

The Aquarist

and Pondkeeper

JUNE 1964



MONTHLY
Vol. XXIX No. 3

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
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- ELECTRICAL AND GENERAL
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- 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
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Telephone : Deansgate 2941 and 2520

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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.

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GOLDFISH

★ Small

★ Medium

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and Super Large

All quantities at Keenest Prices
Our deliveries arrive Direct from Italy twice weekly
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FIBRE GLASS POOLS POLYTHENE POOLS
OTTER FOUNTAIN and WATERFALL PUMPS
AQUARIUM and POOL PLANTS WATER LILIES
POLYTHENE FISH BAGS GREEN TURTLES

Trade visitors always welcome

For complete satisfaction
'Come and pick your own fish'

Van delivery twice weekly - 30 miles radius - Birmingham
Send for list of Pools, Plants, Fish and Fountains

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229 Icknield Port Road, Birmingham, 16
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Mr. Kelly—professional
aquarist and leading
Guppy authority

Mr. James Kelly says

"I have found BIOL highly successful as a food for my *Marine Fish*—feeding with BIOL has never fouled the water."

"BIOL is an excellent food for my baby Guppies and for adult fish. Also we have raised highly successful batches of Dwarf Gouramis on BIOL."

For Top Condition, Maximum Growth **BIOL**

- ★ The Newest Replacement for Live Food!
- ★ The ideal follow-on for Liquifry — the first food for baby fish.
- ★ BIOL-growth food for young fish.
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Standard size 2/6d for 7 grams.

Breeder's Pack 5/3d for 28 grams.

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

- ★ Contains minute food particles and particles to produce infusoria in the minimum possible time.
- ★ A FEW DROPS A DAY IS THE LIQUIFRY WAY!

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

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

Price 2/6d per tube.

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

NEW! Inter-Pet Brine Shrimp Eggs

Standard Size 10.5 ml. 2/6d. One U.S.A. Quart 135/-

Available through your dealer or post free from the

Inter-Pet Supplies Company

18, Church Street, Dorking, Surrey

Tel. Dorking 2566

Sales Division of the Liquifry Company Limited

Please send for our new catalogue.

IT'S SO EASY
 WITH THE
'DIAL-O-MATIC'
THERMOSTATIC HEATER

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



YOU CANNOT GO WRONG WITH 'Es-Es'

PRICE

35/-

100w 150w
 10" 12"



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

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

THE BEST FISH FOOD IN THE WORLD

Fantasy

This is a distinctive red food of the highest quality developed by qualified experts as a replacement for live food. It consists of homogenised particles containing essential ingredients to keep fish in peak colour and condition. Most fish take it readily and it does not foul the water.

SPECIFICATION

High in protein (47%) and carbohydrate (29.7%) and low in water (6.5%) and fat (4.9%).

Ingredients added: Vitamins A, B₁, B₂, B₆, B₁₂, C, D, E, H, & K, calcium pantothenate, choline, folic acid, inositol, niacin, p-aminobenzoic acid.

SEE *Fantasy* IN ITS CLASSIC PACK AT YOUR DEALERS NOW!

At 2/- and 10/-

In case of difficulty write to:—

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POSTAL SERVICE

OVER 150 VARIETIES OF
TROPICAL FISH



A SAMPLE OF OUR STOCK

LIVEBEARERS

Red Swordtails	2/4 each
Green Swordtails	2/4 ..
Albino Swordtails	2/4 ..
Red Wagtail Swordtails	3/6 ..
Taxedo Swordtails Red	4/6 ..
Black Swordtails	5/- ..
Yellow Wagtail Platies	3/- ..
Red Wagtail Platies	3/- ..
Red Platies	3/- ..
Black Platies	3/- ..
Victory Platies	3/6 ..
Blue Platies	3/- ..
Platy Variatus	4/- ..

Black Mollies	3/- each
Speckled Mollies	2/6 ..
Half Beaks	2/6 ..
Blue Lima	3/- ..
Leopard Guppies	3/- ..

EGG LAYERS

Leeri Gouramis	3/6 ..
Honey Gouramis	4/6 ..
Zebrias	2/- ..
Kuhli Loach	2/6 ..
Angels Std	3/- ..
Tiger Barbs	2/6 ..
Rams	5/6 ..

NEW FISH ARRIVING WEEKLY

Kribensis adult	14/- each
Cardinals	7/6 ..
Neons	six for 17/6 ..
Spinney Eels	8/6 ..
White Cloud Adults	3/6 ..
Silver Hatchet	6/6 ..
Marble Hatchet	7/6 ..
Sucking Loach	5/6 ..
Leopard Cats	10/6 ..
Silver Sharks	21/- ..
Red Tail Black Sharks	8/6 ..
Glass Car Fish	5/- ..
Butterfly Fish	18/- ..

5/- RAIL & PACKING CHARGE — LIVE DELIVERY GUARANTEED

THE SUPERB STRAND AQUARIUM

36" x 12" x 15" deep tank, Hood and Book Case Stand with Plants
TOP VALUE 17 gns or £5.2.0 Deposit Six Payments of £2.13.5

WE OFFER THE FINEST RANGE OF ORNAMENTAL AQUARIA AVAILABLE

ALL STANDS STOVE ENAMELLED

FULL RANGE OF STANDARD AQUARIUMS AND STANDS IN STOCK

THE MAJESTIC MAYFAIR

ARBE Aquarium 24" x 15" x 14" and Ornamental Stand
A delightful piece of furniture
£22.10.0 or £6.0.0 Deposit Twelve Payments of £1.16.4

CHOICE OF COLOURS AVAILABLE

CARRIAGE 10/-

ARBE AQUARIUMS FROM STOCK

18" x 12" x 11"	£8. 5. 0
23" x 12" x 11"	£9. 17. 6
24" x 15" x 12"	£12. 17. 6
36" x 12" x 14"	£16. 19. 0

NEW 36" CORNER BOW £21. 0. 0

THE SUPREME REGENCY

ARBE Aquarium 36" x 12" x 14" and Ornamental Bookcase Stand with Plants
A must for the Ideal Home
29 gns or £7.19.0 Deposit Twelve Payments of £2. 5. 4

EQUIPMENT

AIR PUMPS

Montrose Minor	£1 1 0
Montrose Major	£1 4 0
Quicko	£1 2 0
Zoobeko Junior	£1 19 0
Zoobeko	£2 6 0
Rena	£2 5 0
Opona	£3 5 0
Hyflo Pumps	from £5 7 6

HEATERS

Uno 75W 100W 125W 150W	8/3
Rena 150W 150W 200W	10/-
Es-Es Standard 25W 50W 75W 100W	7/4
Es-Es Flexible 100W	18/-

THERMOMETERS

Dumpy Es-Es	6/6
Uno Silver Line	4/6

THERMOSTATS

Constat J.L.	33/-
Springfield ET4	22/-
Uno Outside Adjust	18/-
Uno Popular	10/-
Uno Popular Neon	12/6
Es-Es Minor	10/-
Es-Es Minor Neon	12/6

We Invite You to Inspect our Stocks or Send 6d For Fully Illustrated Catalogue

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**PONDS
PUMPS
PLANTS
FISH**

FIBRE GLASS, POLYSTYRENE, PLASTOLENE
OTTER, STOKE'S, STUART TURNER
MARGINALS, LILIES, BUNCHED ELODEA ETC.
GOLDFISH, SHU'S, GOLDEN ORFE, 2" TO 12"

NEW ARRIVALS

Golden Orfe 6"-7"	15/-
Pantails	4/6 to 7/6
Green Tench	3/- & 4/-
Large Goldfish 7"-8", 8"-10"	10/- & 15/-
Small Orfe & Bitterling	3/-
7" Galois Comets	15/-
Medium Goldfish	5/- to 7/6
Small Goldfish & Shou	1/- to 2/6

ALL POND PLANTS STOCKED

THERMOSTATS

Procter	each
Constat External	33/-
Constat New External Type QK	22/-
Wizard External	22/-
Inter-Pet	22/6, 29/6

UNO

Out/Adl.	18/-
In/Adl.	15/-
In/Adl. "Popular"	10/-
"Popular" with neon indicator	12/6
Primer Manic	24/6
Wizard	10/-, 12/6, 18/-

AERATORS

Les	20/-, 38/6 & 58/6
Es. Summit	21/-
Quido	22/6
Erna	45/-
Beko	35/-
Zoobeko Total	75/-
Zoobeko	46/-
Zoobeko Junior	37/6
Montrose Major	24/-
Montrose Minor	21/-
Procter	60/-
Dymax Mk. I A.C./D.C.	29 0 0
Dymax Mk. D A.C. only	29 5 0

PISTON PUMPS

Hy-do Junior New Super	107/6
Hy-do "A"	130/-
Hy-do "B"	165/-
Hy-do "C"	250/-

Thermometers

Mercury	4/-
Blue Gem	4/6
Mercury Gem 6"	6/-
Dumpy	6/6

Sundries

T Pieces	9d.
Clamps	1/-
Aeration Tubing 9d. yd.	
Siphon	12/6, 15/-
Tubing 1/8 yd.	8/-
Glass Wool 1/-	
Filter Carbon 2/-	
Halamid	3/-
Aquariumstop 2/6	

Filters

Hykro Outside	15/-
Coener	4/6
Outside	18/6
Windmill Hand	
Rejector	15/-
Windmill Air	
Rejector	10/-
Consort	19/6
Premier Biological Sub-	
logical Filter	
Gravel Filter	
Sedijet	8/-
Wish Bellows	16/-
Slim Jim	17/6
Klear King	22/6
Bottom Filter 8/3	
Rock Filter	17/6

TROPICALS

Large Neons, 6 for £1 ; 3/6 each

Rosaceus	4/-
Angels	2/6 & 3/6
White Cloud Minnows	2/6
Flames	2/6
Beacons	2/6
Black Widows	2/6
Platys various	from 2/6
Swordtails various, from 3/-	
Schuberti barbs	3/-
Scissortails	3/-
Guppies (pair) 1/6, 5/-	
Harlequins	3/-
Cherry barbs	3/-
Nigger barbs	3/-
Chequer barbs	3/-
Red Eyed Tetra	3/-
Thick lip 3/-, dwarf or Jeeri 3/6, Kissing 4/-, Opaline 3/6, Gouramis.	

"SWIRL-AWAY"

Aquarium Vacuum Cleaner	46/8
Super Model	56/8

BOOK CASE BOW-FRONTED AQUARIUM

48 x 10 x 15	£28 10 0
36 x 12 x 15	£19 10 0
Standard Bow	£22, £15 10, £11 10 0

PLANTS

Sagittaria	6d. each
Vallis. Toeta	6d. "
Vallis. Spiralis	6d. "
Ambulia	6d. "
Ludwigia	6d. "
Hygrophila	6d. "
Cryptocoryne	2/- & 3/-
Wistaria	1/6 & 2/-
Giant Hygrophila	1/6 & 2/-
By post, add 1/6d. Minimum 7/6d.	

HEATERS 25w to 150w

Inter-Pet	10/6
Uno	8/6
F.S. Standard	7/6
Wizard	9/6

ADULT RARE FISHES

Pelmatochromis Kribensis	7/6 & 10/- each
Elephant Nose Fish	22/6 each
Black Veiltail Guppy	15/- pair
Cardinal Tetra	9/- each
Knife Fish Nigerian	9/-
Black Cardinal	9/- each
Crown Loach	12/6 & 15/-
Scats from	7/6 to 20/-
Amazonia Cats	5/- & 7/6
Malayan Angels	7/6 to 15/-
Ramirezii	6/-
Weather Loach	5/-
Silversharks 2"-5"	17/-, 20/-, 25/-, 30/-
Firemouth	4/-
Red Veiltail Guppy	10/- pair
Red Tail Sharks 7/6	Large 15/- each
Anostomus 4"-5"	25/-

Our minimum order for fishes is £2, a charge of 15/- is made for container. Carriage charges, by fast passenger train and telegram stating time of arrival. Increase due to telegram charges.

NYLON COATED AQUARIA, STOCK SIZES

24 x 12 x 15	£4 15 0
18 x 10 x 12	£2 12 6
White or black covers	18/6 & 25/-

STANDARD AQUARIUMS (Light Gauge) (Angle Iron)

12 x 6 x 6	10/6	24 x 12 x 12	56/-
10 x 8 x 6	9/6	24 x 12 x 15	55/-
14 x 8 x 8	14/-	30 x 12 x 15	74/-
16 x 8 x 8	15/0	36 x 12 x 15	90/-
18 x 10 x 10	21/-	48 x 12 x 15	120/-

COVERS

18 x 10	14/6	18 x 10 x 36	33/6
24 x 12	21/-	24 x 12 x 36	45/-
30 x 12	30/-	30 x 12 x 36	50/-
36 x 12	35/-	36 x 12 x 36	55/-

Aquarium covers sent by post only at customers risk.

FOODS

Exotic Flakes	1/6
Hykro Flakes	1/-
Brosiam	1/6 & 2/6
Euoric	6d. & 1/6
Shrimp	6d. & 1/6
Dry Daphnia	6d. to 3/6
Liquidfy	2/6
Infusyl	2/6
Elite	2/- & 4/6
Hobby	2/- & 7/6
McLynn's	1/6, 2/6, 6/6, 17/6
Brine Shrimp	2/- & 2/6
Tetra Min Groth Food Hahnel	4/-
Wardley's	8/-, 4/6, 2/6, 2/3, 1/3
Guppy Food	4/-
Long Life	2/3 & 3/6
Tetra Min.	1/10, 3/-, 6/6, 22/6, 70/-

Add 1/- up to 10/-; 1/6 up to 20/-; 2/- up to £2; 3/- up to £3; over Free CARRIAGE AT COST ON AQUARIUMS, STANDS, AND TANKS. TERMS, CASH WITH ORDER

THE CENTRAL AQUARIUM

Situated on the A41 Route, opposite Hendon Central Station

391 HENDON WAY, HENDON CENTRAL, N.W.4 Phone: HEN 9700
OPEN 8.00 a.m.—7.00 p.m. Emergency Phone: HEN 9700

"RENA" AIR PUMPS

High Performance
Comparative low price

NOW 45/-

Guaranteed 12 months

**AIR OUTPUT BETTER THAN
PUMPS 4 TIMES THE PRICE**



DISEASOLVE AQUARIUM ANTISEPTIC

1 oz. Bottle 2/-
4 oz. Bottle 6/-

For Cleaning Tubifex Worms:

Before feeding soak portion of worm in a solution of Diseasolve for 10 minutes.

