 1965



MONTHLY
Vol. XXIX No. 12

TWO SHILLINGS

WALTER R. SMITH LTD.

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

POLISHED STAINLESS STEEL		
	Frames	Aquariums
24 x 15 x 12	£ 7 7 0	£ 9 9 0
30 x 15 x 12	£ 8 8 0	£ 11 11 0
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, SEDIJETS, AND MAINTENANCE EQUIPMENT
- PROCKTER, SUMMIT AND STAR PUMPS
- CONSTAT THERMOSTATS
- AQUAFERN AND COLORFERN PRODUCTS
- HYFLO PRODUCTS
- LIVERINE PRODUCTS
- STOKES FOUNTAINS
- WINDMILL PRODUCTS
- ROCK GRAVEL AND STRATA ROCK WORK
- STUDENTS' MICROSCOPES
- ALL FEEDING AND AERATING APPLIANCES
- MERCURY, SPIRIT AND DUMPY THERMOMETERS
- STUART TURNER WATER PUMPS
- ZOUBEKO AND BIKO PUMPS
- VI-FIT FISH FOOD
- BLACK MAGIC GLAZING COMPOUND
- GLASTICON '303' AQUARIUM SEALER
- AQUAMASTA GLAZING COMPOUND
- LIQUIFRY AND INTER-PET PRODUCTS
- FIBRE GLASS PONDS
- OTTER WATERFALL AND FOUNTAIN KITS

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

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

WALTER R. SMITH LTD.
39 Tib Street and 16 Whittle Street
(Off Tib Street)
Manchester 4
Telephone: Deansgate 2941 and 2920

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

presents



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

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

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

ELITE FISH FOODS

As Seen On
Television!

At least, that's where we stand our tin of Elite fish food. Then there's no delay in finding it—our goldfish get really fierce if it's not on time. We don't have to advertise on TV, of course; the satisfied customers do that—why not join them?

ELITE (Tropical—no biscuit) 2/- and 5/-
ELITE (Coldwater) Large Tin 2/6

Trade Agent:

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

or Post Free from the makers:

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

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."

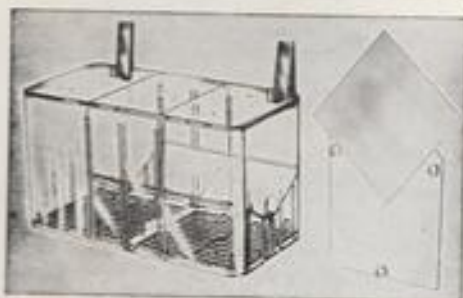


The unique liquid containing (a) particles of immediate food value to the fish and (b) substances to produce natural infusoria in the minimum possible time. The product is in liquid form to ensure the correct particle size and to give rapid dispersion throughout the tank with minimum disturbance to the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

LIQUIFRY No. 1 for fry of Egglayers } Price
LIQUIFRY No. 2 for young Livebearers } 2/6d. per tube

START YOUR BABY FISH ON LIQUIFRY AND WATCH THEM GROW!

Exported to 46 countries



The GRO-WEL 5-way Convertible Trap

The most versatile trap available. Can be used for breeding 1 or 2 livebearers, as a rod trap for breeding egg-layers or as a self-cleaning display tank for 1 or 2 Bettas. Price 28/6d.

For Fungus

LIQUITOX

Effective — Colourless
Does not harm the plants

Definite dosage given by ingenious chart

Price 1/9d. for 2 capsules

each sufficient for 4 gallons of
aquarium water

Breeders Pack: 6/9d. for 12 capsules

LIQUITOX For Finrot

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

Inter-Pet Supplies Company
18 Church Street Dorking Surrey

Sales division of Liquifry Co. Ltd.

WHAT??

100 Varieties of Tropical Fish

PLUS

Coldwater Fish, Pond Fish and Plants, Water Lilies, Marginals etc. Daphnia, Tubifex and Dried Foods. Turtles, Lizards, Bush Babies, Parakeets, Mynahs and Budgerigars.

WHERE?

19 Finchley Lane (Quadrant)

Hendon — N.W.4

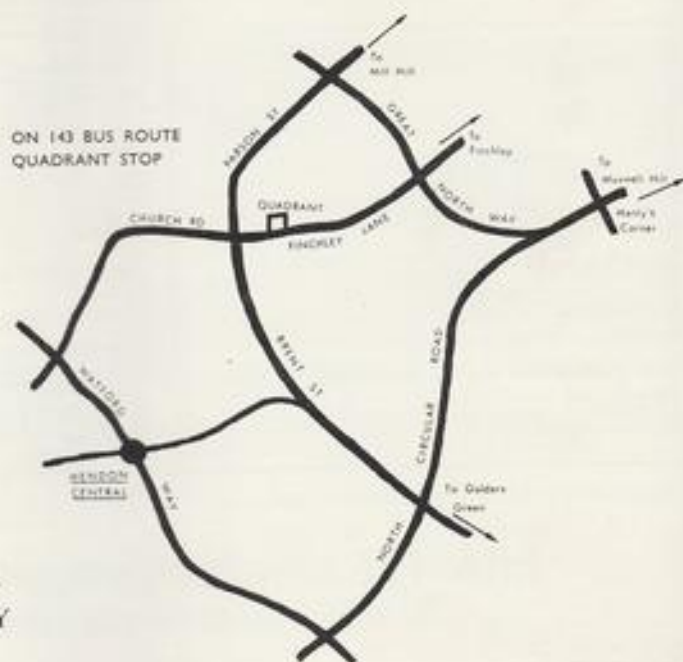
SUN — 2569

WHO?

Flora and Fauna

CLOSED WEDNESDAY
OPEN FOR ENQUIRIES
SUNDAY 10-1.00 p.m.

NO POSTAL WHATSOEVER
PERSONAL CALLERS ONLY



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

Tetra Min Fish Foods



Because they see positive results in their fishes.

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

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

Because Tetra Min never clouds water.

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

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

TETRACRAFT LIMITED

11 STATION ROAD · MARLOW · BUCKS

POND AND AQUARIA PLANTS

ELODEA Densa	1/- bunch
ELODEA Crispa	1/- bunch
CROWFOOT	1/- bunch
DROPWORT	1/- bunch
MORNWORT	1/- bunch
WILLOW MOSS	1/- bunch
LUDWIGIA	1/- bunch
VALLISNERIA TORTA	1/- bunch
SPIRALIS	1/- bunch
SAGITTARIA NATANS	1/- bunch
LOBATA	1/- bunch
GIANT	1/- bunch
CAROMBA	1/4 each
NUPHA LILIES	1/4 each

BOG PLANTS

FORGET-ME-NOT	1/4 each
WATER MINT	1/4 each
FROGBIT	1/4 portion
SWEET RUSH	1/- each
MARSH MARIGOLD	1/- each
BURR RUSH	1/- each
MARETAIL	1/- each
BOG BEAN	1/- each
PENCIL RUSH	1/- each
SPEARHEAD SAGITTARIA	1/- each
WATER IRIS (FLAG)	1/4 each
KING CUP	1/4 each
WATER SOLDIER	1/4 each
BULLRUSH	1/4 each
WATER HYACINTH	7/6 each

WATER LILIES:—

WHITE	5/-
RED	15/-
YELLOW, PINK AND CREAM	12/6

MINIMUM ORDER FOR PLANTS 5/-

All Standard Sizes of Aquaria in Stock. Any sizes made to specification. Quotations free. Complete installations quoted for.

EHEIM AQUARIUM POWER FILTER
£11 15 0

DAPHNIA AND TUBIFEX ALWAYS IN STOCK
PERSONAL CALLERS ONLY

HUNDREDS OF EXCELLENT QUALITY LARGE BREEDING PAIRS OF POND FISH INCLUDING:—

GOLDFISH AND SHUBUNKINS	5-6" 15/- pair
	7-8" 25/- "
	10" 35/- "
NYPHHS	3" 12/6 "
	4-5" 25/- "
	6" 35/- "
GOLDEN ORFE	4-5" 12/6 "
	8-10" 35/- "
CALICO COMETS	5-6" 27/6 "
	8" 40/- "

FOR POND AND AQUARIA:—

GOLDFISH AND SHUBUNKINS	2-3" 1/4
	3-4" 2/6
HIGOI	3-4" 7/6
CALICO COMETS	4/6
RED FANTAILS	4/6
ROCK BASS	4/6
DIAMOND BASS	4/6
PEACOCK-EYED BASS	4/6
GREEN TENCH	2/6 and 5/-
GOLDEN ORFE	3/-
GOLDEN RUDD	3/- and 7/6
BITTERLING	4/6
NYPHHS	3/6

MINIMUM ORDER £1 PLUS 15/- CARRIAGE, PACKING, ETC.

WE USE AND RECOMMEND SHOAL FISH FOOD 2/- and 4/6

WE ALSO STOCK TETRAMIN, VITAKRAFT, FANTASY, BROS-IAM, EXOTIC AND HYKRO FLAKES, ELITE, MLYNN'S, ETC.

LARGE STOCKS OF AERATORS, THERMOSTATS, HEATERS, FILTERS, ETC.

UNLESS OTHERWISE STATED PLEASE ADD POSTAGE UP TO 10/- 1/-
20/- 1/6
30/- 2/-

OTTER SUBMERSIBLE PUMP
COMPLETE WITH EITHER WATERFALL OR FOUNTAIN KIT £8 8 0

GLASS FIBRE POOLS

SHAPED:—

4' x 2' 0" x 12"	£6 17 6
4' 9" x 3' x 12"	£9 18 0
5' 6" x 3' 8" x 15"	£13 15 0
7' x 3' 6" x 17"	£15 19 6
6' 10" x 4' 7" x 18"	£19 10 0
11' 3" x 5' 3" x 18"	£28 7 8

FORMAL RECTANGULAR POOLS:—

7' x 3' 8" x 16"	£25 16 0
5' 6" x 3' x 15"	£17 19 6

STAMPED ADDRESSED ENVELOPE FOR CATALOGUE

POLYTHENE POND LINER
(to your own shape)
Approx. 7' 6" x 6" x 15" deep 35/-

STOKES FOUNTAIN £7 19 6

LIVE FOODS

WINGLESS FRUIT FLIES CULTURE	7/6
GRINDAL WORM CULTURE	3/-
MICRO WORM CULTURE	3/-
WHITE WORM CULTURE	3/-
WHITE WORM, 1 oz.	8/-

Post Paid

LONGLIFE FROZEN BRINE SHRIMP

1 1/2 oz.	3/3
4 oz.	7/6
8 oz.	12/6
16 oz.	20/-

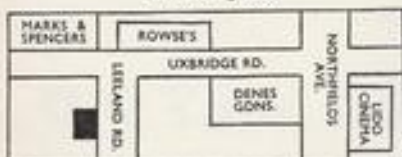
post and packing 1/3

J. T. HUNT (AQUAPETS) LTD

17 LEELAND ROAD, WEST EALING, W.13
Tel. EALing 2748

Opening Hours 9.00—5.30,
Half-day Wednesday

382 EWELL ROAD, TOLWORTH, SURREY
Tel. ELMbridge 0678



BUSES: 207, 207A, 255, 85

WE CATER FOR THE NEW AND FOR THE EXPERIENCED AQUARIST



BUSES: 281, 406, 418, 283

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**



New from **'Suregrow'**

Ideal food for all types of coldwater fish.

In Aquarium or Pond.

Easily measured bite size pellets.

No dust to go to waste.

A complete balanced diet in itself.

Will not cloud the water.

Small size 1/3 Pond pack 3/-

'Suregrow' *The well known Tropical Fish Food*



Fry Food
1/3



2/-



Standard
1/-

Available From Your Dealer Today

OWEN REID'S

UNSURPASSED FOR TROPICAL FISHES

**BIGGER
THAN
EVER
VARIETY**



**BETTER
THAN
EVER
QUALITY**

VISIT THE MOST COMPREHENSIVE
COLLECTION OF TROPICAL FISH
IN THE MOST BEAUTIFUL SHOW-
ROOM IN LONDON

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

**12 · SPRING BRIDGE ROAD
EALING BROADWAY
LONDON · W5**

Phone :
EALING 3259

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

**New Branch Shop
876 HIGH ROAD
NORTH FINCHLEY
LONDON N.12**

Phone HILLSIDE 5510

HOURS OF BUSINESS—
Monday to Saturday, 9 a.m. to 5.30 p.m.
Early closing day Thursday (1 p.m.)



New PHILLIPS fish food

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

After exhaustive laboratory and outdoor tests, the Veterinary Division of Phillips Yeast Products Limited introduce a new Fish Food presented in two grades for COLD-WATER FISH and for TROPICAL FISH. Extra high in protein and rich in vitamins and minerals, Phillips Fish Food contains dried shrimp, daphnia, meat meal, white fish meal, alfalfa, milk powder, cod liver oil, wheaten cereal and yeast, scientifically blended to provide a well-balanced, nourishing food. Phillips Fish Food restores fitness after the winter fast and maintains condition during the stress period of spawning.

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



*Phillips Cold-water Fish Food contains a unique ingredient **SAPROLEGNIL** which affords a high degree of protection against the ravages of "cotton wool" fungus a common disease of cold-water fish.



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

FOR THE BEST FISH-FOOD

McLYNN'S FISH-FOOD

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

FOR THE BEST BOOK

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

FOR THE BEST FISH & PLANTS

McLYNN'S AQUARIUM

VISITORS WELCOME BY APPOINTMENT 11 a.m.—5 p.m. CLOSED ALL DAY WEDNESDAY BUY DIRECT FROM THE BREEDER

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

S.A.E. FOR RETAIL LIST



From your Pet Shop or direct from:

McLYNN'S AQUARIUM
EWHURST, Nr. CRANLEIGH, SURREY
Telephone: EWHURST 446

Testimonials prove that
**IT PAYS TO BUY
WINDMILL
PRODUCTS**



**"WINDMILL"
HAND REJECTOR
AQUARIUM
CLEANER**

Complete with
Hand Bellows

15/- each



**"REGENT"
INSIDE
FILTER**

Designed for
easy cleaning

10/- each

**"WINDMILL"
AIR REJECTOR
CLEANER**

will work
connected to
any make of
Aerator

10/- each



**"WINDMILL"
BREEDING
TRAPS**

Beautifully
Designed and
Constructed

15/- each

RETAIL ENQUIRIES FROM
ALL LEADING WHOLESALERS

Tried, Proven and Tested

THE ORIGINAL
PREMIER BIOLOGICAL FILTER

**It is unique. It is reliable. It is unseen
It is nature's own method of filtration
It is permanent. It needs no attention**



They are saying

- 1. BETTER CIRCULATION.** The Premier Biological Filter collects water from the bottom and recirculates it, thus preventing cold spots—in tanks fitted with this filter fry will even feed at gravel level.
- 2. HEAT ECONOMY**—the action of the Premier Biological Filter gives a continuous circulation of heat and thus provides the desired temperature evenly throughout the aquarium, saving of current costs is noticeable.
- 3. PLANT GROWTH** — in tanks fitted with the Premier Biological Filter plant growth has been more healthy—plant roots do not rot away.
- 4. WATER CLARITY** — tanks are kept suspension free, always crystal clear water. The Premier Biological Filter continually filters and purifies the water.
- 5. NO MESS**—filter mediums are not required for use with The Premier Biological Filter, saving need for replacement, provides a cleaner job and saves money spent on filter mediums. Completely eliminates need for syphoning and prevents black gravel, disposes of sediment where it settles.
- 6. NEATNESS.** The Premier Biological Filter is fitted underneath the gravel, only the air lift is visible. Can be worked by even the smallest of vibration aerators. Once installed can be left for years—will not clog up. Suitable for both cold water and tropical aquariums.

Made for 18" tanks at 12/6 each. 24" tanks at 15/- each

Other size tanks see fitting chart of filter box

Pamphlet willingly sent on receipt of 3d. postage

WINDMILL PRODUCTS

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

Telephone: Victoria 5179



POSTAL SERVICE

TROPICAL FISH



Interesting fish this month

South American Livebearers
 Hybrid Blue Mollies 2" 15/- pair
 Florida Blue Platies 1 1/2" 12/6
 Salt & Pepper Platies 1 1/2" 10/-
 Play Variatus 7/6
 Multi Gold Hi-Fi Play Variatus (Truly Superb fish) 170/-

Black Body Red Veil Guppies (Genuine Virgin Females) 95/- pair
 Red Wagtail Swords 12/6
 Marigold Variatus Platies 17/6
 Florida Red Moon Platies 10/-

Red Speckled Platies 10/- pair
 Black Play Variatus 16/-
 Golden Guppies 4/-
 Red Swords 12/6
Egg Layers
 Good size Albino Tiger Barbs 4/- each
 Good size Tiger Barbs 3/-
 Red Eye Characin 31/-
 Red Fish 12" 42/-

Black Cardinals 7/6 each
 Walker's Cats 12/6
 Electric Eels 22" 210/-
 Blue Gularis 45/- pair
 Adult Cherry Barbs 5/- each
 Combtails 3" 8/6
 Elephant Nose 25/-
 Exodon Paradoxus 39/-
 Orange Chromides 6/-
 Fundulus Chrysolatus 12/6
 Simpson Red Wagtail 12/6 pair

TROPICAL FISH LIST MAR/APRIL REGULAR STOCKS ARRIVING WEEKLY

LIVEBEARERS		BARBS		CORYDORAS	
Guppies		Tiger	2/6 each	Macropodus (Dwarf)	4/-
Fancy	12/6 pair	Nigger (adult full col.)	7/6	Macropodus	10/-
Assorted	3/-	Toto	2/6	Palatus	4/6
Lace Guppies	4/-	Cherry	3/6	Anax	4/6
Swordtails		Commingi (adult)	7/6	Anax (large)	8/6
Red Standard	2/6 each	Nigger (small)	2/6	Melanistus (large)	8/6
Red Large	3/6	Ember	17/6	Arcaustus	10/6
Green	3/6	Tinfoil	5/-	Giant Khuli	3/6
Red Wagtail	3/6	Roy	2/6	Upside Down Cats	10/6
Tuxedo	3/6	Half Banded	3/6	Glass Cats	5/-
Red Eye Red	4/6	Golden	2/6	Japanese Weather Fish	7/6
Golden	4/6	Spanner G.S.	4/6	Khuli Loach	2/6
Simpson Reds	12/6 pair	Crown	5/6	Sucking Loach	2/6
Platies		Hastatus (Red Fin)	5/-	Aymoneri	5/6
Red	3/- each	Ardlia	4/-	Otocorcles Albinis	9/6
Black	3/-	Vittatus	6/-	Myers (large)	10/6
Tuxedo	3/-	Barbus Gelius	5/6	Corydoras Juli	10/6
Comet Tail Yellow	3/-	CATFISH & LOACHES		Beaforts Loach	8/6
Red Wagtail	3/-	Corydoras		Mystus Species	12/6
Florida Blue	3/6	Hastatus (Dwarf)	4/-	CICHLIDS	
Festival	4/-	Macropodus	10/-	Angels	
Yellow Wagtails	3/-	Palatus	4/6	Standard	3/-
Variatus	7/6 pair	Anax	4/6	Lace	3/6
Mollies		Anax (large)	8/6	Lace Veiltail	7/6
Black Lyretail	5/-	Melanistus (large)	8/6	Veil	7/6
Black	3/-	Arcaustus	10/6	Black	4/6
Mosquito Fish	2/6	Giant Khuli	3/6	Black Veil	10/-
Half Beaks	2/6	Upside Down Cats	10/6	Jewel	4/6
CHARACINS		Glass Cats	5/-	VARIOUS OTHERS	
Tetras		Japanese Weather Fish	7/6	Malayan Angels	10/6
Glowlight	3/6 each	Khuli Loach	2/6	Bumble Bees	3/-
Neon	3/6	Sucking Loach	2/6	Silver Fox	5/-
Red Fin	2/6 each	Aymoneri	5/6	American Flaps	3/-
Flame	2/6	Otocorcles Albinis	9/6	Leaf Fish	4/-
Cardinal	4/6	Myers (large)	10/6	Madagascar Rainbows	5/6
Red Eye	3/6	Corydoras Juli	10/6	Australian Rainbows	3/-
Lemon	4/-	Beaforts Loach	8/6	Glass Fish	5/-
Black Line	2/6	Mystus Species	12/6	White Cloud Mountain Minnows	3/-
Serpis	5/-	CICHLIDS		Metynnis Schreiner-mulleri	12/6
Silver Tip	3/6	Angels		African Gobies	4/6
Silver	3/-	Standard	3/-	Red Bellied Puffers	19/6
Faucher Fins	3/6	Lace	3/6	Borneo Sucker	12/6
X-Ray Fish	3/6	Lace Veiltail	7/6	Puffers	10/-
Rosacout	4/6	Veil	7/6	Butterfly (adult)	12/6
Beacon	2/6	Black	4/6	Spiny Eels	8/6
Swordtail Characin	4/-	Black Veil	10/-		
Black Widows	2/6	Jewel	4/6		
Belgium Flaps	4/6				

All fish guaranteed live delivery and in good disease free condition. 7/6 rail and packing charge to be included with every order. See separate list for Plants, etc. All consignments of fish to be collected from nearest railway station.

