

The Aquarist

and Pondkeeper

MAY, 1961



MONTHLY
Vol. XXVI No. 2

TWO SHILLINGS

WALTER R. SMITH

*For Complete Tropical
and Coldwater Aquaria*

80 VARIETIES OF TROPICAL AND
COLDWATER FISH USUALLY IN STOCK

70 Chromium Plated Tanks of Fish on view

DISTRIBUTOR OF—

- McLYNN'S FISH FOOD
- ES-ES PRODUCTS
ELECTRICAL AND GENERAL
- WATER LIFE, AQUARIST AND DITCHFIELD'S
BOOKLETS
- REJECTORS, SEDIJETS, AND MAINTENANCE
EQUIPMENT
- PROCTER AND FAIRY PUMPS
- CONSTAT THERMOSTATS
- AQUAFERN AND COLORFERN PRODUCTS
- HYFLO PRODUCTS
- LIVERINE PRODUCTS
- STOKES FOUNTAINS
- WINDMILL PRODUCTS
- ROCK, GRAVEL, AND STRATA ROCK WORK
STUDENTS' MICROSCOPES
- ALL FEEDING AND AERATING APPLIANCES
- MERCURY, SPIRIT AND DUMPY THERMO-
METERS
- STUART TURNER WATER PUMPS
- ZOUBEKO PUMPS
- VI-FIT FISH FOOD
- BLACK MAGIC GLAZING COMPOUND
- GLASTICON '303' AQUARIUM SEALER

Angle Iron Aquariums, Frames and Stands a speciality
Despatched in crates charged at 30/- each, returnable
half carriage paid. Odd sizes made to order, painted
any colour, guaranteed square and free from welds.
Stove enamelled Corner Bows, Bow Fronts and
Wrought Iron Units.

20 PAGE PRICE LIST FREE ON APPLICATION

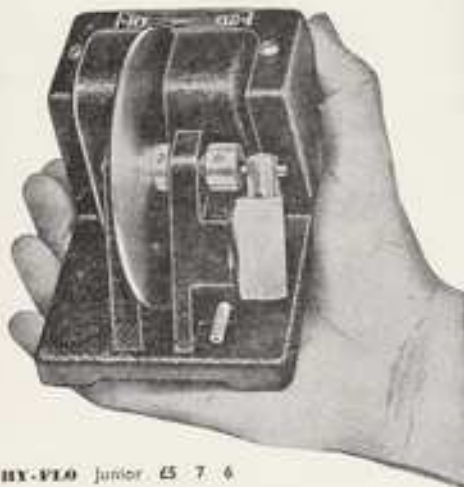
WALTER R. SMITH

39 Tib Street and 16 Whittle Street
(off Tib Street)

Manchester 4

Telephone: Deansgate 2961 and 2920

To meet the ever increasing demand for
HY-FLO pumps we have moved to larger
premises and our Products are available from
your usual suppliers or in the event of difficulty
please write direct.



HY-FLO Junior £5 7 6

Consumes approx. 15 watts. Without interference to radio
or television. Will operate 7 or 8 diffusers or one inside-
type filter and 2 or 3 diffusers.

Also available:

Model "A" Single-piston HY-FLO AIR PUMP supplying
approx. 12 diffusers or 2 filters (inside-type) and 2 or 3
diffusers. Price: £6 10 0

Model "B" Twin-piston HY-FLO AIR PUMP supplying
approx. 24 diffusers or 4 filters (inside-type) and 4 diffusers.
Price: £8 5 0

Model "C" Twin-piston HY-FLO AIR PUMP, fitted with
suction and delivery connections, for the fish breeder and
laboratory use. Price: £12 10 0

Illustrated folders available upon request

ALL HY-FLO AIR PUMPS

ARE SILENT IN OPERATION, SELF-STARTING
GUARANTEED 1 YEAR (from the date of purchase)

MEDCALF BROS. LTD.

Cranborne Road, Potters Bar, Middlesex

Telephone: Potters Bar 58925

"LIQUIFRY"

THE FIRST FOOD (IN LIQUID FORM) FOR BABY FISHES.

The World's most recommended fry food.

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

"LIQUIFRY" No. 1 (red tube) for *oglyzer* fry produces natural infusoria in the minimum possible time.

"LIQUIFRY" No. 2 (green tube) ideal for young livebearers.

Price 2s. 6d. per tube



"PLEASURE"

The Super Food for all Aquarium Fishes



Packed in handy plastic drums price 1s. 9d.

Please send stamped addressed envelope (3d. stamp) for Free Sample.

"YOUR FISH WILL THRIVE ON PLEASURE"

"LIQUITOX"

The proven specific treatment for FUNGUS and FINROT

Colourless—effective—does not harm the plants.

Standard size 1s. 9d. per carton of 2 capsules.

Breeders pack 6s. 9d. for 12 capsules.

Each capsule will treat 4 gallons of aquarium water.



LIQUIFRY QUALITY PRODUCTS are available through your dealer or post free from

**THE LIQUIFRY COMPANY LTD., CHURCH STREET,
DORKING, SURREY**

TROWER'S

the best fish foods . . .



For nutriment value and palatability start feeding today on these hygienically packed fish foods—foods for all varieties of tropical and coldwater fish, blended by the fish specialists; in colourful drums. Available from all aquaria and pet shops.

TROWER & CO. LTD. Established 1876
TREMADOC ROAD, CLAPHAM,
LONDON, S.W.4



ANT EGGS Drums 6d.



TROPICAL FISH FOOD Drums 6d.



GRANULAR FISH FOOD Drums 6d. & 1s.



SHRIMP FISH FOOD Drums 6d.



DRIED DAPHNIA Drums 6d. & 1s.

PARAMOUNT AQUARIUM

FOR THE RARE AND UNUSUAL TROPICAL FISH,
THOUSANDS OF TOP QUALITY FISH IN FIRST CLASS
CONDITION ALWAYS AVAILABLE. ALL THE LATEST
EQUIPMENT. LIVE FOODS AVAILABLE AT ALL TIMES

ANOTHER WONDERFUL
FREE OFFER

Tropical Fish to the
value of this token
given *entirely free*
with all orders of 85/- or over, just write
or call.

10/-

Aquarium Equipment

HEATERS 25-150w	
Paramount	7/6
Little Wizard	9/6
ES-ES Stella	7/6
Postage 1/-	

THERMOSTATS	
"UNO"	
Popular	10/-
Popular with Neon	12/6
Submersible	15/-
"ES-ES" Major	15/-
"PROCKTER"	
Outside Star	36/-
"CONSTAT"	
Junior	21/-
Heavy Duty	33/-
Postage 1/-	

VIBRATOR AERATORS	
Metronome Model	21/-
Metronome M4	24/-
Brookers Hurricane	30/-
Prockter Heavy Duty	43/-
Airstrom	25/-
Fairy	27/6
"ES-ES" Model D Pump	38/-
Postage 1/-	

PISTON PUMPS	
Hy-Bi Junior	187/6
Hy-Bi "A"	138/-
Hy-Bi "B"	165/-
Hy-Bi "C"	258/-

ANOTHER CONSIGNMENT
JUST ARRIVED!

NEW ITALIAN DESIGNED
AQUARIUM STANDS
TUBULAR STEEL
BEAUTIFULLY MADE TO
TAKE ONE 24" AND ONE
18" AQUARIUM HAMMER
FINISH IN GOLD

65/-

Including Packing and Carriage

AMERICAN TERRAPINS
Baby Red-Eared Green Terrapin,
new to keep, 7/6 each or 12/6 pair
(Carriage 1/6)

SPECIAL TERRAPIN BOWL
Complete with food, sand, plants
and instructions ... 6/11
Postage 1/- extra

WORLD FAMOUS
WARDLEY'S
New food from U.S.A.
Special pack. Seven different brands of food, i.e. crab,
beef, fish, liver, shrimp, vitamin eggs, wheat germ,
beetroot, greens & food trap.
Also HI-GLOW = 30 Colour Compound Food 4/6-6/00

TROPICAL FISHES

BELOW IS A SELECTION OF FISH FROM OUR
STOCK OF OVER 50 VARIETIES

COMMON VARIETIES	
Angels	2/6
Widows	2/6
Swordtails	2/6
Royal Barb	2/6
Harlequins	2/6
Tiger Barb	2/6
Blossoms	2/6
Flames	2/6
Plates	2/6
White Clouds	2/6
Neons	3/6
Zebra Danios	2/6
Parrot Danios	2/6
Kribia-Eels	3/6
Nigger Barb	3/6
Guppies	1/6
Shadblow Barb	3/6
Red Stripe	4/6
Gloeflight	4/6
Bloodline	3/6
Penguins	4/6
Australian Rainbows	4/6
X-ray Tetra	2/6
Red Eye Tetra	4/6
Cherry Barb	4/6
Bumble Bee Goby	4/6
Red Play	3/6
Nannostomus	2/6
Amatula	4/6
Antonia Catfish	6/6
Dwarf Gourami	4/-

RAKER FISH

Elkhorn Tetras	25/-
Red Tailed Sharks	25/-
Silver Sharks	35/-
Black Sharks	15/-
Clown Loach	12/6 15/-
Tiger Loach	7/6
Large Anemonefish	25/-
Phantom Tetras	7/6
Black Angels	10/6
Tongans Cats	8/6
Silver Hatchery	7/6
Neon Anemonefish	4/6
Panda's Clown	4/6
Cyprinodontes	
Owling Catfish	12/6
Melonhead Cats	7/6
Blind Cave Fish	6/6
Malaysian Angels	10/6
Baby Scares	10/- 12/6
Dwarf Ignored snail	4/-

MANY MORE IN STOCK

ADD 12/6 EXTRA FOR CARRIAGE PACKING AND TELEGRAM
All fish sent by fast passenger train

COLDWATER SELECTION

★ ALL FINE HEALTHY FISH ★

Small Goldfish 1/- each or 10/- dozen; Medium Size Goldfish 1/6 each
or 15/- dozen; Large Pairs of Breeding Goldfish 6" 8" long 20/- pair;
Selected Breeding Pairs of Shubunkins 6" 8" long 30/- pair; Golden Orfe
3" 4" 5/- each; Golden Tench 2" 3" 4/6 each.

(Add 7/6 extra for carriage and container)

PARAMOUNT AQUARIUM

95 HAVERSTOCK HILL, HAMPSTEAD, LONDON, N.W.3 Phone Primrose 1842

THE AMAZING NEW JUNIOR HY-FLO



£5-7-6

THE ONLY COMPLETELY
SILENT AIR PUMP.
FULLY GUARANTEED

Burke Swords	5/6
Last Angels	4/6
Puffer Fishes	6/6

South American Neons
1/- each or 30/- doz.
Wonderful Colours

IT'S NEW
E & A
ADULT WHITE WORM CULTURE

Dear Reader,

In the fish room of the expert or the single tank of the amateur correct feeding is saving the lives of countless tropical and coldwater fish.

We believe that to retain stocks of fish with full vim, vigour and vitality, live food is essential.

LIVE WHITE WORM IS THE MASTER FOOD

Do you know it is now possible to obtain E & A Adult White Worm Culture, you can buy this culture with confidence, knowing that years of breeding and research have gone into producing a top quality vigorous and healthy strain, so why not breed your own live food? (Breeding instructions given).

It's easy, it's interesting, it's cheap with E & A Adult White Worm Culture. If you do not wish to breed them, you can feed this live culture direct to your stocks of fish.

From all Aquarist and Pet Stores 2/6d. per culture or send 2/9d. P.O. to . . .

E & A CULTURE LABORATORY

389/91 GREEN STREET, UPTON PARK, LONDON E.13

Telephone: Grange Road 1061.

TRADE ENQUIRIES INVITED

Exotic Gems from the World Over

AS IMPORTERS WITH WORLD WIDE CONTACTS WE ARE ABLE TO OFFER A CONTINUOUSLY CHANGING SELECTION OF HEALTHY TROPICALS FROM ALMOST EVERY PART OF THE GLOBE. BROWSING ROUND OUR WELL APPOINTED SHOW-ROOM IS AN EXPERIENCE TO BE REMEMBERED, FOR HERE YOU WILL SEE THE LARGEST VARIETY OF TROPICAL FISHES IN LONDON.

Hours of Business

Monday to Saturday
9 a.m. to 6 p.m.
Wednesday 9 a.m. to 1 p.m.

YOU WILL ALSO SEE A COMPLETE RANGE OF TANKS, STANDS AND LIGHT HOODS, INCLUDING THE VERY POPULAR BOW-FRONTED BOOKCASE AQUARIA, AND THE BEAUTIFUL 'ARBE' BOW-FRONTED PERSPEX AQUARIA. SPECIAL SIZED AQUARIA MADE AND INSTALLED TO ORDER.

OWEN REID'S

TRADE SUPPLIED

SEND NOW FOR WEEKLY PRICE LIST.

12 SPRING BRIDGE ROAD, EALING BROADWAY
LONDON, W.5.

Phone: EALING 3259

THE PERFECT AQUARIUM

The best food and cleanliness are all you need

"SUREGROW"

STANDARD 1/3 & 2/6

FRY 1/6

"INFUSION" 1/6

Replaces Infusoria. An immediate food for newly hatched fry.

has proved the **BEST FOOD**, the only food containing green Vegetable (Chlorophyll) so necessary for fish. Now packed in useful plastic plant pots. This food has been used by many fishkeepers for many years. It was made by men who knew what fish needed—men who kept not a few fish but thousands—men whose judgment had to be right and which over the years has been proved right. **REMEMBER**—here is a product which has been based on years of experience and research. "SUREGROW" is the result and the only dry food used.

For cleanliness, the treatment of velvet, certain fungus and infections, to control bad gas and bacteria in aquariums caused by excreta or feeding etc. they developed—

Keep a bottle in hand, instant cure for velvet, perfect antiseptic for washing "Tubifex Worms" or washing aquariums, filters, etc.

How many times have your fish been at the top and started dying off for no apparent reason? This is usually due to bacteria being present from even slight overfeeding or decaying matter.

"DISEASOLVE"

2/6

With dropper measure

FIVE DROPS PER GALLON OF WATER, IN YOUR AQUARIUM WEEKLY WILL CONTROL BACTERIA AND GIVE YOU A PERFECT AQUARIUM.

From all good Aquarists suppliers — Trade enquiries from

SOUTH COAST AQUATIC NURSERIES LTD.

Old Bath Road, Colnbrook, Slough, Bucks — Telephone Colnbrook 2673

HYKRO

AQUATIC APPLIANCES AND FOODS

Hykro Hi Fi Filters in 6 Sizes (2 per pack). A strong workmanlike job, which will give you Crystal-Clear Tanks.

Hykro De Luxus Corner Filters: Gravel Filters. Feeding Rings (including the 4 in one) Worm Feeders. Four in one Tank Scrapers.

The 3-way Gang Valve. New to England, but very popular in U.S.A. and all over the world—does away with use of Tees and Clamps. Very efficient and compact.

Floating Worm Feeder with Lower Tray—prevents worms falling to tank bottom.