For the cure of many Aquarium Fish ailments:

Fin Rot, Fin Congestion, Bacterial Infections of the Gills, Popeye etc.

In Aquariums where overfeeding results in fouling of the water, or a dead fish is discovered to have lain unseen and fouled the water. Diseasolve is invaluable as a first step in cleaning the tank up; if added immediately to the tank, it will kill many of the harmful bacteria, and so relieve the remaining fishes before further action can be taken.

From your Dealer Today

DISTRIBUTORS: SOUTH COAST AQUATIC NURSERIES LTD. COLNBROOK, SLOUGH, BUCKS.

SPECIAL COLDWATER PLANT OFFER

1. 70 Plants for your pond £1
2. 30 Plants for your pond 10/-
3. 70 Plants for your aquarium £1
4. 30 Plants for your aquarium 10/-

THE BOOK OF THE GARDEN POND

G. F. HERVEY
and
J. HEMS

16/6
post free

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/-

Special Offer

15 Assorted Marginal Plants for your pond 10/-
including 1 Willow Tree

WILLOW TREES	WATER LILIES	MARGINAL PLANTS	COLDWATER PLANTS	
Strong young trees ideal for the pond surround 6/6 each	each Cream ... 7/6 Pink ... 10/6 Red ... 12/6 Yellow ... 12/6 (3 year old plants)	Water Iris ... 2/6 Bullrushes ... 2/6 Kingcup ... 2/6 12 Assorted Marginal Plants 12/6 Good strong Plants	each Elodea Densa ... 6d. Elodea Crispa ... 6d. Willowmoos ... 1/- Moneywort ... 6d. Ludwigia ... 6d. Hairgrass ... 1/- Myriophyllum ... 6d. Hornwort ... 6d.	each Vallisneria ... 6d. Hygrophila ... 6d. Cryptocoryne ... 2/- " Beckertii ... 2/6 " Willinii ... 2/6 " Cordata ... 2/6 Harettiana ... 2/6 Anacharis ... 1/-

ALGAE EATING POND SNAILS 5/- doz.

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. 10 £9 7 6
 No. 12 £12 7 6 Postage 5/-
 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 & Cascades

20 DIFFERENT SIZES. SEND FOR LIST (S.A.E.).

Pond Lining

9ft. Wide 7/6 per yard
 12ft. Wide 10/6 per yard
 in Blue, Post Free

QUEENSBOROUGH FISHERIES

See next page for address particulars, etc.

SPECIAL PLANT OFFERS

OFFER No. 1

2 Wistaria	5/-
1 Apogonatum	4/-
1 Nymphaea Stellata	5/-
6 Bacopa	4/6
1 Cryptocoryne Haertelliana	3/6
3 Micro Sagittaria	1/6
Yours for 18/-	
23/6	

OFFER No. 2

50 Assorted Tropical Plants including:-
Dwarf Lily, Apogonatum Cryptocoryne,
Wistaria.

Yours for 20/-

OFFER No. 3

30 Assorted Tropical Plants ... 10/-

SPECIAL SERVICE LIVE DAPHNIA BY POST 2/- post free

FULL CATALOGUE SENT ON
REQUEST S.A.E.

BOW-FRONTED AQUARIUMS

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

48 inch Bow Fronts in Stock

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

STANDS

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

REMEDIES, etc.

Aquastonic	3/6	Halamid	3/-
Brosiam White Spot Cure	2/-	Liquitor	1/9
Vivo Salts	2/-	Dissolve	2/6
Sea Salt	1/6	Brosiam Fertilizing Tablets	1/6
Tetracarens all 4/- each			

THERMOSTATS

Constant External	35/-
Constant New External	22/-
Type OK	22/-
UNO	18/-
Out/Adj.	18/-
In/Adj.	15/-
In/Adj. "Popular"	10/-
"Popular" with neon indicator	12/6
Rena (with Neon)	21/-
"Ea-Ea" Seasonal	26/6
Springfield Safety	22/-

THERMOMETERS

Mercury	each 6/6
Gem	each 6/6
Plastic Backed	6/6
Spirit Blue Gem	5/-
"Ea-Ea" Drumpy	6/6

FILTERS

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

AERATORS & PISTON PUMPS

Monrose	each 21/-
Fairy	24/-
Star	27/6
Star	36/-
Rena	42/-
Zoobeka Total	75/-
Hy-fo Junior	187/6
Hy-fo "A"	130/-
Hy-fo "B"	165/-
Hy-fo "C"	250/-

HEATERS

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

BACKING PAPERS

STRATA ROCKWORK	
PEBBLE BEACH	
SEA & SHORE	
24in. long x 20in. high. 2/6 per sheet, or 1/3 per foot. (post free)	

SEDIMENT REMOVERS

"Windmill" Air Rejectors	each 10/-
"Windmill" Hand Rejectors	15/-
Fishtail	3/-
Syphon Tubing	76. ft
Hand Type Plastic	4/6
Swirl Away	46/8

PLANTS

Valisneria Spiralis	9d.
Elodea Densa	9d.
Hydrophila	9d.
Bacopa	9d.
Sagittaria natans	9d.
Sagittaria micro	9d.
Valisneria torta	9d.
Ludwigia	9d.
Myriophyllum	9d.
Spatterdock 3/6, 5/- and 7/6	
Cryptocoryne Becketti 2/-	
" Wallii 2/6 and 5/-	
" Cordata 2/6 and 5/-	
Haertelliana 2/6 and 5/-	
Water Wistaria	3/6
Giant Hydrophila	2/6
Giant Sagittaria	2/6
Najas Microdon	2/6
Amazon Chain Sword	2/6
Duckweed	per portion 1/-

FOODS

"Queensborough" Tropical Fish Food	1/6 and 2/6
Exotic Flakes	1/6
Hydro Flakes	1/-
Brosiam	1/6 and 2/6
Brosiam Frygrain	1/6
Brosiam Biovic 6d. and 1/6	
Liquify Nos. 1 and 2	2/6
Infusyl	2/6
Elite	2/- and 4/6
Dried Daphnia } Our 6d. Ground Shrimp } own 1/- Fish Food } pack 1/6 in 3 sizes	
Ants Eggs	each 6d.
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More and More

MOST of us are familiar with the typical story of the keen aquarist. From small beginnings, originating perhaps in childhood attempts at keeping, in jars, fishes netted from the river, he gradually accumulates an increasing number of tanks until the stage is reached that brings their accommodation and that of his family into acute conflict. Solutions to this particular problem vary with individuals, but most of us manage to continue the pursuit of our hobby in one way or another, even if it necessitates a graceful retreat into a garden refuge.

But with the greatest enthusiasm, and even with plenty of capital, there has to come a limit to further expansion, imposed by the volume of the aquarist's spare time. Many aquarists hope to offset some of the expenses of their hobby by breeding some fishes for sale. Others are tempted by the thought that such could even be a source of financial profit. Well, for those who are interested in increasing the scale of their fish breeding we have included an article in this issue by A. Jenno on the subject. We fear that his assessment of the numbers of aquaria required may curtail the ambitions of some, but he has given a factual appraisal of the requirements and procedures that should be considered before any large-scale breeding is undertaken.

However, we should not allow these matters to cause us to lose sight of one of the great advantages of the aquarium hobby. That is, although the urge to expand may always be present, for those in cities for example, who live in flats with no chance to yield to this urge, all the fun of keeping fishes can still be enjoyed including breeding in the living room, as B. Whiteside suggests in another article. Not only are fishes the most convenient and acceptable pets for the flat-dweller to keep but they are certainly the only form of livestock that will allow him to try his hand at breeding on the small scale under such circumstances.

Signs of Trouble

by A. BOARDER

PROVIDED that care is taken to ensure that healthy conditions are supplied for goldfish there are few diseases or pests which should give much trouble. However, even in the best run tanks and ponds occasional ailments occur or pests are discovered. It is with the intention of giving a few possible signs of trouble to pond and tank keepers that this article is written.

One of the first signs that a fish is in any trouble is when the dorsal fin is kept lowered. This fin is the first to be folded up when anything goes wrong. If the fish fails to recover in a day or so, then other fins including the caudal will fold up as well. Although this fin folding is a sure sign of trouble there are a few troubles when the fish keeps its fins fairly open. One such case is when an otherwise healthy fish has swim bladder trouble. I have known such a fish unable to keep upright and lie only upside down on the bottom of the tank, yet still keep the dorsal fin fairly erect.

Some signs will indicate that it is the water which is foul and causing the fish distress, and the fish may be in quite good health itself. In such cases once the water is made pure again the fish will soon return to normal swimming and show no signs whatever that anything has been wrong. In pond or tank the symptoms of foul water are the same. The fish will hang at the surface of the water with their bodies at an angle to the top of about 40 degrees. They will also mouth at the surface and bubbles may be blown which remain for some time. When disturbed the fish will usually swim down in the water for a while but soon return to the top to continue their gasping.

If this behaviour is seen in a tank some of the water should be changed at once. Once fresh water is introduced to the tank, the fish will soon recover. If the water in a pond is in a foul state the fish will be at the surface mouthing and in bad conditions they may lie on their sides on the top. If such a case occurs it is imperative to take swift action or the fish will die. The best thing to do is to play the hose on the surface for a time and the fish will recover almost immediately and then show no signs of discomfort at all. I have known golden orfe to be apparently dead on top of the water, lying on their sides, and yet recover in minutes when the hose has been played on them.

Another sign of possible trouble in the pond is when a fish, which normally swims with the shoal, sulks by itself and appears to be very sluggish. It is strange how many animals will quit the herd when they are ill. Any fish which goes off its food should be watched for illness. If a fish is not eating when others in the tank or pond are doing so then there can be something the matter with that fish. If all the fish in pond or tank are off their food then it is certain that the water condition is to blame.

If a fish makes sudden dashes about the tank and rubs itself against plants or rocks it may be that there are some pests on the fish, but this is not certain in all cases as some fish will dash about occasionally in this way in sheer good health. Constant rubbing, however, can indicate that pests, perhaps in the form of flukes, are present. In such

cases there will soon be other signs which will indicate whether there are flukes on the fish or not. Flukes not only cause the fish to rub on rocks etc., but the fish soon goes off food, mouths at the surface and becomes gradually thinner. It soon appears to be almost "all head", the body gets very thin and later blood streaks may appear. This is almost the last stage, as if not treated the fish will die.

If a fish is unable to keep on an even keel or remains on the bottom of the tank on its side, the trouble is usually disorder of the swim bladder. An affected fish may swim to the top of the water occasionally but returns to its position on the bottom immediately afterwards. The swim bladder can be disturbed by a chill, eating a lot of food when the body is already distended by many eggs or even be a hereditary trouble. It has been noticed that certain types of fish are more prone to swim bladder trouble than others. One type often affected is the deep bodied veiltail and especially one which is almost silver in colour. Why a pale coloured fish should be more prone to this trouble than an ordinary one is hard to explain, but nevertheless it often happens that way.

Should a fish show white woolly substance on it there is little doubt that the fish is attacked by fungus. If the fish is in bad condition then the fungus can appear almost all over the body and fins. When it reaches the gills the fish usually dies. If just one or two spots of fungus are seen on a fish it is probably due to the fact that the fish has received injury to that part. The fungus does not generally attack a healthy fish, but if such a fish has had a blow or received any damage, then that part can be affected by fungus. Healthy fishes have a good mucus covering which protects them from many ailments, but once a fish becomes ill this protective covering is deranged and the fish is prone to attacks of fungus. Any fish seen with fungus should be treated immediately and, of course, separated from the other fishes.

Occasionally a fish may be found with a lump or swelling on the body. This can be a form of cyst or tumour. These lumps will sometimes clear up by themselves, sometimes bursting and then healing with no need for treatment, but if such a lump appears to have become inflamed some treatment will be necessary. If a fish in the pond is seen to dash about unusually it should be caught and examined. If small inflamed spots are seen there may be fish lice on the fish. These lice suck the juices from a fish and cause a nasty wound. The lice are large enough to be seen quite plainly but if under the tail can be missed. Wounds on a fish can be caused by sharp rocks in the pond, the claws of a cat or even by a bird.

Any fish abnormally swollen in the body may be suffering from a form of dropsy, but do not diagnose this trouble in a female fish swollen by the presence of eggs. If a fish has an abnormal shape this may be due to something going wrong either in the egg or soon after the fish was hatched. Such abnormality cannot be cured and such a fish should be destroyed.

My next article will deal with treatments for pests and diseases.

Breeding Tropical Fishes in Quantity



by A. JENNO

TO produce a more or less continuous supply of young tropical fishes in reasonable quantities, three main commodities are required: tank space, time and food. Unless the amateur aquarist can guarantee these it is no use attempting to breed fishes commercially, as the venture is one where half measures will not be successful, and unless the aquarist is prepared to work hard at it, the returns will not justify the outlay involved.

As far as the commoner and therefore cheaper fishes are concerned it is important to breed in quantity only those fishes which are ready sellers, otherwise difficulty will be experienced in disposing of the stock, however good it may be. Some of the best selling fishes are the livebearers, the medium sized barbs and tetras, the danios and angels.

For a fish which sells at 2s. 6d. the breeder can expect to be paid a shilling by a dealer or wholesaler, provided it is of good size and in good health. It is obvious therefore that unless the aquarist is going to produce at least a batch of a hundred a week, it is hardly worth the bother.