KEITH BARRACLOUGH

215 GREAT HORTON ROAD - BRADFORD 7 - YORKSHIRE

Telephone: BRADFORD 73372

(TRADE SUPPLIED)

SPECIAL COLDWATER PLANT OFFER

1. 50 Plants for your pond £1
2. 30 Plants for your pond 10/-
3. 50 Plants for your aquarium £1
4. 30 Plants for your aquarium 10/-

SPECIAL OFFER

LARGE WHITE WITH YELLOW CENTRES
FLOWERING WATERLILIES

5-year-old plants 12/6

- | | |
|--|-----------|
| BREEDING PAIRS OF GOLDFISH 10"-12" | 35/- pair |
| BREEDING PAIRS OF GOLDFISH 8" | 25/- pair |
| BREEDING PAIRS OF GOLDFISH 6" | 20/- pair |
| BREEDING PAIRS OF SHUBUNKINS 10"-12" | 35/- pair |
| BREEDING PAIRS OF SHUBUNKINS 8" | 25/- pair |
| BREEDING PAIRS OF SHUBUNKINS 6" | 20/- pair |
| BREEDING PAIRS OF NYMPHS 6" | 30/- pair |
| BREEDING PAIRS OF NYMPHS 4" | 20/- pair |
| BREEDING PAIRS OF CALICO COMETS 8" | 40/- pair |
| BREEDING PAIRS OF CALICO COMETS 6" | 30/- pair |
| BREEDING PAIRS OF GOLDEN ORFE | 35/- pair |

2"-3" BITTERLING, ORFE, BASS, GREEN TENCH, NYMPHS,
RUDD 4/6 each. 3"-4" GOLDFISH AND SHUBUNKINS 3/6 each

All above fish are pond bred.

Rail and Packing - 15/-

THE BOOK OF THE GARDEN POND

G. F. HERVEY 16/6
and
I. HEMS post free

WATER LILIES

each	
Cream	12/6
Pink	15/-
Red	15/-
Yellow	15/-

(3 year old plants)

MARGINAL PLANTS

Water Iris	2/6
Bulrushes	2/6
Kingcup	1/6
12 Assorted	
Marginal Plants	12/6
Good strong Plants	

COLDWATER PLANTS

each		each	
Elodea Densa ..	6d.	Vallisneria ..	6d.
Elodea Crispa ..	6d.	Hydrophila ..	6d.
Willowmoos ..	1/-	Cryptocoryne ..	
Mosswort ..	6d.	" Becketti ..	2/-
Ludwigia ..	6d.	" Willisi ..	2/6
Hairgrass ..	1/-	" Cordata ..	2/6
Myriophyllum ..	6d.	Harteliana ..	2/6
Hornwort ..	6d.	Anacharis ..	1/-

All Plants Postage 2/- All Coldwater Plants sent subject to early Spring weather conditions.

FLEXIBLE PLASTIC GARDEN POOLS

- 4'4" x 3'4" 9-15" deep £3 19 6
6'4" x 4'4" 9-18" deep £5 18 0
8'4" x 5'4" 9-21" deep £7 19 0
10'4" x 6'4" 9-24" deep £10 10 0

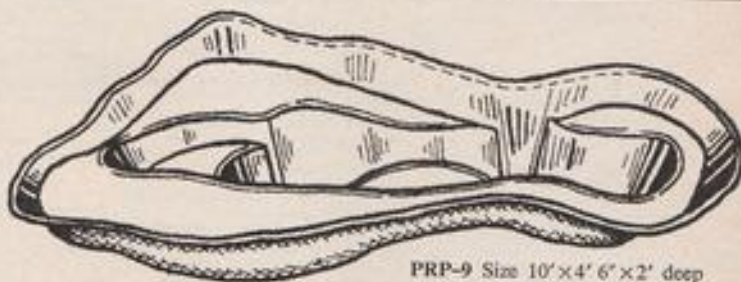
STUART PUMPS FOR YOUR WATER FALLS

- No. 12 £12 7 6 Postage 5/- No. 10 £9 7 6
FOOT VALVE AND STRAINER WITH CONNECTOR £1 17 6
ADJUSTABLE GARDEN JETS 10/6.
STOKES FOUNTAINS FOR YOUR PONDS £7 19 6 each
Send for catalogue S. A. E.
THE NEW OTTER SUBMERSIBLE PUMP COMPLETE WITH EITHER
FOUNTAIN OR WATERFALL KIT £8 8 0 post paid

Garden Pools and Cascades

OVER 20 DIFFERENT SIZES

(SEND FOR LIST)



PRP-9 Size 10' x 4' 6" x 2' deep
£31 4 0



RPP-19
Two tier units - 5' x 2'
approx. £5 13 8

Available in Light Green, Blue or Farm Stone. Add 10/- to cover postage.

QUEENSBOROUGH FISHERIES See next page for address particulars, etc.

SPECIAL PLANT OFFERS

OFFER No. 1

2 Wisteria ...	5/-
1 Aponogetum ...	4/-
1 Nymphaea Stellata ...	5/-
6 Sagittaria Natans ...	4/6
1 Cryptocoryne Haerelliana ...	3/6
3 Micro Sagittaria ...	1/8
<i>Years for 18/-</i>	
	23/6

OFFER No. 2

50 Assorted Tropical Plants including:-
Dwarf Lily, Aponogetum Cryptocoryne,
Wisteria.

Years for 20/-

OFFER No. 3

30 Assorted Tropical Plants ... 10/-

OFFER No. 4

30 Assorted Coldwater Plants ... 10/-

EXTRA SPECIAL

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

SPECIAL SERVICE

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

BOW-FRONTED AQUARIUMS

36in. x 12in. x 15in. bow-fronted aquarium with
wrought iron bookcase stand £19/19/- complete.

48in. x 12in. x 15in. -- 29 gns.

Available in penny bronze, black & gold, and cream

WITH PLAIN STAND

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

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

STANDS

All Standard Sizes of Aquaria in Stock. Any shape or size made to Customers' Specifications. Installations a Speciality.	18 x 10 x 36 ...	37/6
	24 x 12 x 36 ...	47/6
	30 x 12 x 36 ...	52/6
	36 x 12 x 36 ...	57/6

REMEDIES, etc.

Aquastone ...	3/6	Haloid ...	3/6
Bronium White Spot Cure ...	2/-	Liquifox ...	1/9
Vivo Salts ...	2/-	Dissolve ...	2/6
Sea Salt ...	1/6	Bronium Fertilizing Tablets ...	1/6
		Tetracore all 4/6 each	

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

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

THERMOSTATS

Constant External ...	33/-
Constant New External Type OK ...	25/-
UNO ...	18/-
Out/Adj. ...	15/-
Inst./Adj. "Popular" ...	10/-
"Popular" with neon indicator ...	12/6
Rena (with Neon) ...	21/-
"Ea-Ea" Sentinel ...	26/6

THERMOMETERS

Mercury ...	each	6/6
Gem ...	each	6/6
Plastic Backed ...	each	5/-
Spirit Blue Gem ...	each	4/6
"Ea-Ea" Dummy ...	each	4/6

FILTERS

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

AERATORS & PISTON PUMPS

Moutrou ...	each	21/-
Fairy ...	each	24/-
Star ...	each	27/6
Rena ...	each	36/-
Zeobeka Total ...	each	50/-
Hy-do Junior ...	each	75/-
Hy-do "A" ...	each	107/6
Hy-do "B" ...	each	130/-
Hy-do "C" ...	each	145/-
Hy-do "D" ...	each	250/-

HEATERS

"QUEENSBOROUGH" 25w, 40w, 60w, ...	each	10/-
75w, 100w, 120w, ...	each	15/-
150w, ...	each	18/-
Rena (75-200w.) ...	each	10/-
"Ea-Ea" Flexible Heaters (100w.) ...	each	18/-
"Ea-Ea" Thermostatic Heaters, 100w. and 150w. ...	each	36/-
Pressomatic ...	each	24/6
Inter-Pet Thermo- static Heater 22/6 and 29/6 Heater Holders ...	each	2/-

BACKING PAPERS STRATA ROCKWORK PEBBLE BEACH SEA & SHORE

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

SEDIMENT REMOVERS

"Windmill" Air Rejectors ...	each	18/-
"Windmill" Hand Rejectors ...	each	15/-
Fishfall ...	each	3/-
Syphon Tubing ...	each	7d. 6
Hand Type Plastic Swift Away ...	each	46/8

PLANTS

Vallisneria Spiralis ...	each	9d.
Elodea Denax ...	each	9d.
Hydrophila ...	each	9d.
Bacopa ...	each	9d.
Sagittaria natans ...	each	9d.
Sagittaria micro ...	each	9d.
Vallisneria spiralis ...	each	9d.
Ludwigia ...	each	9d.
Myriophyllum ...	each	2/-
Cryptocoryne Beckelii ...	each	2/-
" 198011 ...	each	2/6 and 5/-
" Cordata ...	each	2/6 and 5/-
Maeritlana ...	each	6 and 5/-
Water Wisteria ...	each	3/6
Giant Hygropoda ...	each	2/6
Giant Sagittaria ...	each	2/6
Najas Microdon ...	each	2/6
Amazon Chain Sword ...	each	2/6
Duckweed per portion ...	each	1/-

FOODS

"Queensborough" Tropical Fish Food ...	each	1/6 and 2/6
Exotic Flakes ...	each	1/-
Hydro Flakes ...	each	1/-
Brosiam ...	each	1/6 and 2/6
Brosiam Frygrain ...	each	1/6
Brosiam Biovic 6d. and 1/6 ...	each	1/6
Liquifry Nos. 1 and 2 ...	each	2/6
Infaun ...	each	2/-
Elite ...	each	2/- and 4/6
Dried Daphnia } Our 6d. Ground Shrimp } own 1/- Fish Food } pack 1/6 in 3 sizes	each	
Ants Eggs ...	each	6d.
Wardley's Treat Pac. 7 kinds of food ...	each	8/6
Hi-Glow ...	each	4/6
Glow Tabs ...	each	3/6
Biol ...	each	2/6
G. Bartmann ...	each	3/-
Foodies ...	each	2/6
Supremit ...	each	2/6
Tetramin Flakes (all sizes) 1/10, 3/-, 6/6, 22/6 and 79/-	each	
Suregrow ...	each	1/- and 2/-
(fry food) ...	each	1/3
Vitakraft 1/10, 6/9 and 22/6	each	

FULLY-GLAZED AQUARIUMS

Pressed Steel		Aluminium		Angle Iron	
Inches	Tank H'd Ref.	Inches	Tank H'd Ref.	Inches	Tank H'd Ref.
12 x 6 x 6	10/6	6 x 6	24 x 12 x 15	57/6	27/6 8/6
14 x 8 x 8	13/6	7 x 7	30 x 12 x 15	77/6	32/6
16 x 8 x 8	15/-	7 x 6	36 x 12 x 15	97/6	38/6
18 x 10 x 10	21/6 15/-	8 x 8	48 x 12 x 15	137/6	—
24 x 12 x 12	52/6 22/-	8 x 6			

CARRIAGE EXTRA

QUEENSBOROUGH FISHERIES

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

QUEENSBOROUGH HOUSE,
Ferry Lane, Hyde End,
Wraysbury, Nr. Staines
Telephone: WRAYSBU 2085
Sundays only from 10 a.m. to 4 p.m.

16 PICTON PLACE,
LONDON, W.1
(1 minute from Selfridges)
Telephone: WELBECK 9408
Hours of Business: MON. to FRI.—
9.30 a.m.-4 p.m. SAT. 9.30 a.m.-5 p.m.

ALL POSTAL ENQUIRIES TO GOLDHAWK ROAD ADDRESS

The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



VOL. XXIX No. 12

1965

THE BUTTS, HALF ACRE, BRENTFORD,
MIDDLESEX

Telephone: ISLeworth 6221

PUBLISHED MONTHLY

SUBSCRIPTION RATES

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

QUERIES

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

Correspondence with intending contributors is welcomed.

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

The Editor accepts no responsibility for views expressed by contributors.

Contents

	Page
What Sort of Filter?	207
Natural and Planned Breeding	208
<i>Pseudorasbora parva</i>	210
Power-Cut Protection	211
Planting Time will soon be Here!	212
A Decorative Home Aquarium	214
The Red-eyed Characin	216
American Terrapins in Aquaria	217
Aquarist's Notebook	218
Teaching—the Aquatic Way	219
Reader's Queries Answered	220
The Blind Cave Fish	223
The Aquarist Crossword	223
News from Aquarium Societies	224

What Sort of Filter?

IF the number of different makes of aquarium filters on the market is anything to go by then a very wide use of filtration as an aid to aquarium-keeping is being made today. Although filters are not essential aquarium accessories, we have always maintained that where artificial aeration is being employed the filter offers the best possible means of using the air supply. Voices of the experienced are in fact seldom raised against the principle of aquarium filtration, but these same voices are quite often heard speaking in favour of or emphatically against some particular kind of filter or another. What is the beginner to think when he hears conflicting opinions?

The conflicts here, such as inside filters being better than outside ones or vice versa, or undergravel filters being the best of all or being positively harmful, arise from aquarists' attempts to generalise from their own individual experiences, and these they may or may not have analysed correctly. Discussion of filters often bogs down because what is being compared cannot be comparable. There is no standard aquarium: some are of large capacity, some are small; some are heavily planted, some are unplanted; fishes that may be kept represent a wide range of types, as do, indeed, the water plants; foods used differ from one aquarist's tank to another. Yet all these things, among quite a few other factors, could influence the results obtained with any filter.

Aquarists are not always even certain of what they mean by 'filtration', and confuse a filter's capacity to remove non-dissolved, suspended particles from water (which is really all that filtration can be held to imply) and its possible additional use to limit the accumulation of dissolved substances in water (which is probably 'absorption', taking place only when some agent such as carbon is included in the filter). It is, of course, suspended matter that causes opacity or cloudiness of water, and therefore it is filtration that is usually the aquarist's primary concern. More care to preserve this distinction would help in discussions; we should be quite sure whether filter medium and absorption medium or either of these alone is involved in any filter's operation when results are assessed.

Natural and Planned Breeding

by A. JENNO



Photo: A. Van den Nieuwenhuizen
The zebra fish is a species in which the natural form does not change under aquarium conditions

THERE are two basic types of fishes bred by aquarists: those which are either wild or retain all the characteristics of the wild species although bred in captivity, and those which are a cultivated variety of a wild species and differ considerably from the natural fish. These two basic types require entirely different methods of breeding and selection of breeding stock.

Those fishes which are still the same, when bred in captivity for many generations, as the natural members of that species, are in effect a pure strain, developed and fixed by Nature. On the other hand, cultivated fishes such as the fancy goldfishes, guppies and Siamese fighters are all attempts by man to alter Nature's fixed pure strain and to maintain it in this state of alteration through generations of selective breeding in an effort to improve the alteration still further, and, finally, having reached the desired level of alteration, to fix the strain as a pure one in its new form.

Whatever our opinion of these alterations may be, beautiful or otherwise, as far as Nature is concerned these 'altered' fishes are undesirable freaks which can only cause

harm to the structure of Nature's own fixed pure strain. For this reason, because cultivated fishes are really freaks and abnormal fishes, there is always the certainty present that if the cultivated fishes are allowed to breed indiscriminately they will revert back to the wild pattern of the pure strain. It is therefore essential to practice careful selective breeding to keep the strain in its altered state and to alter it even more if required.

With natural fishes, however, indiscriminate breeding can be practised, because there can be no reversion to the wild form as the breeding stock are already reproductions of this wild form. In fact indiscriminate breeding is essential to maintain the strain at its best, as developed in the wild. While a natural strain may be improved a little in captivity in such characteristics as size, intensity of colour, shape of finnage, these are not alterations to the strain, but only improvements to the individual fishes caused by a better standard of living and the removal of many of the natural hazards, such as sickness and shortage of food which the fishes may meet with in Nature.

It follows then that when breeding a natural strain, the selection of breeding stock is considerably easier than for a cultivated strain because we are not trying to alter Nature's pattern. From time to time in a natural strain freak fishes will appear which do differ from normal; for instance, tiger barbs which have part of one of the black bars missing. These fishes must not be used as breeding stock otherwise the fault will probably be reproduced in their young or in a later generation. This is, of course, the origin of the cultivated strains. Aquarists have deliberately developed freaks of Nature by using them as breeding stock and closely inbreeding the resulting youngsters to concentrate and finally to fix the freak characteristic.

From this then it can be seen that to breed a natural strain and keep it at its best, the effect of these occasional freaks must be kept to a minimum. It has been stated that close inbreeding will concentrate the effect of a freak characteristic, so it is essential to avoid close inbreeding at all costs.

Assuming an aquarist is seriously going to breed a natural strain he must start off by obtaining breeding stock which is unrelated or, at the very least, not closely related. Also he should obtain enough fish to make up as many breeding pairs as he can manage, so that by allowing his breeding stock to pair up indiscriminately he can ensure that each batch of youngsters is not closely related to the other batches. In this way his strain will always be widely related and consistent inbreeding will not occur. If it is difficult to obtain unrelated breeding stock, as may be the case with some of the rarer fishes when starting to breed, then the aquarist may be forced to start off his strain by close inbreeding. As long as the initial breeding pair are true representatives of the natural strain a little close inbreeding can be tolerated if circumstances make this essential, but unless the strain is to deteriorate, fresh unrelated blood must be brought in at least every third generation. Beside amplifying freak characteristics in the strain, close inbreeding will also introduce defects such as lack of vitality and delicate health if carried on for several generations. This is why the cultivated strains are often

much more demanding in their living conditions and food requirements than the original wild fishes.