Hykro Foods. Coldwater Fish Food. Will keep your fish in tip-top condition, also relished by many tropicals. Including the 1/2 lb. pack.

Hykro Natura. Contains 9 Dried Live Foods, and will feed the rarest tropicals (or coldwater fish).
Hykro Flakes. These are known the world over. Used extensively by exhibitors to get that extra condition and bring out the full beauty of fish.

Please note in response to many enquiries.—We do not supply these appliances and foods direct. They are obtainable at all the best shops, but in case of difficulty drop us a line and S.A.E. and we will put you in touch with your nearest stockist. Retailers not carrying full stocks—Drop a line and we will put you in touch with nearest wholesalers and supply descriptive lists.

Two of our Specialities are American Green Turtles and Madagascar Lace Leaf Bulbs and Plants, grown here.

JOE GRASSBY, F.R.H.S.

THE HYKRO DEPOT MORBERLEY NEAR KNUTSFORD CHESHIRE

Phone Moberley 3272

**NOW
IS THE
TIME
TO STOCK
YOUR
PONDS**

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 6" 30/- 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.

FANCY COLDWATER—BLACK MOORS and ORANDAS 3" 8/6

Can and Carriage 7/6 extra

SPECIAL ALGAE-EATING POND SNAILS

6d. each. 5/- dozen

SPECIAL PLANT OFFER

30 Coldwater Plants for your aquarium 10/-.

30 Coldwater Plants for your pond 10/- (including Water Lily 15/-)

WATER LILIES		MARGINAL PLANTS		COLDWATER PLANTS			
	each		each		each		each
Cream	7/6	Water Iris	1/6	Elodea Densa	6d.	Vallisneria	6d.
Pink	10/6	Baldrashes	1/6	Elodea Crisp	6d.	Hygrophila	6d.
Red	12/6	Kingcups	1/6	Willowmoss	1/-	Cryptocoryne	
Yellow	12/6	12 Assorted		Moneywort	6d.	Beckaria	2/-
		Marginal Plants 12/6		Ludwigia	6d.	Willow	2/6
		Good strong plants		Hairgrass	1/-	Cordata	2/6
				Myriophyllum	6d.	Harefilius	2/6
				Hornwort	6d.	Anacharis	1/-

Water Hyacinths. Beautiful Floating Plants 7/6 each

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

STOKES FOUNTAINS FOR YOUR PONDS £7:19:6 each

QUEENSBOROUGH FISHERIES

111 GOLDHAWK ROAD,
 SHEPHERD'S BUSH, W.12
 (1/2 mile from Shepherd's Bush Market)
 Telephone: SHE 2230
 Hours of Business: MON. to SAT.—
 9 a.m.-6.30 p.m. THURS. 9 a.m.-4 p.m.

QUEENSBOROUGH HOUSE,
 Ferry Lane, Hythe End,
 Wraysbury, Nr. Staines
 Telephone: WRAYSBU 1885

Sundays only from 10 a.m. to 4 p.m.

16 PICTON PLACE,
 LONDON, W.1
 (1/2 mile from Selfridges)

Telephone: WELBECK 0428
 Hours of Business: MON. to FRI.—
 9.30 a.m.-4 p.m. SAT. 9.30 a.m.-3 p.m.



We are specialists in aquarium installations. All sizes and styles to customers' own specifications carried out. We have many displays set up in our showrooms. Why not call and let us quote.

BOW-FRONTED AQUARIUMS

48in. x 10in. x 15in. bow-fronted aquarium with wrought iron bookcase stand £28.0/9 complete.
36in. x 12in. x 15in. bow-fronted aquarium with wrought iron bookcase stand £38.10/- complete.
Available in pump bronze, black & gold, and cream.

WITH PLAIN STAND

Each 48 x 10 x 15	£28.0/9
36 x 12 x 15	£38.10/0
24 x 12 x 15	£11.10/0

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

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

REMEDIES, etc.

Breadth White Spot Cure	2/-
Vivo Salts	2/-
Sea Salt	1/6
Claras (Not by post)	2/6
Liquinas	1/9
Dissolvaive	2/6
Breadth Fertilising Tablets	1/8

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

STANDS

18 x 10 x 36	35/-
24 x 12 x 36	43/-
30 x 12 x 36	50/-
36 x 12 x 36	58/-

LIVE FOODS

White Shrimp Eggs	2/6 and 4/6
Cultures of White Worms	2/6
Micro Worms	2/6
Tubifex worms	1/8 and 2/9

THERMOSTATS

Control External	33/-
Control New External Type OK	21/-

UNO

On/Off	18/-
On/Off	15/-
On/Off "Popular"	16/-
"Protek" with neon indicator	12/6
"Ea-Ea" Sentinel	26/6

FILTERS

"Windmill" Plastic Outside Filter	each 19/6
"Windmill" Biological Aquarium Filter 12in.	15/-
"Windmill" Regent Inside Filter	18/-
Copnar Filter	4/-
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

AERATORS & PISTON PUMPS

Mistmas	each 21/-
"Ea-Ea" Fairy	24/-
Sea	36/-
Zoochka Total	75/-
Hy-Ao Junior	107/6
Hy-Ao "A"	130/-
Hy-Ao "B"	165/-
Hy-Ao "C"	250/-

HEATERS

"QUEENSBOROUGH" 27w. 40w. 60w. 75w. 100w. 120w. 150w.	each 18/-
"Ea-Ea" Flashlight Heaters (100w. and 150w.)	18/-
"Ea-Ea" Thermostatic Heaters 100w. and 150w.	38/-
Heater Holders	2/-

FOODS

Queensborough Tropical Fish Food	1/6 and 2/6
Exotic Fishes	1/6
Hydro Flakes	1/-
Bristles	1/6 and 2/6
Breadth Frypan	1/6
Breadth Breads 6d and 1/6	1/6
Liquidly Nuts 1 and 2	2/6
Infants	2/6
Elms	2/- and 4/6
Intergrow	1/3 and 2/6
(Fry Food)	1/6
Dried Daphnia 1/2 Oz	6d
Ground Shrimp 1/2 Oz	1/-
Fish Food 1/2 pail	1/6
Auto Eggs	in 7 sizes 6d.

THERMOMETERS

Mercury	each 6/6
Gem	4/6
Plastic Backed	4/6
Spink Blue Gem	5/-
"Ea-Ea" Dummy	8/6

SPECIAL OFFERS

30 Assorted Tropical Plants 10/-
Algae Eating Snails 6d. each

BOOKS

Guide to Tropical Fishkeeping (J. H. P. Bryner)	36/6
Diseases of Fishes (C. Van Dolin)	15/6
All about Tropical Fish (McLennan)	7/-
Encyclopedia of Tropical Fishes (H. H. Asah and W. Yerkes)	42/6
Electricity in your Aquarium (L. Warburton)	8/6

(Books post free)

SEDIMENT REMOVERS

"Windmill" Air Spongers	each 18/-
"Windmill" Hand Removers	15/-
Fishball	3/-
Fishball Tubing	7d. 0
Hand Type Plastic	4/6

BACKING PAPERS

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

FULLY-GLAZED AQUARIUMS

Pressed Steel	Aluminium	Angle Iron
12 x 8 x 8 18/6	12 x 8 x 8 18/6	24 x 12 x 12 20/- 21/- 24/-
14 x 8 x 8 15/6	14 x 8 x 8 15/6	24 x 12 x 15 55/- 21/- 24/-
16 x 8 x 8 15/-	16 x 8 x 8 15/-	30 x 12 x 15 70/- 27/6 -
18 x 10 x 10 22/6 15/-	18 x 10 x 10 22/6 15/-	36 x 12 x 15 85/- 32/6 -

Carriage extra. Glass, China and Shells sent at purchaser's own risk.

PLANTS

Fuller's Spirals	each 6d.
Golden Dots	6d.
Hyacinths	6d.
Swags	6d.
Sagittaria nana	6d.
Sagittaria nana	6d.
Valeriana torte	6d.
Ludwigia	9d.
Myriophyllum	9d.
Water Clover	1/6
Spotted Vetch	2/6 and 5/-
Cryptocoryne Beckettii	2/-
- IFWalt	2/6 and 5/-
- Cordata	2/6 and 5/-
- Haerdtiana	2/- and 4/-
Water Hyacinth	2/6
Giant Hyacinth	2/6
Giant Sagittaria	2/6
Najas Maritima	2/6
Amazon Chain Sword	2/6
Duckweed	per portion 6d.
Bladderwort	per portion 1/-
Rotic	per portion 1/-

SUNDRIES

Breeding Trap	15/-
Agass Sponges	2/-
Agass Traps	3/6
Suckers Knob or Shank	4d.
- Double	4d.
Planting Sticks	1/3
Razor Scraper	2/-
Dry Floating Rings	1/-
- Squares	1/6
Hydro (4 in. out) Feeder	2/3
Worm Floating Feeders	1/6
Worm Cradle with Sucker	1/8
"Windmill" Diffuser Stones	1/- to 1/8
"T" Piece	1/-
Arrotor Tubing	1/6
Rubber	1/6
Plastic	6d.
4 Way Piece	1/-
Clamps	1/6
Carbon	1/6
Glass Wood	1/2
Nylon Wood	1/6
Coloflex	1/6
Coloured Clips	1/6
Arbolic Glazing Compound—24 lb.	4/3

Post 1/9 extra

QUEENSBOROUGH FISHERIES

111 GOLDHAWK ROAD, SHEPHERD'S BUSH, W.12 (1 minute from Shepherd's Bush Station)
Telephone: 5482 1730
Hours of Business: MON. to SAT. 9 a.m. - 4.30 p.m. THURS. 9 a.m. - 1 p.m.

QUEENSBOROUGH HOUSE, Ferry Lane, Hythe End, Wraybury, N.Y. Staines
Telephone: WRAYSBURY 2885
Sundays only from 10 a.m. to 4 p.m.

16 PICTON PLACE, LONDON, W.1 (1 minute from Selfridges)
Telephone: WELBECK 0438
Hours of Business: MON. to FRI. 9.30 a.m. - 4 p.m. SAT. 9.30 a.m. - 3 p.m.

The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



THE BUTTS, HALF ACRE, BRENTFORD,
MIDDLESEX

Telephone: ISLeworth 6221

PUBLISHED MONTHLY
SUBSCRIPTION RATES

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

QUERIES

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

Correspondence with intending contributors is welcomed.

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

The Editor accepts no responsibility for views expressed by contributors.

Contents

	Page
Editorial	23
The Home Aquarium for Marine Tropicals	24
The Armchair Aquarist	26
The Wall Lizard—A Case History	27
A Society Publication	28
Three-Spined Stickleback	29
The Garden Pond in May	30
Cacti in the Fish House	30
The Wrestlers	31
Dig those Crazy Cats!	31
Aquarist's Notebook	32
The Story of Beatrice	33
A Fish House in the House	34
Tropical Aquarium Queries	35
Coldwater Fish-keeping Queries	36
Our Readers Write	37
Clearing a Green Pond	38
Aquarist Crossword	38
News from Aquarists' Societies	39

VOL. XXVI No. 2

1961

Editorial

A NEWS paragraph headed "Super Aquarium," announcing the start of work on a new aquarium at Wellington, New Zealand, acts as a sad reminder that in Britain we still await the foundation of a spectacular modern public aquarium to serve as a national exhibit. The New Zealand aquarium is reported to be costing £60,000 and has been designed by a British aquarist, Mr. A. Fraser-Brunner, who is director of the Singapore Aquarium and who was a former editor of *The Aquarist*. In addition to the display of coldwater and tropical aquaria, both freshwater and marine, pools for seals and penguins and a large pool for sharks or dolphins, with underwater observation facilities, are to be included. There is unquestionably a public interest in living animal exhibitions of all kinds; as well as this aspect, that of the popular appeal of a National Aquarium, such an institution would also be used by scientists working in aquatic biology and would be seen as a proper acknowledgement of the status of British biology in the eyes of other countries. However, to anyone who has followed the progress and fates of the schemes for the foundation of a National Theatre over three decades or so, the chance of a National Aquarium being seriously considered would seem to be a slim one.

NEXT month there is being staged in Manchester the largest show of fishes and aquaria to be seen in this country during the year. We refer to the always popular British Aquarists' Festival, organised by the Federation of Northern Aquarium Societies, at Belle Vue Zoological Gardens on 10th and 11th June. In recent years the event has been arranged for the autumn, but there has been an enthusiastic response to the earlier dates fixed for this year and the B.A.F. promises to be an occasion not to be missed. We hope that readers will take the opportunity of visiting the stand of *The Aquarist*, where Mr. A. Boarder, authority on coldwater fishes, pond-keeping and cacti, will be available to give advice.

The Home Aquarium for Marine Tropicals

by JOHN BOURSOT

Continued from the April Issue

IN time green and blue-green algae will gradually appear on the stones, coral heads and sides of the new marine aquarium. They help enormously in keeping the water crystal-clear, and in decreasing nitrates and phosphates in the water from as much as 225 milligrams/gallon to nil. Larger, more imposing, green algae will flourish in the tropical marine tank if given sufficient sunlight. However, too much light produces a vigorous growth of microscopic algae which soon coat the fronds of the larger plants and may even turn the water green.

Two large decorative species of algae for the tropical tank are *Gasteria crassifolia* and merman's shaving brush (*Pencilia capitata*). The former sends up 3 to 5 inch blades of a most pleasing green from runners lying on the surface of the sand or gravel and anchored to it by "hold-fasts." The latter resembles a bright-green shaving brush. Dealers in marine tropicals usually supply this species with a ball of sand or other particles adhering to the holdfast. This is a disadvantage, as more often than not tiny marine animals living in the ball of sand die under aquarium conditions and soon cause trouble. If the sand is removed the algae still needs to be planted in sand too deep for practical aquarium purposes.

Encrusting calcareous algae are a strong feature of tropical seas, and some do well in a marine tank when lit by a 40 watt bulb burning for 9 hours a day. A species of *Rhodochoron*, appearing as liver-coloured smears and patches upon stones, and a species of *Coralina* growing in rose or rusty patches on stones, have lived in my sea urchin tank for years. These algae cannot be pried loose and then be planted elsewhere. They must be lifted from the sea together with the stone on which they are growing. It is a wise plan to brush or rub the stones in sea water with the palms of the hands in order to rinse off possible enemies. Such treatment will not dislodge the algae. Should one of these encrusting forms die in the aquarium, and lose its colour in consequence, the interstices in the remaining white calcareous patch may become the home of blue-green algae, which lend a most delightful emerald colour to the part of the patch they inhabit.

The beginner will do well to encourage the growth of algae in the aquarium as an excellent aid to keeping the water pure and sweet. These will appear in time of their own accord, but I urge abstention from the larger algae until experience has been gained, when some red algae may be introduced with success, as they need less light than the green varieties.