When planning a breeding programme on this scale, try to use fishes which are suited to your local water conditions. This will save the bother of adjusting the water to suit the fishes. In general cichlids, *Corydoras* catfishes, danios and the livebearers either tolerate or prefer hard waters, whereas the barbs and tetras prefer either medium-soft or very soft waters. It is also an advantage to breed

a fish which can be raised to a reasonable size fairly quickly with proper feeding. With a top quality diet and frequent feeding, fish such as tiger barbs should be up to 'selling size' at about 8 weeks old. This is a critical point, as it is important that if the operation is to be efficient and economically successful, then the fish must be raised to the required size in a certain length of time. This means that they must have always as much space as they need and the right foods available.

Let us assume that the aquarist wishes to set up a system to produce 100 fish per week of one of the commoner species, such as zebra danios or tiger barbs. One of the first surprises will be the number of tanks required. There are three main stages in the breeding of a typical egg-laying fish: the conditioning of the breeders, the actual spawning and the rearing of the resulting fry. It is usual to separate the breeding stock, with males in one tank and females in another, for conditioning. Unless a large number of breeding pairs are being conditioned, two 24 inch tanks are sufficient for this. For spawning, 18 inch tanks are usually used for small and medium fishes.

The young fry are usually left in the spawning tank for about 2 weeks before moving to a large rearing tank, so it would be necessary to use three 18 inch tanks in rotation to spawn one pair of fish a week. For raising the youngsters to the required size larger tanks are needed. A standard 36 inch tank will just about manage 100 of the type of fish

considered here, so the system will want one of these for each week that the fish are in them before sale. A system of breeding fishes which sell at 8 weeks old will require a minimum of six rearing tanks to rear 100 a week. On top of this, other tanks will be required for raising future breeding stock to adult size and for keeping other fish which are not in use for breeding at that particular time.

The other surprise in store is the amount of food young fish eat when they are growing properly. Couple this with the fact that variety is required and it will be seen that the arrangement of a planned diet is a difficult business. Most aquarists give their fishes the best of whatever is available at a particular feeding time, but many do not plan what will be available. For instance, if *Daphnia* can be obtained it is far better to give it to the fishes on say, Monday and Friday, rather than on Monday and Tuesday and then none for the rest of the week. Try to arrange a balanced diet with a majority of natural live foods if possible and make sure that there is always more food available than is required. Avoid cheap prepared foods and use only proved, reputable brands.

If the aquarist is unable to feed the fishes frequently through the day, then it is recommended that the bases of the tanks be left bare so that it will be possible to put in more food at a time than usual and the surplus will not then be lost in gravel or other base material. White worms in particular can be fed very heavily in aquaria with bare bases as they live for some time under water. Some trouble may be encountered with adult fishes with this method, however, as fishes which have grown up in planted aquaria sometimes never settle down properly in bare tanks.

To ensure that a spawning is produced when required it is advisable to have several pairs in the conditioning tanks, so that if one pair fails to spawn, another pair can be tried. After spawning, the fish will need 2 or 3 weeks conditioning before being used again, so at least four pairs will be required for a weekly spawning. If six pairs are available this will allow the aquarist to try another pair

when necessary without breaking the schedule for the following week.

It will be found that if the diet and method of conditioning the fishes are correct, some species can be spawned regularly for long periods. Where it is necessary to alter the characteristics of the water to induce a fish to spawn, remember to do this in the conditioning tank as well, otherwise the sudden change, when the fish are put into the spawning tank, may shock them and put them off breeding instead of encouraging them.

The spawning tank must be clean and set up in the correct manner for the species concerned. The use of plants is advised only where it is absolutely necessary, such as in breeding gouramies, where floating plants may be required. Whenever possible use an artificial spawning medium which can be sterilised by boiling. Some fishes, such as the danios, will spawn without plants or their substitute, but in this case any pebbles or marbles used to catch the eggs should be boiled.

After setting up the spawning tank, allow it to stand for a few days and during this time shield it from light. Before putting the breeding pair into the tank make sure that the water temperature is at the required value and that there are no snails present. It is best if the breeding pair are taken from the conditioning tank with a clean net and allowed to jump from this into the spawning tank. This minimises the transfer of unwanted organisms from one tank to the other but it is necessary that the two tank temperatures are matched before doing this, otherwise the fish will suffer an unnecessary shock.

Remove the breeding pair either as soon as they start to eat the eggs or immediately they finish spawning, whichever occurs first. Some of the barbs, in particular, will drop a bunch of eggs and eat them before dropping the next lot. This presents a problem and in a case like this it is very difficult to obtain a large spawning.

After removal of the parents, the tank should be kept in total darkness until the fry are free-swimming, to mini-



Breeding tanks in an amateur's fish house

mise fungus and infections. The use of chemicals is not recommended because what suits the eggs very often does not suit the fry, and vice versa.

With cichlids and gouramies it is usual to take the eggs away from the parent when large and frequent broods are required. Angels, in particular, will spawn more frequently and even regularly if the eggs are removed each time. When moving eggs, they must be kept under water and at the same temperature all the time. With gouramies the eggs, complete with bubble nest, can be simply sucked into a wide-necked vessel, but more care must be taken with cichlids. Cichlids should be encouraged to spawn on a removable object, which can then be placed in a jar below the water and the eggs are then moved in this manner. If the fish have spawned on the aquarium walls or on any of the fixed apparatus in the tank, then no attempt should be made to move the eggs as they will almost certainly be damaged.

When the fry are free-swimming feeding must commence, and the foods used must be small enough for the particular species concerned. For very small fry some form of fine Infusoria will be necessary, but otherwise egg yolk and proprietary liquid fry foods are satisfactory. Remember that young fish require food available at all times if they are to grow at the maximum rate, and it is essential therefore either to feed very frequently or to use a food which will remain in a fit condition to be eaten for a few hours at least, so that feeding can be less frequent but heavier. As soon as the fry have been successfully brought over this first food stage and are taking brine shrimp or micro worms, the aquarist can usually expect to raise the spawning successfully. This does not mean that he can be any less careful in the care of the young though; it is just that the first feeding stage is difficult to handle because of the small size of both the fry and the foods, which makes it hard to tell whether the fish are feeding properly.

When raising quantities of young fish, particularly in bare or unplanted tanks, it is important to keep the water as clean and as fresh as possible. A large outside box filter on each aquarium is recommended, and a regular system should be set up whereby about a third of the water in each tank is changed weekly. If these conditions are maintained it will then be possible to overfeed the fish (within reason) and thus assure that they take the maximum amount of food.

The young fish should be put on a planned, mixed diet as soon as possible. This is difficult while they are very small, but generally they can be given many foods after passing through the brine shrimp stage. Fishes such as the barbs and livebearers, which eat a lot of algae, can be given cooked peas as a substitute if algae is not present in the rearing tank. Other fishes like the cichlids and danios, which are mainly carnivorous, should receive a high proportion of cooked liver and other suitable meats. Live *Daphnia* is highly recommended both as a food and also as a laxative but it is important to see that large insects or parasites are not introduced with it. White worm and Grindal worm should not be used heavily as they are very rich foods and are said to cause deterioration of the reproductive organs if fed in excess. Earthworms are one of the best foods available but are too large for young fish and the job of cutting or mashing them is messy. *Tubifex* worms are undoubtedly a good food when clean and healthy, but they go off so quickly that it is often hard to tell whether they are any good or not, and they are best left alone except where nothing else is available. Gentles can also be used in emergencies, but when broken up for young fish they tend to pollute the water quite quickly.

In general then, remember that to raise good youngsters, in quantity, they must be given plenty of room and as much food as they require. The water must be kept in good condition by regularly changing part of it, and by filtering and siphoning muck etc. from the bottom of the tank.

Assuming that the aquarist wishes to sell his surplus fishes to a dealer or wholesaler, a few words on this may be advantageous. In the first place no dealer wants to buy runts and throw-outs. A certain amount of trust must exist on both sides in any transaction and any aquarist who tries to unload all his rubbish on a dealer will soon find himself in a position where he has no-one to sell his fishes to. Secondly, the majority of dealers are honest and will give a fair price for the fishes without the need for argument or bargaining. At first thought, a shilling for a fish which sells at 2s. 6d. may seem a small proportion to be paid, but the seller must realise that the dealer must be able to cover any losses which may occur, and also he must expect to have some of the batch on his hands for some time before reselling them. If the fishes are sold to a wholesaler, he must again sell them below the final price and so there are then two other people involved besides the breeder, each expecting a certain profit.

Breeding in the Living Room

by BILLY WHITESIDE

AQUARISTS who have one community tank in the living room, and who think they have no room for breeding tanks, are missing half the excitement of fish-keeping. In the confines of a living room there is bound to be enough room for one more 18 in. by 10 in. by 12 in. aquarium. This tank is large enough to breed one of the most exciting yet common types of fish available—the guppy. No other species produces such variations in body shape and colour in the male.

A breeding tank in the living room must be pleasing to the eye. Here the guppy tank is ideal as it can be made to look as beautiful as any community aquarium.

The initial setting up is important. An under-gravel base filter should be placed in position before the gravel is

added so that the problem of keeping the water crystal clear is solved. It will also draw waste materials to the plants' roots where they will be converted into plant food, resulting in healthy plants and thus a healthy aquarium.

Suitable plants for the tank would be several *Cryptocoryna* for the back corners; a row of *Vallisneria* along the back and sides; a water wisteria as a centre-piece; and pygmy chain swords for carpeting the centre and front areas of the tank. Most of these plants will soon produce runners and form enough plants to fill the whole tank. Pieces of flint provide suitable rocks with which to furnish the scene—if these blend with the colour of the compost. Pieces can often be picked up on the sea shore, the sharp edges having been worn off by the action of the tide.

With the guppy, temperature is not too important, but to keep the fish active and breeding, and to bring up their full colour, a temperature of about 75°F (24°C) is best, this also favouring plant growth.

It pays to buy the best guppies available. Two pairs should be obtained from each of two dealers, thus ensuring that two distinct lines are purchased. This will prevent the subsequent weakening of the young due to inbreeding. From these eight fish will come the progeny which will populate the aquarium. Mating at random, the fish give the aquarist the excitement of watching the youngsters develop into an assortment among which should be many excellent and interesting specimens.

Some of the fry will naturally be eaten by the adults,

but the majority will escape to grow to maturity. The tank will eventually become over-populated, so the inferior fish may be disposed of. Feeding such a mixture of growth stages can be solved by giving a pinch of both fine and coarse foods at each feed. Grindal worms provide an excellent live food for all stages of growth, worms themselves being in all stages of growth and development in a mature culture. The diet should be varied with scraped raw liver or a small cube of steak suspended on thread in the aquarium.

A 18 in. by 10 in. by 12 in. aquarium will hold a large number of guppies, and the little looking after that they require is amply repaid by the attractive tank with its ever changing variety of fish, adding to the décor of any room.

The Coldwater Catfish



Photo:

W. J. Howat

by B. FRY

A COLDWATER catfish that appears in dealers' tanks from time to time is *Ameiurus nebulosus*, a native of the Eastern States and Great Lakes region of the U.S.A., where it is commonly called the brown bullhead. Although it reaches a length of about 14 inches in the wild, it seldom exceeds more than 10 inches in the aquarium. Under domestication it flourishes best in well-aerated water over a sandy bottom well furnished with thick clumps of submerged vegetation, into which, every now and again, it likes to retire. As a rule, it is most active on dull days and at night, for it is essentially a nocturnal feeder and shuns a bright light.

The most characteristic features are a scaleless body which tapers towards the tail, a wide mouth adorned with eight, moderately long, fleshy barbels, and beady, gold-rimmed eyes. In coloration the species is black to dark olive brown, shading to silvery white on the throat and belly. The flanks often show a greenish violet to greenish bronze sheen. The dorsal fin is usually held erect and is provided with a spine. The adipose fin, near the root of the tail, is quite small. The anal fin is long-based and rounded. All the other fins are of roughly normal proportions.

A. nebulosus is not fastidious about what it is given to eat (it is a natural scavenger), but it should have whole or chopped earthworms, white worms, tiny gentles, live *Daphnia*, thin slivers of lean meat and so on as often as possible to maintain it in good health. It is remarkably sensitive to noises or movements in the water, and will usually emerge from its hiding place the moment the cover glass is removed. If by any chance food is not forthcoming, it will waste no time in returning to its day-dreams in the plant life.

Despite its rather ferocious appearance, it is in fact a peaceful species and may be kept with other fishes too large to be swallowed at a single gulp and which can swim quickly enough to escape its large mouth. Ordinary room temperature suits it very well. It is not hardy enough to withstand an English winter outdoors.

Pisciculturists on the continent have reported several late spring spawnings of large numbers of eggs in clear artificial basins and lakes, but up to the time of writing it has refused to breed in aquaria. To make things even more difficult for the ambitious aquarist, there are no positive external sexual characteristics by which the two sexes may be told apart.