Indiscriminate breeding of a natural strain is made easier in many cases by the fact that many species will spawn as a shoal. This is termed 'flock-breeding'. The danios and most of the barbs are good examples of this. Several pairs can be placed together and will freely interbreed. Indeed many species prefer this method. Wherever possible, flock-breeding should be practised, as this is Nature's own way of avoiding close inbreeding and thus maintaining the quality of the natural strains.

Cultivated Strains

The propagation of a cultivated strain of fish is far more challenging to the serious breeder and demands a lot more concentration and experience. In effect the aquarist is defying Nature and is attempting to bring about a permanent alteration to the natural form of a particular species of fish. Nature considers these fishes to be abnormal and any mistakes by the breeder in his selection of breeding stock will result in the strain reverting to the original wild form. If breeding stock is used which has partly reverted then the rate of reverting back will be accelerated. Also, while the breeder is producing in his strain those altered characteristics which he considers desirable, other altered characteristics will probably turn up, many of which may be undesirable and detrimental to the strain. Even more intense selective breeding will then be necessary to maintain the strain without these undesirable alterations and still, of course, without the strain reverting to the wild form.

The basic method of constructing a cultivated strain is the use of continuous close inbreeding. By the laws of heredity this concentrates the original freak characteristic from which the cultivated strain starts and allows it to be evolved by careful selection of breeding stock into a final altered characteristic entirely different from the wild form. Continuous close inbreeding is against all the laws of Nature. A strain which has been treated in this way will suffer because while the desirable alterations are being produced, undesirable ones will come with them, however careful the breeder may be, and thus we find that, for instance, fancy guppies and many strains of fancy goldfish



Swordtails, like the fancy guppy also pictured on this page, are an example of a species that has developed many separate varieties in aquaria.

Let us suppose that an aquarist has a good natural strain of fish, and in one of his batches of young he finds a freak fish which is different in one of its characteristics from the normal form of the species, and the aquarist then decides to attempt to establish a strain of fish which will eventually breed pure in this altered form. Obviously, the first move will be to give the freak fish the best food and living quarters available and to generally pay it the greatest attention to bring it to sexual maturity in as good a condition as possible. This fish, depending on its sex, is then crossed back either to its mother or father. If this is not possible then it can be crossed with a sister or brother, but unless the sister or brother used exhibits the same freak characteristic this method is not so reliable. All the young from the first back-crossing are then kept and reared to sexual maturity in the best conditions.

It may be found that in the first generation the freak characteristic is not to be seen on any of the fish. This does not mean that it has been lost, only that it has been covered up by more dominant characteristics which still exist in the strain. The way to uncover the freak characteristic would be to mate the original freak fish with all the fish of the opposite sex from the first generation, when the freak condition should appear in the second generation, in a reasonable proportion. If the second generation freak fish are now crossed back to the original freak fish (actually their grandparent) then the freak characteristic should be reasonably fixed in the strain.

Having obtained initial breeding stock in this way the breeder can now proceed to concentrate on developing the freak condition into a fixed, altered characteristic by closely inbreeding his fish and using only those fish which carry the characteristic. He must, of course, also concentrate on removing any undesirable characteristics which occur through constant inbreeding. Small size of mature fish is a frequent example of this.

Development of the new strain to a pure state may take many generations of careful and exacting work, but finally the aquarist should reach a point where all of the fish bred

Continued at foot of next page



Fig. 1. A. Skipper

are sluggish and inactive and cannot stand cold weather as the common goldfish can. Before attempting to cultivate a strain of fish then, it is essential to ensure that the best living conditions and foods for the particular species can be provided, so as to combat as far as possible the tendency for closely inbred fish to be weaker and fussier than fish from a natural strain.

Prochilodus insignis

by JACK HEMS



Prochilodus insignis (reduced in size)

THIS striking and lively member of the family Anostomidae comes from Guiana and the Amazon Basin and under favourable conditions will attain a length of about 6 in. in captivity, against about 14 in. in the wild. Like most energetic fishes, it has a hearty appetite, and though in Nature it lives largely on insects and their larvae, small crustaceans, and various types of algae—it can deal with these admirably by virtue of its distensible, thick-lipped mouth, which can be converted into a circular sucking disc—in the aquarium it will thrive on any of the regular dried and live foods and suitable substitutes for its preferred green food in the form of scalded or bruised lettuce, or cooked tender cabbage or spinach.

The fish frequents all levels of the water, which to suit it should be soft and slightly acid, and soon becomes quite tame after an initial spell of shyness. It has a natural aptitude for jumping, and in this connection the importance of keeping the aquarium properly covered cannot be overstressed. It is hardy enough to withstand a slow drop in the temperature to 68°F (20°C), but 75°F (24°C) with a range of about 5°F either way is to be preferred.

In immature (small) fish the general colour is bluish

green on the back lightening to silvery overlaid with blue or green on the sides. These are adorned posteriorly with a number of blue-black dots and/or streaky markings arranged in horizontal rows. The underparts are flushed with violet to pink. The large caudal fin is widely forked and longitudinally striped with dark blue to black on an ivory ground. The dorsal, anal and tiny adipose fins are yellowish to green with some blue to black markings; the pectoral and ventral fins are reddish. In well grown fish the dark adornments on the sides tend to disappear and leave the body an overall silvery hue, except the belly which retains its pinkish appearance.

P. insignis is peaceful, at least in its smaller sizes, and a shoaling species that makes a singularly attractive show-piece in a community tank. Although numerous importations have been made into Europe and America since it was first introduced to aquarists in Germany more than 50 years ago, it has not bred in captivity and, furthermore, it is not known what secondary sexual characteristics, if any, exist. Owing to the distinctive stripes on the caudal fin, the species is sometimes referred to as the flag-tail prochilodus.

Natural and Planned Breeding

(continued from preceding page)

from the strain show the altered characteristic. At this point the strain can be tested for purity. This is done by flock-breeding and if this proves successful the strain can be considered pure.

There are many complications to overcome in some particular cases, but others may be exceptionally easy. It all depends on the nature of the freak characteristic which is to be developed. Some characteristics may be sex-linked, i.e. the heredity factor for these will only be carried by the male or the female fish, never by both. The characteristic may become so closely entangled with some other undesirable characteristic, because of the particular inbreeding methods used, that it becomes impossible or very difficult to continue the strain. All these problems are a challenge to the breeder and this is what makes the cultivation of a new strain so absorbing.



"Can Sammy have half an hour's exercise in your nice big tank, please?"

Power-Cut Protection

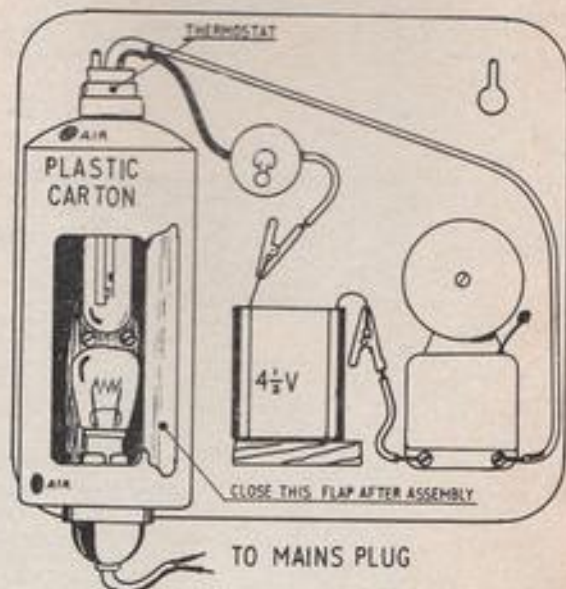
by M. J. STAINES

Do you dream of waking up in the morning to find a power-cut in operation with disastrous results to your fish? We have all suffered these nightmares, but I am glad to report that they can be forgotten by using the device described below.

The 'sensing' element is designed on the well-known 'oil-well' principle. A lamp bulb connected to the mains provides heat which holds the contacts of a thermostat open. Should there be a power-cut, or the lamp fail, the contacts close and connect a battery to an electric bell which continues ringing until switched off by the awakened aquarist.

Construction

The arrangement of the parts and the electrical wiring is made clear by the drawing. Construction is as follows. Take the plastic carton and cut round the top, leaving about $\frac{1}{2}$ in. of the neck intact, and cut a hole in the bottom the size of a florin, for the lamp-holder. If the neck is too small, heat it quickly over a gas ring and push the thermostat through with soapy water into the hole to enlarge it. The air-hole at top and bottom should now be made with a heated apple-corer or similar tubular tool. A pen-knife is useful to cut round the three sides of the flap, the fourth



side being left as a hinge. Attach sufficient flex to the lamp-holder to reach from your bedside to a convenient mains supply, which can be a light socket or power-point, but remember it must be switched on all night. Now screw the plastic carton, bell and battery shelf to the prepared board and assemble complete as shown in the drawing.

The wiring is as follows: red thermostat wire to right-hand bell terminal and the black one to the switch. The other side of the switch carries a short wire to the crocodile clip, and a similar wire and clip is attached to the remaining bell terminal.

The unit is designed to hang on a wall but may be arranged differently provided that the plastic carton is fitted upright. If enclosed in a case, holes should be made in the top and bottom to allow air to circulate, or the operation will be delayed.

Put it into operation in this way. With the bell switch in the 'off' position, plug into the mains and allow time for the thermostat to warm up. Now put the bell switch to 'on', the bell will now remain silent until the power is cut. Test initially by switching the mains off. The bell should ring 1 to 3 minutes later.

Emergency Action

In the event of a power-cut, first of all insulate the tanks with cushions (especially foam rubber ones from arm-chairs), eiderdowns, pillows, blankets etc. Cover the tanks completely, hoods and all, leaving no exposed glass.

A tank 2 ft. by 1 ft. by 1 ft. well covered in this way will lose heat in a cold room at a rate of about 3°F per hour if left severely alone. Do not be tempted to read the thermometers for at least 2-3 hours. Concentrate on getting the room as warm as possible. If the room temperature can be kept at 65°F (18.3°C) the tanks may be uncovered. Unless a tank is very severely overcrowded there should be enough oxygen in the water to last at least 5 or 6 hours without ventilation of any sort.

Parts List

- 1 Low-voltage on-off switch (single-pole, single-throw).
- 2 Crocodile clips.
- 1 Flashlamp battery (4½ volt).
- 1 Electric door bell.
- 1 Submersible thermostat.
- 1 Lamp-holder.
- 1 Bulb (5 watt) mains voltage.
- 1 Large washing-up liquid plastic carton.
- 1 Board (½ in. thick) for mounting.
- 1 Power plug or lamp adaptor (for bedroom).
- 1 Suitable length of 5 amp. flex.

Total cost approximately £1 5s. Most of these parts may be obtained at a good electrical store.

ABOUT THE POND THIS MONTH

Planting Time will soon be Here!

by A. BOARDER



Photographs by W. J. HOWES

THE pondkeeper will find plenty to do during March. Before the end of the month some of the water lilies will have started to send out fresh leaves and perhaps flower buds. Although April may be the best time to plant new lilies it is possible to divide suitable subjects from the last week in March. It must be realised that new plants may have to be out of the water for some time and so it is not wise to get new ones just yet. However, if there are some plants in the pond which need dividing, it is quite safe to do it now, and the best shoots can be seen easily.

Any water lily which has grown fairly well needs dividing after 3 or 4 years. This is especially so in a small pond where it is possible for a plant to get so far out of hand that it takes up too much space. When this happens much of the beauty of the lily is lost. Whilst the lily leaves lie flat on the top of the water and there is still plenty of open space there, all is well. Once the leaves become so abundant that they just cannot find a spot in which to lie, they will grow up into the air and look anything but attractive. Also the whole surface of the pond may be so covered that the fishes cannot be seen nor get to the top of the water if they want to.

If the water lilies were planted in separate containers it is easy to drag them out of the pond for division. It will be found that several thick root-stocks will have formed. Leaf and flower shoots will already be showing. Take

great care of these as they are easily broken. It may not matter much if one or two of the leaves are broken but be careful that the flower shoots are not damaged. Some young shoots may be seen at the sides of the root system. These are the ones to retain and take off for planting in another container. If some of the old root-stock appears to be very thick and dull in colour, it can be cut out and dispensed with. Often one can see that there are plenty of roots coming from the top of the root-stock whereas lower down there may be no roots and no shoots are likely to come from that part again. This can be cut out.

If any fresh plants are wanted, think well before ordering. The main fault with many pondkeepers is that they will not realise that most water lilies grow at a fast rate. There is always plenty of water for them and provided that there are some fishes in the pond, there is usually nutriment in the form of fish droppings for them to feed on. A small pond needs only one water lily. A medium growing plant can cover the whole surface of a pond 8 feet by 8 feet in 3 or 4 years. There are so many good types to be purchased that one need only give the dealer the colours required and the depth of the pond so that he will know which are the best ones to provide.

There are lilies for the very small pool which will grow in a foot depth of water. There are many others for ponds up to 2 feet 6 inches deep. Few water lilies need a greater depth than this. The lilies will be sent out usually

in early April, and it is well to get suitable containers ready for them. It is possible to buy plastic planting cases which will be admirable and last a long time. It is also possible to use large flower pots and if this is done it is well to set the pots in a large heap of concrete so that there is a good base to the pot to stop it from turning over in the water.

Much has been written about the need for some good loam or a piece of old turf, in which to plant the lily. This is all very well if the growth of the lily is all that is required in the pond. There is, however, a very important point for the lilies. The roots should stray over the base of the pond and use up much of the waste material in the water. They are doing a very good scavenging job and will help to keep the water pure. If too much nourishing soil is given them they will not need to search for and utilize the waste matter.

For the small pool I suggest one of the following: *Nymphaea laydeckeri purpurata*; *N. odorata alba*; *N. nuxifolia*. For the deeper pond there are: *N. escaradea*, dark red; *N. sunrise*, yellow; *N. gladstoniana*, white. The lilies *N. pygmaea alba* and *N. pygmaea helvola*, a yellow, can be set in a pool no deeper than a foot or less. It is not wise to plant any lily in a very shallow pool.

When planting any fresh lily it is essential that the pot is not placed too deeply in the water. If the pond is 2 feet or more deep, it is better to raise the pot with bricks or other material so that the head of the root-stock is not too low in the water. Once the leaves start to reach out on the surface the pot can be gradually lowered to its correct depth.

There are many other plants suitable for the garden pond but the same point must be borne in mind. They nearly all grow rampantly and can soon take over too much of the pond. These types of plants are not oxygenators. They can be very attractive though, and a judicious choice enhances the beauty of a pond considerably. Some good ones are: *Butomus umbellatus*, the flowering rush; *Acorus*, the water flag; *Pontederia cordata*, the pickerel weed; *Sagittaria japonica alba flor pleno*, a good double white; *Typha*, reed mace.

The oxygenating or under-water plants can be set in baskets at the sides of the pond like the previous mentioned plants or they can be weighted and lowered into the pond to make roots and grow by themselves. Some of the under-water plants grow very vigorously in some ponds while in others they appear to fail. It is not difficult to find out which do the best in your pond. One point I must make here and that is the fact that it is quite unnecessary to have many different species of water plants in



Hornwort is a good under-water oxygenating plant for the pond



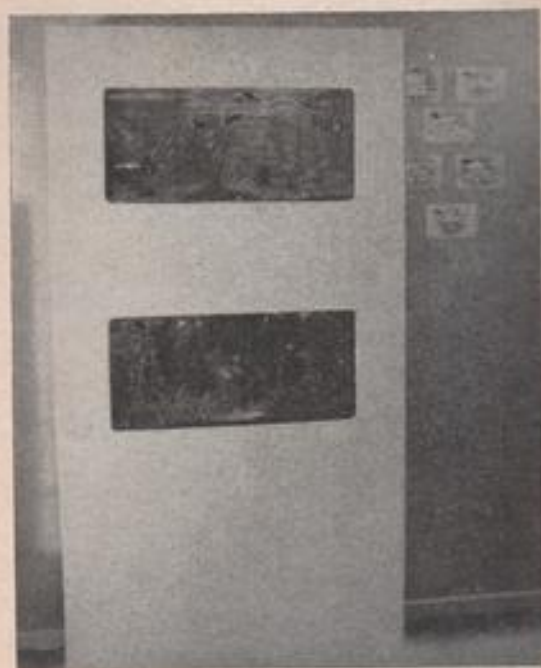
No pond can be said to be complete without a water lily

the pond. It is probable that in the average pond, the use of one oxygenating plant will be sufficient. One of the best is *Lagarosiphon major*, which can spread rapidly with long strong shoots over most of the pond provided that there is some decaying matter at the bottom for the plant's food. Another very good one is *Egeria densa*. This can also spread well and even a small piece can soon make a good coverage if in a suitable pond. *Ceratophyllum demersum* or hornwort is another good plant which can soon spread well. It has no proper roots but appears to attract mulm etc. to its stems, and soon throws out many shoots and makes an ideal plant in which fishes love to spawn. *Myriophyllum*, or water milfoil, is a pretty plant but I do not think that it is quite robust enough for the garden pond. It is better used in a tank.

There are some other oxygenating plants, but I have found that the use of more than two kinds in the average pond is not to be recommended. It is usually found that one plant will take precedence over the others and, after all, there is little use in having several species of oxygenators in the pond as they may not be seen very much once the lily leaves cover most of the surface.

Some covering plants can be used if the water becomes too green through the presence of algae. This is likely to form in the water in the spring, as there will not be enough cover from the water plants to cut out the sunshine. It is then that some cover can be provided. I find that the ordinary duckweed, *Lemna*, is ideal for this purpose. It

Continued on page 216



With the outer case in position two of the aquaria are on view

THE home layout described in this article is designed to accommodate two 24 in. by 12 in. by 12 in. aquaria with provision for a 24 in. by 15 in. by 12 in. breeding tank if required. The outer case, which is tilted forward for feeding, can be completely removed for cleaning and other purposes.

The advantages of the layout are fourfold:

- (1) The fitment can be decorated to match the living room and can therefore be aesthetically satisfying.
- (2) All components of the hobby are contained in a single unit (including breeding tank, accessories, brine shrimp hatcher).
- (3) All electrical wiring, switches and thermostats are concealed and therefore out of the reach of children and domestic animals.
- (4) It is more economical than providing manufactured stands and hoods.

As only simple joints are used in the construction the fitment can be made by any handyman provided reasonable care is taken in marking out and in squaring each frame. The materials used should be the best available and free from knots, shakes and other defects.