It is repeatedly stated, perhaps more for reasons of logic than for any based on actual observation, that sea water aquaria should never be topped up with sea water but with fresh water, as the dissolved salts do not evaporate and by the addition of more sea water the tank will become increasingly salty. In an un-aerated tank this practice is a sound one, but invariably to top up with fresh water where aeration is used is highly questionable. Salt does escape from an aerated tank in various ways. Coatings of salt will form

on the cover glass around the holes for the admission of filter and air tubes, and spread down the outside of the tank in thin sheets. But this is not all. Owing to the fact that (in my tanks) each cover glass has a small round hole through the centre to lift it by, salt also forms on the electric light bulb and wires over the tank, and in damp weather a clammy feeling betrays the presence of deliquescent salt on the neighbouring sockets and woodwork on the wall behind. Hence I often top up with sea water, and think it unwise to assert dogmatically that marine aquaria should always be topped up with fresh water.

However, the prudent aquarist does not guess; he uses a hydrometer. In order to support marine life sea water must be of a certain density; not lower than 1.020 nor higher than 1.030. Dealers supply these hydrometers, which are sometimes conveniently marked off in red from 1.020 to 1.025 for Atlantic fishes, and in blue from 1.025 to 1.030 for Pacific fishes. In the aquarium, however, fishes do best in the lower range (say) from 1.020 to 1.023, though a degree either way makes no difference. Low salinity reduces the unnecessarily high rate of metabolism induced by high salinity. The fishes do better; they eat less, void less waste material and tend to be less pugnacious.

The temperature for marine tropicals should range from 75° to 85° F, although 1° or 2° above or below is of no consequence. A slight drop of 1° or 2° during the night is as healthy for marine tropicals as it is for freshwater tropicals. Avoid abrupt changes. Some fishes seem indifferent to the lower range of temperature; others, such as the clown fish, definitely prefer a temperature of 80-84° F.

The rule of never stocking a freshwater tank to its full carrying capacity holds true for marine tanks. A few brilliant, perky fishes in prime condition are a joy never to be forgotten. But overcrowded, drab, listless, disease-ridden fishes are shameful and burdensome. In my tanks, all understocked, aerators and filters are turned off from 12 p.m. to 3 p.m., and again from about 11 p.m. to about 2 a.m. The fishes no doubt find it a pleasant change during the day, and more restful and quieter at night. Lights are turned on at 9 a.m. and turned off at 7 p.m. regardless of the entreaties of visitors. At night tanks should be protected from other lights in the room by heavy black cloth wrapped round the glass sides. No light should shine in from the top.

Marine tropicals grow fast and have good appetites, and quickly learn to accept food from the fingers. Two or three feedings a day will suffice, but extreme care must be exercised in removing all uneaten food particles from the tank after feeding is over, especially if no algae of any sort are present. In order to obviate any danger allow four or five or six particles of food (according to the number of fishes) to sink through the water at a time, and carefully watch the face of each one. As interest of the fishes wanes reduce the number to one at a time in order to make it easier to keep track of its progress to the bottom and remove it before it becomes hard to see against the sand. Then stop feeding.

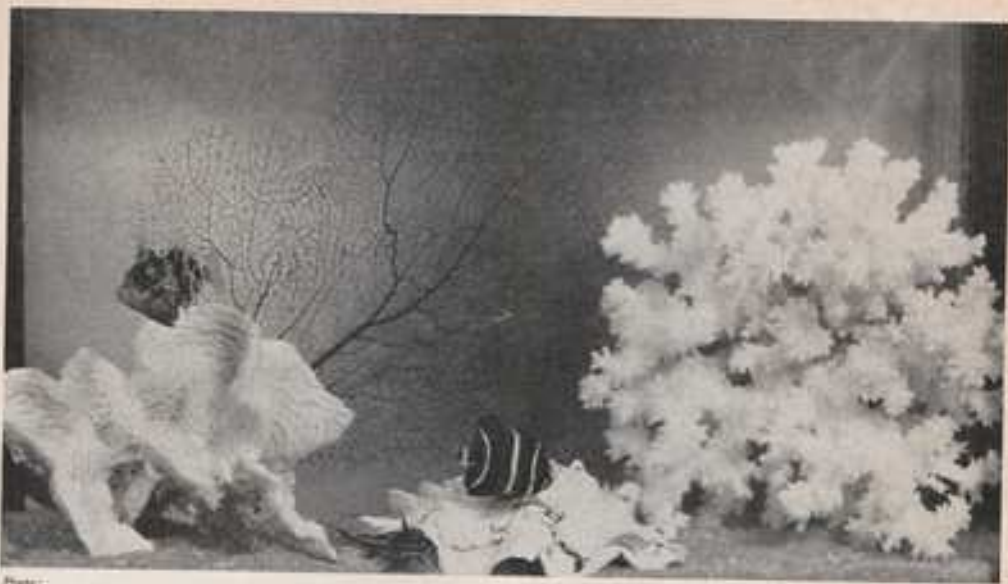


Photo:

Robert Longworth

Marine tropical fish in this coral setting are (left to right) the trigger fish, the cobby or top-hat and the black angel fish

This method may seem finicky and wearisome, but complete control is afforded from start to finish, and the quantity eaten by each fish is readily observed. Then, when feeding is over and the glass cover has been replaced, the aquarist will feel delightfully reassured that there is no unclean food left behind to pollute the water. If, however, small showers of food are administered haphazardly some of the particles will inevitably reach the bottom or be driven among the stones by the swiftness of the fishes.

Food for most marine tropicals suitable for the aquarium is the usual kind: brine shrimp, *Tadpole*, white worms, earthworms, *Daphnia*, seaweeds, prepared foods, freshwater shrimps (*Gammarus*), uncooked porridge, oats, lettuce, crab, shrimp, heart and liver. The last four should be washed free of their juices before feeding. Bloodworms are accepted by some fishes, though mosquito larvae are usually refused by all. There seems to be little appreciation for insects of any sort.

In addition to the usual foods baby guppies are relished by the blue and gold fairy basslet, the golden-striped bass and the squirrel fishes. The curious and hardy Sargasso fish feeds readily and almost exclusively on other fishes, although they may be practically as large as itself. Upon becoming accustomed to its surroundings it will take whole dead shrimps from the end of a toothpick. Clown fish and sea horses will occasionally eat tiny guppies. Earthworm is relished by most of the commoner coral fishes, and the various species of tank like dog-biscuit, Opossum shrimps (*Myia* sp.) when available are a delicacy for all fishes large enough to eat them. In a state of nature the beautiful marine angel fish are partly vegetarian, but in the aquarium they learn to take raw beef, heart, liver, shrimp and earthworm. These foods should be washed before feeding. But strips of lettuce are always eagerly pulled down from the surface when they are sufficiently narrow to be swallowed.

Cleanliness in the marine tank is of prime importance.

It keeps nitrogenous compounds at a low concentration and the fishes in excellent colour. With careful feeding a weekly siphoning should be enough. I siphon off my marine tanks no oftener than once every 2 or 3 months. The siphoned-off water should be filtered through filter paper set in a funnel. A bottomless and lidless tin resting securely on two stout supports laid across the top of another container will serve to hold the funnel upright. The filtered water is then tested for temperature, and if no drop has occurred it may be gently poured back into the tank. Should the temperature have fallen it must be brought up to that of the tank before being put back. If a large funnel is used with a correspondingly large sheet of filter paper it is wise to line the former first with plastic netting to give additional support to the latter; the filter paper will be less likely to tear when the water is poured down upon it. A small patch of clean white linen between the tip of the filter paper and the netting will make things doubly safe. It should be noted that no metal except stainless steel must come in contact with the sea water. Although water is not rendered harmful to fishes by coming in contact with plain iron in receptacles with chipped enamel, such receptacles should be washed under the tap after use in order to avoid needless corrosion.

The need for constantly changing the water in the marine tank is no greater than it is for the freshwater tank. Sea water in a healthy, well-administered, aerated and filtered tank will remain perfectly wholesome for months and even for a year or longer. Beware of even a partial change; it may put the fishes temporarily off their food, although upon regaining their appetite they seem to have benefited. Personal experience shows that marine tanks are like freshwater tanks in that the less you tamper with them the better and safer they are. But when a change is necessary the new water must be of the same temperature as that of the tank.

Please turn to page 26

The Armchair Aquarist

by L. R. BRIGHTWELL

WHEN Sir Richard Owen gave his blessing to Brighton's original great effort he said that an Aquarium could be a major education factor. And ever since, any Aquarium that can claim to be something better than a mere wild-fish show, either issues an informative guide book or appends a Museum, to show the many phases of aquatic life, such as metamorphoses, which cannot be shown in tanks.

To touch on a more worthwhile matter. Every imaginative aquarist must have longed to see the world Aquariums, now in some instances showing a breadth of vision that would have amazed Phillip Henry Gosse, the father of them all. Television does indeed give us glimpses of some of these. But the crowded programmes we now enjoy cannot permit more than glimpses, and for many of us they are all too tantalising. But how to see more without a banking account of a size that few of us possess? A next best experiment I have embarked upon with great success is the armchair method. Write for the Guide Book.

As a result my modest library now shows one shelf packed with these little brochures, and some amount to the dignity of tomes, a most generous repayment for the modest outlay of stamps. One of my favourites, a fairly recent acquisition, is that of Madras. It is most beautifully illustrated with line drawings by a native artist, a vast improvement on most photographs, for the still photograph of aquatic life is often too smudgy and impressionistic to be of any value on movement and detail. Coloured photographs are even worse.

The Madras Aquarium was the outcome of a Museum and the Guide Book was written by the late James Hornell, who will be remembered by his fine volume on the Sacred Chank of India. Hornell was, some 50 or more years ago, a partner of another remarkable man, Joseph Sineel, with whom he set up an Aquarium and Marine Biological Station at St. Helier, Jersey, in the Channel Islands. Then, when travel by air was yet a dream, the sea journey proved altogether too much for most intending students, and its passing is most regrettable. Hornell's second venture at Madras is now a magnificent monument, sponsored by the Madras Board of Fisheries.

The Guide is full of fascinating sidelights on Aquarium-keeping in the tropics. For instance, it makes a great feature of sea snakes, some extremely venomous, and it is surprising to learn that these active and voracious reptiles are much hampered by growths of acorn barnacles. However, each slough rids them of these pests. Another unique feature is that of the toad fish, a near relative to our own species but with a "lure" that takes the form of a little wheel, which by oscillations seems to be in constant movement. The fish's colouring harmonises perfectly with every station taken up amidst the constantly changing panoramas of most varied seaweeds.

Owing to the great heat of the day, the Aquarium is very heavily visited at night, and one day of the week is specially reserved for women. Amongst the fishes, prominent are the file fishes, well known for their flesh containing poisonous alkali, the poison being most virulent amongst the more brightly coloured species. The file fish is very rarely found on our shores. One that called last year near me at Portloe,



Toad fish (*Antonarius hispidus*), an angler with its own "lure" (illustration adopted from the Madras Aquarium Guide)

according to Couch was known at the same place in 1887.

My Guide Books cover the widest range, from Norway to the tanks of Honolulu. The most sumptuous guides are those of Chicago and Naples. The John Shedd Aquarium at Chicago has its own train, literally an Aquarium on wheels, which tours a wide range of sea ports, picking up desired exhibits as it goes. The Naples Guide is quite a natural history book, packed with information. New York even issues special guides, and one well worth writing for is a well-illustrated brochure on the porpoise in captivity. The porpoise in question is really the bottle-nosed dolphin (*Tiopsis truncatus*), very frequently beached along our south coast. Whilst in Sussex I acquired one weighing 200 lbs., about the weight of an average man. The brain weighed just 18½ ounces, about one and a third the weight of a human brain, and as heavy and richly convoluted as the brain of a chimpanzee.

To the aquarist really out to learn all he can about his pet hobby there are side by side with these illuminating Guides the list of specimens for sale—alive or dead. Who, for example, wants to buy the blood of the great spider crab, *Maja squinado*, at so much per litre? Or who has hankerings after the trilobite stage of the so-called "king crab"? All these things and many others are in the growing archives of my Armchair Aquarium-visiting-by-post Library.

Marine Tropicals

(continued from page 25)

I find that a slight variation of a degree or two in the salinity is of no consequence if the quantity of water to be changed is small in proportion to the total amount in the tank. When putting new water into a tank I do so by siphoning it into the stream of rising air bubbles, or by sprinkling it evenly over the surface from the end of the siphon. The inhabitants of the tank are thus saved a too abrupt encounter with the new water.

(To be continued)

The Wall Lizard— A CASE HISTORY by J. S. COOPER

FOR 5 years I have made observations on the wall lizard (*Lacerta muralis*) in an outdoor vivarium, and their activities have been the subject of a paper in the *British Journal of Herpetology* (vol. 2, no. 7). There seems to be rising interest in European lizards, and a number of people have written of releasing various species in their gardens. The following account is an example of the complex and interesting behaviour of the wall lizard.

In April, 1957, two male and two female wall lizards of the Italian variety *Lacerta muralis bruggenowii* were obtained. During the month of May, however, they all escaped from the vivarium, for I had not realised that their climbing ability was even greater than that of the common variety of *Lacerta muralis*. Although the four escaped at different times, all took up residence on a garage roof, a hundred yards away, where they remained throughout the season, according to the frequent reports from neighbours.

In August, 1958, one of the males was accidentally recaptured when a sudden storm washed it through the down-pipe of a greenhouse into a bucket of water. He was put back into the vivarium, but after a month, again mysteriously disappeared.

In the spring of 1959 the lizards were again reported on the garage roof and, on 12th May, a cat killed a female lizard containing six eggs which would soon have been laid. This gravid female was doubtless less quick-moving on account of her weight and more observable owing to the tendency of gravid lizards to bask in the sun.

In July, 1959, a large male was seen climbing a trellis in a garden several hundred yards from my own. Knowing that it had come from my vivarium, the owner of the garden made efforts to catch the lizard, but it did not surprise me to learn that he had failed, for the lizards are unbelievably swift.

On 29th August, 1959, a friend and myself were feeding the lizards in the vivarium when we again saw a large male at close quarters. He was nosing the glass walls of the vivarium as if trying to get in, possibly attracted by the food being dropped. But before I could devise a means of catching him, he darted into a crown of rhubarb and disappeared.

On 7th May, 1960, while feeding the lizards at mid-day, I was astonished to see, once again, a large male nosing around the vivarium and challenging the other males inside the glass, with his neck arched and puffed-out in the characteristic "threat posture." I remained motionless near a corner of the vivarium and watched the lizard trying to find a way by which to reach the other males. He

climbed the nearby walls, looking for a "jumping-off" point from which to reach the frame of the vivarium. At last, having found nothing suitable, he climbed on to my shoe, scrambled up the leg of my trousers and, having gained sufficient height, leapt on to the corner of the vivarium. Running across the covering net, he looked down at the other lizards and again adopted the threat posture. Finally, as if unable to contain his anger any longer, he dived down through the net and engaged in furious combat with another male, doubtless oblivious of the fact that, in doing so, he had caused his recapture. In this remarkable way, he again came into my possession after 3 full years at liberty.