“Dear Enemy”—the Tilapia of Lake Alaotra

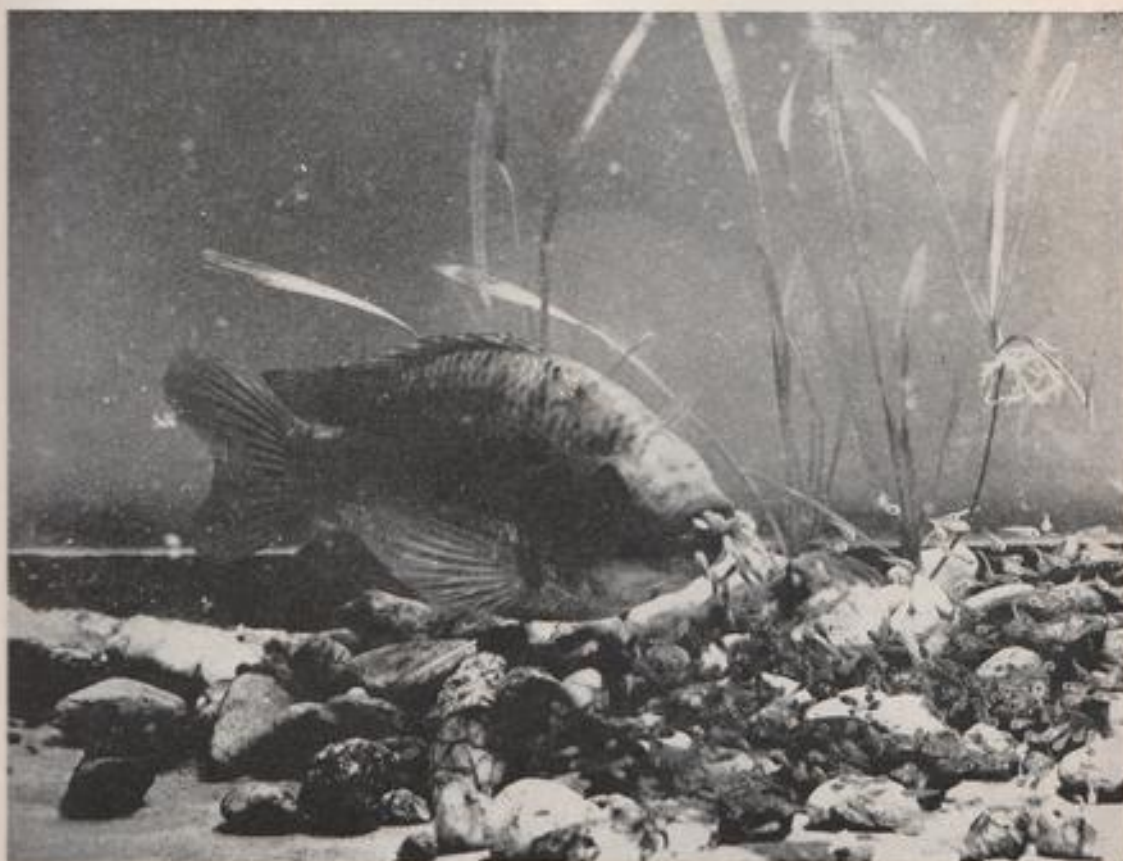


Photo:

Female Tilapia with brood of young

FAO

by J. T. HARDYMAN

THE *Tilapia* is probably the best-known, the best-loved and, in some areas, the best-hated fish in Madagascar today. It came with the advantage of a name which looks as though it is naturally a part of the Malagasy language, so that even the lips of a countryman have no difficulty in pronouncing it. Propaganda, energetic action by the authorities and the example set by individuals spread it far and wide. Satisfied palates and improved incomes set the seal on its value. All seemed to prophesy that this imported stranger would soon become everyone's friend.

There would seem, then, to be no reason why so useful a fish should arouse strong feelings among some of those

it was intended to help, or that it should take on political and indeed near-racial overtones. But that is what happened in one main area—the Lake Alaotra district, in which the writer has been living for many years. It is instructive to see what happened, as it illustrates the difficulty which may be met in introducing new ideas into unfamiliar situations, especially in “under-developed” areas, in any part of the world.

The account here given is based on personal observation and on comments made by the Malagasy concerned. For the more technical matters, the writer relies on material published in the *Bulletin de Madagascar* by Moiss. A. Keiner, who in his official position has been especially

concerned with everything to do with fish in the island. His enthusiasm and knowledge have achieved a great deal to benefit the Malagasy.

The introduction of *Tilapia* was simply one part of a general plan to improve resources in fish in Madagascar. People have been encouraged to construct special fish tanks ("ponds") and because of the extraordinarily prolific rate of reproduction, these tanks have been very productive.

In general therefore *Tilapia* have been a great success. But it is in the area of Lake Alaotra that there have been difficulties. This lies towards the north-east of the island. The lake is roughly 25 miles long, by a few miles wide; but a large proportion, especially in the south-west, is overgrown with papyrus and water hyacinth. There is a vast flat area surrounding the lake; this is given over to rice-fields, which may be flooded during the wet season, and which are in special danger if there is a cyclone (no uncommon event). Although some recently constructed dams provide irrigation of land a few feet above the normal level of approximately 2,425 feet, there is no actual control over the level of the water, which has only one exit—the river Maningory, in which certain narrow sections prevent a quick release of excess of water. As might be expected, many of the people who live on the edge of the lake (the Sihanaka) derive from it both their food and their cash income. There have for long been two or three main types of fish (e.g. carp). Dried fish are taken and sold in other districts at a very good profit.

Official Introduction

An official decision to introduce *Tilapia* was taken by two Government offices with the twofold aim of providing food and increasing trade. The type chosen was *Tilapia melanopleura*, obtained from the Congo just over 10 years ago. With good reason, experiments were made to discover its habits in special tanks at an agricultural research station. These revealed, first, that the fish attacked vegetation at the water's edge and destroyed rice, which, in a given area, might have yielded up to about one-tenth of the total estimated crop. But when the finances were looked into, it seemed clear that the value of the fish would greatly outweigh the financial loss on the rice. It was found, second, that some of the fish were capable of escaping through gratings into the lake.

On the basis of these experiments the *Tilapia* were introduced into the open lake, with the backing of the scientific knowledge that some damage to rice might be caused; and with the economic knowledge that the fish were more valuable than the rice they might destroy. This seemed a sound starting point.

What actually happened, however, was a little different. The grown fish proved to be much more destructive than the small fish used in the experiments; further, in the open lake they formed what might be called 'armies' and attacked the rice-fields with massed forces; what the locusts achieved in the open air, they achieved in the water.

Not surprisingly, the owners of the fields attacked by these invading armies were loud in their complaints, and all the more when the exceptional floods caused by the 1959 cyclones spread the devastation even further. The answer, of course, could be given, and was given, in bits and pieces, by some: that this was just their misfortune if their rice-fields were badly sited; that their land was poor and their methods of rice-production out-of-date and inefficient, giving a very low yield; and that they could catch fish instead.

Such comments could be justified. But they did not take sufficient note, in the actual situation, of the outlook of the people concerned. For example, there is a common European fallacy that people have only to be shown that something will benefit them economically and they will at

once change what they have long done to reap such benefits. But, of course, there are many things that people prefer to plain wealth. With the lake-side Sihanaka, having their rice-fields at the water's edge, a main interest lies in having rice-fields of their own and harvested rice of their own, to be stored in their houses; all this being linked with the mystical feeling that these were the lands inherited from their ancestors.

All this was happening when the French were still largely in control of Madagascar (even though a Republic was proclaimed towards the end of the period). So when some Malagasy newspapers took up the matter, anything done by the authorities could be represented as being done "by the French" rather than by "Madagascar and the Malagasy". Thus political and something, too, of racial feelings were introduced. Accusations were made that the *Tilapia* had been brought in to cause famine and as a policy intended to ruin the economy of the Malagasy. Rumours also spread that *Tilapia* might cause sterility and other troubles.

All this was a very unexpected result of the introduction of *Tilapia* to improve food supplies and to benefit the economy! What could be done? Scientifically and economically, the *Tilapia* still seemed to be most advantageous; on the other hand, these violent feelings were being aroused among some, together with the spreading of rumours which, among a scientifically untrained population faced with something new from another country, could be very damaging.

One suggestion was that the *Tilapia* might be poisoned; in other words, there should be a policy of exterminating them, and a possible local poison called *fanamo* did exist. But this seemed hardly practicable, if only in view of the large size of the lake and the several thousands of tons of *Tilapia* already estimated to be in it. A second suggestion was to make use of the fish, but to prevent their entry into the fields by the use of gratings, which would be effective except in, perhaps, abnormal circumstances.

This suggestion could be subsumed under a wider policy: only about a tenth or twelfth of the total rice-producing area around the lake was affected by the rising waters and therefore by the fish; further the production of these lands was low; therefore the policy for the Alaotra district should be: (a) rice on the higher areas which could be irrigated; (b) a maximum yield of fish from the lake. While the owners of land closest to the water would be protected as far as possible, they would have to adopt a new attitude in view of the *fait accompli*, for the fish were there to stay. They might lose rice, but they could greatly increase their catch of fish and could buy much of their rice.

"Dear Enemy"

That then is the policy which has been officially followed and further steps have been taken: first, by the encouragement of net-fishing instead of rod-fishing in the traditional manner, and second by the experimental production of fish flour. The *Tilapia* has become the "dear enemy"—a foe from which benefit can still be derived. The new possibilities have not satisfied everyone; grumbles are still heard, for the old ancestral outlook, hallowed by so much emotion, dies hard, and somehow the *Tilapia* still manage to cause damage. But the outlook of some is changing. For example, higher education may become a thing to be desired for the good of the children (another powerful emotion); so it may become easier to give up some old ways and take advantage of the new situation.

The story of the *Tilapia* of Lake Alaotra provides a few pointers for situations in which 'science' and 'Government' wish to make changes in an established way of life. First, on the scientific side: the principle of 'pilot experiments' is well-established but (a) when there are several "possibili-

Continued on opposite page

The Checker Barb (*Barbus oligolepis*)

by JACK HEMS



THIS diminutive Sumatran cyprinid (*Barbus oligolepis*), which was first introduced to tropical aquarists early in the 1920's, is commonly called the checker barb, the island barb or the iridescent barb. It is an inoffensive little fish, it does not as a rule exceed much over 1½ inches in length, and is ideally suited to life in a well planted community tank housing species as peaceful and as quiet-living as itself.

The male is olivaceous on the back, shading to shining gold on the sides. Almost every glittering scale is anteriorly marked with black. In young fish these dark markings form a striking checker-board pattern along the sides, but in adult fish they are not so pronounced and, in point of fact, may be entirely absent, except for a few bold blotches on or near the tail. The forked caudal and black edged dorsal, anal and ventral fins are reddish orange; the pectoral fins are yellowish-tinted clear. The male fish is more highly coloured than the female. Moreover, he has flatter sides. There are short barbels on the mouth.

Breeding

A temperature in the neighbourhood of 75°F (24°C) suits the species very well, though a drop to 68°F (20°C) or a rise to 80°F (27°C) does no harm if the change is gradual. It breeds at about 78°F (26°C). It is omnivorous by nature, and eats any food usually palatable to a fish, including bright green but not blue slimy algae.

For spawning purposes a well-lighted tank measuring 24 in. by 12 in. by 12 in. or larger is called for. It should be half-filled with water. Ordinary mains water left to stand for a week or so is quite satisfactory. The ends of the aquarium should be thickly planted with several clumps of bushy-foliaged vegetation, teased-out nylon mops or a similar alternative. Separation of the sexes for a week or two, combined with a generous diet of scraped red meat and live food, should bring them into tip-top condition.

It is easy to recognise a male in spawning mood: his colours stand out a mile as the saying goes. Further, he becomes extra lively in his movements and chases the female all over the aquarium. If she is ripe for spawning it will not be long before she starts to scatter her adhesive eggs every time she is driven through or into the plant life. When spawning is over, see that the couple is removed to another tank without delay. Failure to act on this instruction will mean the loss of the eggs, for the fish are avid eaters of their spawn.

The eggs hatch out in about 3 days but the fry do not swim about freely until they have absorbed the contents of the abdominal yolk-sac. Normally this takes another 2 or 3 days. Then the fry become ravenously hungry and hunt in all levels of the water (by having shallow water the fry are not hampered by too much top pressure) for food. If Infusoria is not available, substitute a liquid fry food which can be obtained from any well-stocked dealer, or sprinkle the merest pinch of a flour-fine dried food on the surface of the water at least thrice every day for about 2

weeks (and talking of the surface of the water, do make certain that this is kept clear of oily scum by drawing a sheet of newspaper across it every now and again). After this stage brine shrimps, sifted *Daphnia*, micro worms or flake food may be offered. Another thing, if there's any green water available (a glass jar of water stood in a sunny window will soon turn green), see that the fry get spoonfuls of it; green water makes a most beneficial first food.

So long as the youngsters are not overcrowded, and the aquarium is kept wholesome by frequent dip-tubing, they will grow very quickly and assume their colours at an early age. Normally they reach breeding size before 8 or 9 months are out. Long before this time, however, some of them will have to be sorted out into other containers, for it is not uncommon for a large female to lay two or three hundred eggs.

Mr. Arthur Derham

WE regret to announce the death of Mr. Arthur Derham, which occurred after a long illness on 18th April. Mr. Derham was a pioneer aquarist in this country who started the Derham Fish Farm after the first world war, with tropicals in ponds heated by waste steam from his brother's factory. This venture was well known as a place to visit by aquarists up to 1939. He will be known to many readers by his characteristic advertisements incorporating his personal comments (often in mixed tongues) in this journal, but in our earlier days he was a frequent contributor to the editorial pages.

"Dear Enemy"

continued from opposite page

ties" within one area of an experiment—for example, several different kinds of *Tilapia*—there should be wider experiments (for other types of *Tilapia*, it seems, do not show the liking for nipping off rice stems which delights *Tilapia melanopleura*; also, grown fish proved different from young fish); (b) the 'fence' around the pilot experiment should provide no loop-holes, for it was the *Tilapia* which got away which began the trouble. Second, there should be full attention to the methods of the anthropologist (another scientist, but "human" instead of "natural"): how will proposed plans fare in the light of people's outlook, customs etc.? Third, the importance of explanation, which must be combined with obtaining the co-operation of the people concerned.

Meanwhile, the *Tilapia* still swim around Lake Asootra in their thousands, knowing nothing of the storm which they have caused above the surface of their waters!



Photo:

Lawrence E. Perkins

Spined loach (*Cobitis toenia*)

MANY aquarists would say that a community tank devoid of a loach is just as bad as one without plants, and though there may be some who do not class them among their favourites, the general opinion is that they are among the top ten. There is much to commend and very little to condemn them, and apart from their most interesting habits, they really do a fine job of work in helping to keep the tank clean.