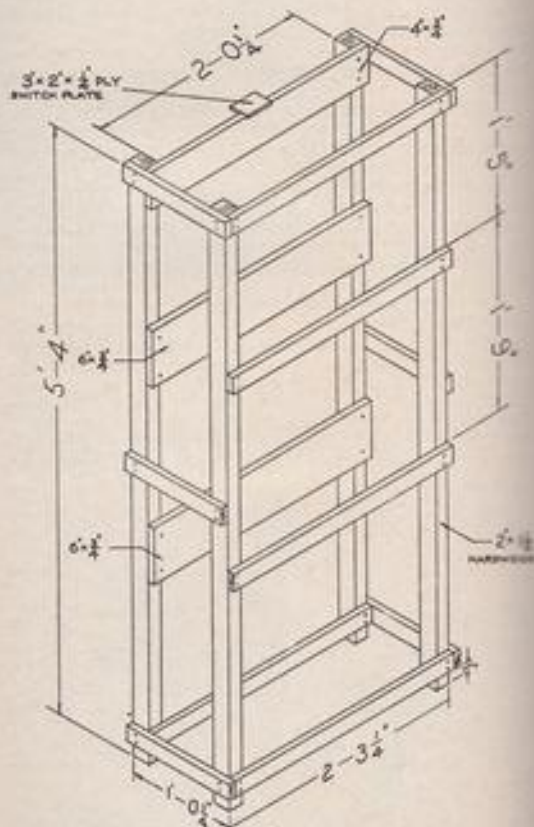
Beech or similar hardwood should be used for the stand uprights and a hard softwood such as parana pine for all other pieces. All timber must be straight and any warped or unseasoned timber should be returned to the supplier. As the size of the outer case is determined by the dimensions of the stands, the stand must be made first.

The sizes given here may be altered to suit individual requirements but the size between uprights must not be less than the tank length plus $\frac{1}{4}$ in. This is to allow for discrepancies in tank sizes and slight error in cutting the windows in the outer case.

To make the front and back of the stand the uprights and cross-rails should be cut to the exact length; the

A Decorative

positions of the screw holes are then marked on the cross rails and drilled ($\frac{7}{32}$ in. diameter) and finally countersunk to take the head of a $1\frac{1}{2}$ in. No. 10 screw. The position of the cross-rails is next marked on all four uprights, remembering that the bottom rail is kept 1 in. up. The frame should then be laid flat and the rails placed in position. A $\frac{1}{4}$ in. diameter 'thread hole' is drilled in the upright, concentric with the clearance hole in the cross rail. This is to accommodate the thread of the screw, which would otherwise split the upright or be very difficult to turn. A leading tool manufacturer has introduced a bit, called a 'screw-mate', which will drill thread hole, clearance



Details of the stand assembly (overall 5 ft. 4 in. high, 2 ft. $4\frac{1}{2}$ in. wide and 1 ft. 1 in. from back to front). All unmarked rails are $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.

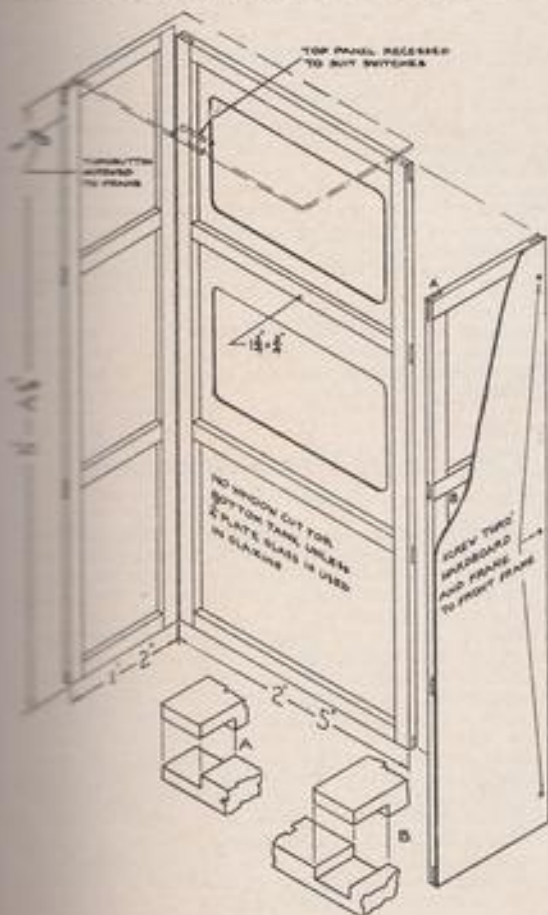
Home Aquarium

L. M. COOPER

hole and countersink in one operation when fitted to a power or hand drill. One screw should be inserted at each joint and the frame checked for squareness (the diagonals should be equal in length) before the second screw is fitted.

The front and back frames are connected by the six short cross-rails in a similar manner, ensuring that the screws do not foul the screws of the front and back frames. The stand is now complete and should be quite stable.

The outer case comprises three frames which are half-jointed and glued and screwed together with $\frac{1}{4}$ in. No. 6 screws. The clearance hole this time is $\frac{9}{64}$ in. All



Details of the outer case



The aquaria on the stand with the outer case removed.

three frames must be checked for squareness before second screws are inserted.

As the outer case should be a good fit to the stand, on the same principle that the best drawers are those which fit well into the opening, the large frame should be made slightly wider than the breadth of the stand, and planed down until just wider than it.

It is better to nail the hardboard on to the side frame before assembly as doing so afterwards may strain the joint between front and side frames. In nailing the hardboard to the frames, $\frac{1}{4}$ in. deep drive panel pins

Continued at foot of next page

Stand		Materials Required	
Uprights	Hardwood	Four	5 ft. 4 in. by 2 in. by $1\frac{1}{2}$ in.
Cross-rails	Parana pine	Five	2 ft. 3 $\frac{1}{2}$ in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.
"	"	Two	2 ft. 3 $\frac{1}{2}$ in. by 6 in. by $\frac{1}{2}$ in.
"	"	One	2 ft. 3 $\frac{1}{2}$ in. by 4 in. by $\frac{1}{2}$ in.
"	"	Four	1 ft. 1 in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.
"	"	Two	1 ft. $\frac{1}{2}$ in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.
Outer Case			
Uprights	Parana pine	Six	5 ft. 4 $\frac{1}{2}$ in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.
Cross-rails	"	Four	2 ft. 5 in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.
"	"	Eight	1 ft. 2 in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in.
Hardboard	"	Two	5 ft. 4 $\frac{1}{2}$ in. by 1 ft. 2 in.
"	"	One	5 ft. 4 $\frac{1}{2}$ in. by 2 ft. 7 in.
Plywood ($\frac{1}{2}$ in.)	"	One	2 ft. 6 $\frac{1}{2}$ in. by 1 ft. 2 in.
Screws	"	$\frac{1}{2}$ Doz.	$1\frac{1}{2}$ in. No. 10
"	"	5	" 1 in. No. 10
"	"	4	" $\frac{1}{2}$ in. No. 6
Panel pins	"		$\frac{1}{4}$ in. deep drive
			Two small turn buttons

The Red-eyed Characin



Red-eyed characin (*Arnoldichthys spilopterus*)

THIS too seldom seen West African species, a member of the family Characidae, is native to the lower reaches of the river Niger and its tributaries westwards to Lagos and attains about 2½ in. in length. It is commonly called the red-eyed characin because of the fiery glow above the alert-looking black eyes. Another distinctive feature is the scales. These are very large, especially along the middle sides, and glitter like freshly polished silver.

The general colour is brownish on the back, iridescent blue to green on the flanks, and silvery gold with an overtone of pink to red on the belly. A dark horizontal line, accompanied above and below by a yellowish to silvery margin, extends from the gill-covers to the bifurcation of the yellow-lobed caudal fin. The other fins are greenish to yellow; the dorsal with a bold black marking spreading over most of the upper anterior rays; the anal with some whitish streaks. In common with most characins, a small adipose fin is situated on the back near the base of the tail. In mature fish the sexes are easily told apart because the male's body and fins are richer coloured and more streamlined looking than the female's.

The red-eyed characin is a peaceful fish and, owing to

its small size, active habits and remarkably attractive appearance, makes a most worthy addition to a community tank. Generally speaking, it is hardy enough to withstand a slow drop in the temperature to about 68°F (20°C), but, not unnaturally for a species whose habitat is close to the equator, a temperature above 72°F (22°C) is recommended.

Carnivorous Fish

It likes a densely planted background, with plenty of swimming space along the front, and water which is clear, soft and slightly acid. As a rule it spends most of its time swimming in the middle levels of the water, but will rise quickly towards the surface for food. It is carnivorous by nature—its mouth is well supplied with teeth—but it will accept any type of dried or small live food, and substitutes for live food such as scraped red meat or shredded shellfish. In the wild it subsists mainly on insects and their larvae.

Although it was first introduced to tropical aquarists more than half a century ago, there are, so far as the writer can ascertain, no records of its having been bred in captivity.

Planting Time

(continued from page 213)

can usually be obtained from a natural pond and if a little is placed on the top of the water it will soon grow and cover a large surface of the pond. Many types of fishes, including goldfish, will eat some of this weed, and so when it is first placed on the water see that there is plenty of other food for the fishes. Once the water warms up in the summer it may be found that the duckweed has spread to such an extent that it has covered most of the surface of the pond. Much of it can be removed by playing a hose from one side of the pond and rolling the mass of duckweed to one side. It can then be raked out and used as a mulch in the garden. There is no need to remove all of it at a time, or you will have the green algae back again.

Remember that a pond requires careful planting to ensure that it remains attractive and does not get overgrown in a short space of time. I know that some of the plants can be removed or pruned back fairly easily, but it is a waste of money and time to purchase many more plants than is necessary. Do be patient and it won't be long before your pond becomes the envy of visitors and is a source of enjoyment to you and your family.

A Decorative Home Aquarium

(continued from preceding page)

should be used as these do not require to be punched later. The frames must be laid flat for nailing since a frame which has a bend in it during nailing will retain the bent shape.

The side frames should be screwed to the front frame with 1½ in. No. 10 screws.

The ½ in. plywood top is next pinned to all three frames and the whole assembly tried for fitting over the stand.

The hardboard of the front frame is tacked in position, allowing about ¼ in. projection at each side. The windows are then accurately marked on the face of the hardboard in the case of glazed tanks, but with unglazed tanks the windows may be marked accurately on the back of the hardboard, i.e. from the inside of the frame. A ½ in. drill is used at each corner of the window and the windows marked accordingly. A keyhole saw may then be used to commence cutting out the windows. The entire cover is then tried in place and the front hardboard pinned into correct position. The surplus at the edges is planed off, and all corners are rounded with glasspaper before papering.

Turn-buttons should be fitted at the top back corner of the outer case to retain the case hard against the stand.

American Terrapins in Aquaria

by V. G. BREEZE

ALTHOUGH *Pseudemys scripta elegans* comes from the area around Texas, and *Pseudemys ornata callirostris* from Columbia, their requirements are very similar. *Pseudemys scripta elegans* has a yellow stripe on each of the plates of the carapace (upper shell), and the 'ear' is bright red. *Pseudemys ornata c.*, however, has an orange 'ear', and the markings on the plates of the carapace are more circular. The overall colour of both species is dark green.

The general shape of each species is almost identical, but the hind feet of *P. scripta e.* are more webbed than those of *P. ornata c.*, which is perhaps the stronger of the two.

Temperature

Both species need a temperature of about 76°F (25°C), and about 8 to 10 hours of light (daylight if possible) per day. Very small specimens should have 2 inches of water: a tank 18 in. by 10 in. will hold two or three 1½ inch terrapins. The tank should have a slate ramp or rocks situated so that the occupants can climb out to sun themselves (this is done to speed digestion, and to kill leeches and skin parasites). About half an inch of gravel on the bottom is necessary if the base is made of transparent glass.

The animals should have as much space as possible, but the accompanying table is given as an idea of minimum requirements:

Minimum Space

Size of terrapin (in.)	Number in tank	Size of tank (in.) length width	Depth of water (in.)
1.5	2	12 8	2
1.5	4	18 10	2
1.5	8	30 12	2
2	2	18 10	3
2	4	24 12	3
2	6	30 12	3
3	2	30 12	4-6
3	4	48 12	4-6
4	2	30 15	6
4	4	48 15	6
5-6	4	36 18	6
Larger than 6	4	36 36	6-7

Once the terrapins are larger than 4 inches, a heated fibreglass pool is more practical than a glass tank. As fibreglass construction is rather tedious, polythene can also be used. If polythene is preferred, any seams must be sealed with a rock or slate, as terrapins will bite through polythene seams. For only one or two large animals, a big tank is probably easier to maintain than a pool. Hard water is preferable to soft, because it cannot in any way harm the terrapins' shell. If an immersion heater is used, it must be covered with a piece of stainless-steel mesh to

prevent the animals burning themselves. A filter may be necessary.

The best foods for small *P. scripta e.* and *P. ornata c.* are earthworms, lettuce, finely chopped meat and shrimp. Lettuce is essential, and I have found that small earthworms are favoured. Halibut oil and bone meal should be given periodically (at least once a week). These can be sprinkled over meat. Healthy young guppies may also be eaten. Larger terrapins eat meat greedily.

Terrapins smaller than 3 inches should be fed every day, with lettuce or vegetable matter at least once a week. Larger animals may only eat once or twice a week.

Well-kept terrapins suffer from few diseases, but soft shells and rickets are common. These indicate (i) lack of light, (ii) lack of calcium or (iii) lack of lettuce, and can be cured if discovered early. Algae growth on the shell does not seem to be detrimental. Fungus and bacterial diseases can be cured with methylene blue.

Growth

With good light and food, a terrapin may grow 2 inches per year: under ideal conditions, 3 inches is possible. Rates of growth vary slightly from season to season.

P. scripta e. and *P. ornata c.* are probably the easiest terrapins to raise, but losses are inevitable. This is hardly surprising, considering the way they are handled during transport. Losses usually occur during the first few weeks of captivity. Once the young terrapins are over the 2 inch stage, they rarely look back. At this time, they are very lively. *P. ornata c.* is especially active; *P. scripta e.* is rather docile. If picked up, the former kicks with all four feet, and when replaced in the water, swims away rapidly, instinctively diving to the bottom.

When two or more terrapins are kept in one tank, fierce wrestling matches take place during feeding time. The food is snatched by one, who dashes off into a corner, where he proceeds to eat it. Then another comes across, grabs the morsel, and the fight starts. The two twist and turn, all the time seeming to be trying to tear their opponent's eyes out with the front feet. The skin around the face must be very tough, because the powerful strokes of the claws never seem to cause any damage. These fights should not be encouraged, but only should be stopped if one animal is being damaged. It is important to see that the weaker partner does not go unfed.

These two species, indeed all terrapins, make very interesting pets, being well suited to the aquarist who wants something different in his collection.

Price of *The Aquarist*

IT is regretted that because of increasing costs of production and distribution of periodicals the publishers of *The Aquarist* have to increase the price of the journal to 2s 6d, starting with the April issue. Subscribers will be notified of the new rates when current subscriptions come to an end.

Aquarist's NOTEBOOK

by P. M. FULLER

IN the profusion of tributes offered to the memory of a great man earlier this year I saw no mention of the fact that the late Sir Winston Churchill was an aquarist of no small ability. Undoubtedly this is only because in his full and varied life he found time to do so much that was worthy of comment. However, the tanks in the London Zoo Aquarium stand as a permanent memorial to this side of his life, and collectors of *The Aquarist* will recall that on at least one occasion these pages contained a photograph of the great man at one of the National Aquarium Shows in London and displaying obvious interest. It is thus fitting that we should at least be aware that among the many activities that have lost an able supporter by the death of Sir Winston ranks the hobby of aquarium-keeping.

One of the singular characteristics of this hobby of ours is the number of other pastimes to which it can introduce us, without in any way lessening our enthusiasm for tropical fishkeeping. The aquarist may well branch out into such diverse fields as photography, geology, or philately as a direct result of his being an aquarist. One of the most interesting was the ardent aquarist who recently took up psychology with the intention of discovering why a tank of fish (often to be seen in medical men's waiting rooms—or so I am told) is always credited with tranquillising effects at least equal to those of many sedatives. He came to the Freudian conclusion that the fish in the enclosed space were a 'womb symbol'—pointing out that water in mythology and dream interpretation has long had a uterine significance. Thus, the aquarium satisfies, or at least substitutes for, the craving of every man to return to the womb and so acts as a sedative. Are you sure you know why you took up tropical fishkeeping?

A note for those who have been using thermometers for over a year without checking them, especially if they are of the dial or spring-operated type. Are you certain they are in working order? Recently I discovered that my dial thermometer was stuck at 80°F (27°C) and the real temperature of the tank was in the region of 95°F (35°C) and could well have been so for several months! It was a blessing that the tank contained only the ever adaptable blind cave fish, who seemed to suffer no ill-effects!

One of the most effective cures for fin rot is phenoxetol, which has for some time been on the market as a proprietary brand. I was recently in a bit of a quandary about how to cure an axolotl of a severe fungus infection that had even begun to affect the gills. Both my dealer and the text-books were pessimistic, advising no complete treatment apart from surgery. In the absence of anything else I dosed the axolotl with phenoxetol and in a few days it was as miraculously cleared as a goldfish. This is, I think, worth knowing. Fungus infections in amphibians are often far more difficult to eradicate than corresponding diseases in fishes.

Many are the household devices that can be adapted for use in the aquarium. For example, there is nothing more effective than a nylon pan scrubber for removing algae from the aquarium sides. Unlike steel wool, it doesn't leave dangerous scratches and it doesn't leave rusty remnants in the tank. However, one word of warning—ensure on purchase that the scraper doesn't contain soap or detergent of any kind—it can be fatal! I discovered in

a supermarket a few months ago what must be the cheapest ready-made breeding trap on the market. It is a perforated plastic bowl, intended I imagine for washing vegetables. However, I found a better use for it. The holes were absolutely ideal for holding back a female guppy and letting the young ones through, whilst the handles neatly reached across the tank. Never have I used a more satisfactory breeding trap.

Any aquarist visiting Pitlochry, Scotland, for his summer holiday has the opportunity of seeing a unique aquarium in which all the fishes are absolutely free. When the Pitlochry dam was built a remarkable fish ladder was constructed to enable the salmon to continue to migrate without impediment, despite the presence of a dam. In the side of one of the upper steps of the ladder a viewing panel has been inserted, through which one can view (in the right season) huge salmon travelling up or down stream. Even out of season there are often smaller fishes—trout or salmon parr—to be seen. Also in the area of the dam are vast salmon hatcheries, regrettably not open to public viewing. If you are planning a visit to Scotland, Pitlochry Dam is thus well worth including in your itinerary.

One of the most annoying characteristics of fish behaviour is their stubborn refusal to behave in the way you want them to at the right time. One can diligently create exactly the right breeding conditions—temperature, pH and special requirements all being taken into consideration, introduce the fish and discover that they absolutely refuse to reproduce. In desperation one returns them, perhaps to a community tank, only to find the next day the gravel littered with eggs and all the fishes eagerly consuming the spawn that would have been adequately protected.

I was infuriated to find *Tubifex* worms behaving in exactly the same way. Stubbornly they refused to breed under observation. However, I was also feeding them to amphibians in a very wet vivarium in comparatively small quantities. When I came to dismantle the vivarium set-up I noticed for the first time high concentrations of wavy red worms all over the mud and especially behind the stones. The moral seems to be if you want anything to breed, just look the other way. Maybe fishes, and even worms, are embarrassed if you make them reproduce under observation.

Plants for very damp vivariums are always a problem—many just won't settle down in over-wet conditions. But one that won't flourish in any other is the sundew. It is to be found in wet and marshy ground—for example in the New Forest, Hampshire, where it feeds on small insects. You may be unlucky, sundews are sometimes awkward and shrivel up and die for no apparent reason, but you can be sure of one thing, it won't be through too much water, and if you are lucky you will possess an interesting and unusual plant. Incidentally, the insects are only supplementary food and not essential for the well-being of the plant.