I naturally assumed that there was no other survivor of the two pairs originally lost. But on 30th May a neighbour reported that a lizard of interesting description had been seen in her garden. On the next morning, as I was about to leave my garden, I caught sight of a lizard's head peeping out from a hole in the wall, unmistakably another male of the same variety and of exceptionally fine size. Needless to say, I was unable to catch him, and on 15th June I was sorry to find his body on the garden path, killed, no doubt, by a cat.

How easily could my recaptured male have suffered a similar fate, if he had not regained the safety of the vivarium. That the two lizards had survived for so long is remarkable. Apart from the natural hazards of three hibernations, and the difficulty of finding food, they had avoided the many predatory animals, including cats, which have a great liking for lizards. The many children and passing traffic had also failed to put an end to them. Furthermore, both had attained a fine size and were in splendid condition.

What caused them to remain voluntarily in the district for so long? They had always been reported as being close to human habitation, and the greatest distance travelled from my own garden was a matter of 400 yards. For much of their time at liberty they had certainly remained in my garden and a few adjacent ones. Doubtless the many stone walls with deep holes had been an attraction (for "wall" lizards are well-named) and probably served as their hibernaculum. Is it possible that they could sense the presence of the other lizards inside the vivaria, particularly in the breeding season? Food would be unlikely to attract them unless they were close enough to see it being dropped.

The demeanour of the male which returned to the vivarium seemed to indicate that he was anxious to gain access to the other males in order to fight them, having approached closely enough to see them through the glass.

On the day after "my" male had returned to the vivarium, another male and a female of the same variety (recently purchased) were placed with him. At once the two males began to fight, but the new one, being the smaller, was soon defeated and on 10th May he was found dead, bearing the marks of a violent struggle.

Having removed all opposition "my" male pursued the female. He had already been seen to mate with her on 8th May, and further matings were observed on 22nd, 28th and 29th May. By 5th June the female was becoming plump and taking every opportunity to bask in the sun.

Many of the European lizards become very tame in captivity and will take food from the hand, but the Italian wall lizard never becomes sufficiently tame to do this. To overcome the feeding difficulty, freshly killed mealworms, spiders, earwigs and flies were placed in a dish and left in the vivarium in the morning. The food had invariably gone by the evening and, occasionally, the lizards were seen furtively taking something from the dish.

On 18th June I noticed that the female was refusing food,



A newly hatched Italian wall lizard photographed on a sixpenny piece



This mole Italian wall lizard returned to vivarium life after 3 years of freedom

a sign that egg-laying is imminent. The next morning, at 11.30 a.m., she retired under a flat stone and emerged at 4.30 p.m. characteristically thin, hungry and thirsty. Careful digging under the stone revealed four soft-shelled eggs at a depth of 7 centimetres from the surface. They were whitish and oval, with equal poles, and measured 10 millimetres by 6 millimetres.

Previous experience had shown that the eggs of wall lizards will not hatch without artificial heat, and they were therefore buried in a small box of soil and incubated at 80° F by day and not below 60° F at night.

The male loses interest in the gravid female, but as soon as the eggs have been laid, attempts to mate are resumed. Mating was in fact observed on 19th June, a few minutes after the eggs had been laid. A second clutch of five eggs was laid on 23rd July in the same site as the first, and these were also removed for incubation.

The eggs of the first clutch hatched on 3rd and 4th August and after 44 to 45 days of incubation. The second clutch hatched on 12th September after 51 days of incubation. All the young are doing well in a heated indoor vivarium, feeding on small spiders and young mealworms. It is my hope that both generations of lizards will continue to thrive and provide further information.

There are two small colonies of common wall lizards in Surrey, which were introduced there over 20 years ago and are said to breed regularly. My own experiences with these lizards in captivity have indicated that the hatching of the eggs is the only "weak link" in the chain of their life cycle in our climate. But the incubation period of the Italian wall lizard seems to be shorter than that of the common wall lizard, and this would certainly favour the success of the "Italians" in this country.

It appears possible that this beautiful and wholly beneficial creature could become established here.

A Society Publication—by H. J. VOSPER

TWO main difficulties face societies wishing to publish some kind of magazine: firstly, the lack of interesting copy and secondly, insufficient funds to cover printing or duplicating a limited number of copies for circulation within an individual society. It is suggested that neither of these two problems need stand in the way, provided that a member is willing to act as editor and that access to a typewriter is possible. The latter proviso, a typewriter, is mentioned as a hand-written magazine might be considered too futile.

If a society exists at all it is because it does something interesting; members hear talks, hold table shows, make visits and so on. These various proceedings can be used to provide interesting material for a publication, suitably entitled "Proceedings." Each meeting can be briefly reported, mentioning the high-lights such as table-show results, details of special fishes on view, special facts and other interesting information. Complete talks, perhaps written up from notes made by the editor at the time or from notes provided by the speaker (if he cannot be persuaded to write an article), form the main bulk of the publication, together with items culled from the aquarist world at large and with luck something from the pens of individual members.

The typing of material is done shortly after the meeting concerned, being retained until either a suitable amount of material is available or until a suitable moment such as the end of a quarter. Each collection of material forms a "number," to be added to former numbers to make a yearly volume. In this way is produced an ever-growing magazine which not only records, in detail, the activities of the society but also provides a useful source of information to those absent from particular meetings and to newer members.

As each page is typed, two or three carbon copies are made and treated in the same way as the original. Stapled between cardboard covers and with a list of the "reading-

circle" members on the front, the "Proceedings" are ready for circulation. If one member is made responsible for ensuring that every member of his "circle" sees the "Proceedings" and that individuals do not delay too long before passing the copy along to the next on the list, it will take some of the load off the shoulders of the editor. As a new number becomes available the copies are called in and the fresh issue is added, or each number can be treated as a separate entity. Reading circles have been an accepted system for many years, among such groups as the London Natural History Society, for instance. And what is a public library but a vast "reading circle"?

The Beckley and District Breeders Circle last year introduced this system in lieu of their Newsletter (held in abeyance, though not through lack of material). The first two numbers of volume 1 provided 30 pages of matter, excluding two Editorials, list of contents and the index of subjects.

This group is perhaps fortunate in having members who are willing to produce articles, in having breeding reports which can be written up and so on, but even if reduced to publishing only those happenings and subjects of ordinary meeting nights there would still have been 22 pages of material, after but 3 months of the year had past.

Obviously the system is not perfect, for it is much better if all members have their own copies, but it does provide a forum of sorts. There will be some articles, such as breeding reports, which some members would like to have as permanent records, and this problem can be overcome by the sale of "separates"—typed copies which are charged for; a suitable sum will prevent the too un-necessary requests.

It should perhaps be emphasised that the "Proceedings" are not simply the minutes of a meeting, for business is but briefly mentioned and matter concerning fishes is much more detailed.

Three-Spined Stickleback

(*Gasterosteus aculeatus*)

by A. BOARDER

IT would be safe to say that thousands of aquarists started their interest in the hobby of fish-keeping by catching and trying to keep the humble stickleback, a fish found in most streams, ponds and rivers. I wonder how many have been caught, put into the inevitable jam jar and suffocated before their new owner has reached home? No-one told us then that it would have been far better to have taken home three or four in comparative comfort than to have overcrowded them and so arrived home with none!

Aquarists are inclined to look down on the stickleback, mostly because it is so small compared with other British fishes and also because it is so common. What we are inclined to overlook is the fact that it is quite alone in this country in its habit of showing parental care. The male of the species not only builds a nest but also looks after the fry when they are hatched. Much as we might admire the salmon, trout, charr, carp, roach, dace, pike, perch, chub, gudgeon etc., it must be admitted that not one of these takes the slightest interest in any of the fry, and apart from members of the Salmonidae covering their eggs, no others take the slightest interest in the eggs. Most of the fishes named spawn in masses, when the males in their excitement spread their milt over thousands of eggs, often from dozens of females. Which males fertilise which eggs is anyone's guess and these fishes are not in the least concerned about what happens to the eggs after they are laid; in many cases the parents eat some of the eggs.

How different then is the stickleback. The male at least is keenly interested in the process of reproduction. He builds a small nest, entices the females into it to lay their eggs, fertilises them and then fans them and keeps them aerated until they hatch. He then takes charge of the school of fry and protects them from harm. It is therefore strange that more aquarists do not keep a few of these interesting fish. They are very attractive, the colours being at least as good as those of most British freshwater fishes, and during the breeding season the male becomes very smart with his blood-red throat and heightened hues.

To be successful at rearing some young sticklebacks it is necessary to have a tank well-established fairly early in the year. A 24 in. by 12 in. by 12 in. tank will do; very small tanks are not recommended as it is essential that the females should have every chance of getting away from the male should he become too fierce. Spawning takes place in May and June as a rule, and so it is important to have everything ready for the fish when they are caught. They are easily caught with a fine net but do not be tempted to have too many at a time. To be sure of everything going well be content with one male and not more than six females. The females usually show by their swollen bellies that they are full of eggs, and the male will be more brightly coloured.

Sticklebacks are not fussy about food and will take most of the kinds used for goldfish. They are fond of most forms of live food, such as white worms, *Tubifex*, *Daphnia*, mosquito larvae, broken maggots and chopped small earth-worms. Do not over-feed, so that the water becomes fouled, as these fish prefer a clear water. When they have



Photo: W. J. Howard

settled down the male may start to make his nest. This is a small collection of tiny sticks and pieces of weed glued together with a secretion from the fish, supposed to come from the kidneys.

Once the nest is formed the male encourages the females to enter the nest and lay their eggs. When they have done so they take no further interest in the eggs and leave the male to look after them. This he does by fanning them and keeping a current of water passing over them. He will not allow any other fish to go near the nest and fights furiously with any which venture too close. It is often better to remove the females from the tank once they have laid their eggs; this is especially important if the tank is small.

When the eggs hatch, the time taken being about 10 days, according to the temperature of the water, some fine food for the fry should be added. Infusoria is the best first food for the fry but do not use too much and pollute the water. See that there is some food for the male also as he may not have had much, if anything, to eat whilst the eggs have been incubating. Once the fry are large enough to see easily it is a pretty sight to watch the male with his brood, as he takes great care of them until they are big enough to fend for themselves.

There is no need to have the water in the tank too deep; 9 inches will be enough. It will then be possible to set up the tank as an aquascape. Keep the compost away from the front glass and with two large rocks, one at each end, and by using a large slab of stone, create a platform across the back half of the tank. On this can be placed some compost and some small low-growing ferns etc. can be added. A pleasing picture can be made in this way and there will still be plenty of water space for the sticklebacks.

Do not wait too late in the year to collect the sticklebacks as they may by then have spawned. If healthy plump fish are taken there is no reason why a successful breeding should not take place.

The Garden Pond in May ——— by ASTILBES

WATER plants in the pond should now be making active growth and perhaps by now some of the fishes may have spawned. Water lilies may be flowering and in general the pond begins to take on its summer attractiveness. Most pondkeepers will look hopefully for signs of spawning but it is not always that the fishes oblige. Healthy fishes will have the natural urge to reproduce but this is not always enough to set them off. What makes them suddenly take it into their heads to begin is hard to define. It is easier to give some reasons why they do not start to spawn. One of these can be that they are not sufficiently healthy or have not had the right kind of food or enough of it. If the water is impure it is not likely that fishes will be encouraged to breed. Water has to have a good oxygen content before they will be excited enough to start spawning.

To have a good chance of breeding success make sure that you have the two sexes among your fishes, that they are adequately fed (especially on live foods such as earthworms) and that the water is well oxygenated. How is the pondkeeper to know when the water is well oxygenated? An experienced aquarist will be able to tell at a glance whether a pond is healthy or not: there is a look about the water which can be recognised with experience but which is not easy to describe. A pond in good condition will have sparklingly clear water, although ooc with some green algae in it is not unhealthy for the fishes even though it may not look too good. Algae are only plants and are good oxygenating ones, as long as the growth does not become too thick and prevent light from reaching well down into the water.

If the fishes do not show any inclination to spawn they may often be encouraged to make a start by removing some of the water and replacing it with some fresh. By allowing the hose to form a kind of fountain the water can be broken up and so be cleared of most of the chlorine compounds usually in tap water, and it will also carry plenty of oxygen into the water.

Feeding the fishes in the pond will always present problems to newcomers as there is really plenty to know about this subject. The difficulty of recommending an actual programme for pond feeding is that so few ponds will present the same conditions. If a pond has been well planted and everything is flourishing, there will always be something for the fishes to browse over and so obtain some nourishment. Feeding also depends on the number, size and kinds of fishes in the pond. A well-planted and stocked pond can function quite well with the minimum attention. It would be safe to state that more ponds are upset and more fishes lost through wrong feeding than from any other cause. Owners think that they are being so kind to their fishes by constantly feeding them and they would strongly resent being told that their so-called kindness has only resulted in deaths of their fishes.

If the water becomes slightly green it may not be possible to see if the fishes are eating what is offered them, but there is an easy way to test the appetites of the inhabitants. On a fair day, when the temperature of the water is above 50 F, throw a piece of dry brown-bread crust in the pond. If the fishes are hungry they will soon be at the surface biting at the bread. If this is soon cleared up some other food can be given, but if no attempt is made to touch the bread on no account should more be given.

At this time of the year live foods which can be given include frog tadpoles, *Daphnia* and mosquito larvae. The advantage of feeding with foods such as frog tadpoles is that if the fishes are not hungry enough to eat them they will remain in the pond for a time doing a very useful job of scavenging. They will not pollute the water as uneaten

dried food could and so are always safer to use if procurable. (Tad tadpoles are excellent scavengers but will not be eaten by most fishes.) If you feed the fishes at the same place in your pond you will find that they will gather there when hungry and you will be able to see if any food given has been eaten.

During the warmer months of the year there will be many insects around the pond, some of which may lay their eggs in the water. The resultant larvae will make good food for the fishes and unless a pond is very overcrowded it is possible that little extra artificial feeding will be necessary. It is only towards autumn, when many of the natural foods become scarce and the fishes need extra nourishment to build them up for the winter, that judicious artificial feeding can be carried out with safety.



Photo: H. Juel

Cacti in the Fish House

SOME cacti should be in flower during this month, but a lot depends on the genera kept. Many of the *Opuntia* cannot be expected to flower until they are of a good size, but there are very many plants which flower every year with little attention. One of the easiest of genera to grow for flowers is *Rebutia*, which has quite large flowers mostly produced near the base of the plant. The plants do not grow very large and so are ideal for the small collection. The one usually procurable is *Rebutia missouriensis*, which has trumpet-shaped flowers of pinkish red. Many of the *Mammillaria* are free flowering and some can be brought into bloom the year after sowing the seed. The *Notocactus* is also a very easy type to grow, especially those which resemble *Notocactus ottonii*. These flowers are quite large and showy, usually yellow with a red stigma. Many cacti flower only if they make fresh growth each year, and so the actual care in cultivation can bring an abundance of flowers among these fascinating plants.