The majority of loaches are eel-like fish, but not all, and a few brief notes on the different varieties will, I hope, help the reader to identify these.

All the loaches are peaceful fishes, and will eat all kinds of food; they are very hardy and rarely suffer from the fish diseases which do crop up from time to time in the aquarium. Most of them are not content with clearing the refuse which accumulates on the sand and will burrow into this in search of particles of uneaten food; live *Tubifex* worms will never get established in the sand if loaches are present.

Normally these fish are not very active during the daytime and some form of shade or cover should be provided; a small flower pot on its side or half a coconut shell makes an excellent shelter for them. They are very sensitive to changes in atmospheric pressure and can be quite reliable barometers; if the fish are abnormally active during the daytime a change in the weather is imminent. The frantic swimming from end to end of the tank during hot weather usually means a storm is on the way.

Kuhli Loaches

Most loaches come from running streams and they do better in water which is not too deep, although they have great adaptability and do settle down to almost any conditions which are met with in the average aquarium. In water which is too deep the colours are apt to fade a little.

Acanthopthalmus are members of the family Cobitidae and although there are several species they are all sold as *A. kuhli*; in fact kuhli loach seems to be the name given by the trade to all eel-like fish with black and yellow markings. These remarks, of course, do not apply to the few

Loaches in

by L. B.

professional aquarists, who do take great care to see that the fishes they sell are sold under the correct names.

The following should help to identify the different species.

A. kuhli: average about 3 inches, has an eel-like body with about 18 wide vertical black bars on a pale yellow background.

A. weyersi: average about 2½ inches, has slightly deeper body with only about 15 vertical bars, which are not so dark as in *A. kuhli*.

A. semicinctus: average about 3 inches, with black bars, about 16 in number, extending only half way down the body, which is yellow above and pink below; it is more sensitive to light than others and must be given some shelter. This species is the one most commonly offered for sale.

A. shelfordi: average about 3 inches; the black bars are broken, giving a row of prominent black markings along the back and each side. Rarely seen in this country.

All these fishes have the dorsal and anal fin placed well to the rear, about two-thirds of the body length from the head, and all fins are small and transparent. All *Acanthopthalmus* species have six small barbels and a small spine in front of the eye.

Acanthopthalmus species are found over quite a wide area; Malaya, Singapore, Java, Borneo, Siam and Johore are the main sources of supply, but not the only ones.

In the aquarium temperatures between 70° and 75° F (21—24°C) suit these fishes and they will adapt themselves to most water conditions.

Botia

Botia, another genus in the family Cobitidae, provides a number of most attractive fishes suitable for life in our aquaria. These fishes are called loaches but differ from *Acanthopthalmus* in a number of ways: the body is compressed laterally and much deeper, well arched at the top and comparatively flat below; the tail is forked and not rounded as in *Acanthopthalmus*, and in natural surround-



Kuhli loach (*Acanthopthalmus kuhli sumatranus*)

The Aquarium

PATTERNS

ings members of this genus grow to a length of 10 inches and over.

Botia are more free-swimming but do not like too much bright light; they scavenge among the plants but rarely dig into the sand. Live food is preferred but not essential. Temperature should be maintained around the 75°F (24°C) mark and the aquarium should not be too small, as they like plenty of room to move about. These fishes are a little dearer than most aquarium fishes owing to the limited supply, but they are well worth the little extra. *Botia* have a small spine under the eye which they are able to erect as a means of protection and it is possible to receive a nasty sting when handling them; the sting is not poisonous.

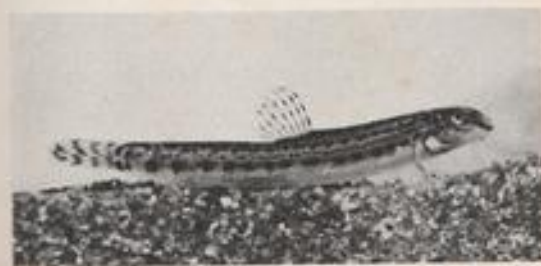
B. beauforti: Beaufort's loach comes from Thailand and is one of the more recent introductions to this country; the body is grey to green and has about 10 vertical dark bars; the head is pointed and has three pairs of barbels.

B. horae: Hora's loach is much smaller, rarely exceeding 4 inches, has a yellowish green body and no vertical markings; there is a dark line running along the top of the back and across the base of the tail; the fins are yellow tinged with red, the red intensifying as the fish matures. This species also comes from Thailand.

B. hymenophysa: the banded loach is more widely distributed than the preceding ones and can reach a length of 11 inches in natural surroundings, although it is very unusual for them to exceed 4 inches in the aquarium. The body is greenish brown and is covered with numerous narrow vertical dark bars; in most specimens these number 15.

B. lohachata: the Pakistani loach is a small variety not often seen in this country, and expensive when available; it is a most attractive fish with a greenish yellow body covered with six to nine wide wavy dark bars. Very timid unless kept with other fish in subdued light, and live food must be the main diet.

B. lucas-bahi: the barred loach, another small variety from Thailand, has a grey to brown body with 12-15 dark



Spined loach (*Cobitis toenia*)



Stone loach (*Noemacheilus barbatulus*)

vertical bars, which extend only half way down the body; the lower part of the body, which is much lighter in colour, is covered with numerous black spots.

B. macracantha: the clown loach is undoubtedly the most popular of all the loaches, due to the vivid coloration. The body colour varies between yellow and red, this being governed by age, size and surroundings; there are three very wide black vertical bars, and in some lights these appear navy blue. *B. macracantha* are more free-swimming than most loaches and do better at a slightly lower temperature.

B. sidthimunki: the dwarf loach is a very recent introduction from Thailand and is difficult to obtain in this country. The body shape is a little different from the other *Botia*, the belly being rounded instead of flat; the lower part of the body is silver and the top half black with a row of six large spots along each side; the fins are transparent. A free-swimming variety and less timid than the others.

It is wise to have several *Botia* in the tank, as if kept singly with other species they sometimes annoy the other fishes, whereas when there are two or more this does not happen.

Sucking Loach

The sucking loach (*Gyrinocheilus aymonieri*), from Thailand, has earned itself the name of the Aquarium Housemaid, and I think the general opinion is that it is the best of all scavengers. Its main function is the removal of algae, which it does with the greatest efficiency, even from the growing plants. The mouth is transformed into a large sucking disc, which enables the fish to maintain its hold in fast-flowing currents. The fish has a long tapering body, light brown in colour with darker markings, and reaches a length of about 4 inches.

G. aymonieri are vegetarian and if there are no algae present in the aquarium some form of vegetable food should be given; crushed lettuce is ideal for the purpose. Temperatures around 75°F (24°C) keep this fish happy and slightly alkaline water suits it best.

An unusual loach from south-eastern Asia is the horse-faced or long-nosed loach (*Acanthopis choiichrychus*), similar in shape to *Acanthopis* but with a very pointed head, which when viewed from the side is not at all unlike that of a horse. These fish remain buried in the sand during the daytime with only the head protruding; this makes it very difficult to find and it is quite common for them apparently to disappear for weeks on end. At least some live food is necessary if they are to be kept in good condition; dry food is only eaten as a last resource.

All the fishes mentioned can be termed tropical species and the aquarist having only coldwater aquaria may feel left out of things where loach-like fishes are concerned,

Continued at foot of next page

Tench for the Coldwater Aquarium

TINCA TINCA, to give this fish its formal name, is found in most parts of Europe, Asia Minor and Western Siberia. It attains a maximum length of just over 2 feet, and its body is covered with small scales deeply imbedded in a mucus-coated skin. In general appearance the species is olive-green, darker on the back and much lighter on the underparts. There is a greeny golden sheen on the flanks. The thick-lipped mouth is directed forwards and is adorned with a single pair of barbels.

The sexes are not easy to tell apart, but early in the spring the sides of a large female usually become noticeably distended with eggs. Further, in mature fish the ventral fins of the male grow longer than those of the female.

The tench favours sluggish waters and will flourish in conditions that would quickly kill most other fishes. In point of fact, fine specimens of tench are sometimes taken from smelly pools used for watering cattle, and field ponds, the water of which tends to dwindle to a mere puddle during a prolonged drought. River and canal tench usually congregate where the water is deep and the bottom soft and muddy. But during the summer months they may often be found in the shallows, in close proximity to thick growths of weed, among which they like to pasture and bask in the sun.

The natural food of tench consists in the main of crustaceans, molluscs, worms and tender greenstuff. But in

the aquarium the species will eat almost anything at almost any time of the day, or at odd intervals through the night. In the wild, little if any foraging is done during the coldest days of the winter. Instead, the fish lies in depressions in the mud or sand, or takes up residence in holes under an overhanging bank. There it will stay until milder weather resuscitates its appetite, or the warming sun and longer days informs it of the approach of spring.

Egg-laying among dense carpets of *Callitriche* or *Potamogeton*, favoured spawning plants, begins about April and continues on and off right through the next few months to about the beginning of August. As many as 300,000 eggs may be deposited at a spawning. The eggs hatch out within the space of 8 to 10 days. Spawning will not take place in the aquarium.

Small tench make ideal aquarium pets, for they are not troubled by normal changes in room temperature and never molest other species. The golden tench, or golden schlei, is a variation of the type worth looking for. It has a reddish-yellow back and paler sides which, together with the fins, are usually adorned with dark spots.

Many years ago it was believed that the slime on the body of a tench cured diseases in man and fish. Izaak Walton went so far as to say that the pike respected the medicinal qualities of the tench and refrained from snapping at it. Even today there are people who still refer to the tench as the doctor fish.

FISH DISEASES

Grey Cataract

by R. E. MACDONALD

GREY cataract is a disease of the eye and may be diagnosed by the whitish or opaque appearance of the lens; partial or complete blindness is the final result. It is found mainly in varieties of goldfish and very rarely attacks tropical fishes. Unfortunately the cause of this disease is not yet known so there is little information to offer about the treatment of grey cataract. It does not appear to be contagious or hereditary.

When the disease reaches the stage where both eyes are so badly affected that complete blindness ensues, the obvious thing to do is to kill the fish, for apart from causing injuries to itself by knocking into objects in the aquarium, perhaps with some force if the fish is badly frightened and panics, the fish will also become easy prey for every bully in the tank! With its eyesight gone the fish will also experience difficulty in finding and securing food in the community tank and will probably die within a few weeks from starvation.

A sightless fish may live for quite some time if placed alone in a tank and time is given to its feeding, but apart from sentimental reasons this practice will serve no useful purpose.



Left, normal eye; right, eye with cataract

Loaches in the Aquarium

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but there is one fish which is quite common and fills the bill. This is the spined loach (*Cobitis taenia*), a fish quite common all over Europe and found in many parts of the British Isles. They inhabit shallow running streams where they spend most of the time hiding under stones, but in spite of this they readily adapt themselves to life in the aquarium provided that they are kept in shallow water for a few days at a low temperature and if possible never allowed to rise above 60°F (16°C). They will take all kinds of food but prefer live food.

C. taenia is similar in shape and size to *Acanthophthalmus* but the under side of the body is a pale amber colour and the upper part pale brown; several lines of dark markings run along the body from head to tail. This fish becomes very active when there is a change of weather on the way, and some of the American writers refer to it as the weather fish.

Butterflies of the Pacific

by HUSEIN ROFÉ

AMONG the most delightful fishes which the amateur fisherman can net or purchase from fishermen off the coasts of Hong Kong island are at least four species of Pacific butterfly fishes, all characterised by white and black stripes (and sometimes one or more black spots) on a brilliant yellow or orange base.

I have so far tentatively identified the following: *Chaetodon auriga*, with black spot at the end of the dorsal fin; *Chaetodon fasciatus*, with diagonal lines across the body; *Chaetodon vagabundus*, with a spot at the base of the caudal fin, and another similar one just above it; *Chaetodon lunula*, with a black patch at the base of the caudal fin. Some of the markings of these spots appear to vary so much from the information given in standard handbooks that I am inclined to suspect the markings may change with the growth of the specimens.

All these fishes have pointed snouts, in addition to spikes at the front of the dorsal fin which tend to be raised when they are alarmed and also at the approach of death, though otherwise these are generally folded flat.

The Germans call them *Kaiserfische* or emperor fishes, and both the English and German titles pay tribute to the colourful beauty of these creatures. The Pacific species are, however, unfortunately much more delicate than their West Indies counterparts, and, unless caught very young, are almost certain to die of starvation, since they reject all kinds of live and dried food in most cases, if obtained when over 3 inches long. I have found exceptions, especially when I was lucky enough to obtain a pair of 5 inch specimens together, and it was possibly the feeling of companionship which tempted them to sail rapidly out from their hiding places at the back of the tanks and dive for *Tubifex* worms on the gravel.



Clown fish



Chaetodon fasciatus

Chaetodon fasciatus is among the more difficult types to keep, perhaps as it is among the largest of these varieties, and adapts less willingly to life in a 25 gallon tank. One of mine could not be tempted to eat any food, and kept up its hunger strike for the 2 weeks of its sad existence in various tanks. Strangely enough, the weaker it became, the more restless and constant were its movements, implying a state of increasing panic; right from its capture, it persisted in panting rapidly with a permanently open mouth. It was not purchased under the most auspicious circumstances, though no such beauty was ever bought for less by an aquarist. Like all of this species, I obtained it from a Chinese fisherman. In this case, it was shown to me in a bucket full of the most assorted fishes intended for somebody's dinner-table. I have never heard of anyone having butterflies for lunch, and I don't have to tell you the stomach condition one might be expected to contract as a result. I was asked the equivalent of one U.S. dollar, but the fisherman accepted 9 cents with alacrity! After all, he had no use for it, unlike the dark clown fish (*Amphiprion xanthurus*), which is considered a tasty morsel for the Chinese menu.