Teaching—the Aquatic Way

by B. WHITESIDE

IN the teaching of science in secondary schools, where the curriculum is not governed by an external syllabus, the scope for making use of aquatic plants and animals as teaching aids is wide. The main reason for having them would be for the teaching of biology, but the school aquaria can also be a means whereby children develop a love for plants and animals as well as developing their sense of aesthetic appreciation. As most aquarists will agree, few art forms can excel the beauty of a well decorated tropical aquarium with a collection of suitable fishes.

School entrance halls are an excellent place in which to site such an aquarium. Here the display can be appreciated by both staff and pupils, which would not be the case if the tank were set up in one of the laboratories. In this instance the set-up would only be seen by pupils and teachers whose timetable was such that they had classes in the particular room, as laboratories are placed out of bounds and kept locked unless a science teacher is present. The entrance hall aquarium can be further enhanced by the addition of a variety of pot plants placed beneath or around the tank and the Rural Science teacher in the school will probably be pleased to supply these.

Looking after plants and the aquarium during term time offers no problems as many keen pupils can be found to water plants and to feed fishes and service the tank. During holiday periods the problem is more difficult. Pot plants can be returned to the school greenhouse, which will possibly be looked after by the caretaker or the laboratory technician. These officials may be persuaded to look after school aquaria, too, as holiday periods for them are much less than normal school holidays. Arrangements usually have to be made, during the long summer vacation, for the tending of the school garden and pupils who volunteer for this task could also attend to school aquaria. Motivation for such tasks can be supplied by allowing such pupils to take ripe fruit and vegetables from the garden as a reward for the work carried out during holiday periods. Arrangements for attention to school aquaria have to be made between teacher and caretaker so that pupils can have access to both garden and aquaria.

General Biology

The teaching of biology can be enhanced where a variety of aquatic creatures are kept in the school laboratory. A study of air is one of the basic subjects taken by junior forms and here it is useful to keep some of the common freshwater creatures, found in local streams, in small all-glass aquaria. Water boatmen, *Amoeba*, *Hydra*, *Euglena*, beetles, water flies and various larvae can be kept for varying periods, and their methods of obtaining oxygen for respiration studied. Frogs can be raised from spawn to adults to show how their breathing methods change from tadpole to adult amphibian. A larger tank could house a number of goldfish but with some of the easier to breed tropical fishes the scope for teaching points is widened.

Tropical fishes can be used as teaching aids for many facets of biology but in the teaching of sexual reproduction they could provide a useful starting point for a series of

lessons for older children, where this subject is included in the curriculum.

Although the livebearers are the easiest to breed, it would possibly be better to start with trying to breed some of the simpler egg-layers such as White Cloud Mountain minnows, showing how, in an aquatic habitat, male and female fish do not unite in sexual union. Here fertilisation is external and contact between the two fish is unnecessary. The next stage could be approached by alluding to the frog (*Rana temporaria*), in which the male clasps the female with his "arms" and, though contact between male and female occurs, fertilisation is still external. Here it must be made clear to the pupils that such external fertilisation is only possible in water and that the developing embryo must be supplied with food—from the yolk cells, just as in the egg of the domestic fowl.

Fishes and Water Plants

Guppies present an obvious choice when studying internal fertilisation. The difference between male and female fish can be studied and note made of the male organ used to introduce sperm into the female vent. Stages in the pregnancy of the female can be studied until she delivers her brood. If, by chance, the pupils are present at the birth of the young, the remainder of the yolk sac can be pointed out. It should be made clear to the children that there is no direct connection between mother and the developing embryos. One can then lead on to aquatic mammals where fertilisation is internal and where the developing young is supplied with food and oxygen via the umbilical cord. Land mammals can then be introduced and the necessity for internal fertilisation emphasised. Rabbits or white mice may also be bred in schools for studying, and reproduction in the human is eventually studied in detail.

Aquatic plants can also be used in various experiments. A common one shows how oxygen is produced and released by a water plant such as Canadian pond weed, in the presence of strong sunlight. This experiment is carried out by inverting a test tube full of water over an inverted filter funnel, below which is placed a quantity of the plant. The whole is placed in a large beaker of water and placed in strong sunlight for a number of days. Before being left the apparatus is made air-free. A quantity of oxygen can usually thus be collected and tested with a glowing wood splinter, which it should relight. For more advanced pupils the phenomenon of cyclosis can be observed if a small portion of a fresh young leaf from the growing tip of Canadian pond weed is mounted, on a slide, in water and viewed under the high power of a good microscope. A very slight warming of the slide may make the process speed up a little. (Cyclosis is the process whereby the streaming protoplasm in the plant's leaf cells causes movement of the chloroplasts—small green plant bodies which assist in photosynthesis.) The chloroplasts can be seen moving along in the plant's tissues.

These are only a few of the benefits of keeping aquaria in

schools. Many more ideas can be and are being used by progressive teachers who find that the little bother entailed in school aquarium keeping is well rewarded. Tropical fishes and plants are the things which are usually in short supply, so that readers with excess of home raised specimens can probably find a welcome outlet in a local school. In such places the absorbing hobby of aquarium keeping is

introduced to a large number of children, some of whom will be potential aquarists of the future.

Perhaps aquarists with children of their own might like to use some of these ideas to answer the penetrating questions often asked by children with the enquiring minds of this scientific age. Fishes are certainly a much more useful teaching aid than are the birds or bees!

OUR EXPERTS' ANSWERS TO TROPICAL AQUARIUM QUERIES

I should be grateful for some information about the chocolate gourami.

This rare anabantid is formally known as *Sphaerichthys ophromenoides*. It is native to Sumatra and the Malay Peninsula and attains about 2½ in. in length. It rarely flourishes for long in captivity unless it is placed in soft, peaty water maintained at a temperature of about 78°F (26°C), and is shaded from a too revealing side and/or top light by spreading growths of submerged vegetation. It needs small live food and is not suited to community life unless its companions are as inoffensive and as quiet-living as itself. The sexes are not easy to tell apart, except for the more pointed dorsal fin of the male, and the fuller sides of a roe-filled female. Very little is known about the fish's breeding procedure. It is said on good authority, however, that the species is a mouth-brooder.

I have been given to understand that young shubunkins can be kept in a tropical tank to act as scavengers. Is this true?

It is true that young shubunkins can be kept in a tropical tank, where they will help to get rid of uneaten fish food and algae. All the same, we do not recommend them. For one thing, they require considerably more oxygen to stay alive than the average warm-water species. For another thing, they soon outgrow their container.

Please give me the names of a few large, attractively marked and easily cared for tropicals suited to living together in a well-planted 48in. by 12in. by 15in. tank.

Pearl gouramis, rosy barbs, clown barbs, Australian rainbow fish, giant danios, keyhole cichlids and silver sharks.

I have been told that crumbs of hard-boiled yolk of egg make a valuable food for tropicals. Do you agree?

For some newly hatched fry the answer is yes; but for grown fish the answer is no; for crumbs of hard-boiled egg dropped into the aquarium dissolve in the twinkling of an eye into countless minuscule particles which are ignored by



An algae-eating fish with a big appetite is *Plecostomus plecostomus*

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

the occupants of the tank and only lead to clouding and sometimes pollution of the water.

A friend asserts that labyrinth fish can be drowned. Is this a fact?

The answer is yes. If a labyrinth fish is prevented from taking in fresh air death by drowning will soon result.

What in your opinion are the best algae-eaters to introduce into an aquarium?

Gyrinocheilus aymonieri, the so-called Siamese sucker fish, comes first to mind. This peaceful and highly interesting species seems to do little else but hunt around for algae. Next, we would recommend *Plecostomus (Hypostomus) plecostomus*, a large-growing catfish from Brazil.

Please outline the general requirements and maximum size of *Therapon jarbua*.

This essentially marine species needs salty, well-aerated water and a spacious aquarium. It will accept almost any kind of food and flourishes best at a temperature in the middle seventies (°F). In its smaller sizes it is reasonably well-behaved, but as it matures it becomes a spiteful bully. In the wild it attains a length of 12in. but few specimens reach this size when kept in captivity.

I recently saw some handsomely coloured fish called *Alopius leucipinnis* in a dealer's shop. I should very much like to know the country of origin of this species, and whether or not it is easy to keep in good health in a community aquarium.

This 5in. African characin is found in the wild from Sierra Leone to the Congo. It is not ideally suited to the average community tank because it is rather shy and is apt to be browbeaten by boisterous companions. Further, it needs plenty of swimming space in clear, peaty water and a diet consisting in the main of insects and their larvae.

Every time I switch off the artificial aeration, the six tiger barbs in my community tank rise towards the surface and stay in a group as though they are too scared to move, or are short of oxygen. Their companions—livebearers and small tetras—carry on as usual. What is the reason for the barbs' strange behaviour?

That tiger barbs are always among the first fishes to suffer from the effects of overcrowding or a diminution in the oxygen content of the water is well known to experienced aquarists. All the same, it is a habit of these fish to take up a slightly head-down position near the surface, and stay put, as it were, for brief or protracted periods. We can only

suggest that they benefit from 'breathers' every now and again in a less stagnant environment than that which obtains in the lower levels of a long-established aquarium.

Acting on the advice of a fellow fishkeeper, I placed a well-conditioned pair of zebra fish in a spawning trap contrived out of a discarded, fine-meshed net curtain. I saved plenty of eggs, but all the fry died shortly after hatching out. What do you think killed them?

Perhaps you failed to soak and squeeze the curtain net in several changes of water before using it to protect the eggs from the adult fish. Both fry and grown fishes are soon killed by the residues of certain dyes, detergents, soap, or soap powders dissolved in their water.

I am thinking of setting up a 36in. by 15in. by 15in. tank in which to house some large cichlids. What species, and how many of each kind, do you recommend for a comparative beginner?

First of all, we must tell you that most of the larger-growing cichlids are extremely quarrelsome, and cannot be kept together unless, as in a public aquarium, they can be

accommodated in a very spacious tank furnished with hiding places among piles of rockwork or overturned flower-pots. Your tank is only large enough to support one well-grown pair of largish cichlids. We suggest you choose a single pair from any of the following: *Astronotus ocellatus*, *Aequidens portalegrensis*, *A. tetramerus*, *Cichlasoma severnsoni*, *C. facetum*, *C. meeki*, or *C. nigrofasciatum*. Alternatively, several baby cichlids (not necessarily of the same species) could be obtained and grown on until the danger of overcrowding and/or their increasing aggressiveness compelled you to split them up and house them elsewhere.

I saw some black paradise fish for the first time a few days ago. Is this handsome species suitable for a community tank? Is it easy to breed? What is its scientific name and maximum size?

The black paradise fish can be even more aggressive than the ordinary paradise fish and is definitely unsuited to life in a community tank. It is not difficult to breed and has large broods. It is formally known as *Macropodus opercularis concolor*, and attains a length of about 3½ in.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

During my visits to the British Aquarists' Festival, I have been struck by the attractive appearance of the rocks in some of the leading furnished tanks. Could you tell me the name of this particular rock and where it can be obtained?

The rock was probably Westmorland rock, well weathered. This makes a fine setting in a furnished tank and can be procured from most landscape gardeners. On the other hand the rock may have been of some special rarer kind. Some exhibitors are very secretive about the source of their rockwork. I have met aquarists who guard the secret source of rocks and bottom compost with their lives and know some who creep out at night to certain rivers to collect their gravel etc. unobserved!

I had decided to refurnish my tank in the manner described in *The Aquarist*, October, 1956, using a thin layer of cement to cover glass and coal to build up the strata. Having let the mixture set for 2-4 days I found the cement had not taken to the glass. Please could you make any suggestion?

If you had used Prompt cement you would have found that it would have stuck to the glass better than the kind you named. This cement sets rock hard in a matter of half an hour, and will even do so under water. I have found it ideal for all underwater jobs.

I have bought four coldwater dogfish (*Umbra krameri*), but have not been able to find anything at all about them in any books. I would be grateful for information about these fish: temperatures, feeding, breeding, sexing, natural location and whether they can be kept in an outdoor pond all the year round.

The fish in question is a native of Hungary and lower Austria, and grows to about 3½ inches in length. A rather similar fish is found in North America, where it is known as the mud minnow (*Umbra pygmaea*). These fish can stand the ordinary winter temperatures out of doors in this country. They prefer live foods but can be trained to take dried foods as well. They are difficult to sex, as are most of the egg-laying fishes. When the female is full of eggs her body is fatter than that of the male. When viewed from above this difference usually shows up quite plainly unless the examination takes place soon after a spawning. They require a large tank for spawning, filled with water plants and algae (the filamentous type is preferred). When about to spawn they make a kind of cave in dense vegetation and then this is closed and guarded by the male. These fish

are able to take in air from the atmosphere and so make constant dashes to the surface. They spend a lot of time at the bottom of the tank. Some years ago when judging at Hendon show I was surprised to find a mud minnow (*Umbra pygmaea*) in a coldwater class. It had been caught in an outdoor natural pond and had no doubt been released there at some time. This little fish had the peculiar powers of waving about the dorsal fin like many tropicals, a running wave going from front to back.

Please let me know if part of an article on plants in a book called *The Aquarist's Encyclopedia* is correct. It says that water plants give off oxygen during the dark hours and so aerate the water. Some members of our Society consider that the opposite is the case. Will you comment please?

The statement is incorrect and may be a printing error. Water plants give off oxygen under good light conditions and absorb carbon dioxide. At night or during darkness the process is reversed. On dull days it is a good plan to give extra artificial light to tanks so that the plants can assist in the aeration of the water.

When should goldfish in an outdoor pond have their first after-winter feed?

Once the water warms up a little the fish will become more active. It is then that feeding can be commenced. It is advisable to give small or broken earthworms for a few first feeds and do not feed every day. Be guided by the weather and activity of the fish. When the water is very cold the fish are sluggish and do not require much food. It also takes them much longer to digest what food they do eat when the water is cold.

When I constructed my garden pond I made the mistake of siting it at the lowest part of the garden. Now when there is heavy rain the surplus water runs into the pond and soils the water there. How can I overcome this trouble?

As you have found out, it is undesirable to site a pond too low in the garden as it makes it so difficult to empty if required. You will have to construct a small wall around your pond so that the water draining from higher ground is prevented from getting into it. Perhaps a rockery can be incorporated with the scheme so that the addition is partially hidden.

I have had trouble with fin rot on my goldfish, kept in a tank 12in. by 10in. I think I have cured that trouble but the fish is developing black marks on the body and head. I have a filter unit and the water temperature is 70°F (21°C). Why is the black forming?

The black is usually a sign that there has been some damage to that part and this is where new growth has been made. The new growth is often black at first but is likely to change back to the red after a time. There is nothing you can do about it but have patience and all should be well. Why do you keep the tank at 70°F for goldfish? These fish are quite hardy; my own fantails have been under several inches of ice and then snow for a fortnight and they are all right. Goldfish do not need a high temperature during the winter months.

I have a sunken concrete tank in each of my two greenhouses, each tank having an area of 40 square feet. One house is at 60°F and the other at 50°F. They are fed by rain water from a felted roof. Mosquito larvae are a nuisance and I would like to know if I could keep fishes in the tanks other than goldfish?

The tanks would be ideal for breeding fancy goldfish, the warmer house being used for actual breeding and the other one for rearing. You could breed any of the fancy goldfish such as fantails, veiltails, orandas, moors or shubunkins. Golden orfe and sunfish could also be kept. I do not like the idea of rainwater from the felted roof. This may bring in many impurities. It would be better to divert this water for a time so that the roof is well washed before rainwater is allowed to run into your tanks.

I have a moor which has developed a bad spot just behind the gill. A couple of scales seem to stick out with a film of blood surrounding the spot. I treated it for fungus but now another fish has one scale protruding and the blood film around it like the other one. What is the cause and cure?

The description you give indicates that the fish has been attacked by a fish louse (*Argulus*). These parasites suck the juices from a fish and attach themselves by means of suckers. It is difficult to see these pests on a fish as they are transparent. They can cause quite an angry wound if not removed. They can be picked off with tweezers or if the fish is immersed in a solution of a quarter teaspoonful of Dettol to a gallon of water the louse will leave the fish. A further treatment after a week is advisable.

I have a 3-year-old nymph goldfish which has been in perfect condition and spawned for the first time last summer. Now it swims head down and is not eating. On examination I found that the tail was badly blood-streaked. The tail seems to be getting worse. What can I do?

These fish with a short deep body are often prone to swim bladder trouble once the cold weather sets in. The fish can be cured of the fin trouble by immersing the fish in a salt bath for several days. Place the fish in a gallon of water and add a heaped tablespoonful of salt. Do not stir but just allow it to dissolve steadily. Do not feed the fish whilst under treatment. After 4 or 5 days the fish should be cured. Then add fresh water so that the strength of the solution is gradually restored to almost normal.

Just recently I have been given three golden orfe, which I had never heard of before. I have read many books but cannot find any information on them. Can you give me some information about them, such as diet, temperature etc.?

Golden orfe are a fish which prefer very clear water and like it fairly cool. They are essentially a river fish. They are very active and soon grow to a length of upwards of 18 inches. They are not particular as to food but prefer live food. Garden worms and the usual live foods will be accepted gratefully by them. In *Coldwater Fishkeeping* (5s 4d post free from *The Aquarist*) you will find information on keeping these fine fish.

I am thinking of buying a greenhouse to house my fancy cold-water fish. It is made of silicified cedar wood and I am wondering if the condensation from this will harm the fish if it drips into the water?

I do not think that there will be any trouble from drip. The water should run off without taking anything harmful into the tanks. You will have to provide either blinds or shading on the glass for the summer as a greenhouse will soon become much too hot for fancy goldfish. A proper fish house is much better as this will not have so much glass—an advantage both in summer and winter.

I have taken over a house with a garden pond about 55-60 square yards in area. There is a leak in it and I have to top it up twice a week. I wonder if I can paint it over with anything to stop this loss of water. I think that the concrete is porous; there do not appear to be any cracks.

You should re-line the pond with a mixture of one part of fine sharp sand and one part of cement. Failing this you can try painting over with a bitumastic preparation such as is used for flat roofs. The trouble with the latter method is that this material will not adhere to anything damp as it is waterproof itself. It would not be an easy task to dry a pond the size of yours, especially at this time of the year.

I would like to know if it is advisable to feed goldfish on ants' eggs bought from a shop?

These are not ants' 'eggs' but the dried pupae of ants. As such they are not of much value as fish food, though they can be used if freshly obtained from a garden ant nest. There are far better foods for fishes advertised in *The Aquarist* each month.

I am building a garden pond in which I wish to keep small trout, besides other fish. I believe this is quite easy provided that the water is kept clean and either moving or aerated. Can you please advise on the best methods?

You can keep small trout in a garden pond but as they grow you may find that they attack any other small fishes there. Trout are not averse to eating any other fish small enough to get in their mouths. It is essential to have good oxygenated water for trout as their preferences are for clear fast-running rivers. A good type of arrangement for a trout pond is to construct a well raised rockery beside the pond and then a series of small ponds and channels to lead into the pond. An electric pump can be installed to raise the water from the pond and it can then flow back along the channel and over small waterfalls. During this time the water will be well oxygenated and so ensure that the trout should not lack this important gas. One point to watch is that stale food must not be left in the water. Even with the waterfall working poisonous water cannot be turned into fresh. Alternatively a fountain can be fitted to be worked by an electric pump. Several small pumps are on the market and regularly advertised by dealers in *The Aquarist*.