The Wrestlers

by R. E. MACDONALD

I MUST state for the record that I have never kept the wrestling halfbeak (*Dermogenys pusillus*) of the family Hemiramphidae. I have had, however, ample opportunity of studying their characteristics on film, as a compensation.

The chief characteristics of this species are its pugnacious temperament towards members of its own kind, and its viviparity (i.e. it bears living young). It is a small fish, measuring only 3 inches in length when fully grown, and prefers quiet surroundings with a water temperature in the high seventies. The male possesses a gonopodium, so sexing the fish is an easy matter.

Because the halfbeaks only wrestle with their own kind, they can be kept individually in a community tank without fear of attack on other fishes. Some considerable amount of trouble may be experienced if the halfbeaks are housed in a transparent vessel for these fish suffer an inability to adapt themselves to transparency and can cause serious damage to themselves either internally or by breaking the lower jaw in a desperate attempt to swim through the glass sides of the aquarium. They should therefore be housed in vessels of an opaque nature such as earthenware.

Since 1864, the wrestling halfbeaks have been cultivated in Thailand for contests of strength and endurance. This fish, of course, is not the only species propagated by the Thai people for sporting purposes; most aquarists are well acquainted with the celebrated Siamese fighting fish (*Betta splendens*), known the world over for its fighting capabilities and which is also native to Thailand.

The cultivated *Dermogenys* displays a greater propensity for fighting than the wild fish and is certainly vastly superior in strength and technique. Wild fish caught and then separated for a few days will attack each other on sight, but the contest rarely lasts more than a quarter of an hour as by this time the fish either tire or lose interest in the contest. On the other hand, cultivated fish make each encounter a fight to the finish and may combat for hours at a time.

Cultivation is achieved by selective breeding from stock possessing proved strength, endurance and wrestling technique. This last ability is most important when cultivating this species for fighting purposes, for it is found that the most effective holds used by these fish may result from generations of selective breeding.

Before a matched contest between two male *Dermogenys* is held, the fish are isolated from each other in opaque containers where they are conditioned by their owners. When the fish are introduced to each other in the combat vessel, they attack each other immediately.

The most common hold used by the halfbeaks when wrestling is an interlocking of the jaws at their base, but there are a great number of holds that are used most effectively and there are certainly no holds barred!

A contestant effects a hold on his opponent by closing his jaws across the eyes, or in a straight or an oblique manner across the body; or by grasping the pectoral, dorsal or caudal fins, or, most dangerous of all, by using a stranglehold that closes the gill covers or gill openings with the jaws, from either above or below, so that the opponent's respiration is impaired. An adversary may be held, head on, with his jaws in the mouth of the opponent, or may be held so that he is kept on his side or back for long periods. A fish will always seek to obtain a particularly effective



Wrestling halfbeak (*Dermogenys pusillus*)

hold again after a break and more often than not it is this hold that will decide the outcome of the contest.

Every hold is designed to tire and exhaust the opponent, and it is very rare that an injury is sustained in the course of fighting. Sometimes the eyes or gills may be injured by inadvertent stabbing, or perhaps the tip of the lower jaw may break. Exhaustion or the unwillingness to fight, either from lack of spirit or because of injury, eventually decides the winner of the contest.

CONSTANCE KELLY says (in the modern idiom)

Dig those Crazy Cats!

FIXED your peepers on those crazy wild cats now coming on to the market? Unlike their square, sophisticated bronze brothers, these are the mouset, with the latest cut in black coats—and brother, do they send you.

After placing two in a 24 in. by 12 in. by 12 in. tank recently to kick their heels, I was troubled to notice one night that owing to the 'stat sticking in the groove, the joint was hotter than a jazz session in a heat wave—over 80° F to boot. Boy, were those cats having a Ball!

No doubt now who was Daddy. His pelvis were as pointed as the latest in Italian-style "winkle-pickers," and Mama had the cutest line in red waistcoats. Now the heat was on he was really going to town, moving faster than a Beatnik leaving an Old Time Dance, and only stopping to tickle Mama's back with his whiskers in passing.

To my way of thinking these cats looked real troubled, and knowing they usually like to play it real cool, I replaced the 'stat and at the same time gave the pump a twist to clear the air a little. Surprise, man, surprise, because next morning the front glass was covered with tiny, one sixteenth-inch size, yellow blobs. Mama had given out.

In an effort to save the eggs from that old creep, fungus, I dosed the tank with right drops of a 5 per cent. solution of methylene blue (medicinal, none of this cut-up-rough industrial blue). I could almost hear Daddy crooning a snatch from "My Blue Heaven."

Two days later (and a stone lighter), I noticed the bottom moving with tiny white, really groovy splinters. Brine shrimp seemed the right me and you and events proved right, because the young cats grew rapidly. Come the end of the month and I had quite a party of "real cool cats."

The moral of all this is, if you want your cats to give out, jazz things up but then play it real cool, man!

AQUARIST'S Notebook

by

RAYMOND YATES



WHEN an Englishman buys a house or a car, a washing machine or a radio he expects it to last a lifetime. Very often he is right, the English build things to last. Our American cousins can never understand this trait of character, they believe in "off with the old, on with the new," which, at least, has the merit of being good for business. I am occasionally asked about items of apparatus used in the hobby something on the lines of "Just how long will it last?"

Provided that one buys the equipment from reputable manufacturers the answer is "A lifetime." Of course it is not as easy as that. Equipment which is subjected to careless usage, the attentions of children or which is constantly being changed about, cleaned or "improved" will have a much shorter life. The golden rule is to leave well alone; once set up do not touch your heater, thermostat or tank. Heaters should never be removed from the water if long life is wanted. They can be cleaned under water quite easily if and when this is necessary. Left alone they will give years of service and this also applies to the thermostat. The external-fitting type is now probably the most popular, and, once set, no further interference is advisable.

Tanks are long-lived if treated properly. Don't move them and never empty them. Nowadays tank bottoms are almost always of glass, and occasionally a piece of rock-crystal is dropped on the bottom with tragic results, although I have had 40 gallon tanks which have held water for years after having enormous cracks in the base glass. Sometimes a heater is allowed to slip against the side glass for a period and a crack results. The best way to court trouble is to move the tank half full or to empty it completely and to leave it to dry out. I never remove more than half the water at a time, and a tank once set up is never moved. Of course, newcomers to the hobby can be excused if they wish to experiment in moving tanks about, but it is a risky business, particularly if the tank is of large size.

Secondhand tanks are not usually a good buy: they have to be transported empty and are often more trouble than they are worth. Leaks (through the mastic) can often be stopped with chewing gum—it works in most cases. Rust, of course, attacks the edges of the tank and this cannot be helped. No matter what you do the rust will arrive in time. However, is it so serious a matter? Over the years the metal will flake off alarmingly but there will always be plenty left; I have yet to hear of a tank rusting away completely and I have exposed some for years to outside conditions. The top edges are subjected to the effects of condensation and this is mainly where the rust attacks. However, rubber-rim edges help to minimise this trouble, but cannot prevent it. Rust is not, therefore, a real worry although it should not be allowed to fall into the tank water—snails hate it. Chrome tanks are not safe from rust either. The chrome will in time begin to peel off and the rust follows. However, it is a slow process.

Tank covers must be aluminium if they are to have a reasonable life. Although this metal breaks down rather easily, in tank covers it enjoys long life. The heat from top lamps dries up large areas so that the condensation is mainly directed to the bottom edges or channels, and there soon get a film of algae on them which buffers the metal from the condensation water. Tank lights have a short life, bearing in mind the rather adverse conditions under which they work, and the lamp sockets need constant renewal, as water of condensation seeps in and damages the connections in time.

Rubber perishes and rubber piping will not last indefinitely. However, only a small part usually perishes and the good part can be used again. It is a good idea to use small

lengths of glass or plastic tubing to connect these small pieces of rubber tube; there need then be no waste. Diffuser stones last a long time but can be treated as expendable at the price. Thermometers need never be moved. As a rule they are attached to the front glass by a rubber suction disc, and during cleaning of the front glass they can be slid a few inches to one side and then returned to their original position. The limpet variety should not be cleaned or they may lose their watertight properties.

Aerators are of various types and need some attention. Rubber diaphragms need renewal from time to time but there is no oiling with this variety. Piston pumps don't wear out if properly treated, which means keeping them well oiled and not overloaded with too great depth of water to pump against. They need frequent oiling for best results but no worries need be entertained over their tendency to become quite hot after a few hours working. From time to time piston pumps can be thoroughly cleaned out with carbon tetrachloride, which makes a thorough job. Electrical connections may be subject to wear and these need watching and renewing as and when necessary. Most filters last for ever but need frequent cleaning. Glass wool has no lasting properties but nylon wool is there for ever, if cleaned.

Recently the question of a fast day for animals kept as pets was brought up in the press. Suggestions were later put forward that this meant not a complete fast but a non-luxury diet. Whatever the pros and cons may be, it is certain that some of our overfed and pampered dogs and cats would benefit from such a course. Birds are another matter; you simply cannot afford to forget to feed your feathered pets—it is soon fatal with many. Fishes are in a different category. They can be left without food for several days and will not suffer; in fact some will benefit. However, one must use some common sense and not leave small specimens with large ones, or predatory types with more humble bedfellows. Most inmates of the vivarium can survive without food for a week or two. It is a pity that the relatives of aquarists all too often do not appreciate that fishes do not need breakfast, lunch, tea and supper, not to mention elevenses. They mean well and are so hard to dissuade. Their favourite reply is "But look for yourself, the fish are hunting for food now." Good job fish food is so rarely wrapped up in covering papers; what a mess the bottom of a tank would be if fishes were litter louts like so many on terra firma!

When new fishes are obtained from any source they should be quarantined in a special tank set aside for this purpose. Failure to take this precaution can produce a heap of trouble. My personal view is that at least 10 days should go by before the aquarist can be certain that all is well; a week is not long enough. White spot is the most commonly introduced pest. Fish often itch and scratch themselves a lot after new fishes have been introduced to a tank. This may or may not be white spot. As a rule this pest first appears on the tail or fins of fishes: once one spot is seen the tank should be dosed with 2 per cent mercuriochrome solution (2 drops per gallon). When no spots are seen the trouble is mainly due to overfeeding (because of the novelty of the new specimens) and consequent fouling of the water, which produces masons for many little nuisances

that bother the fishes although are harmless to all intents and purposes. Colour the tank water bright pink with potassium permanganate solution and this trouble will quickly disappear.

Something of an innovation in school swimming pools has been those produced by Purley Timber and Trading Co. of Purley, Surrey. These pools require no excavation and have been produced to suit the needs of schools from 100 to 500 children on roll. The pool is erected on any convenient level site, and the instructor standing outside the pool is on the same level as the children inside. The plastic liner is tough, still blue in colour, and two men can erect it in a few hours, no other tool than a screwdriver being necessary. A large pool measuring 41 ft. by 25 ft. costs under £500. How does all this affect aquarists? Well, it looks as if things are moving in the right direction and the day when almost any garden owner can have his own quickly erected garden fish pool is not far off. True, expense is still considerable. Fibre-glass ponds are a reality, if rather formal and expensive, but if pools so large are possible for swimming the more modest needs of the aquarist should be easy to satisfy if the demand is there. Most pools are quite small, 10 ft. by 6 ft. being ample for most enthusiasts, although I read a letter in a country magazine recently in which a gentleman was having trouble

with his garden pool of one and a half acres! Most water authorities now allow hosepipes without the need for a licence but the question of quantity of water used could crop up. If a pool has an outlet plug it will be relatively easy to empty (and refill) and the water board is likely to insist on a meter and full charges, roughly 2s. to 3s. per 1,000 gallons.

One aspect of the giant pencil fish (*Anostomus anostomus*) is the odd way it tends to worry angel fish. This fish is particularly fond of algae and spends long periods in vertical or upside-down positions nibbling algae off rocks or leaves. Angel fish in the tank are fairly soon singled out for "treatment" and *Anostomus* makes their lives miserable in the extreme, irrespective of size. Angels, being so cumbersome, are unable to take the avoiding action needed and heel over in the water while *Anostomus* nibbles at the edges of their fins and ventral area. One gets the idea that this is not bullying; the *Anostomus* finds something to his liking on the angel in perhaps the same way that young discus feed off mother. I have not witnessed any actual biting of fins (as some authors have suggested) but the area under attack suffers and a slight fungoid growth is observed. The only remedy is to separate these fishes. I have often seen something very similar with mollies, who appear to feed off angels and cannot dent.

The Story of Beatrice by NORMAN McDONALD

I CANNOT now remember who it was that gave Beatrice her name, and, except that "Beatrice Beetle" was pleasantly alliterative, it had no real meaning. At the same time, I am not exaggerating when I say that within a certain circle of friends she was well-known by name, in appearance and by repute for the greater part of 4½ years.

Beatrice was a beetle, a specimen of the kind known more precisely as *Dytiscus marginalis* or great water beetle. I should also point out that this species is no rarity, and, except that she became domesticated, she was in no way different from the countless others of her kind.

Like many another little creature that has been brought to me—for purposes of identification, as a rule, Beatrice arrived imprisoned in a match-box that had been emptied of its contents and from which now came an intermittent scratching noise.

"Feyther said as how I wis tae gie ye this," said the little boy, handing me the box. "He said it was a right wild sort o' a beast but that mebbe ye'd like it for yer collection."

Never have truer words been spoken. Beatrice was soon to prove herself to be quite the wildest inhabitant of any of my aquaria, and how enthusiastically did I make her welcome! From the little boy, I also learnt that the "beast" had tried to bite his father, not once but several times. It appeared that the man had seen the creature float on the water of a little loch less than 10 miles from the centre of Glasgow.

Following my usual custom, my first task was to give Beatrice a wash to free her from the signs of travel which she had willy-nilly accumulated; at the same time I was relieved to see that she had suffered no damage. I next transferred her to a small aquarium measuring 12 in. by 9 in. by 10 in. deep, presently occupied by a pair of that most aggressive little fish, the three-spined stickleback, two or three ramshorn water snails (*Pisorbis cornus*) and some half-dozen *Gambusia* cases complete with occupants.

Again keeping to my usual custom, I did not immediately give Beatrice anything to eat but left her to explore among the weeds and to settle down peaceably (I hoped) in what were to become her permanent surroundings.

One hour later, when I went to offer her a small dark-green saw-fly caterpillar, I at once saw that I had arrived too late to prevent slaughter. Beatrice had apparently been hungrier than I had imagined, for she had attacked both sticklebacks and they were dead. The female's severely gashed body was floating upside down and the even more mutilated body of the male was already half eaten—by Beatrice.

I did not need to be told; several times a week and with my own eyes I was to see that the great water beetle is the fiercest of all pond creatures. In addition to the defenceless insects that might be considered her legitimate prey, fish (as I had just seen) and small newts and small frogs are regularly assailed and consumed. A year later, when I first introduced another *Dytiscus* to the aquarium, carefully identifying him as a male by his smooth-surfaced wing cases, and in great hopes that they would mate, I was witness to another instance of beetle savagery.