The other smaller species mentioned above are often found close to shore, particularly young specimens, which I have frequently caught in the spring, when about an inch long or less. On one occasion I swept up two together in a small aquarium net, and I have even found them in tide pools. These babies offer the best chances of success, and will easily be induced to take not only worms but even to peck at floating pieces of Japanese fish-bread. Although they are said to live only near coral reefs, I know of none in the vicinity of the bays where I have caught them.

Numerous larger specimens, up to about 3 inches long, may be seen gambolling about in some 3 or 4 feet of water. Possibly these varieties swim out to deeper waters as they grow larger, as most butterflies are said to browse on live coral polyps. One such baby apparently fascinated an equally diminutive long-nosed *Chelmon rostratus*, who kept following it around with great interest.

The butterfly fishes belong to the tribe of marine dentists, all of which are characterised by yellow markings of some kind, and which minister to larger fishes by the coral reefs, visited by the latter for the purpose of having their teeth picked. It is said that the patients never molest the little creatures which swim in and out of their jaws with impunity.

It is thought that few butterfly fishes live longer than

about 3 or 4 years in the sea, but it is rare for them to survive even 1 year in a tank. I am inclined to think the best chances of success with the Pacific species lie in keeping at least a pair of them together, in the company of some other small marine fishes which will easily accept both live and dried food. Despite their small snouts, the butterflies may accept new-born guppies, and the example of their companions, coupled with the sense of security given by members of their own kind, help to assure them a longer span of life.

I have kept *Chaetodon octofasciatus*, but omit it in this description, since it is not characterised by yellow markings, and the specimens were imported from the Indian Ocean, not local ones.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

I have a tank with the following fish in it: a dogfish, a catfish, a shubunkin, two fantails and a moor. Recently I have noticed the tails of the goldfish and moor have become frayed and tattered. The fishes appear quite healthy with their dorsals erect, active and are eating well. The tank appears to be in good condition, and I would like to know the reason for the trouble as I don't want it to spread.

The trouble with your fishes is that the fins have been attacked by the catfish. These fish are quite unsuitable for a community tank as they will eat any fish small enough for them to get into their huge gape. Those which are too large to swallow have their tails bitten by the catfish. Stick to varieties of goldfish and you will have no further trouble.

I would like to keep a small pike. What sized tank would I need, would any other food beside live food be suitable and would it be possible to keep more than one in the tank?

You would need a large tank for a young pike as they like a good swimming space. One yearling, about 6 inches long, would be suitable. This would need a 24 in. by 12 in. by 12 in. tank. You must allow for growth as these fish grow quickly if they are fed well and have good conditions. They are very handsome fish and well worth the effort of keeping. As for food, you no doubt know that in the wild they live almost entirely on live foods. Anything moving in the water will be attacked. In captivity you could feed largely on garden worms, but any type of live food would be taken, such as adult *Daphnia*, white worms and *Tubifex*. Small pieces of raw meat might also be given. I do not advise you to keep more than one pike in a tank as if one grows faster than the other it might make a meal of the smaller one.

I have had a common goldfish for the past 19 years. In the last 3 years it has suffered from chronic constipation. Each time the condition gets worse and the dose of Epsom salts used to cure it larger. It has been getting worse lately and the dose has been increased up to human level. Can you suggest a cure and if not how is the best way to destroy it?

I am always rather sceptical about goldfish suffering from constipation. How do you know this is the case? Is it just because you notice droppings hanging from the fish? If so this may be just a sign of recent heavy feeding. If I leave my fish in a tank without feeding them for a few days their droppings become copious and black, hanging from them in lengths up to 3 inches. This is not a sign of constipation, as they have eaten only vegetable matter in the form of algae and soft plants. Stop the salts treatment and feed entirely on garden worms; if the fish does not recover kill it by dashing it on a concrete path or similar hard surface. I know it sounds drastic, but it is sudden and I know of no better way to destroy an ailing fish.

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.

I am contemplating the construction of a waterfall and fountain in my fish pond. If I use polythene tubing to run water through the side of the pond will this be all right or do you think metal tubing will be better?

The polythene tubing should be quite all right for your purpose, better I think than metal. Many metals can be dangerous to fish, especially those containing copper. Modern polythene tubing appears to be almost indestructible under ordinary use.

I have a small calico fantail in my pond which has a white slime on one pectoral fin and this seems to be spreading. What is the treatment and the cause please?

It sounds as if the fish has a slight attack of fungus. This could have been caused by damage, perhaps by a fish louse (*Argulus*). Give the fish a salt bath for a few days (one heaped tablespoonful of salt to a gallon of water). After about 4 days the fish should improve, when the solution can be gradually weakened by the addition of fresh water.

We have a fish tank at school with two large goldfish in it. They are fed with proper fish food but after a time the water gets very cloudy and begins to smell very badly. When we change the water it is better for a time but soon smells as badly again, despite the fact that we used an advertised cure and have no weed in the tank. Can you help please?

The trouble is probably that you have no growing water plants in your tank. These plants use up much of the waste matter coming from the fish. The droppings from two large goldfish which are well fed would soon pollute the water if there are no plants to break up and use some of this matter. I have two tanks beside me as I write, containing fantail goldfish, and they have been set up since 1947, never having been emptied, nor rockwork or plants changed during the whole of that time. They just get a weekly servicing, when about a couple of gallons of water are changed. The water is quite clear, does not smell and the fish are in perfect condition. Put some compost in the base of the tank and some growing water plants. Good kinds for your purpose are *Elodea canadensis*, *Egeria densa* and *Lagarosiphon major*. Do not feed very much until the plants are growing well.

our readers

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



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

A Show Mourned

WITH reference to Mr. Marshall's letter in the April issue of *The Aquarist*, there are a number of factors that need looking at to-day in a different light from that of 10 years ago.

Money is not so easy to come by at the doors of exhibitions these days. H.P. commitments for cars and domestic appliances begin to take cash that was available 10 years ago, and to increase admittance charges to 10s. per head on top of the exhibitors' fees for entries, and add to this the high cost of travelling to the show, would put many aquarists off.

Now the all important question. Where does one park a car or coach at any of the London exhibition halls? This is of major importance to-day and we in Nottingham are negotiating with the local authorities in this matter of parking as there is ground available to accommodate a great number of vehicles.

On the question of how long for a show, Mr. Marshall says a week. I think he will find it won't work like it used to do. We originally planned a 3 days show ourselves, and took another look at the work factor from the exhibitors' point and realised that aquarists cannot take time off as they used to do to stage exhibits at mid-week and travel back again at the close of the show to collect them.

The other important point about a 7 days show is the staffing problem; 3 days or 2 days is manageable but 7 is another matter, and a bigger headache than all the other problems as it is a voluntary service.

Referring to M. D. Cluse's letter (*The Aquarist*, April), the matter of societies banding together, like the Goldfish Society, the Guppy Society etc., is not so easy as these are usually made up of members scattered all over Great Britain and regular meetings are necessary in planning and co-ordinating a show of this size.

I still do not agree that London can be the only focal point for a national show, but would concede that it would be where one would expect a national show from a foreign visitors' point of view; but the aquarist makes or mars its success, and he is the one you are catering for.

W. J. CHRISTIAN,
Show secretary,
Nottingham and
District Aquarists' Society.

I HAVE been reading with great interest the various comments on a "National Fish Show". May I suggest

a subscription membership? You could issue badges and over the year print the names of donors in your wonderful magazine.

I am only too sure that the aquarists of Britain will be only too glad to help to put their interest in the general public's eye. Most firms, like myself, would welcome a national shop window of their goods.

J. P. HAS,
Houghton Regis, Beds.

Mr. Edgar Chapman—a Tribute

WE of the Sheffield and District Aquarist Society would like to add something to the Obituary of our founder member, Mr. Edgar Chapman, published in your May issue.

To us Edgar was an institution, and a kindly, benevolent one at that. Without malice or ill-will he had withstood the rigours of show-judging for many years. The fact that his services were in demand from well south of Sheffield almost to the Scottish border bears ample witness to the high regard in which he was held, both as a judge and as a man. Edgar had well earned this respect. When unable to judge at the Belle Vue Society table show the week before his death Edgar was heard to remark that only once before had he failed to keep a judging appointment. That occasion had also been caused by ill-health. Surely a rare record this!

Edgar seems to have been in at the beginning of most of what is now the foundation of our hobby in the north. It would therefore be a great pity if his unassuming and unpretentious manner allowed us to forget the parts he played long before the great majority of us ever met him or his hobby. He was a founder member of the Federation of Northern Aquarium Societies and served on the council in the capacity of vice-chairman to the end. He was a tireless supporter of the British Aquarists' Festival both in principle and in organisation. There must be many aquarists who knew Edgar by sight if not by name purely by his unflinching appearances at the Exhibition Hall, Belle Vue.

To the beginner in the hobby Edgar was the most approachable person possible. His cheery, helpful manner invited conversation and his boyish vigour was an example to aquarists many years his junior. It was this activity and enthusiasm that made it almost inconceivable that one day he would no longer be with us. Having been in the society longer than anyone else, to all of us Edgar was the heart of the Society. No doubt it was this feeling that

moved the Society to grant him an honorary life vice-presidency on its twenty-first birthday.

Just as he was able to understand the finer points of show judging so also did he understand the finer points of life. He had many friends and no enemies. Rancour he never harboured and if he felt an apology was deserved he gave it readily and without reservation. In all his activities Edgar was ably supported by his wife, a person for whom we all have the highest regard. No one can think of the Society's annual dinners without remembering the verve and good sportsmanship with which they both joined in the proceedings. Their youthfulness always gave lie to their years, and their sense of fun made them delightful to know. So obviously happy was their union that all who know her can have nothing but the deepest sympathy for Mrs. Chapman in her time of loss. We send her our deepest commiseration.

Our regret is that we were not privileged to know Edgar longer than we did. Perhaps it was fitting that only this year he presented the S.A.D.A.S. with a perpetual trophy for its Annual Open Table Show. His name will thus go on for posterity in at least one way. His memory will certainly be with us for many years to come.

R. E. GALLOWAY,
Secretary, Sheffield and
District Aquarist Society.

Marine Aquaria Class

WITH reference to Mr. R. S. Barnes' letter in the March issue of *The Aquarist*, for our last two open shows we have included in our 43 classes one for marine aquaria. The first time there were three entries after a lot of pushing, one of which went foul halfway through

the Show. The last time there was one entry, so to make a better show of the class a couple of members volunteered to collect some anemones etc. on the setting up day, so we had two tanks, all exhibits were put in by club members, and the class will be on the schedule again this year.

We are also going to try a couple of classes for reptiles and amphibians this year. I wonder what support we shall get?

W. T. RYDER,
Show secretary,
Portsmouth Aquarists' Society.

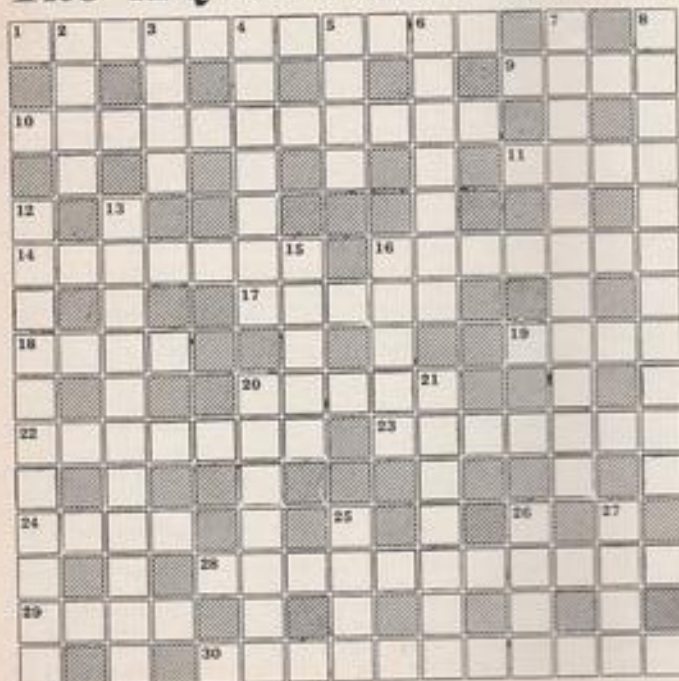
Euglena as Food for Fry

I WAS interested in Barry R. James' article "Algae and the Aquarist", in *The Aquarist* (January).

One particular point is of interest, where he mentioned the use of *Euglena* as food for fry. We have carried out a number of experiments on the digestibility of *Euglena* spp., using a number of species of fish, and in no case have we found that *Euglena* is digested at all. On the contrary, the organisms pass through the gut alive and can emerge after several hours still alive and moving. Experiments on which the periplast was ruptured by mechanical means, e.g. grinding with fine sand, suggest that only ruptured cells are digested. This therefore prompts me to question whether the fry are really living on *Euglena*. Several species of Rotifera have been seen to ingest and digest some of the Euglenineae, and it is just possible that the fry may be living on these. I doubt if any of the cultures used for feeding fry are pure cultures, and it is quite likely that organisms such as Rotifera may be present.

Dr. G. A. PROWSE,
Director, Tropical Fish
Culture Research Institute, Malacca.

The AQUARIST Crossword



Compiled by
L. BRADLEY

CLUES ACROSS

1. *Phenacogrammus interruptus* (5, 6).
9. So the French produce this fat fish (4).
10. *Aphyosemon oerulium* (4, 7).
11. — and bitter (4).
14. Encroached (7).
16. Boast about a medical degree and become pompous (7).
17. Genus of bivalve molluscs found in the Solent (5).
18. Yorkshireman (4).
19. Early mooring tetra? (4).
20. Species of ray found at the ice rink? (5).
22. Specific name of the yellow rainbows (7).
23. Reduce liquids to form of spray (7).
24. Render unfit by use of drugs (4).
28. *Baobab schubertii* (6, 5).
29. Cook (4).
30. Lo! Double bed made up for Royalty (4, 7).