I am interested in becoming a show judge for tropical and coldwater fishes. How can I set about this?

To become an authorised judge under the Federation of British Aquatic Societies you must apply to the secretary (K. J. A. Pye, 35, Steeles Road, London, N.W.3). Prospective judges are usually chosen from aquarists who have gained considerable experience both at keeping and breeding various fishes and also those who have been successful exhibitors for a few years. Such aquarists are usually recommended by their club. At infrequent intervals classes are held by the Federation for candidates and then if satisfactory they are first classed as "B" judges, when they can judge club shows, and later when they have gained experience by perhaps accompanying an "A" judge they are up-graded.

The Blind Cave Fish

NOTWITHSTANDING the deprivation of its sight by untold centuries of life underground, the blind cave fish (*Anoptichthys jordani*), a characin from San Luis Potosi, Mexico, never bumps into rockwork or the sides of its aquarium, becomes entangled in the plants, has head-on collisions with other fishes sharing its tank, or fails to find its food.

That it avoids doing these things is due, without a doubt, to its heightened senses of location and vibration. Indeed, it can snap up worms wriggling in the water as quickly, if not more quickly, than normal-sighted fishes. Obviously, too, its sense of smell must be very acute; for it can find pieces of meat or dried food lying on the bottom in the proverbial no time. Clearly, then, there is no need to emphasise the fact that *A. jordani* makes a most praiseworthy scavenger.

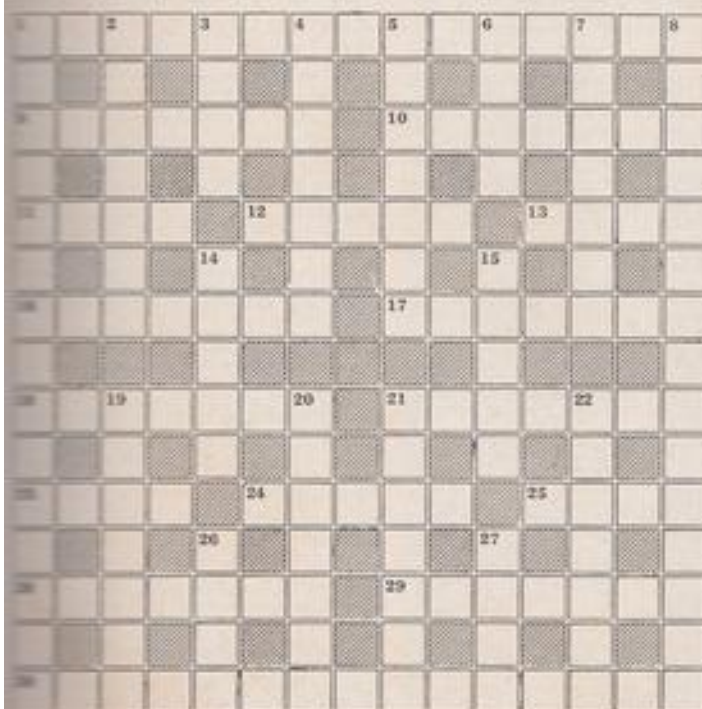
In general appearance it is flesh coloured overlaid with a silvery sheen. The fins are faintly or pronouncedly tinged with pink. The places where the eyes were in the long, long ago (the species is said to be derived from *Astyanax bimaculatus mexicanus*, specimens of which must have become imprisoned where no light penetrated by a landslide or such tremors) are rudimentary sockets partially or completely grown over. It is peaceful by nature and attains about 3 inches in length.

The species is named after the distinguished hobbyist and collector, C. Basil Jordan of Dallas, Texas, who first communicated its discovery by a band of Indians to the great American authority, William Thornton Innes, in 1936. It was first exhibited to the public at the New York Aquarium in 1939.

It is a hardy fish which thrives well at a temperature range of 64°F (18°C) to 75°F (24°C), and is quite at home in the well-lighted aquarium. It swims in a slightly head-downward position, and is always on the go. It can be bred in captivity, and the female—the larger of the two sexes—scatters her non-buoyant eggs at or near the surface of the water. The breeding tank should be filled with crystal-clear water, and to bear some small resemblance to natural conditions, should have its floor furnished with some clean, flat pebbles placed on well-washed sand. As the parent fish are avid eaters of their own spawn, they should be removed to another tank immediately mating is over.

At a temperature of 78°F (26°C) the eggs hatch in about 3 days, and 3 days later the fry should become free-swimming. As first food, Infusoria is needed, but after a week to 9 days the usual small live and dried food is taken greedily. Provided there is ample swimming space in well aerated water the fry never fail to make rapid progress.

The AQUARIST Crossword Compiled by L. Bradley



CLUES ACROSS

1. Firemouth (10, 5).
9. Do hoard (Anag.) (7).
10. Light of the aquarium (7).
11. Fall in drops (4).
12. I divide perfectly (5).
13. Irritation caused by overfeeding fish (4).
16. Bait for sea-fishermen (7).
17. A stoppage of trade by authority (7).
18. Rises to make up tales (7).
21. Fish of genus *Halilut* (7).
23. Impetuosity (4).
24. Turkish council of state (5).
25. Air — used for aeration (4).
28. Obvious (7).
29. Common English bass (3, 4).
30. Fish of the *Mollisina* variety (8, 7).

CLUES DOWN

1. Scavenger whose name means bronze and helmeted (9, 6).
2. Coo to a North European sea fish for reducing the temperature (7).
3. — head, member of the goldfish family (4).
4. Mast rod (Anag.) (7).
5. Communication sent by Meg about rough seat (7).
6. Stour-like animal (4).
7. Rehead this person to finish the winner (7).
8. Contributors to *The Aquarist*? (13).
14. In the aquarium copper is an example of this kind of substance (5).
15. Chief of fallen angels (5).
19. Iridescent anabantid? (7, 7).
20. One of nine pins? (7).
21. Lintel (7).
22. See 19 down.
26. Half — (*Dorsogenys pailloti*) (4).
27. Caudal fin (4).

Solution on page 225



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 chairman of Brighton and Southern A.S., Mr. B. Shelton, reported a very successful year with average attendances, for the first time since records were kept. The Society held its first open show and 177 entries were received. Apart from the postal strike which delayed the entries the show went off without a hitch.

The Club was very proud to announce that they had gained an honorary president in Miss Dora Bryan. Her husband is a very keen breeder of fishes. It was also announced that the open show for 1965 will be held on Saturday, 12th June, details of which will be forwarded to all secretaries shortly.

The following committee was elected for 1965: Hon. chairman, Mr. J. Coleman; hon. secretary, Mr. J. Pelham; treasurer, Miss Pam Carr; show secretary, Mr. R. Browning, also F.B.A.S. delegate; and in addition Mr. P. Pavey, Mr. B. Shelton, and Mr. N. Peters.

By invitation Dr. R. O. B. List presented the club trophies to the following members: Nichols Challenge Cup, Mr. C. Wael. Ladies' Trophy, Miss Pam Carr. Novices' Cup, Mr. D. Randall. Nichols Cup for Best Fish of the Year, Mr. J. Coleman. David Harris Cup for Best Guppy, Miss Pam Carr. Furnished Aquaria Class A, Miss Pam Carr. Furnished Aquaria Class B, Miss Pam Carr.

For details of the Club's activities please write to the hon. secretary, J. A. Pelham, 79, Vale Road, Portslade, Sussex.

THE Dewsbury and District A.S. open table show will be held on 8th May at the Social Centre for Disabled, Daisy Hill, Dewsbury, Yorks. Schedules are available from: Mr. J. Thompson, 53, Sunnybank Road, Mirfield, Yorkshire.

THE activities of the Freedonia A.S. over the past four weeks have included two lectures from aquarists outside the Club.

A list of the events was as follows: Lecture on fighters given by Mr. M. Thomas; lecture on furnished aquaria, by Mr. R. Jessop; "Know your fish," by Mr. R. Thomas; slide show and commentary, by Mr. J. Morrish. The annual furnished tank competition is at present being judged, a great many entries being involved.

ON Monday the 15th February, the New Forest A.S. entertained the Brockenhurst Allocations Association and the Lymington Gardeners Club, at the Baptist Church Hall, Lymington, with a talk illustrated by coloured slides on "Water-Lilies," given by Mr. N. H. Bennett.

AT the Thurrock Aquarist Club meetings for February the chairman, Mr. R. Nicholls, gave two interesting talks, one on the setting up of a tank to achieve the perfect balanced aquaria and the other on the anatomy of livebearers. On the same evening as the talk on livebearers was held, a table show took place for livebearers other than guppies and the results were as follows: 1, Mr. E. Nichol (velifera); 2, Mr. D. Durrant (black sailfin); 3, Mr. D. Durrant (tuxedo sword). The class had 13 entries.

The Club meets on alternate Monday even-

ings at 8 p.m. at Gypsy Lane Hall, Grays. New members are always welcomed and they should contact the chairman, Mr. R. Nicholls, 37, Arthur Street, Grays, Essex.

NEW officers of the Pontypool and District Aquarist and Pondkeepers Society are as follows: Mr. J. Mayers, chairman; Mr. B. Smith, treasurer; and Mr. H. R. Clarke, secretary, Ty-Gwent Bungalow, Crumlin Road, Pontypool, Mon.

AT the annual general meeting of the Harwich and District A.S. the secretary was happy to report the Club growing steadily stronger in membership and enthusiasm. The chairman thanked Mr. Margrove for his great efforts as founder member/secretary over the two years since the Club was formed. Mr. Margrove has given up his post owing to his forthcoming marriage. Mr. West, the treasurer, reported the Club in a very sound financial position. The officers elected for the coming year were: Chairman, Mr. T. Newcombe; vice-chairman, Mr. B. Sillitoe; treasurer, Mr. P. West; librarian, Mr. A. Madders; secretary, Mr. J. Farthing, 12a, Hamilton Street, Parkenton, Essex. New members will be very welcome. Meetings are held at the Vacuumic Sports Club on the first Monday of each month.

RECENTLY the Blackpool and Fylde A.S. held their annual general meeting and the members elected the following club officers: President, Mr. C. Cross; vice-presidents, Mr. V. Fletcher, Mr. G. N. Hadley, and Mr. J. Eshington; chairman, Mr. W. K. Pearson; vice-chairman, Mr. F. C. Willson; secretary, Mr. G. Howard; asst. secretary, Mr. B. Litzler; treasurer, Mr. R. Ikina; librarian, Mr. L. Howlett; publicity officer, Mrs. M. J. Fletcher; equipment officer, Mr. G. N. Hadley. Members elected to the executive committee were Messrs. E. Crowther, B. Litzler, B. Simmons, J. Smith, J. Taylor, and P. Williams.

Mr. R. W. Crook, chairman for the past four years, was presented with a silver tea service at the annual dance for his service to the club. He will be leaving with his family to set up his home in Canada, sometime in early April. Mr. E. Crowther, who was secretary for five years, received a presentation of a set of bar tools for his cocktail bar, at the last meeting before the 44th.

The table show competition prizes and the cups were presented at the annual dance. Singleton Trophy (single fish), Mr. L. Howlett; Robinson Trophy (pairs), Mr. A. Mather; Legat Trophy (breeders), Mr. B. Simmons. Fish of the Year Trophy was won by Mr. J. Taylor with a tiger barb. The Cardwell Figher Cup was won by Mr. G. Howard. The home furnished aquarium contest was won by Mr. J. Taylor. A success which delighted club members was Mr. G. N. Hadley winning the Cassons Challenge Trophy at Belle Vue, a trophy which he has worked hard for but it has always been a point or two away all these years.

Meetings are held every second and fourth Wednesday at the Vevers Arms. All people interested will be most welcome. Further details can be obtained from the Secretary, Mr.

G. Howard, 56, Stamford Avenue, Blackpool, Telephone no. 42678.

THE officers elected at the annual general meeting of the Harlow A.S. were as follows: Chairman, Mr. J. Soares; vice-chairman, Mr. R. Haines; secretary, Mr. J. B. Duncan; treasurer, Mrs. V. Duncan; show secretary, Mr. R. Oliver; auditor, Mr. J. Shime; Committee: Mr. J. Monty, Mr. A. Cox, Mr. E. Spencer, Master K. Martin and Master J. Coleman.

The society meets on the first and third Wednesday of each month at Mandie Hairdressing Saloon, Bush Fair, Harlow, Essex. New members and visitors are always welcome and the society would also welcome correspondence from societies abroad. The secretary's new address is 28 Long House, Bush Fair, Harlow and the show secretary's address is 143 Shortbridge, Harlow.

OVER 90 members and friends attended the annual dinner and dance of the East London Aquarist and Pondkeepers Association and had a most enjoyable evening. The guests of honour were Mr. R. Taylor, who is a founder member, his wife, and Mr. and Mrs. S. Wade.

The following Friday the annual general meeting was held. The following officers were elected: President, Mr. P. Camplin; chairman, Mr. J. Bryden; vice-chairman, Mr. P. Arnold; general secretary, Mr. R. Emery; treasurer, Mr. A. Harris; show secretary, Mr. W. Bunnage; show organizer, Mr. W. Corby; social secretaries, Mr. P. Knight and Mr. D. Wade; bulletin editor, Mr. J. Smith; equipment officer, Mr. B. Armon; programme secretary, Mrs. J. Bunnage; librarian, Mr. A. Field; committee members, Messrs. Mayhew, Clements and Groves; auditors, Mrs. Harris and Mrs. Arnold. Following the election of officers there was a discussion on the programme for 1965, and it was agreed that the annual show should be held once again in September. The show secretary is Mr. Bunnage, 91 Boundary Road, Barking, Essex. The club meets on the first and third Friday of each month, at the Ripple Road School (near level crossing), Barking at 8 p.m. The general secretary's address is 44 St. Erkenwald Road, Barking, Essex.

AT a recent meeting of the Kingston and District A.S. the following officers were elected for 1965: Chairman, D. W. Ellis; treasurer, G. E. Greenhall; secretary, Miss P. Greenhall, 7, Woodside, Wimbledon, S.W.19; show secretary, H. Towell, 11, Belmont Terrace, Chiswick, W.4. The meeting for 1965 will be held in a new hall at Richmond Road Primary School, every first and third Thursday of the month.

NEWS from the Biford and District Aquarists' and Pondkeepers' Society includes their annual prizing and review of the past year's activities.

Mr. H. Berger, the Society's energetic show secretary spoke about the successes achieved in the 1964 shows and discussed the prospects of entering for open competitions in 1965.

The awards, presented by Mr. Vic Price, the Society's president were as follows: Best Competition: 1, Mr. J. Nott; 2, Mr. Cook; 3, Mr. Braham. Home Aquarist Competition: 1, Mr. L. Smith; 2, Mr. H. Berger; 3, Mr. M. Brill. Table Shows (highest number of points all classes table show): 1, Mr. A. Stebbing; 2, Mr. M. Brill; 3, Mr. Davidson. Best egg-layer: Miss Rita Berger. Best livebearer: Mr. A. Stebbing.

THE Regent A.S. third open show will be held at the Railway Institute, Siskala Road, Derby, on Sunday, 2nd May. Bidding commences at 11 a.m. Many attractions and refreshments until close of show at 7 p.m. Further information and schedules can be obtained from Mr. A. A. Widdowson, Show Secretary, 19, Finchley Avenue, Derby.

MEMBERS of the **Loyne Aquarists** enjoyed a talk given by Mr. D. Humphreys who is the head fish-keeper at Marneland, Morecambe. Mr. Humphreys spoke about a number of different types of fish and their breeding habits, and paid particular attention to a few of the old favourites such as the *Jordanella flavida*. He then explained to members the difficulties of keeping fish and animals in public zoos and aquariums and finished off the evening with a humorous account of keeping elephants.

At the second annual general meeting the results of the two competitions were announced and new officers elected. The winner of the home aquarium competition was Mr. R. Barker, second, Mr. K. Holmes, and third, Mr. D. Sowden. The winner of the best all-weather competition was Mr. J. Mills, second, Mr. D. James, and a tie for third place between Mr. F. Aveyard and Mr. E. Kiley. The following officers were then elected: President, Mr. R. Dunham; chairman, Mr. G. Ortoy; secretary, Mrs. F. Goodger; treasurer, Mr. J. Goodger. The judges for the two competitions are: Mr. G. Ortoy, Mr. D. Sowden and Mr. E. Riley. Committee members: Mr. D. James, Mrs. Smith, Mr. H. Riley and Mr. J. Mills.

THE Radlett Section of the Fancy Guppy Association held its annual general meeting recently when the following officers were elected for 1965: Chairman, Mr. T. Hale; vice-chairman, Mr. F. Stone; secretary, Mr. G. Goodall; 3, Turner Avenue, Westgate Road, Tottenham, N.17, telephone L.A.T. 1836; treasurer, Mr. C. Powell; show secretary, Mr. H. Harris; publicity officer, Mr. A. Goodall.

Anyone interested in guppies and would like to pay a visit should go to the Guides Hut, Watling Street, Radlett. The Society meets on the second Sunday in every month at 3 p.m. and a table show is held at every meeting.

There will also be an open show on Sunday, 28th April. All are welcome to exhibit their guppies. At this show plaques will be awarded for all classes.

At the annual general meeting of the **Bradford and District A.S.**, the election of officers and committee was as follows: President, Mr. B. Norris; vice-president, Mr. G. Holmes; secretary, Mr. D. Carr; treasurer, Mr. R. Winterburn; social and publicity officer, Mr. C. Binns; equipment officer, Mr. H. Greenwood; committee: Mr. P. Moorhouse, Mr. C. R. Wilson, Mr. E. Little, Mr. C. Holdsworth, Mr. A. Firth, Mr. J. D. Barford, Mr. A. Whitfield.

The Society has had a successful year during 1964 and with the membership standing at 91 a comprehensive programme of talks, slide shows and social outings is well in hand for the coming year. Two open table shows are to be held on: Sunday, 10th May; Sunday, 3rd October. Both shows will be held at Unity Hall, Rawson Square, Bradford, as will the Society meetings which are held on the first and third Wednesdays in each month at 7.30 p.m.

New and prospective members are assured of a friendly welcome and full details will be sent on request by the secretary, Mr. D. Carr, 42, St. Paul's Road, Shipley, Yorkshire.

THE Merseyside A.S. annual general meeting was held recently when a new committee was elected and Mr. Cassava, secretary, gave a resume of the past year's events, highlighting the very good show season, particularly the very high standard attained at the B.A.F. this year. He thanked all members for the enthusiasm shown and hoped we could keep up the good work through the coming year.

The following new committee were then elected: Chairman, Mr. F. Mulla; vice-chairman, Mr. R. Stamp; treasurer, Mr. K. Parker; secretary, Mr. R. Moorcroft; show secretary, Mr. P. McConnell; librarian, Mr. J. Beck; editor, Mrs. E. Collings. The date of the open table show is the 16th May. THE latest leading places in the competitions of the **Dundee A.S.** are as follows: Scott Trophy: W. S. Russell, 19 pts.; J. McGeoghan, 18 pts.; A. Cross, 17 pts.; A. L. Hastie, 8 pts.; S. Mackenzie, 8 pts.; P. N. Greening, 7 pts.; F. McNaughton, 5 pts.; E. J. Seymour, 5 pts. Member of the Year: Bernard Robertson, 140

pts.; A. L. Hastie, 135 pts.; Brian Craig, 130 pts.; E. J. Seymour, 130 pts.; S. Mackenzie, 125 pts.; Ian Broad, 120 pts.; J. Courts, 120 pts.