Beatrice certainly accepted the strangers and for a time they darted about in and out among the water weeds, occasionally coming to rest. Then, perhaps the attentions of the smaller male seemed to annoy Beatrice, and to my disappointment I saw that if she was going to accept him it was as a meal and not as a lover. I at once separated them, however, before any damage was done but never again did they show any interest in one another when I put them together in the same aquarium.

In many ways I greatly regret that Beatrice produced no offspring, for her larvae, though ugly to a degree and equally as fierce as their parents, would have been objects of great interest. But my pet water beetle, perhaps the only water beetle to enjoy 4½ years of captivity, never failed to interest me but gave me a wider horizon in my life-long study of lesser worlds.

Yes, I have kept many pets—with two legs, four legs, six legs, eight legs and more. Pets, no matter what they are, become part of our lives and part of ourselves, and this was truer of Beatrice Beetle (1946-1951) than of any other creature that I have ever kept.

A Fish House in the House

by P. DENDY

WHEN I started in to be a serious aquarist I was fortunate enough to have a ready-made fish house provided for me, in the shape of a general utility room which formed part of the house itself. It was complete with sink and hot and cold water laid on for routine tank maintenance. A minor battle with my wife, who tried to insist that the utility room was for doing the washing and other household chores, was most fortunately won and I was left in undisputed possession.

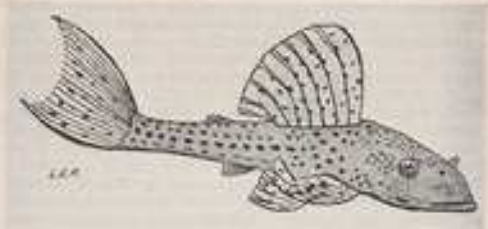
As the walls are cavity brickwork the insulation is therefore good and there are no particular heat-loss or condensation problems. Living alongside the fish undoubtedly means that they receive more attention than they would if visiting them meant making a trip in the rain or cold to a shed in the garden. I think now that my wife has forgiven me for stealing part of her house as she also takes an interest in the fish and at least has not got to shout from the back door every time she wants me.

Such a set-up is to be recommended, though it means that all tank lighting has to be by artificial light and tanks must be completely covered by glass to exclude dust. It is surprising just how much dust, stirred up by the normal household pursuits, does collect on the cover glasses. Of course, evaporation must be kept to a minimum, too, and the cover glass takes care of this, so that very little topping up is required.

At the commencement of fish-keeping activities I consulted several books on the subject and there appeared to be fairly unanimous agreement that the intensity of lighting should be 30 to 40 watts per square foot of surface area for 8 to 10 hours a day. I decided that the fish would get up when I did and go to bed when I did, which gave them a 14 to 15 hour day, and on this basis I settled for 30 watts per square foot. I was quite rapidly in trouble with soft green algae, which started to smother everything and even the importation of one or two *Plecotomas* did not help as they were not content to eat the algae but consumed the plants as well. I found light bulbs a problem, as their life was all too short even though I followed the old dodge of putting them in with the two filament supports to the top.

Over several months I gradually reduced the intensity of the illumination to 8 to 10 watts per square foot of surface area, at which figure I find that practically no algae grow. In practice this means two 15 watt bulbs over a 36 in. by 18 in. tank, two 8 watt bulbs over a 24 in. by 12 in., one 15 watt bulb over an 18 in. by 12 in. and one 5 watt bulb over a 12 in. by 8 in. Even with this low level of illumination some tanks have been further reduced in brightness by the insertion of one or more sheets of Bronco between the bulbs and the cover glass.

The immediate reaction to this statement will obviously be, how about the plants?—they won't have enough light to see by let alone to grow! My equally immediate reply is that the plants are doing better than before, much better in fact. I rely on *Vallisneria*, *Sagittaria*, *Cryptocoryne*, giant *Hygrophila polycarpa* and Amazon sword plants, and I had found that the *Hygrophila* and Amazon sword all became very pale and sickly when close to the light bulb, but did nicely when in a darker part of the tank. The reduction in lighting now means that these particular plants grow anywhere in the tank and look extremely healthy,



Plecotomas, a cowfish that will eat vegetable matter, including algae

and my electricity bill is that much lower, as is my bill for bulbs, which last very much longer. Lack of light can give rise to the formation of brown algae, but I have not been troubled by it.

I have experimented with several varieties of plants and have found that many of them do not do at all well under artificial light. Indian fern, *Aponogeton*, *Cabomba*, *Ludwigia*, *Myriophyllum* and duckweed survive after a fashion but do not really grow. *Etiloia densa*, *Najas pectinata*, *Bacopa*, bladderwort and the fascioid plants like lace leaf do not even survive. This may be due to reasons associated with my water, which is of 14 degrees hardness (Clark's scale) and about pH 6.0 (i.e. slightly acid).

With artificial light there are to all intents and purposes no seasons for the plants and fishes and while it might be argued that this is contrary to nature and therefore a bad thing, it is extremely useful, particularly if you wish to do most of your breeding in the winter when there is not much to do in the garden.



"I'm afraid he's living under a mental strain Doctor"

OUR EXPERTS' ANSWERS TO TROPICAL AQUARIUM QUERIES

I have read somewhere that a layer of peat under ordinary aquarium compost inhibits the growth of algae, and produces the sort of soft water that the majority of fishes like. Is the peat sold for garden purposes safe to use in the aquarium, and, if it is, how deep should it be spread over the bottom of an aquarium?

Granulated or compressed peat obtainable from a nurseryman is quite suitable for aquarium use. It should be placed in a bucket of clean water, and left to soak for a day or two before being spread to a depth of 1 in. over the floor of the aquarium.

I should be grateful for any information you can give me about keeping and breeding the glass perch (*Aethanias luteus*).

The glass perch settles down best in clear, slightly saline water maintained at a temperature range of 75° to 80°F. The fish shows no liking for dried food, but takes any live food or pieces of meat with relish. It is not one of the easiest fishes to breed, but when it does, the female, closely attended by the male, turns on her back and discharges her eggs into the feathery roots of floating plants, or plants with fuzzy foliage lying at the top of the water. The parent fish should be removed from the aquarium as soon as spawning is over. The eggs take about a day to hatch out, and the fry must be given copious amounts of small Infusoria.

Would it be all right to introduce some prettily marked sea-shells into my aquarium?

Sea-shells do not always make satisfactory ornaments for a tropical aquarium. Uneaten food often lodges inside them and decays. The sharp edges and points on some of them are a danger to fast-moving and boisterous fishes. What's more, some sea-shells can make the water too alkaline for the successful maintenance of plants and fishes.

I have made an attractive-looking sand and cement ornament for my aquarium, but an aquarist friend has told me that it will poison the water for the fish. What can I do to render this cement ornament harmless?

First of all, scrub the surface of the ornament to remove loose cement and sand. Then leave the ornament to pickle for about a week in a strong solution of vinegar and water, or weak hydrochloric acid. After another good soaking and rinsing in fresh water, it should be quite safe to place in an aquarium.

Is it true that water plants grow more luxuriantly in pots of soil than when they are rooted in sand alone?

Many aquatics such as Cabomba, spatterdock, dwarf lilies and nuphars show their appreciation of a rich planting medium by producing stronger-looking stems and richer green foliage. But make sure that you place insect-free, sterilized garden soil in your pots. Better still, use a mixture of baked clay, crumbled peat, charcoal and coarse sand. The pots should be topped with a fairly thick layer of grit to prevent the fish muddying the water.

About 2 months ago I set up an aquarium measuring 24 in. by 12 in. by 12 in. During the daytime, the temperature of the water averages about 75° to 77°F, but in the evening, when the room is heated, and the light over the aquarium is switched on, the temperature rises rapidly to the mid-eighties. Although the aquarium is kept scrupulously clean, I have lost several of my fishes with an illness that gives them a "wobble" and closes their fins. Can you help me, please?

The health of your fishes has been undermined by the rapid rise and fall in the temperature of the water. Closed fins and a "wobble" are usually indicative of a chill, or an extremely run-down condition. You can reduce the amount of extra heat produced by top-lighting by substituting an electric lamp of a smaller wattage. We gather that you are operating your heater without a thermostat. If our assump-

Many queries from readers of "The Aquarist" are answered by post each month, all aspects of fish-keeping 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.

tion is correct, we advise you to fit a thermostat as soon as possible. A thermostat will switch off the current supplying the heater as soon as the temperature rises above a pre-determined setting of the control knob.

Could you tell me whether it would be safe to use bulb fibre as a planting medium in a tropical aquarium? I have been told that sand alone doesn't give the best results.

The majority of aquarium plants in normal use do well in sand alone, but for those that really need a richer medium we recommend crocked pots of gritty loam rather than bulb fibre, which usually contains fragments of crushed shell and other additives. Alternatively you could carpet the floor of your aquarium with a thin layer of soaked peat, and then cover this with the usual thickness of washed sand. A subsoil half an inch deep is about right.

I have just moved into a house where the water is delivered through copper pipes. If I use this water to fill my aquarium will it harm the fishes?

It is not advisable to fill an aquarium with water stored for any length of time in copper pipes, but if it is allowed to run from the tap for about 2 minutes before it is used to fill an aquarium it should do no harm. Ideally, water from the tap should be left to stand for several days before introducing any fishes.

About 5 weeks ago my female black mollie gave birth to 30 young. They are all females. Can you offer any explanation as to why they should be all one sex?

Mollies are often late in developing the stick-like anal fin which characterises the male sex. Furthermore, it is not uncommon for a female mollie to deliver a batch of young, and then change into a fertile male.

Please can you give me the names of some exotic fishes that would live comfortably at a temperature range of roughly 82° to 82°F?

The white cloud mountain minnow, the black-banded sunfish, the pygmy sunfish (*Blechnoides evergladesi*), though this species would probably need gradual acclimatisation to the lower temperatures; *Corydoras planatus*, *C. aeneus*, the common paradise fish (*Macropodus opercularis*) and the Japanese weatherfish (*Misgurnus anguillicaudatus*).

I have some neon tetras which I first placed in my community tank 5 years ago. It is unusual for such a small species to live for such a long time!

No, quite a number of the smaller fishes have a long life span. For instance, paradise fish, clown loach, *Pristella*, *Neonotomus aeneus* (to mention but a few) can live for upward of 5 years.

Although I never experience any difficulty in keeping *Corydoras* catfish alive in my aquarium, species of *Doradus* and *Pleurocentrus* always waste away and die within the space of a few months. Do these catfish need anything special in the way of conditions or food?

It is essential that these sucker-mouthed catfish be kept supplied with algae or an alternative green food such as boiled cabbage or spinach. It must also be remembered that they are less active during daylight hours than are *Corydoras* catfish, and it is a good idea to drop some *Tubifex* or white worms into their tank after dark.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

We have a tank which is 36 in. by 35 in. with five common goldfish and shubunkins. Until recently the fish were healthy but lately some have become ill, with their dorsal fins lowered and attacks by fungus have occurred. We are told that fungus should never trouble fish if they are properly kept. We use an advertised substance to keep the water pure but when a fish is ill it soon recovers when removed from the tank and treated. However, as soon as it is returned to the tank it is ill again. Where have we gone wrong?

The substance which you keep adding to the tank may be doing more harm than good. If it is a mineral substance in a form of salt this will remain in the water and in time can become too dense in strength for the health of the fish. It is quite obvious that if the fish are all right when removed from the tank but fall in health when returned there must be something the matter with the water. Many aquarists are too fond of adding all sorts of supposed cures to the water when they do not know what is the matter with the fish in the first place. Empty all the water from the tank, wash out well and make a fresh start. Then do go easy with the additions and your tank should remain quite healthy.

I am interested in the purchase of a polythene pond and I understand that it is a good idea to have some oxygen to keep the water from becoming stagnant. What can I do to provide this?

Water in an open pond will always get sufficient oxygen from the atmosphere to maintain a few fish. You can of course add some under-water oxygenating plants such as any of the *Elodea*, but too much uncast food in the pond can cause foul gas to form which can upset the fishes. Why not get a book such as *Coldwater Fishkeeping* (price 2s. 10d. post free from *The Aquarist*)? This will help you considerably.

I have a pond about 28 feet by 11 feet, of irregular shape, in which I have rather more than a hundred fishes: orfs, goldfish, tench and roach. The water is very green although there are many water plants including water lilies. The pond is exposed to all the sun. I feed every evening with maggots, which the fish appear to clear up. The pond has been made about a year. Is there anything I can do to improve the state of the water?

Your pond is rather new and it is a fact that it takes some time for a pond the size of yours to settle down and clear. I am inclined to think that your feeding may be helping the undesirable conditions. I have often noticed that many fishes do not digest maggots very well and have seen them voided in an almost completely unaltered state. If such is the case with many of your fishes it could be the cause of some pollution in the water. Once this happens the formation of green algae is encouraged. Try feeding with garden worms or even some dry brown bread for a change of diet; change most of the water if possible and you may find that conditions improve. In any case it is probable that the water will clear since the weather becomes colder.

I have a small shubunkin about 4½ years old which repeatedly gets attacks of fungus. The other fish do not seem to get this disease. I have cured the fish several times but it appears to be out of condition. Is there anything I can do, as I do not want the other fish to get the fungus?

You should isolate the shubunkin and I think that as this fish is a weakling it would be better to destroy it. There seems little sense in trying to keep alive an ailing fish as you must realise this fish may breed in your pond and then you are likely to get a number of youngsters from it which may also be weaklings. It is quite wrong to patch up fishes for breeding; only the very healthiest fish should be used for this purpose and if everyone stuck to this rule there would be fewer weaklings about among fancy goldfish.

I am having trouble with the hatching of my goldfish fry. The parent fish are in a tank 14 in. by 9 in. by 8 in. in a conservatory. After breeding, the parent fish are removed and the eggs left to mature. When the fertile eggs are within 24 hours of hatching they start to discolour, going creamy white. Consequently the majority of the fry do not hatch at all; some die in the attempt of hatching half way out of the egg and the remaining few which do emerge die within a short space of time. Can you explain this?

It is obvious that the water in the tank is impure. The tank is much too small for hatching goldfish fry. Another point probably partly responsible is the fact that when the fish spawn the males eject millions of sperms. A very few find an egg to fertilise and the rest soon die. The concentration of so many of these in a small tank would soon cause pollution in the water. You will be well advised another time to remove some of the weeds with eggs attached to another tank which has been cleaned out and filled with good mature water.

I am making a pond about 10 ft. by 8 ft. and my experience tends to digging large holes, brick laying and cement mixing. Can you recommend any book or publication which would provide some detailed advice on making the pond?

The booklets *A Simple Pond for the Amateur*, price 1s. 10d., and *Coldwater Fishkeeping*, price 2s. 10d., both post free from *The Aquarist*, will be very helpful to you both for making the pond and for maintenance afterwards.

I have read several books on the construction and planting of ponds. In some one is advised to plant in pots for easy cleaning and to stop the earth from going sour. I have made several cement boxes but with no holes at the bottoms. Will these be all right for water plants? If holes have to be made how can one stop the soil getting into the water?