CLUES DOWN

2. Greasy (4).
3. Valley (4).
4. Country gentlemen (7).
5. Pale version of a jump (4).
6. Belief (7).
7. Dwarf gonzami (6, 5).
8. *Chilodactyl punctatus* (11).
12. *Naphis latron* (11).
13. *Cichlasoma bicoloratum* (4, 7).
15. They could be dry, wet or floating (5).
16. The Siamese fighter (5).
20. Nocturnal bird of prey (4, 3).
21. Everlasting (7).
25. I would shorten the French and become lary (4).
26. Surrounds the sun and moon (4).
27. Musical instrument (4).

Solution on page 56

News 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 annual general meeting of the **Isle of Wight A.S.**, saw the completion of eight years in office of the chairman, Mr. R. Davison, who in his report, thanked the stalwarts whose loyalty and support had made his task easier. He welcomed to the office his successor Mr. S. Stevens. Other officers: Vice-chairman, H. Rushoon; treasurer, B. Davison; hon-secretary, R. L. Netten ("Stuffs"), Colwell Road, Totland, I.W.J.; show secretary, H. Roshton. Committee members: Messrs Bradley, Davis, Leppard, Smaet, and Willis. Guest of honour at the dinner was Mr. A. Brydon who until his departure was the Judge. In a brief reply to Mr. Davison, Mr. Brydon expressed his pleasure on being invited and said he hoped to remain in touch with the club and its activities. He then presented the cups and trophies, Challenge Cup (ponies), L. Davis, Best Fish (tropical), A. Parker, Best Fish (Coldwater), E. Davison, Shield Furnished Tank, R. L. Netten, Novice Cup, M. Coates, Tetra Cup, L. Davis, Guppy Cup, S. Stevens. The evening was concluded with a social and dance.

THE twenty-first annual open show of the **Midland Aquarium and Pool Society** will be held at Bingley Hall, Broad Street, Birmingham, 26th-29th August.

To mark this important event in the history of the Society the M.A.P.S. and the Federation of Guppy Breeders' Societies have agreed to stage a joint show. Some 1,300 entries are expected, with many promised from Germany, Holland, Wales and Scotland.

There will be 77 classes for fishes and Plants—furnished aquaria, and society tabernacles. In support there will be trade stands, exhibits, talks and film shows, ponds and fountains.

Visitors and society groups will be most welcome. There is ample parking space for cars and coaches, also a bar and buffet in the Hall which will remain open from midday until 10 p.m. throughout the show.

WINNERS at the annual open show of **Goole and District A.S.** were as follows: Livebearers: 1 and 2, Mr. Fletcher (Bradford); 3, Mr. Peacock (Hull). Characins: 1, Mr. D. Carr (Bradford); 2, Mr. Gray (Thorne); 3, Mr. Sweeting (Thorne). Toothcarps: 1, Mr. Whitlock (Tadcaster); 2, Mr. R. Bean (Goole); 3, Mr. Powell (Thorne). Ras. dan. min.: 1, Mr. Holmes (Don Valley); 2 and 3, Mr. Sweeting (Thorne). Cichlids: 1 and 2, Mr. Mackrill (Goole); 3, Mr. Jackson (Don Valley). Anabantids: 1, Mr. Duckett (Skipton); 2, Mr. Crainiger (Don Valley); 3, Mr. Jackson (Don Valley). Fighters: 1, Mr. Baxter (Tadcaster); 2, Mr. Greenall (Tadcaster); 3, Mr. Whitlock (Tadcaster). Barbs: 1, Mr. A. Firth (Bradford); 2, Mr. Whitlock (Tadcaster); 3, Mr. Smith (Tadcaster). Catfish and Loach: 1, Mr. Holdsworth (Bradford); 2, Mr. Hampton (York); 3, Mr. Gray (Thorne). A.O.V.: 1, Mr. Banks (Goole); 2, Mr. Gabbitts (Thorne); 3, Mr. Machin (Thorne). Breeders Live Bearers: 1, Mr. Hardwick (Thorne); 2, Mr. Duffield (Thorne); 3, Mr. Whitlock (Tadcaster). Breeders Egglayers: 1, Mr. Mackrill (Goole); 2, Mr. Mackrill (Goole); 3, Mr. Baxter (Tadcaster). Coldwater: 1, Mr. Hall (Hull); 2, Mr. Hunt (Goole); 3, Mrs. Rimbald (Tadcaster). Best fish of the show: Mr. Duckett's Gourami gourami with 92 pts. There were 234 entries.

A **TABLE** show held by the **Portsmouth A.S.** for danios and minnows, barbs and rasboras, at the Portsmouth Community Centre, resulted as follows: Danios and minnows: 1, Mr. N. Franklin; 2 and 3, Miss E. Hancock. Barbs: 1, Mr. D. Hancock; 2, Mr. H. Armitage; 3, Mr. D. Fosse. Rasboras: 1, Mr. J. Sillwell; 2 and 3, Mr. D. Fosse.

THE table show, a.v. goldfish, a.v. fancy goldfish, a.v. British freshwater fish, held by **Bradford and District A.S.**, resulted as follows: Goldfish: 1, Master D. Angel, 94 points; 2, J. Burke and K. Sauerthwaite, 91 points; 4, Master D. Angel, 91 points. Freshwater entries: 1, Master D. Angel, 92 points (Rudd); 2, R. McMurray 89 points (Bleak); 3, R. McMurray 85 points (Minnow). Both sections of entries were judged by Mr. R. Flynn (F.B.A.S. Judge) of Northampton.

RESULTS of the **Bradford and District A.S.** open show were as follows: Livebearers: 1, Mr. Derrice (Worktop); 2, Mr. H. Fletcher (Bradford); 3, Mr. I. Hunt (Tyneside). Barbs: 1, Mr. F. Mackrill (Goole); 2, Mr. Nicholls (Osram); 3, Mr. A. Firth (Bradford). Characins: 1, Mr. I. Hunt (Tyneside); 2, Mrs. Brunt (Independent); 3, Mr. Cranwick (Featherstone). Carps and Minnows: 1, Mr. J. Hooper (Bradford); 2, Mr. Nicholls (Osram); 3, Mr. B. Norris (Bradford). Anabantids: 1, Mr. C. Duckett (Skipton); 2, Mr. Greenall (Tadcaster); 3, Mr. C. Holdsworth (Bradford). Fighters: 1, Mr. Baxter (Tadcaster); 2, Mr. Greenall (Tadcaster); 3, Mr. Cranwick (Featherstone). Cichlids: 1, Mr. Derrice (Worktop); 2, Mr. J. Hooper (Bradford); 3, Mr. Cranwick (Featherstone). Catfish and Loach: 1, Mrs. Brunt (Independent); 2, Mr. F. I. H. Brooks (Meresyde); 3, Mr. Honour (Halifax). Toothcarps: 1, Mr. Cranwick (Featherstone); 2, Mr. Faircliff (Tadcaster); 3, Mr. Wilbraham (Osram). A.O.V.: 1, Mr. Hampton (Aireborough); 2, Mr. Chadwick (Aireborough); 3, Mrs. Brunt (Independent). Breeders—Livebearer: 1, Mr. Shore (Osram); 2, Mr. C. Holdsworth (Bradford); 3, Mr. C. R. Wilson (Bradford). Breeders Egglayer: 1, Mr. Mackrill (Goole); 2, Mr. K. Emms (Bradford); 3, Mr. Wilbraham (Osram). Coldwater: 1, Mrs. M. Firth (Bradford); 2, Mr. L. Booth (Bradford); 3, Mrs. Rumbold (Tadcaster). Plants: 1 and 2, Mr. R. Winterton (Bradford); 3, Mr. Wilkinson (Halifax). Best fish in show: Mr. C. Duckett (Skipton). 223 entries were benchied by seventeen Societies and two independent aquarists.

RECENTLY the **Willesden and District A.S.** held the annual tropical show, which marks the end of the current show season. Mr. Ted Jessop who judged the show commented on the large number of exhibits and also on the good quality of fish for a show of this kind. Mr. Eric Large supplied the evening's entertainment in the form of a lecture on "Breeding habits of fish". The results were as follows: Fighters: 1, Mr. B. Rowlands; 2, Mr. D. Smith. Swordtails: 1 and 2, Mr. B. Sullivan; 3, Mrs. V. Dixon; 4, Mrs. D. Smith. Loaches: 1 and 2, Mr. R. Porter. Mollies: 1 and 2, Mr. T. Glass; 3, Mrs. I. Brown; 4, Mr. K. Hobbly. Plants: 1, Mrs. I. Brown; 2 and 4, Mr. D. Smith; 3, Miss D. Williams. Corydoras Cat: 1, Mr. R.

Sanderson; 2, 3 and 4, Mr. D. Smith. A.O.V. Catfish: 1, Mr. T. Glass; 2 and 4, Mr. D. Smith; 3, Mr. R. Porter. Labyrinth: 1, Mr. R. Sanderson; 2, Mr. T. Glass; 3, Mr. D. Smith; 4, Mr. B. Rowlands. Cichlids: 1, Mr. D. Smith; 2, Mr. R. Sanderson; 3 and 4, Mr. R. Porter. Characins: 1 and 2, Mr. T. Glass; 3, Mr. K. Nessall; 4, Master G. Brown. A.O.V. Egglayers: 1, Mr. K. Hobbly; 2, 3 and 4, Mr. D. Smith. Guppies: 1 and 2, Mr. A. Soneilake; 3, Mr. D. Smith; 4, Mrs. I. Brown. Toothcarps: 1 and 2, Mr. T. Glass; 3, Mrs. V. Dixon; 4, Mr. D. Smith. Danios, Rasboras and W.C.M.M.: 1, Mrs. I. Brown; 2, Mr. R. Ing; 3, Mr. D. Smith; 4, Mr. W. Hobbs. Barbs: 1, Mr. R. Porter; 2, Mr. R. Sanderson; 3, Mrs. V. Dixon; 4, Mr. T. Glass. Special award card for best fish in the show, won by Mr. R. Porter with an Indian barb. Jackson Cup for best fish in the show, won by Mr. R. Porter with his Indian barb. Leveridge Points Cup (tropical): This was won by Mr. R. Porter with 123 points, in spite of a last "do or die" challenge by Mr. D. Smith. This cup is awarded to the member who has gained most points from fish shown through the year. Leveridge Points Cup (coldwater) won by Mr. Bob Esson with 37 points, with Mr. S. Wingrove second.

AT the April meeting of the **Hford and District A. & P.S.** held at St. Laurence's Church Hall, Barkingside, Hford, the main event of the evening was an auction between members, of surplus fish, plants and equipment, a per centage of the proceeds being allocated to club funds.

The monthly table show was for breeding pairs, any variety of egglayers or livebearers. Among the entries were a fine pair of veiltail goldfish, and pairs of liberty mollies, kissing gouramis and red platies. The winners were: Egglayers: 1, Mr. Bergh; 2 and 4, Mr. Brill; 3, Mr. Price. Livebearers: 1, Mr. Brill; 2, Mr. Price; 3 and 4, Mr. Seebing. Meetings are held at St. Laurence's Church, Barkingside and anyone interested in fishkeeping can be assured of a warm welcome. The meetings are held on the second Monday evening of each month, and further details may be obtained from the secretary, Mr. R. Ruth, 13, Dunfield Road, Dagenham.

THE results of the open show held by the **Nelson A.S.** were as follows: Guppies: 1, Mr. Emmot (Earby); 2, Mr. Edmondson (Nelson); 3, Mr. Eden (Barnoldswick). Swordtails and platies: 1, Mr. Crook (Blackpool); 2, Mr. Slater (Barnoldswick); 3, Mr. Ashworth (Osram). Mollies: 1, Mr. Whitney (Accrington); 2, Mr. Edmondson (Nelson); 3, Mrs. Crick (Nelson). Characins (large): 1, Mr. Stammer (Meresyde); 2, Mr. Poole (Meresyde); 3, Mr. Richards (Nelson). Characins (small): 1, Mr. Lewis (Burnley); 2, Mr. Edmondson (Nelson); 3, Mr. Rukon (Nelson). Barbs (small): 1 and 3, Mrs. Crick (Nelson); 2, Mr. Lewis (Burnley). Barbs (large): 1, Mr. Mulla (Meresyde); 2, Mr. Helm (Nelson); 3, Mr. Bickett (Earby). Anabantids: 1, Mrs. Crick (Nelson); 2, Mr. Campbell (Bury); 3, Mr. Myerscough (Accrington). Fighters: 1, Mr. Thornall (Meresyde); 2, Mr. Helm (Nelson); 3, Mr. Cort (Meresyde). Catfish: 1, Mr. Bickett (Earby); 2, Mr. Cort (Meresyde); 3, Mr. Richards (Nelson). Loaches: 1, Mr. Helm (Nelson); 2, Mr. Shaw (Osram); 3, Mr. Edmondson (Nelson). Cichlids (small): 1, Mr. Richards (Nelson); 2, Mr. Scamper (Meresyde); 3, Mr. Bibby (Accrington). Cichlids (large): 1 and 3, Mr. Myerscough (Accrington); 2, Mr. Singleton (Nelson). Cyprinodontids: 1 and 3, Mr. Ingham (Accrington); 2, Mrs. Crick (Nelson). Rasboras and danios: 1, Mrs. Crick (Nelson); 2, Mr. Boden (Nelson); 3, Mr. Ashworth (Osram). Sharks: 1, Mr. Nicholls (Osram); 2, Mrs. Crick (Nelson); 3, Mr. Stephenson (Burnley). Breeders Livebearers: 1, Mr. Shaw (Osram); 2, Mr. Richards (Nelson); 3, Mr. Thomas (Burnley). Breeders egglayers: 1, Mr. Ingham (Accrington); 2, Mr. Wilbraham (Osram); 3, Mr. Schofield (Nelson). A.O.V. tropical: 1, Mr. Shaw (Osram); 2, Mr. Beck (Meresyde); 3, Mr. Myerscough (Ac-

crington). Any variety cobbwater: 1, Mr. Livesey (Hackburn); 2 and 3, Mr. Isherwood (Accrington). The best fish in the show award was won by Mr. Stumper with a large characin. There were 202 entries, all first class fish.