At the February meeting of **Chapelton and District A.S.** the table show was for livebearers and guppies and the details were as follows: Livebearers: 1 and 2, Mr. J. Tunney; 3, Mr. J. Mitchell. Guppies: 1 and 2, Mr. E. Mitchell; 3, Mr. A. Hurst.

The judge was Mr. Ken Calton of Sheffield. During the judging a very interesting lecture was given by the secretary, Mr. R. Crofts, on methods of filtering tanks, the equipment for which can be made by aquarists themselves very cheaply.

It has been decided by the Society to add one tank to the existing one at the High Green Special School for Backward Children and these tanks are to be set up and maintained by the Society. The meeting night has now been changed to the fourth Tuesday of the month, and the meetings are to be held at the Midland Hotel, Chapelton, where any new members will be warmly welcomed. Any information can be obtained from the secretary: Mr. R. Crofts, 42 Burncross Road, Chapelton, Nr. Sheffield, or by phoning the Midland Hotel, Ecclefield 3375.

THE Uxbridge and District A.S. Chairman, Mr. Moore, at the annual general meeting, expressed his appreciation to all members who had helped in any way to promote the club's activities, especially the open show that was staged earlier in the year. This had proved an unqualified success and he looked forward to even more ambitious activities in the coming year.

The secretary drew attention to the continuing increase in membership which was very gratifying and indicated the interest that was being shown in the hobby. Show secretary, Mr. Baker, outlined the arrangements for the party the club was to play in the Uxbridge Show to be held on 19th June. Preparation for the open show was in hand and an estimate of thirty furnished aquaria, forty coldwater and three hundred and twenty individual entries was, at the moment, visualised. Mr. Baker thanked all members who had signified their willingness to lend a hand and said that the enthusiastic response boded well for the success of the show.

Plaques were awarded to the following members: Breeders (Cogglers), Mr. Moore; Breeders (Livebearers), Mr. Baker. Furnished aquaria, Mr. Cookley. Most points, Mr. Baker.

The officers elected for the year 1965/66 were as follows: Chairman, Mr. Moore; secretary, Mr. Baker; assistant secretary, Mr. Bull; treasurer, Mr. Peters; show secretary, Mr. Forder; assistant show secretary, Mr. Ganger. Committee: Mr. Smith, Mrs. Smith, Mrs. Moore.

The club meets on alternate Wednesdays at The Parish Rooms, Hillingdon Heath, Hillingdon.

TABLE show results at the **Leeds and District A.S.** monthly meeting were as follows: Guppies: 1, Mr. P. Clarke; 2, Mr. I. Chadwick; 3, Mr. Welch. Catfish and loach: 1 and 2, Mr. I. Chadwick; 3, Mr. J. Moss. All interested in the home furnished aquaria competition and also a trip to Chester Zoo should give their name and address to the secretary. The society meets the second Wednesday in every month at the Leeds Church Institute, Albion Place, Leeds 1, at 7.30 p.m. All aquarists welcome.

THE Witham and District A.S. annual general meeting was held recently and the following were elected for 1965: Chairman, Mr. D. Malton; treasurer, Mr. W. Fox; secretary, Mr. D. K. Willett, 25 Armond Road, Witham, Essex. Committee: Messrs. R. Nokes, D. Wells and K. Olett. Vice-chairman, Mr. D. Keen.

At the annual general meeting of the **Hull A.S.** the following officers were elected: President, Mr. D. Robinson; Vice-president, Mrs. E. Chapman; chairman, Mr. W. Reveley;

vice-chairman, Mr. W. Hall; secretary, Mr. P. Wilkinson, 86 Woldcarr Road, Anlaby Road, Hull, E. Yorks; assistant secretary, Mr. A. Overy; show secretary, Mrs. N. Robinson.

At the **Newcastle Guppy and Livebearer Society** annual general meeting the following officers were elected: Chairman, Mr. J. Swain; vice-chairman, Mr. R. Skyles; hon. secretary, Mr. W. Cummings, 30 Greenlaw, West Denton, Newcastle-on-Tyne. Committee members: Messrs. S. Fox and J. Pomeroy. After the election of officers followed a jar show of A.V. mollies which was well supported and judged by R. Skyles and J. Robertson. The results were as follows: 1, W. Cummings; 2, J. Reid; 3, N. Little. Anyone interested in joining the club should contact the secretary.

THE officers elected at the annual general meeting of the **Salisbury and District A.S.** were as follows: Chairman, Mr. R. Haydon; vice-chairman, Mr. C. Lemoor; secretary, Mr. V. J. West; treasurer, Mr. A. Davison; show secretary, Mr. J. Lynch. Meetings are held at the Toll Gate Inn on the first Friday in every month, and table shows will now be held at each meeting.

New members are cordially invited to attend and further details are obtainable from the Secretary, Mr. V. J. West, 32 Wain-a-Long Road, Salisbury, Wilts. The meeting ended by thanking the retiring secretary, Mr. B. Chick, for all the work he has done for the club.

TOWARDS the end of January the members of the **Wakefield and District A.S.** visited the trout hatchery at Pickering and on the return journey called at the Flamingo Park Zoo which irrespective of the time of year provided a very interesting afternoon. At the February meeting the half yearly trophy was won by Mrs. Turner (guest gaurami), the judge was Mr. H. Foden of Huddersfield.

At the last meeting of **Houghton and District A.S.** members decided to hold their first one-day open show on the 4th April. Due to lack of suitable accommodation in Houghton-le-Spring, the show will be held in Herrington Burn Welfare Hall, which is approximately 14 miles from Houghton, on the Washington road. A jar show was judged by Mr. Alf Bailey of Sunderland club. First with a female sword-tail was Jimmy Grives, one of the junior members, second, Don Sharples with a toy barb, and third, T. Adamson with a feather-fin.

CHANGE OF NAME

THE Sunderland and District A.S. title is now changed to **Sunderland Aquarist Club**. The hon. secretary is Mr. R. B. Maynard, 23, Westfield Grove, High Barnes, Sunderland.

Crossword Solution

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

HYKRO PRODUCTS from DENMARK

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

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

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

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

JOE GRASSBY (Importer and Wholesale Distributor)

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

THE INTER-PET Super Submersible Combined Heater-Thermostat



- ★ Overcomes all previous objections to combined heater-thermostats.
- ★ A unique combination of efficiency and functional neatness.
- ★ Can be completely submersed. Therefore can be hidden behind rocks, etc.
- ★ Price only 29s. 6d., 100w, 125w, 150w.

This Heater-Thermostat finds great favour among aquarists with decorative community tanks, since the instrument can be completely concealed. Aquarists with heated fish-houses find the instrument ideal for raising one particular aquarium above the fish-house temperature.

For the aquarist who prefers a separate heater and thermostat

THE INTER-PET SUPER HEATER. 75w, 100w, 125w, 150w. A rugged instrument for 10/8d.

THE INTER-PET SUPER SUBMERSIBLE THERMOSTAT. 500w. capacity. Price 22/6d.

Developments of the highly successful combined instrument.

Author of Exotic Fishkeeping

MARSHALL'S AQUARIA

26, Westbury Lane, Buckhurst Hill, Essex. Open 7 days each week 10 a.m.-1 p.m. 2 p.m.-8 p.m.

(Telephone: BUCKHURST HILL 4708)

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

Here is just a few rarer fish that we have at present. Puffers, Glass Fish, Splash Tetras, Aphanius Sophia, Orange Chromides, Lyretail Veilera Mollies, Green Panchax, Ramirezi, Flying Barbs, Reed Fish, and many others. We have a good selection of Cichlids, including Jack Dempseys, Texas Cichlids, Tilapia Headiloti, Blue Acaras, Brown Acaras, Nigger Cichlids, Mozambique.

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

THIS MONTH'S BARGAIN OFFER OF PLANTS

30 plants of 6 varieties for 10s. post free.

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

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

Twisted Vallis ...	Per Doz.	5/6	Indian Fern ...	Each	2/6
Portuguese Vallis ...	"	5/6	Banana Plants ...	"	6/6
Sage Notans ...	"	5/-	Water Orchids ...	"	6/6
Cabomba ...	"	6/6	Cape Fear Spatterdock ...	"	7/-
Bacopa ...	"	6/6	Broad Leaf Amazon Plant ...	"	9/-
Hydrophyllia ...	"	6/6	Cellophane Sueded Plant ...	"	9/-
Myriophyllum ...	"	6/6	Madagascar Lace Plant ...	"	15/6
Red Ludwigia Tenais ...	"	6/6	Aponogeton Undulatum ...	"	2/6
Giant Sag ...	Each	3/-	Aponogeton Ulvaceous ...	"	3/6
Water Wittaria ...	"	2/6			

WHOLESALE PLANTS S.A.E. FOR LIST

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

THIS MONTH'S BARGAIN OFFER OF FISH

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

OUR SPECIAL OFFER

of Thermostat, Heater (state wattage) and
 Thermometer is available ...
 post free for 20/-

USE "CORAL" AS YOUR BASIC FOOD

It is a **BALANCED PROTEIN DIET**, not just a cereal filler.

From dealers in 6d., 1/-, 2/- drums.

Keep Them Healthy on Coral

"CORAL" FISH FOOD
 For TROPICAL & COLDWATER FISH
 A STAPLE DIET. The ideal fish dash for and thrives on.
 PLEASE FEED SPARINGLY
 Once per day only.
 The safe and economical food
 Manufactured by
LIVERINE LTD.
 GRIMSBY, ENGLAND



STIMULITE FISH FOODS

Registered Trade Mark.

There are over 120 fish foods on the market. Are they really necessary?

Stimulite bird foods are acknowledged the best of their kind in the world. We claim similarly with our fish foods. We challenge ANYONE I YES ANYONE I to get better results (or even as good) as you can with our foods. They are manufactured with Natural Food Elements. There is nothing synthetic about them. They represent the finest value obtainable today, will provide complete nutrition to the most delicate stock. Try these wonderful foods today, all good Pet Shops sell them, if any difficulty send name and address of your local dealer. All "STIMULITE" Foods are personally made by our principal, Mr. P. H. Hastings, who has been making these foods for over 42 years. At his premises, pre-war, at Harnion Road, Southsea, he had on show, the largest collection of Coldwater and Tropical fish in the country and bred and reared Hundreds of Thousands of Tropicals.



Try these wonderful nutritional foods now !!! You will never change.

AT ALL GOOD PET STORES—

GOLDFISH FOOD 6d. and 9d. Drums, 1/3d., 2/- and 3/3d. hermetically sealed Jars

TROPICAL 1/6d., 2/6d. and 3/6d. hermetically sealed Jars. Postage extra.

Manufactured by

P. H. HASTINGS Ltd. 182 SULTAN ROAD,
PORTSMOUTH Phone: 21582

Trade enquiries invited. Generous discounts.

Wade Aquatics

333 High Street North
Manor Park London E12
GRA 6333

2 minutes from East Ham Station

Specialists in Tropical and Coldwater Fish

Our reputation is based on selling
only good class, well grown, healthy
fish and plants. Also equipment
that we can guarantee

BROAD GREEN AQUARIUM

Over 50 tanks of Tropical and Coldwater Fish

Selection of Tropicals from Large Discus
Leporinus Fasciatus, down to Zebra Danio
and common guppies, Coldwater Bubble Eyes,
Copper Orandas, down to Comet Shubunkins
and Goldfish

Bowtanks, All Standard Sizes
Normal Flat Tanks, All Equipment

Eheim Double and Single Filters

Waterfall and Fountain Pumps,
Pools, etc.

all at

**250 LONDON ROAD
WEST CROYDON SURREY**

Phone CROYdon 9165 Opposite ABC Cinema
on main road from London to Croydon

BIRDS ILLUSTRATED

Well printed and profusely illustrated with the work of foremost bird artists and photographers this monthly magazine is a must for all bird lovers. Articles appear regularly on British and Foreign Birds, the Canary and Budgerigar and many other topics of interest to both the advanced aviculturist and newcomer. A beautiful coloured plate is presented with each alternate issue.

SEND TODAY FOR A SPECIMEN COPY
6d. post free

BIRDS ILLUSTRATED,
The Butts, Half Acre, Brentford, Middlesex

Subscription for one year (Inland and Abroad) £1 2s., six months 11s. including postage. Canada and U.S.A. \$3 per annum. Can be obtained through your newspaper for 1s. 6d.

WESSEX AQUARIA AND PET STORES

(Member of the Pet Trade Association)

25, Beehive Road, BINFIELD,
Berkshire. Tel. Bracknell 670
(Nir. "Shoulder of Mutton" Public house)

For tropical fish, Marine Coral Fish, Plants,
Accessories, Tubifex, White Worms, Reptiles
and Amphibians. S.A.E. for Lists.

AT LAST

We are able to announce the opening of our new premises at

132 HAVANT ROAD
HAYLING ISLAND HANTS

Hrs. of Business Wednesday-Sunday inclusive 9.30-6 pm
Closed Monday and Tuesday

Wholesale and Retail
Parking Facilities
No fish sent by Rail

Fernwood Aquarium and Nurseries Ltd
Hayling Island 77144



... but the better aquariums

are glazed with

ARBOLITE Q.S.
Aquarium Glazing Compound

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

Packed in 1 lb; 2 lb; 4 lb; 7 lb. and 14 lb. tins and in $\frac{1}{2}$ cwt., $\frac{1}{4}$ cwt. and 1 cwt. kegs.



ADSHEAD RATCLIFFE & CO. LTD.
BELPER • DERBY • Tel: Belper 2891 (3 lines)

BUYERS' GUIDE

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

BERKSHIRE

The Reading Aquarist
64, King's Road, Reading
Telephone: Reading 53632
E.C.D. Wednesday. R. C.T.P.AA.

CHESHIRE

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

DEVON

Plymouth Tropicals
127, North Road, Plymouth
Telephone: Plymouth 62663
Closed Wednesday. R. C.T.P.AA.

DURHAM

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

Metcalf, G. R.
187, Northgate (near Minorities Garage)
(On main A.1 road) Darlington
Telephone: Darlington 5991
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

Powell, M. C.
The Honey Pot,
Claypath, Durham City
Telephone: Durham 2108
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

ESSEX

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

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

GLOUCESTERSHIRE

Patricia Preece (Prop. Mr. B. R. James)
10, Suffolk Parade, Cheltenham
Telephone: Cheltenham 24949
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

HAMPSHIRE

Arundel Aviaries & Fisheries
241/243, Arundel Street, Portsmouth
Telephone: Portsmouth 20047
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

Bridgemary Pet Stores
56, Gregson Avenue, Gosport
Telephone: Fareham 4781
E.C.D. Wednesday. R. C.T.P.AA.

Wingate Zoological Supplies
7, Market Street, Winchester
Telephone: Winchester 2406
E.C.D. Thursday. R. C.T.P.AA. R.&A.

KENT

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

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

Sherwood Pet Stores
(Proprietors, Fairbairns Aquaria, Ltd.),
252, Sherwood Park Avenue, Sidcup
Telephone: Bexley Heath 7217
E.C.D. Thursday. R. C.T.P.AA. R.&A.

LANCASHIRE

Hornby's
Trafford Bar, Old Trafford,
Manchester, 16
Telephone: Trafford Park 2989
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

Liverpool Aquaria Company
23, Sir Thomas Street, Whitechapel, Liverpool, 1
Telephone: Central 4891
Closed Wednesday Morning. R. C.T.P.AA. R.&A.

LONDON (East)

Wade Aquatics
333, High Street North,
Manor Park, E.12
Telephone: Grangewood 6333
E.C.D. Thursday. R. C.T.P.AA. R.&A.

LONDON (North)

The Aquarium,
2, Gatcombe Road,
London, N.19
Callers by arrangement only. W.R.T.C.P.

Philip Castang Ltd.
75, 91, 95, Haverstock Hill,
Hampstead, N.W.3
Telephone: Primrose 1842 and 9452
E.C.D. Saturday. W. T.P.AA. R.&A.

LONDON (South)

Fairbairns Aquaria, Ltd.
15, Well Hall Parade, Eltham, S.E.9
Telephone: Eltham 5859
E.C.D. Thursday. R. C.T.P.AA. R.&A.

Petfish
554, Garratt Lane, S.W.17
Telephone: Lakeside 2805
Closed Wednesday. R. C.T.P.AA. R.&A.

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

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

LONDON (West)

Aquapets
17, Leeland Road,
West Ealing, W.13
Telephone: Ealing 2748
E.C.D. Wednesday. R. C.T.P.A.A. R.&A.

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

NORTHAMPTONSHIRE

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

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

OXFORDSHIRE

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

STAFFORDSHIRE

Walsall & Wolverhampton Aquatics
46, Stafford Street, Walsall and
147, Horsley Fields, Wolverhampton
Telephone: Walsall 21783 and Wolverhampton 24147
E.C.D. Thursday.
W.T. AA. R. C.T.P.A.A. R.&A.

SURREY

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

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

SUSSEX

Dowding, Conrad A.
1, St. John's Terrace,
Lewes
Telephone: Lewes 3970
E.C.D. Wednesday. Open until 8 p.m. Fris. & Sats.
R. C.T.P.A.A. R.&A.

Preston Aquarium
44, Beaconsfield Road, Brighton
Telephone: Brighton 681602
(Open all week). R. C.T.P.A.A.

Regency Pets Aquaria (Prop. R. A. Bassett)
23, Surrey Street (outside Brighton Station),
Brighton
Telephone: 29940 R. C.T.P.A.A. R.&A.

WARWICKSHIRE

The Coventry Aquarist (Prop. W. Dymond)
43, Melbourne Road, Earlsdon, Coventry
Telephone: Coventry 72772
E.C.D. Thursday. WR. C.T.P.A.A.

WORCESTERSHIRE

The City Aquaria, Bird and Pet Supplies
(Proprietor: Mrs. M. Hemming)
34, Friar Street (opposite Union Street), Worcester
Telephone: Worcester 22005
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

YORKSHIRE

The Corner Shop (Prop. J. Wilde)
526, Abbeydale Road, Sheffield, 7
Telephone: Sheffield 54172
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

SCOTLAND

Aquarists' Rendezvous
164/168, Albert Drive, Pollokshields, Glasgow. S.1
Telephone: South 4258 WR. C.T.P.A.A.

P. N. Greening
176, Blackness Road, Dundee, Co. Angus
Telephone: Dundee 66409
E.C.D. Wednesday. R. C.T.P.A.A.

NORTHERN IRELAND

Ulster Aquatics
15, Montgomery Street, Belfast
Telephone: Belfast 27144
E.C.D. Wednesday. WR. C.T.

JUST SQUEEZE!

and watch your fish go for

TUBIFLEX

the new tubed paste food from

WARDLEY'S

so simple!

so economical!

so nourishing!

TUBIFLEX

is the name

your local stockist has it now

U.K. DISTRIBUTORS

T.F.H. PUBLICATIONS (London) LTD.
13 NUTLEY LANE REIGATE SURREY

PREPAID ADVERTISEMENTS

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

FOR SALE

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

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

SUPERB Veiltail Guppies, £1 per pair; Blue Acanas, 3s. each; Anglia, 3s. each; P. Black Mollies, 3s. each, carriage 3s. 6d. C. R. Perry, Professional Aquarist, 615, West Street, Crewe.