The cement boxes will be all right for your plants. It is not essential to have holes in the containers as the roots of the plants can run out over the top when they have filled the pot and the plant will come to no harm. If you have holes in a pot, some coarse grass or rough peat can be placed over these to stop the soil from entering the water and some large stones can be laid on top to prevent the fishes from disturbing the soil.

I have a pond at Kuwait, Persian Gulf, and would like to know which water plants would grow around the edges. The temperature here in the summer reaches 120°F and frost has been known in the winter.

I think that any of the usual water-side plants will be all right for your pond-side. As long as plenty of water is available they will come to no harm. The heat affects plants badly mostly when they are unable to get enough water to make up for the wastage caused by the heat. I am well aware of the heat where you live as I was in Mesopotamia during the first world war.

A year ago I made a pond and lined it with polythene. I had a fine lot of fish but then the polythene developed leaks and I had a builder to concrete the pond all over. I also had a small pond made at a higher level with an overflow fed by a small stream. I put the fish in at night and in the morning they had nearly all jumped from the top pool and even gone down the stream from the larger pool. Why did they leave the pool? Was it because the fresh pool had a more graduated slope to the overflow than the old one?

One reason for the fish leaving the upper pool was that the inflowing water became rather strong in current and as the overflow approach was shallow the fish were washed over. Another reason could be that the water in the newly constructed pond was too highly charged with free lime from the fresh concrete and the fish got out of this water as soon as possible. If the concrete had not been well scrubbed and washed before putting the fish in the water it could have been very uncomfortable for them.

our readers

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



write

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

Home Aquaria Competitions

IN view of the recent correspondence in *The Aquarist* on the Home Aquaria Competition held by the Merseyside Aquarist Society, I would like to point out that we at Merseyside are not so insular as to claim that the Home Aquaria Competition was our innovation. All that Mr. Raymond Yates pointed out was that we were in the process of using that particular type of competition; we had no doubt that it had been used before and will be used again.

It is obvious to me where this competition originated: Dundee, Inverness, Stroud and Chorley, the divine spark visiting each club simultaneously. We in Merseyside quickly learnt that there is nothing new under the sun, and especially in the aquatic world.

I have nothing but praise for Mr. Yates's "Notebook" (on which, incidentally, I base our Society magazine), and I hope that in the future he will continue to ferret out these items of information that create such interest and controversy, especially if it comes from the Merseyside.

SYDNEY CANAVAN,
News editor, Merseyside Aquarist Society.

Ways of Using Tape Recordings

A FEW years ago the use of colour slides and films etc. during society meetings was quite rare but to-day many, perhaps most, groups use these visual aids in the provision of interesting programmes.

Now tape recorders (sometimes condemned, sometimes praised) are being used as a further means of introducing variety into club meetings. We have not noticed any reports on the best method of utilising these machines but we should be glad to hear from societies on this subject. At the risk of trying to teach grandmother to suck eggs, as they say, we should like to start the subject off with a brief note of our own experience so far.

The recording, on tape, of society meetings appears to be rather a useless operation owing to the disturbing background noises of chairs, coughs etc., while the unfortunate speaker later realises just how often he says "er," "ah," "lemme see now" and "actually, to be acrit" and so on.

Brockley Circle had their best evening of recent months when a speaker, thinking he would not be able to give his talk owing to an urgent call elsewhere, carefully wrote up his lecture (synchronised with a number of coloured slides) and "taped" the talk in the peace and quiet of his own home. When the evening arrived he was never-the-less able to be present during the play-back, operating the projector in time to the recording.

The advantages were: (1) The speaker, recording at home

and surrounded by his models, photographs and references, was able to ensure that no aspect of his subject was overlooked and could concentrate very fully on each item without distraction of any sort. (2) The audience could examine the screened photographs, the models and specimens, without the distraction of the speaker's presence or mannerisms etc., and their attention was never divided between the screen and the speaker. They were unanimous in agreeing that the quiet, somewhat disembodied voice from their midst was a good idea and welcomed further experiments on these lines. The advantage of the speaker's work on the projector enabled the next slide to be presented at the proper time, while questions raised could be answered "on the spot," which could not have been done, of course, if he had not been there.

While not suggesting that no other group has tried this method in the use of tape recordings, we feel those who have not might find it rewarding. It appears to be essential to write out the whole story beforehand to avoid the "ers" and "ums" (our first effort was a 1 hour talk—an awful lot of writing!). Correspondence on such subjects would be very welcomed by this group.

H. J. VOSEB,
Secretary, Brockley and District Brooders Circle
(Aquaria Society).

New Idea for Shows

THE suggestions by Mr. Max Gibbs (*The Aquarist*, February) for exhibitors to provide their own show tanks would really start something if generally adopted. By and large the greater number of exhibits come from a very small number of exhibitors, who may well have a dozen to a dozen and a half entries in a show. Would haulage contractors quote cut-price estimates for aquarists to cart their tanks about for them?

I think that I shall have to ask Mr. C. R. Parslow (*The Aquarist*, February) to name his weapons after his reference to "mongrels"! I told my guppies about it and they were absolutely furious and only calmed down when I said that he was probably talking about those very inferior ought-to-be-tipped-down-the-drain types which one sees about from time to time.

Whatever types Mr. Parslow had in mind, a deputation of my lady guppies has asked me to state quite categorically that they, in common with all other F.G.B.S. lady guppies, make it a point of honour always to breed true, and if there are any further aspersions they can produce documental pedigrees to prove their point.

P. DENOY,
Evesham, Worcs.

MR. Max Gibbs seems to have an interesting scheme in his idea of exhibitors owning their own show tanks, and if a general specification for such tanks were arranged I believe the scheme could easily be put into operation. Perhaps the Three Counties Group Aquarist Society will give a lead in this matter.

I agree with Mr. Gibbs that certain other shows are not always ready for visitors when they should be. My own Society are holding our third Annual Open Show on the 4th, 5th and 6th of May and we hope to continue our usual practice regarding tanks and staging: all the washing and setting-up will be completed and the water brought to the right temperature during the night of Wednesday the 3rd. This gives enough time on the Thursday morning for final checks before exhibitors start to arrive.

Slough Aquarium Society are, obviously, fortunate in the facilities available at the Slough Community Centre and we try to make the visit of our exhibitors (and their fishes) a happy one.

E. C. B. KNIGHT,

Show secretary, Slough Aquarium Society.

Yorkshire Fish House



SINCE my article on "Fish House Design," published in *The Aquarist* (January, 1960), I have had a photograph taken of the "rearing room" of my fish house, with a wide-angle lens camera. Since publication of my article I have had many visitors from all parts of the country. I have been informed by my neighbours, however, that quite a number of people have come to Beverley on different occasions only to find no-one at home. I wonder therefore if you would inform any intending visitors to please write or telephone to say when they are coming in order to avoid any further disappointments.

E. FORTES,

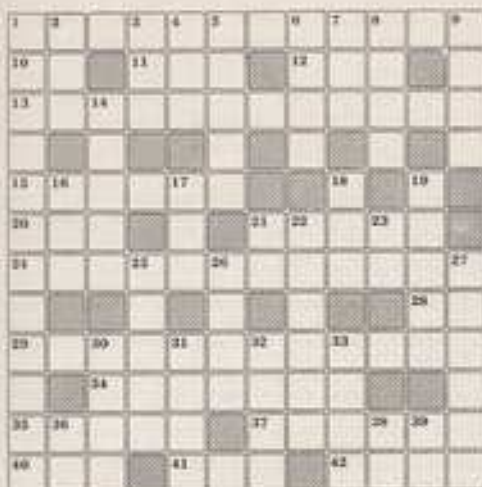
99, Colman Avenue, Beverley, E. Yorks.
(Tel.: Beverley 82193.)

Clearing a Green Pond

IF your pond water has turned very green and it is possible to catch the fishes and place them somewhere else for a time it is possible to clear the water by placing a quantity of *Daphnia* (water fleas) in the pond. These will multiply and eat up most of the algae and other free floating matter in the water. After a time the water will clear and when the fish are returned to the pond they can have a good feed on the *Daphnia*. It is probable that if there are enough water plants growing in the pond the water will remain clear.

The AQUARIST Crossword

Compiled by J. LAUGHLAND



CLUES ACROSS

- They build a house under water and stock it with air (3, 7)
- The Spanish (2)
- The coat least his head and returns (3)
- He goes back to the den (3)
- Those fish really are shockers (8, 4)
- Young eels (8)
- Terra from ---- (3)
- No wonder Loder is confused. He's not so young (3)
- You find these fish on the head to Mansley (8, 4)
- The smallest country? (2)
- Perhaps the fiercest fish we have (12)
- One of 1 Across is one of these of 12 back (7)
- Eastern eelers (3)
- Take under water (8)
- Call for help (3, 1, 1)
- Utter (3)
- Countless numbers of these in a trout (4)

CLUES DOWN

- Fishes with poisonous spines (6, 6)
- The lot (3)
- And so on (3)
- This disease attacks fish (3)
- Vacancies (3)
- Short measure, but an extra hundred would be a cinch (4)
- Welsh salmon river (3)
- And an English river before the Fall (3)
- A fish or a hand around the waist (8)
- An important representative (3)
- Small lily (3)
- Spout of fish travelling upstream to spawn (3)
- You will find plenty of these in *The Aquarist*, and some real bargains, too! (shower) (3)
- Destroy (3)
- Belonging to (7)
- Lowest (6)
- Enlightenment (2)
- Not outside the dog! (8)
- God? Or a fish-eating bird (6)
- Mummy to a T but makes for violence (8)
- Another fishing bird, regarded as sacred in Egypt (4)
- What you may expect from the kissing gourami (4)
- A very gentle sort of whelp (4)
- Space (4)
- American state in short (2)
- One result of excessive alcoholism (3, 1)
- Tail of the image (2)

(Solution on page 40)



from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 5th of the month preceding the month of publication.

THE Newsletter of the Association of Yorkshire Aquarist Societies gives advance notice of the annual general meeting which will be held in the Church Institute, Albion Place, Leeds, on Saturday the 13th May at 2.30 p.m.

AMONG the recent activities of the **Barnford A.S.** has been a talk from Mrs. Meadows on various aspects of the hobby. It is hoped that members of the N.E. London Association would be visiting the club shortly and a visit from **Walthamstow A.S.** was also on the programme.

MEMBERS of the Bedford and District Aquarists' and Pondkeepers' Society speak at enjoyable evening when some members of the Guppy Breeders' Association, led by Mr. R. Alley, gave a series of short talks on different aspects of their society's activities including live breeding, show standards, judging, etc. At the Bedford table show held the same evening the following were the results: **Brighters:** 1 and 2, Mr. Parsons; 3, Mr. Moore; **Gouramis:** 1, Mr. Bell; 2, Mr. Cook; 3, Mr. Parsons.

ONCE again the **Canford A.S.** are holding their annual show and this year the date is the 27th May. This show is the only one in South London and a large entry is expected with awards of 200 entries. The venue is the Canford Secondary School for Boys, Brownhill Road, Canford, and can be reached from Canford Hydrant Station.

ADVANCE information is now in hand from **Merseyside A.S.** regarding their open show to be held on 13th, 14th and 15th July. There are 17 classes and the show secretary is Mr. T. A. Mitchell, 47, Oakhill Road, Liverpool, 11, from whom schedules are obtainable. At the last meeting the proposed changes in the standing rules of the F.N.A.S. were discussed.

AT the last meeting of the **Thames A.S.** Mr. Foden of Haddenfield gave a very interesting talk on plants. Some members of the Guppy Aquarist Society attended the meeting in order to hear Mr. Foden. The result of the table show, which was for the best pair of fish was as follows: 1, Mr. D. Wells (perch fish); 2, Mr. G. Lewis (dwarf gourami); 3, Mr. N. Sanders (rainbow).

A furnished aquaria competition held recently resulted as follows: 1, Mr. N. Sanders, 209 points; 2, Mrs. Tippett, 218 points; 3, Mr. D. Wells, 218 points; 4, Mrs. E. Sanders, Mr. D. Machin and Son, 214 points.

AT a recent meeting of the **Healdon and District A.S.** the following changes in the society officers were made: Honorary secretary, Mr. H. G. J. White, 32, Ellevestry Avenue, Mill Hill, N.W.7; assistant secretary, Mr. J. Mills; show secretary, Mr. J. Barnes, 95, Victoria Road, N.W.4; assistant show secretary, Mr. K. Fairbairn; treasurer, Mr. P. O'Connell.

THE first annual open show of the **Middlebrough and District A.S.** proved a great success. The societies taking part, in addition to Middlebrough, were Harrogate, Thirsk, Thirsk and Sandholme. The results were as follows: **Furnished Aquaria:** 1, T. Trevorton (M.D.A.S.); 2, K. Whittam (M.D.A.S.); 3, Mrs. S. Whittam (M.D.A.S.); **Perchfish:** 1, D. Clark (M.D.A.S.); 2, Mrs. N. Jones