The Bedford and District A.S. were pleased to welcome members of the Dunstable and District A.S. on the occasion of the last monthly meeting. The whole evening was devoted to a film show given by Mr. Mason-Smith of Cambridge and the following films were shown to a full house: "Tropical Aquarium Fishes"; "The Clawed Toad"; "Blue Gouramis"; "Malindi" (film of East African coral reefs); "Siamese Fighters"; "Hawaiian Mouth-Breeders"; "Stick Insects"; "Praying Mantis" and to finish, "Safari to Tree Tops" (an exciting film on African wild life at close quarters). The evening closed with Mr. J. Burke (the society chairman) thanking Mr. Mason-Smith for a first class show.

The result of the **Freelance A.S.** club show for characina, was as follows: 1 and 3, Mr. B. Mumford (Meyrin); 2, Mr. B. Prior (Rosa-cum).

At the April meeting of the **Yeovil and District A.S.**, the chairman, Mr. Stanley Langdon, gave an interesting talk on the "Techniques of Breeding Fish", from his own experiences, which was much appreciated by members present.

The annual inter-club Show between Yeovil and Taunton aquarist societies, held at Taunton resulted in a further win for Yeovil who retain the trophy. The final results were Yeovil, 9 points (first in coldwater, first, second and third in tropical), Taunton, 3 points. Fourteen members made the trip and enjoyed a pleasant evening.

The annual show of the **East London Aquarists and Pondkeepers Association** will be held on the 19th September.

The open classes will be as follows: All breeders classes, home propagated plants, individual furnished aquaria, and the big attraction this year, the "Southern Counties Club Furnished Aquaria Championship". A trophy has been kindly donated by Mr. Arnold of "I've Got Millions" fame. Will all individuals and clubs interested in competing please write to P. Knight, Show Secretary, 48, Halfdene Road, East Ham, London, E.6.

The **Hartlepool A.S.** open show will be held in The Labour Hall, Park Road, West Hartlepool, on 13th to 16th August inclusive. Fish to be benched Thursday the 13th and Friday the 14th before 10 a.m. Entry Forms are available from show secretary, Mr. Raymond Way, 8, Forth Grove, Oulton Manor, West Hartlepool.

The **Harwich and District A.S.** held their first annual general meeting recently, under the chairmanship of Mr. A. Mulder. The hon. secretary, Mr. D. F. Margrove, gave a report of the club's activities through the year, during which period there have been several lectures to the members by Mr. Hunwick of Colchester. The officers for the year are as follows: Chairman, Mr. J. Farthing; vice-chairman, Mr. D. Whitehouse; treasurer, Mr. P. West; secretary, Mr. D. F. Margrove; librarian, Mr. A. Mulder.

The society would be grateful for any hints that other clubs can give and would welcome any new members. Please contact Mr. D. F. Margrove, Hon. Secretary, 758, Main Road, Dovecourt, Essex.

The date and venue for the **Leeds and District A.S.** annual open week show have been fixed for 13th-19th September at the Trinity Church Hall, Leeds. Details can be obtained from Mr. E. Benn, 6, Compton Road, Leeds 9. At the May meeting a very interesting and amusing talk was given by Mr. D. Lees, entitled "Aquascapes" and a great deal of interest was created by the speaker in this comparatively new field of the hobby. The results of the table show held were as follows:

Plants: 1, Mr. A. Redman; 2, Mr. J. Moss; 3, Mr. D. Easonson. Egglayers (pairs): 1, Mr. Macfretidge; 2, Mr. J. Moss; 3, Mr. H. Jackson. Novice prize: Mr. Bailey. Livebearers: 1 and 3, Mr. Fletcher (Bradford); 2, Mr. Raine (Morden). Barbs (large): 1, Mr. R. Hampson (Leeds); 2 and 3, Mr. I. Hunt (Tyneside). Tooth Carps: 1, Mr. Machin (Thorne); 2, Mr. Whitlock (Tadcaster); 3, Mr. R. Hampson (Leeds). 2, Mr. Gabbittas (Thorne); 3, Mr. Duffield (Thorp). Characins (large): 1, Mr. Hampson (Leeds); 2, Mr. I. Hunt (Tyneside); 3, Mr. Gabbittas (Thorne). Coldwater: 1 and 2, Mrs. Rumbold (Tadcaster); 3, Mr. Machin (Thorne). Breeders (livebearers): 1, Mr. T. Cherry (Skipton); 2, Mr. C. Holdsworth (Bradford); 3, Mr. Duffield (Thorne). Breeders (egglayers): 1, Mr. Emsw (Bradford); 2, Mr. Wells (Thorne); 3, Mr. Baxter (Tadcaster). Cichlids: 1, Mr. Mother-sill (Hedon); 2, Mr. R. Bean (Goole); 3, Mr. I. Hunt (Tyneside). Anabantids: 1, Mr. Duckett (Skipton); 2, Mr. J. Gray (Thorne); 3, Mr. Gabbittas (Thorne). Catfish and Loach: 1, Mr. C. R. Wilson (Bradford); 2, Mr. C. Holdsworth (Bradford); 3, Mr. R. Hampson (Leeds). A.O.V.: 1 and 3, Mr. I. Hunt (Tyneside); 2, Mr. Chadwick (Aireborough). Fighters: 1, Mr. Baxter (Tadcaster); 2, Mr. Whitlock (Tadcaster); 3, Mr. Greenall (Tadcaster). Carps and Minnows: 1, Mr. Machin (Thorne); 2, Mr. C. Wilson (Bradford); 3, Mr. R. Hampson (Leeds). Barbs (small): 1, Mr. Kirk (Thorne); 2, Mr. Duffield (Thorne); 3, Mr. R. Hampson (Leeds). Best in the show: Mr. Duckett.

The **Willesden and District A.S.** held a table show for guppies recently and also had the pleasure of welcoming to the meeting, Mr. George Phillips, founder member of the club and one of the leading experts on guppies. He kindly agreed to judge the show and later gave a Lecture on "Guppy Management". Mr. Phillips who is 82 years young and still an active fish keeper had plenty of advice for the up-and-coming guppy enthusiasts, who were more than eager to ask questions. Results of the show were as follows: Male guppy class: 1 and 2, Mr. A. Stonelake (Delta); 3, Mr. A. Stonelake (Farrall); 4, Mrs. I. Brown (Delta). Female guppy class: 1, Mr. R. Sherwin (Grey); 2, Mr. R. Eason (Golden); 3 and 4, Mrs. I. Brown (Grey).

NEW SOCIETIES

The formation of a new society has been announced from Sittingbourne. This will be known as the **Sittingbourne and District A.S.** The officials to date are as follows: Chairman: Mr. A. Gibson; Treasurer: Mr. W. Lee; publicity officer: Mr. P. Jones. The secretary is Mr. P. J. Burton, 27, Northwood Drive, Sittingbourne, Kent.

The **Witham and District A.S.** held its first meeting on Wednesday, 13th May, for the purpose of electing its officers. The following were elected: Mr. D. Moulton, chairman; Mr. D. Willett, 25, Armond Road, Witham, Essex, secretary; Mr. R. S. Baldwin, Mr. J. Shakeshaft, and Mr. D. Wells, on the committee. It was decided at the meeting that the annual subscription would be 10/- and half price for junior members.

FROM Swindon we understand that the **Swindon and District New A.S.** has been formed. The present officers are Mr. R. Whitall, Chairman; Mr. E. R. J. Gardner, Secretary, 88, Lenton Drive, Walcott, Swindon, Wilts. Mr. B. H. Card, treasurer. The secretary would welcome any enquiries from other societies or intending new members. Old members of a previous society are also advised to contact the secretary for new details.

The results of the recent successful annual show of the **Sheffield and District A.S.** were as follows: Guppies: 1, J. Mitchell (Sheffield); 2, E. Robinson; 3, P. Brammer (Workshop Fishkeepers). Swordtails: 1 and Class, R. Dyson (Mansfield); 2, I. Purdy (Nott. Trop);

3, G. Murgatroyd (Halifax). Plants: 1, J. Robertson (Tyneside); 2, W. Sibson (Workshop); 3, R. Galloway (Sheffield). Mollies: 1, J. Ferguson (Ashton); 2, I. Hunt (Sunderland); 3, I. Hunt (Sunderland). Small characina: 1, H. Crossland (Sheffield); 2, J. Lindley; 3, W. Bratford (Sheffield). Large characins: 1 and Class, D. Dyer (Nott. Trop); 2, I. Hunt (Sunderland); 3, E. Smith (Nott. and Dist). Small cichlids: 1, A. Leakes (Nott. Trop); 2, D. Dyer (Nott. Trop); 3, M. Lindley. Large cichlids: 1 and class, I. Mitchell (Sheffield); 2, A. Leakes (Nott. Trop); 3, R. Martin (Mansfield). Small barbs: 1 and Class, J. Hudson (Sheffield); 2, R. Crofts (Chapelton); 3, W. Taaffe (Sheffield). Large barbs: 1, J. Wooley (Tadcaster Regent); 2 and 3, I. Hunt (Sunderland). Egg-Laying Tooth-Carps: 1, L. Tye (Workshop); 2 and 3, R. Galloway (Sheffield). Carps and Minnows: 1 and 3, M. Miles (Derby Regent); 2, B. Smith (Nott. Trop). Fighters: 1, R. Martin (Mansfield); 2, R. Galloway (Sheffield); 3, W. Eccles (Workshop). Labyrinth: 1, R. Galloway (Sheffield); 2, H. Cox (Nott. Trop); 3, J. Robertson (Tyneside). Danios and Rasboras: 1, M. Lindley; 2, W. Bratford (Sheffield); 3, K. Riley. Breeders Livebearers: 1, H. Crossland (Sheffield); 2, M. Lindley; 3, I. Bullock (Nott. and Dist). Breeders Egglayers: 1 and Class, J. Turner (Ashton); 2, H. Cox (Nott. Trop); 3, K. Gibson (Sheffield). A.O.V.: 1 and 2, I. Hunt (Sunderland); 3, B. Smith (Nott. Trop). Best fish in show, Marbled Cichlid class: J. Mitchell (Sheffield).

A table-show of fishes was held by **The Layne Aquarists** recently. Entries were judged by Mr. Eric Smart of Windermere. Prizes were awarded as follows: Egglayers Single: 1, J. Whalley (Penguin); 2, D. Swenden (Kribbenst); 3, D. James (Red-tailed black shark). Livebearers: 1, J. Mills (Green Saffin Mollie); 2, D. James (Moon Ptery). Egglayers Pairs: 1, E. Riley (Rosy-octra); 2, J. Sallis (Serpae-tetra). The table-show was followed by a talk from Mr. Smart on "Keeping a Strain True". Mr. D. James, the society chairman described present progress at Morecambe's Marine Land due to open 9th June.

MEMBERS of the **Hastings and Boxhill A.S.** were given a most entertaining talk on "Marine Aquaria" by Mr. Giuseppe of the P.B.A.S. at their last meeting. He first explained how to set up a salt water tank, then described how to feed and care for the various fascinating creatures which may be kept. These included the octopus, hermit crabs, snappers, and many others, some of which can be collected from our own seashore. Members were able to examine live specimens of sea anemones, brine shrimp, blenny and even a small piece of living coral. Other exhibits were many kinds of sea shell and decorative pieces of coral, which can be used to furnish the marine tank.

Crossword Solution

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

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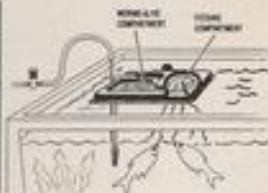
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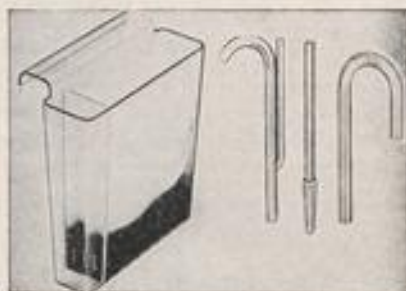
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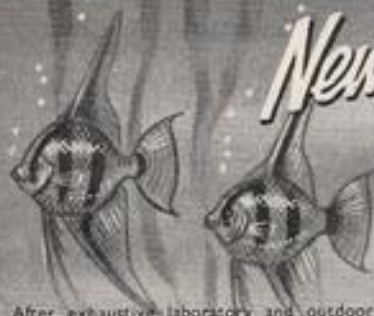
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15, Well Hall Parade, Eltham, S.E.9
Telephone: Eltham 5859
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The Jaynor Organisation
(James North (London) Ltd.)
316, Lee High Road, Lewisham, S.E.13
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Petfish
554, Garratt Lane, S.W.17
Telephone: Lakeside 2805
Closed Wednesday. R. C.T.P.A.A. 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.

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The Goldfish Bowl
9, East Avenue, Cowley Road,
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STAFFORDSHIRE

Walsall & Wolverhampton Aquatics
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147, Hoersley Fields, Wolverhampton
Telephone: Walsall 21783 and Wolverhampton 24147
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SURREY

Aquapets
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Tolworth
Telephone: Elmbridge 0678
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Thameside Tropicals and The Pet Shop
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Walton-on-Thames
Telephone: Walton 24076 R. C.T.P.A.A. R.&A.

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Dowding, Conrad A.
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Lewes
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Preston Aquarium
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Regency Aquaria (Prop. R. A. Bassett)
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Telephone: Coventry 72772
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Birmingham
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P. N. Greening
176, Blackness Road, Dundee, Co. Angus
Telephone: Dundee 66409
E.C.D. Wednesday. R. C.T.P.A.A.

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