AQUARIA FRAMES. For quality and accuracy buy direct from the manufacturer. 1' x 1' x 1/2" angle; 36" x 15" x 15" ins., 27s.; 36" x 12" x 12" ins., 25s.; 30" x 15" x 15" ins., 24s.; 30" x 15" x 12" ins., 24s.; 30" x 12" x 12" ins., 23s. 6d.; 24" x 12" x 12" ins., 21s. 6d.; also 18" x 10" ins., 15s.; 18" x 12" ins., 16s. 6d. from 1/2" x 1/2" angle. All milled and welds ground flush. Carriage paid. Any size made to order. C.W.O. Money refunded if not satisfactory. For complete list, stands, shades, etc. See to J. E. Henney, 52, Charter Street, Accrington. Phone Accrington 34538.

WHIN IN STOKES visit Every's for tropical fish, plants and accessories. Finest selection for the aquarist in the Potteries. 16, Harbottle Road, Stoke-on-Trent. Phone 48358.

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

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

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

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

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

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

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

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

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

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

AQUARIUM STANDS to take two tanks 18" x 12" x 36 ins. high, 32s.; 24" x 12" x 36 ins. high, 36s.; 30" x 12" x 36 ins. high, 40s.; 36" x 12" x 36 ins. high, 46s.; 44" x 12" x 36 ins. high, 60s. Wrought iron stands, shades rustproofed, frames any size. Send for list S.A.E. Hockney Engineers, 30/32, Somers Street, Leeds, 1. Telephone 25081.

BARNESLEY, YORKS.—Wide selection of Tropical Fish. All tanks and accessories. "Pet Stores," 206, Barnsley Road, Cadworth.

SHOAL SHOAL SHOAL SHOAL SHOAL SHOAL SHOAL SHOAL SHOAL SHOAL. SHOAL fish food for rapid growth. SHOAL fish food for better colour. SHOAL fish food for vigorous health.

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

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

Other foods may look like SHOAL—They only look like it.

SHOAL was developed in collaboration with professional fish breeders, a Water Board Fisheries Officer, a Chemist, a Veterinary Surgeon and an expert on Vitamins and Animal nutrition.

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

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

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

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

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

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

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

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

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

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

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

SHOAL is distributed to the trade by: Karblen's Fisheries (Tropical) Ltd., 62, Lamb's Conduit Street, London, W.C.1 (Hof. 3002). Stuart Friskine, Lonells Road, Birmingham. Barry M. Austin, 95, Crown Road, Twickenham, Middx. (Pop. 7425). W. Howard, "Birdsaces," Lower Woodhouse, Almondsbury, Nr. Bristol. Trade enquiries welcomed by Shoal Fish Foods, 12, Cranleigh Gardens, Bridgwater, Somerset.

CAMBRIDGESHIRE. 250 varieties Tropical Coldwater and Pond Fish, 100 varieties Plants, also Tanks and Accessories. Catalogue 1s. Callers welcome, 3.30 p.m. to 10 p.m., weekday meetings by appointment, 9 a.m. to 10 p.m. Saturdays and Sundays. Special—20 Plants, including Cryptes, 12s. 6d. Barker, 33, Victoria Street, Chatteris, Cambs. Phone 2103.

PUBLIC AQUARIUM AND GIFTS. Lock-up shop. Fully equipped, 17 year lease, at the Gorge, Cheddar, Somerset. Particulars: Advertiser, The Old Farmhouse, Church Street, Blagdon, Nr. Bristol, Somerset. Phone: Blagdon 344.

TAYLOR'S AQUARIUM, 76, Manchester Road, Burnley, Tel.: 6542. Top quality plants and fish. All equipment. Collection tropical plants 10s. and 20s. post free. Satisfaction guaranteed.

CAMBRIDGE and DISTRICT AQUARISTS visit Aquarists, 21, Cambridge Road, Impington, Cambs., for Tropical Fish, 90 varieties always in stock, also Plants and Accessories.

EXOTIC DECOR. Decorate the room containing your aquarium with large and beautiful sea shells from the African Coast: Tiger Cowries Shells, 1s. 6d.; Black Humped Cowries, 5s.; Green Snail, dark green shell weighing about 1 lb., 18s.; Giant Spider, a large, very beautiful shell of 2-3 lbs., 25s.; Murex, whitish with many frills and fronds, 12s.; Giant Helter, 4-5 lbs., our largest and most spectacular, 30s.; Giant Frog, about 1 lb., 17s. 6d.; Red Cameo, large, red, lovely, 15s.; Common Spider, 4s.; Scorpion shell, 10s. Minimum order, 40s. Add 15 per cent. for postage by surface. Write air-mail to: Indian Ocean Shell Co., P.O. Box 7813, Nairobi, Kenya.

CALLING ALL AQUARISTS. Call and see our large selection of Tropical and Coldwater Fish, Plants in variety. We stock all accessories and equipment. White worm, grindle worm, micro worm, Tubifex and Daphnia, at The Coventry Aquarist, 43, Melbourne Road, Coventry. Phone: Coventry 72772.

MICROWORMS BY RETURN—1s. 6d., with instructions. 10, Lee Road, Bowers Gifford, Essex.

OLDBURY'S OF CHESTER. 50 varieties Tropical Fish, Plants, Equipment, Tubifex. Evenings after 7 p.m. 36, Pearl Lane, Vicars Cross. Tel. Chester 41671.

HI-FIN SWORDTAILS. The first of its kind. Black with good red fins. Not imported. A strain of my own. A few good sized fish. At £10 a pair. The Boot Aquaria, 198, Belgrave Gate, Leicester. Telephone 27788.

CHELSEA AQUARIA use, recommend, and sell SHOAL.

ELECTRONIC ELECTRONIC ELECTRONIC. Automatic switching of tank lighting at dusk. Operates at predetermined light levels. State wattage of lighting to be switched. Prices on request. P. E. Devices, Ltd., 72, Goutham Road, Radcliffe-on-Trent, Notts.

J. T. HUNT (AQUAPETS) LTD. of Lealand Rd., West Ealing, and Bwell Rd., Tolworth use, recommend and sell SHOAL.

36 VARIETIES TROPICAL in stock, S.A.E. for p.l. Personal callers Tuesday and Friday evenings. Breeders surplus purchased. Thompson, 30, Halidon Rise, Harold Park, Essex.

continued on page six

The CONSTAT 25/-

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

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

Distributed by
BARRY M. AUSTIN

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

EPAID ADVERTISEMENTS—continued from page xviii

WHITE WORM BY WEIGHT, 1 oz.-4s.—4 oz.-15s. Established prices in boxes—28s., all post paid. V. J. A. Dene & Son, "Denford," Oster Road, Portway via Alvechurch, Worcestershire. Tel. Wythall 42.

BULOUS Madagascar Lace Leaf (plants with corm) *Aponogeton cradockii*. Medium, 12s. 6d. large, 15s.; super large, 17s. 6d. J. Ellis, Milngavie, Grimsby.

ITISH and BEST, McLynn's fish food.

GUARANTEED QUALITY PLANTS by return. *Ambulia*, *hygrophilla*, *bacopa* dwarf amazon, dwarf *sagittaria*, *sagittaria*, *vallisneria* *spalis*, *V. toria*, hairgrass, *lodwigia*, hornwort, 8d. each, 7s. 6d. dozen. *Bian fern* (fine, broad), *cabomba*, *becketti*; 1s. 6d. each. Dwarf lily, *varia*, giant *hygrophilla*, *hartelliana*, *cordata*; *aponegeton*, 2s. each. *amazon sword*, 8s. 6d. each. Post 9d. all orders. Over 120 varieties *exotic* and *coldwater* fish, personal shoppers only. Kingfisheries, 138, Lyden Road, Beckenham, Kent. BEC 3716. Closed Wednesday.

ANKET WEED REMOVER. This device is as unique, effective, as original as the shredders. Made of stainless steel, it will remove almost weed from aquariums without damaging plants. Price 3s. 9d. + 9d. postage. **SHREDDERS** for White Worm, Earthworm, Meat, etc. I can now offer the Super Shredders Combination at 26s. + 1s. postage. This comprises the usual fine toothed plate, a coarse shined plate and the top plate with handle; a perfect combination in stainless steel, or the Super Shredders (fine tooth only) still at 16s. plus postage. **GIANT SAGITTARIA**; suitable for tropical or coldwater *varia*, also ponds. Young plants, 6s., 7s. 6d. or 8s. 6d. dozen. Large ones 1s. 3d. and 1s. 6d. each. Postage 1s. 3d. E. S. Walker, 143/145, St Lane, Christchurch, PS.—Postal trade only. Local purchasers obtain supplies from Cook's Aquaria, Boscombe.

J. & R. (DOG-FISH) LTD., of Glasgow, use recommend, and sell **SHOAL**.

MAKE YOUR TANK a BEAUTIFUL INDEPENDENT PIECE of FURNITURE with a wrought-iron stand made by first-class Scottish craftsmen. Made to order—any size, (even to your own design). For calls, write to—John Matthews, 118, Rimbleton Avenue, Glenrothes, 10, Scotland.

VERY SPECIAL OFFER to PET SHOPS. The books of Thos. H. Marshall offered in dozen lots, two of each title at 33 1/3% discount, 60s. 6d. with order. Post paid. Send now, only limited number available. Box H, Marshall, 26, Westbury Lane, Buckhurst Hill, Essex. Phone DC 4708.

COLDWATER FANS, breeders and show enthusiasts can also benefit (feeding **SHOAL**).

MIMIE DADEN of Roman Road, uses, recommends, and sells **SHOAL**.

ALLING CAMBRIDGESHIRE. Tropical fish and plants for sale. E-mailto—Only the Best Will Do, so call Aquarist, 65, 106, Wulfstan Way, CAMBRIDGE.

DR A GOOD BETTA BEST, feed McLynn's fish food.

OPY 1963 International Fauna Index £2. 10s. Pair Spanish Terrapins 8s. Postage 2s. on each. Best, 4, Croft Drive, Anlaby, Hull, Yorkshire.

REPTILES, AMPHIBIANS, S.A.B. for list. J. & D. Naturalists, 6, Nazeby Avenue, Crosby, Liverpool, 23.

Costs only 2s. and takes only 10 days to prove that your fish also, will survive when fed on **SHOAL**.

HERE was a young lady from Cardiff Docks

whose fighters are all she stocks

to grow extra long fins

so feeds them McLynn's

the original Food in the Plastic Box.

RIDGEWATER. Wide selection of tropes, with new arrivals weekly, fly quarantined, large range of tanks, stands, equipment, etc. Evenings only. 12, Cranleigh Gardens, Bridgewater 2794.

IVORY AQUARIA of Dagenham, use, recommend, and sell **SHOAL**.

BUSINESS FOR SALE

FISHING TACKLE/AQUARIA. Lock-up shop, Hertfordshire. 30 £10,000—12 years lease at £500 p.a. Wonderful scope for turnover increase S.A.V. Price £4,000.

Wanna Box 6001, *The Aquarist*, The Butts, Brentford, Middx.

SITUATION VACANT

OUNG MAN required to assist in our newly-opened fish importing business near Docking. An interesting and progressive post where personal interest in fish is more important than experience. Please write to Mr. A. C. Lambart, stating age, present work and other relevant details. Inter-Pet Fish Supplies (division of Liquify Co., Ltd.), 6, Church Street, Dorking, Surrey.

SHOWS

THE BRITISH CHAMPIONSHIPS for individual furnished aquaria sponsored by THE FEDERATION OF BRITISH AQUATIC SOCIETIES will be held in conjunction with THE UXBRIDGE OPEN SHOW at Uxbridge Common on Saturday, 19th June. Entry forms may be obtained from Mr. P. Ginger, 2, Clovelly Avenue, Ickenham, Middlesex.

ATIONAL OPEN SHOW Nottingham Drill Hall. 11th to 12th September. 100 Classes.

REPAIRS

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

W. HAROLD COTTON

F.R.M.S.

ICHTHYONOTOMIST

POST MORTEM EXAMINATION
of Tropical and Coldwater fishes

Specimens should be wrapped loosely and very wet in greaseproof paper, surrounded by a damp cloth and then re-wrapped in dry greaseproof paper and sent in a strong container.

A brief history and any relevant details should be given. No preservatives please.

Examination fee 3/-

39, BROOK LANE, KINGS HEATH,
BIRMINGHAM 14

Phone HIGHbury 1693

Tropical Fish

Tanks, Accessories, Plants

Retail, Wholesale

johns pet stores

278 Penistone Road,

SHEFFIELD 6

Half day Thursday

REPTILES — AMPHIBIANS

Imports from all Continents

Write for current price list

Sole agency for England:

MR. ALAN COOK

"White Ladies,"

41, Chestnut Avenue, Andover, Hampshire

DRS. W. DE ROVER

Le puits du Plan Ouest

Fayence (Var), France

I've Got Millions!

WORMS! FOODS! COMPOSTS! RESULTS!

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

Breeder's packs: five times 2/6 quantity for 7/6

Ask your dealer, or free delivery from

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

BOOKS TO HELP YOU

Exotic Egg-laying Fishes

BY JACK HEMS

(2s. 10d. or 50 cents post free)

Summary of Contents

General Requirements: Keeping & Breeding · The Characin Family · The Catfishes · The Cyprinid Fishes · The Cichlids · The Cyprinodont Fishes · The Labyrinth Fishes · Some Diseases of Exotic Fishes

The Guppy

BY A. FRAZER-BRUNNER

(2s. 10d. or 50 cents post free)

Summary of Contents

Why the name "Guppy" · The Guppy as Prey and Predator · Guppies in the Aquarium · Varieties · The Fins of the Guppy · The Role of the Male in Breeding · The Part Played by the Female in Breeding · Heredity in the Guppy

Simple Pond for the Amateur

BY T. BROWN

(1s. 9d. or 25 cents post free)

This booklet does not set out to be a general treatise on pond-making. It is a straightforward account of the construction of one particular sort of pond based upon the practical experience of the author.

The pond recommended can be adapted to various gardens, for three sizes are given. Even if an informal pool of irregular shape is desired this book will be found valuable.

Coldwater Fishkeeping

BY A. BOARDER

(5s. or \$1 post free)

Summary of Contents

First Principles of Fishkeeping · Aquarium and Pond Maintenance · Water Plants · Foods and Feeding · Goldfish Varieties · Coldwater Fishes · Breeding in Aquaria and Ponds · Diseases and Pests

Obtainable from "The Aquarist",
The Butts, Half Acre, Brentford, Middlesex

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



FANTASY FISH FOODS

are rich in first class protein and contain comprehensive vitamin supplements in stabilised form. Their low water content gives them an excellent practical storage capacity.

FANTASY FISH FOOD

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

Fine grade: 5/-

Coarse grade: 5/-

FANTASY FRY FOOD

4/- per pack

SILVER FANTASY

5/- per pack

Fantasy

LUXURY PROFESSIONAL FISH FOODS

TACHBROOK TROPICALS

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

Telephone: VICTORIA 5179

POST!!!

ALL PARTS OF THE U.K.

ALL PARTS OF THE WORLD

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

SEEING IS BELIEVING . . .

COME ALONG AND SEE OUR DISPLAY
OF TROPICAL FISH. 7,000—9,000
FISH ALWAYS IN STOCK

DON'T MISS THESE PLANT BARGAINS

AGLAONEMA SIMPLEX	5/6 each	4 for 20/-
AMAZON SWORDS (8")	4/6 each	5 for 20/-
CRYPT. PHEASANT FEATHER	1/6 each	4 for 5/-
CRYPT. APONOGETIFOLIA	4/6 each	5 for 20/-
WATER WISTERIA	2/- each	4 for 7/6
MADAGASCAR LACE PLANTS.	First class well-grown plants, according to size, 12/6, 17/6, 25/-, 35/-, 45/-	

Postage 1/- to cover post and packing.

TROPICAL FISH SPECIAL BARGAINS

NEW BLUE LOACH	5/6 each	4 for 20/-
SUCKING LOACH	5/6 each	4 for 20/-
FIREMOUTH CICHLIDS	3/6 each	4 for 10/-
STRIPED CICHLIDS	3/6 each	4 for 10/-
FLYING FOXES	4/6 each
TINFOIL BARBS	3/6 each	4 for 10/-
LARGE SILVER SHARKS	22/6 each
LARGE REDTAIL SHARKS	7/6 each

SPECIAL LINE—BRED PRIZE WINNING GUPPIES, SNAKESKIN VEILTAIL GUPPIES, 50/- PAIR.

MALES ONLY, 27/6 EACH. AMERICAN VEILTAIL GUPPIES, 50/- PAIR.

PERSONAL SHOPPERS ONLY.

ILLUSTRATED CATALOGUE

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

Shirley Aquatics Ltd.

WATER PLANT NURSERIES AND FISH HATCHERIES—Phone: SHIRLEY 1300

Stratford Road, Monkspath, Shirley, Solihull, Warwickshire

A MANUAL OF AQUARIUM PLANTS

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

PRICES IN GREAT BRITAIN

Limp cover edition printed on Diamond Star paper 17/6 post paid

Hard cover edition printed on heavy art paper **NOW OUT OF PRINT**

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

SPECIAL SHIRLEY-BRED VEILTAIL GUPPYS

RED, BLUE, GREEN, GOLD, REDTAILED BLACK AND MULTICOLOUR

from 30/- (young fishes) to £5 (adults) per pair

POND FISHES AVAILABLE EARLY APRIL

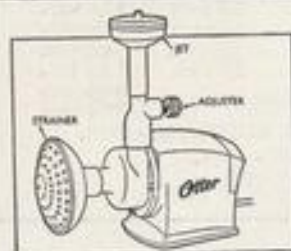
Golden Orfe, Golden Tench, Golden Rudd, Mirror Carp, Higo Carp, Japanese Coloured Carp, Goldfish, Comets, Shubunkins etc.

WATER LILIES

As all our water lilies are now pot-grown they can be safely moved from March onwards. Many shades of red and pink, also yellow and white.

WATER IRIS, MARGINAL & BOG PLANTS

A wonderful selection of the choice cultivated varieties, all grown in cold Midland conditions.



THE NEW OTTER

Submersible pump complete
with either fountain or
water-fall kit

£9 5 0 post paid

Both kits include the "Otter" submersible pump complete with 10 feet of sealed cable fitted. The Fountain Kit has in addition, an inlet strainer with filter mesh insert, flow adjuster and fountain jet, whilst the Water-fall Kit provides an inlet strainer, 10 feet of $\frac{1}{2}$ in. plastic tubing, and hose clip.

Additional cable to reach back to the nearest source of mains electricity is supplied separately, with a rubber-shrouded connector for connection to the cable sealed into the pump.

Additional cable 6d per ft. Weatherproof Connector 7/6 each.

Send S.A.E. for list or 1s. in stamps for instructional catalogue for ponds

PLEASE NOTE—All enquiries requiring a reply **MUST** be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 3 miles from Birmingham, Midland "Red" Bus No. 150 from Bus Station, Birmingham, passes the door, alight at "The Crown," Monkspath.

HOURS OF BUSINESS—

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

CLOSED ALL DAY EVERY MONDAY

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

Printed and Published by BUCKLEY PRESS LIMITED, London and Brentford