(H.A.S.); 3, T. Trevorton (M.D.A.S.); **A.V. Fishes:** 1, D. Lancaster (M.D.A.S.); 2, K. Whittam (H.A.S.); 3, G. S. Westwood (M.D.A.S.); **A.O.V. Labrids:** 1, R. Altherton (Spotted Perch) (F.A.B.); 2, G. Kellert, Paradise Fish (H.A.S.); 3, J. Bowyer, Loon Gourami (M.D.A.S.); **A.V. Cichlid:** 1, J. Thompson, *Apistogramma Agassiz* (T.A.R.S.); 2, A. Duffield, *Apistogramma Agassiz* (T.A.R.S.); 3, B. Trevorton, *Burton Agassiz* (M.D.A.S.); **A.V. Gourami:** 1, G. S. Westwood (M.D.A.S.); 2, J. Young (T.A.R.S.); 3, B. Clark (M.D.A.S.); **A.V. Swordtail and Platy:** 1, Mrs. T. Trevorton, *Platy Varians* (M.D.A.S.); 2, J. Carter, *Black Swordtail* (H.A.S.); 3, G. Kellert, *Red-eyed Red Sword* (H.A.S.); **A.V. Mollie:** 1, G. Kellert, *Voltaire Mollie* (H.A.S.); 2, T. Trevorton, *Voltaire Mollie* (M.D.A.S.); 3, T. Saunders, *Black Mollie* (M.D.A.S.); **A.O.V. Livebearer:** 1, F. W. Dunn, *Mosquito Fish* (S.A.S.); 2 and 3, K. Whittam, *Mosquito Fish* (M.D.A.S.); **A.V. Barb:** 1, R. Adkinson, *Fishing Barb* (A.A.S.); **Betta fish in Show:** 2, F. Taitford, *Ruby Barb* (M.D.A.S.); 3, A. Duffield, *Claret Barb* (T.A.R.S.); **A.V. Rainbow and Danio:** 1, A. Duffield, *Rainbow Bettastrimma* (T.A.R.S.); 2, F. W. Dunn, *Rainbow Bettastrimma* (S.A.S.); 3, F. W. Dunn, *Rainbow Bettastrimma* (S.A.S.); **A.V. Large Lumping Tooth-Carp:** 1, W. Cowland, *Fantasia Linnatus* (M.D.A.S.); 2, D. Blackburn, *Fantasia Clasper* (M.D.A.S.); 3, J. Young, *Pandora Linnatus* (T.A.R.S.); **A.V. Characin:** 1, F. W. Dunn, *Silver Hatchet* (S.A.S.); 2 and 3, H. Goodwin, *Cardinal Tetra* (H.A.S.); **A.V. Cichlid and Loach:** 1, A. Jones, *C. J. Hill* (H.A.S.); 2, W. Cowland, *C. Aeneas* (M.D.A.S.); 3, B. Ritchie, *Lampard Catfish* (H.A.S.); **A.V. Cold Water (Single Tail):** 1, 2 and 3, Messrs. Hood and Gibson, *British Shubunkin* (not attached); **A.V. Cold Water (Twin Tail):** 1, W. Cowland, *Twin Tail* (M.D.A.S.); 2, Brunton and Pearson, *Galaxy Veilfin* (S.A.S.); 3, W. Cowland, *Twin Tail* (M.D.A.S.); **A.O.V. Eglestey:** 1, Mrs. S. Whittam, *Bodonia Grey* (M.D.A.S.); 2, B. Trevorton, *African Kribia* (M.D.A.S.); 3, L. Collins, *Bodonia Grey* (M.D.A.S.); **A.V. Breeding Pairs:** 1, G. Kellert, *Paradise Fish* (H.A.S.); 2, Pearson and Brunton, *British Shubunkin* (S.A.S.); 3, G. S. Westwood, *Optima Gourami* (M.D.A.S.); **Breeding Class (Any Variety):** 1, Hood and Gibson, *British Shubunkin* (unattached); 2, D. Lancaster, *Albino Edwards* (M.D.A.S.); 3, D. Lancaster, *Zebra Danio* (M.D.A.S.); **Best Club Stand:** 1, Middlebrough and District A.S. School Children—*A.V. Cold Water or Tropical:* 1, J. O'Brien, *Black Mollie* (St. Francis); 2, M. Gurnelly, *Flare Mandarin*; **Best Angel Fish in Show:** 1, Bowyer (M.D.A.S.); **Best Fish shown by Lady Exhibitor:** Mrs. T. Trevorton (M.D.A.S.).

COMMENCING on 29th May for six days, the **Freeland A.S.** will be showing various aquaria setups at the Hobbies and Handicraft Exhibition, to be held at the Town Hall, Clacton, London, S.E.8. Both fawcett and breeding tanks will be displayed with as large a variety of tropical fish as is possible.

MEMBERS of the Northampton and District A.S. were given a talk entitled "Cacti keeping in the fish house," by Mr. A. V. Ashford. He illustrated it with colour slides of his own

collection. A "triss-crow-quiz" in fish completed the evening.

Table show results for the month, for Berlin, Danio, and *Mosquito* were: 1 and 3, Mrs. Upton; 2, Mr. R. Messery.

THE speaker at a recent meeting of the **Bournemouth Aquarist Club** was Mr. Norman Bennett, water plant specialist of Weymouth. Mr. Bennett gave a very interesting talk on pond plants and illustrated it with colour slides taken at his nursery. The secretary of the Bournemouth A.C. is Mr. B. Legg, 21, Bester Road, Merdon, Bournemouth.

THE annual general meeting of the **Atherstone A.S.** resulted in the following officers being elected: President, Mr. W. T. Adcock; vice-president, Mr. V. Walton; chairman, Mr. C. E. Jenkins; vice-chairman, Mr. H. E. Jones; treasurer, Mr. W. A. Wainwright; secretary, Mr. E. A. Davis, 4, Ambion Road, Atherstone; show secretaries, Mr. R. Dipple and Mr. F. Cripps; committee, Mr. J. Bagwell, Mr. H. Beale, Mr. J. Jones, Mr. I. Simpson, Mr. J. Rowlands.

THE awards for 1960 were presented at a recent meeting of the **Brighton and Southern A.S.**, the winners being as follows: **Club Show Cup:** C. A. Dowling; **Ladies' Cup:** Mrs. R. Soppaham; **Pandanus Show Cup:** G. Field; **Societal Cup:** R. Bassett.

A film show given by Mr. Mason Smith, of Cambridge, was much appreciated by a large audience which included a party from the Crawley A.S. It is hoped to arrange a return visit to Crawley in the near future, to strengthen the link between the two societies.

RESULTS of the first table show of the year of the **Llanrwst Major A.S.** were as follows: **Brighters:** 1, Mr. Wigg, *Serpae Minor*, 98 points (this was also best fish in the show); 2, Mr. Jobbo, *Serpae minor*, 93 points; 3, Mr. Isher, *Agassiz*, 91 points; **Livebearers:** 1, Mr. Hill, *sunset platy*, 91 points; 2, Mr. Lamm, *sunset platy*, 87 points; 3, Mr. Williams, *guppy*, 86 points.

Meetings are held on the second Saturday of each month. Further information can be obtained from secretary, Mr. R. Lamm, 1, Chestnut Avenue, St. Albans, Glouc.

THE guest speaker at the April meeting of the **Cambridge and District A.S.** was Mr. Kermack, and he gave members a very interesting talk on the building, stocking and maintenance of garden ponds. He dealt with factors to consider when choosing a site for the pond, types of pool which can be purchased ready-made, and methods of making ponds with polythene or with concrete, constructing the advantages and disadvantages of various materials and styles. Mr. Kermack gave helpful advice on the choice of plants, space to allow and cultural hints on a variety of plants, illustrated with slides.

AT a recent meeting of the **Southend, Leigh and District A.S.** the subject was a discussion on aquaria scavengers: catfish versus snails. The previous meeting was devoted to a talk and exhibition on the different types of fish foods both live and dried that can be used by the aquarist.

THE **Goldfish Society of Great Britain** will stage an open challenge class for maximum or most twinstails (male variety) in conjunction with the **Hendon Aquarist Show** at Brookwood Hall, Hendon, on 13th May.

THE last meeting of the **Bristol A.S.** began with a table show for characters, the results being as follows: 1, Mr. C. Craddock; 2, Mr. G. Saxon; 3, Mr. G. Stone; 4, Mr. J. Mason. The rest of the evening was devoted to a "Brain Cross." The new secretary is Mr. W. G. Ham, 18, Imperial Road, Bristol, 4.

The date of the open show is to be 26th and 30th September at Bishopston Park Hall, Bristol.

AT the annual general meeting of the **Welsh National A.S.** new officers were elected as

follow; Chairman, Mr. J. Amshury, assistant chairman, Mr. H. Hyatt; secretary, Mr. D. G. Smith, 23, Alfred Street, South Park, Cardiff; treasurer, Mr. H. Hemm. The society meets every second Monday in the month at the Sergeant's Mess, Drill Hall, Durdley Place, Cardiff, and new members are welcome.

A SATISFACTORY balance in hand, in spite of considerable expenditure during the year on show equipment, was reported at the annual general meeting of the **Dorset A.C.** at Dorchester Y.M.C.A. After several years as chairman, Mr. F. Reader asked to be relieved of office for a spell and was thanked for his careful guidance of the affairs of the club. Mr. S. Yeomans was elected as his successor. Other officers elected were: Treasurer, Mr. T. Swinburn; secretary, Mr. J. Cook, 36, Bullist Street, Dorchester; librarian, Mr. W. Gwynn; press correspondents, Mr. H. P. Finch; committee, in addition to the chairman, secretary and treasurer, Mrs. A. Turner, Messrs. G. Holman and H. P. Finch; auditors, Messrs. K. Allen and J. Burnett. Plans for the year include lectures by well-known personalities of the fish world, film shows, quiz, etc.

RECENT activities of the **Yeovil and District A.C.** included a talk by Mr. Norman Sauter entitled "Aquarium Highlights," and a visit from Mr. J. V. Merrice, of London, who gave an illustrated lecture on "Aquarium Aspects." Both meetings were well attended.

AT the annual general meeting of the **Manfield and District A.C.**, the following officers were elected: Chairman, Mr. A. J. Bickel, vice-chairman, Mr. L. A. Townsend; secretary, Mr. A. Atkins; treasurer, Mr. R. Heath; show secretary, Mr. B. Hutchinson; two committee: Mr. H. Morton, and Mr. E. V. Dixon. Also at this meeting the society held its first "Fish of the Year" show, and the trophy for this show was kindly given by Mr. C. Hughes, the retiring secretary, who is also leaving the district.

Appreciation of Mr. C. Hughes' loyalty and work for the society were expressed; he will be sadly missed but it is hoped that his services will be available in an advisory capacity. The "Fish of the Year" show was won by Mr. R. V. Dyson. The society holds its meetings at the Crown Hotel, Manfield.

AT the last meeting of the **Reading A.C.** films were shown to the members by Mr. W. J. Edwards and these dealt with three forms of pond life. The table show for egg-laying tooth carp (Domesic) was won by Mr. H. Fren, second and third places being filled by Mr. M. Sheppard. The tooth carp championship was also won by Mr. H. Fren, second being Mr. D. Anderson with Mr. M. Sheppard third. The first larval club table show league held between Reading and Slough was won by Slough with 871 points to 821 points.

THE **East of Fife A.C.** who were the first to answer the appeal of the **Surbiton Grammar School A.C.** will be pleased to help any youth organization or school with information about the hobby. The subject for the May table show is characins, and the raffle dinner for this meeting is Mr. A. Nicholson. Two of the members were in the prize list at the recent Federation show: Mr. J. Campbell, president, gaining a first in the barb class and also the best fish in the show award with his barb, Mr. R. Gold was placed third in the catfish class.

AN open table show is being held by the **Dundee A.C.** on Sunday, the 25th June and there are 19 classes. The show is open to any aquarist in Scotland and clubs will be receiving show schedules shortly. At the last meeting a film was shown and there was also a table show. The present leader in the Scott Trophy competition is Mr. A. Robertson with 19 points.

THE **Bradford and District A.C.** newsletter contains an amount of detail regarding

the society's activities. At the last meeting the table show was for cyprinids and the speaker was Mr. C. B. Wilson, his subject being livebearers and guppies. At the previous meeting the speaker was Mr. Podis. Also being considered are details of a home aquatic competition and an annual outing trip to Chester Zoo where Mr. Leage is now the curator. This year the open table show is being held on the 25th May in the Assembly Hall of the Co-operative Institute, Thornton Road, Bradford, and there are 14 classes.

AT the last meeting of the **Dewsbury and District A.C.** there was a lecture by Dr. G. Cost, a former member of the society and now Medical Officer of Health for Clarksheep and Grimsby. Dr. Cost spoke on "The egg-laying tooth-carp" and gave an account of his experiences in breeding the various species of this fascinating family with some comments on the natural habitat and breeding of the fish.

A notable feature of the meetings of the society so far this year has been really good attendance with equally good interest and entries for the table shows. Any aquarist non-member in the Dewsbury district would benefit by paying a visit to the Tenth Club, Union Street, Dewsbury, on the second Thursday or last Wednesday of the month.

A **LIVELY** evening was spent and many topics discussed by a "visita team" at a meeting of the **Blackpool and Fylde A.C.** After judging the table show with Mr. G. N. Hadley, Mr. D. Hammond reported that the standard of exhibits in the recent season was remarkably high. During March the society set on show three furnished aquaria at an exhibition of hobbies and handicrafts held in Kirkham, Lancashire. The team of members who carried out this operation were well rewarded by the results of their efforts.

"Breeding Tropical Fish" was the title of a talk given by Mr. G. Gosser at the last meeting. He gave the many novice members present excellent advice when he told them to aim initially at breeding good livebearers. The chairman, Mr. B. Dimes, introduced Mr. S. Arnold, headmaster of Park School, Blackpool, who spoke about his aim and hopes in seeing

up a number of aquaria in his school. He also thanked the society for the assistance so far given to him in his new venture.

Once more the evening's table show was another "highlight" with a score of entries. Leading so far in this year's Scottcup trophy for seniors is Mr. B. Stronach (12 points) and Single Fish Trophy for juniors, Master Bryan Crowther (19 points). The Society meets at the Veterans Arms, near bus station and North Railway Station, second and fourth Wednesday of each month, commencing at 9 p.m.

SECRETARY CHANGES

CHANGES of secretaries and addresses have been reported from the following societies: **Bristol Aquarists Society** (W. G. Hign, 18, Imperial Road, Bristol, 4); **Hendon and District A.C.** (H. G. J. White, 52 Elmstone Avenue, Mill Hill, London, N.W.7); **Manfield and District A.C.** (A. Atkins, 61, Windsor Road, Manfield); **Welsh National A.C.** (D. G. Smith, 23, Albert St., South Park, Cardiff).

Crossword Solution

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

AQUARISTS' CALENDAR

12th May: Hendon and District A.C. open show at the Rutherford Hall, Hendon.
27th May: Cardiff Aquarists' Society annual open show. Full details from Mr. S. Corcock, 35, Howard Road, Brunley, Kern.
28th May: Reading and District A.C. open table show at the Assembly Hall, Co-operative Institute, Thornton Road, Reading. Schedules are available from Mr. B. Marshall, 13, Park Hill Drive, Bradford, 6.
2nd June: Federation of British Aquarist Societies general assembly.
10th-11th June: British Aquarists' Festival, Belle Vue Zoological Gardens, Manchester. Schedules are available from Mr. Geo. W. Cooke, Spring Grove, Fritchill, Batley, Yorks.
15th June: Friends A.C. first open show at Bristol. Entry forms from Mr. F. Jakes, 6, Westwood Park, London, S.E.28.
22nd-24th June: Southampton and District A.C. annual open show at the Avon Hall, Southampton. Details can be obtained from Mr. D. E. Ring, 32, Clover Nook, Redbridge, Southampton.
24th June: Dewsbury and District A.C. furnished aquatic show at Bailey Agricultural Show, Mount Pleasant, Batley, Yorks.
25th June: Skipton and District A.C. One day open table show, Ambulance Hall, Skipton.
30th-31st July: Great A.C. Open Show.
30th-31st July: Ogdenham Town Show. All enquiries to Schellish, etc. to the show secretary, Mr. A. T. Smith, 125, Hinton Avenue, Runcorn, Cheshire.
13th-15th July: Merseyside A.C. Open Show at the Liverpool Show. Schedules and information from T. A. Marshall, 47, Oakhill Road, Liverpool, 13.

14th-15th July: Bedford and District A.C. open show in conjunction with the Bedfordshire Agricultural Show. Details can be obtained from the show secretary Mr. D. Ward, 42, The Ridgeway, Puzos, Bedford.
8th-12th August: Portsmouth A.C. sixth open show at the Community Centre, Twyford Avenue, Stanstead (setting-up date 6th August). Show schedules are available from the show secretary Mr. W. Byler, 495, Commercial Road, Portsmouth, Hants.
18th-19th August: Three Counties Aquarists' Show at Basingstoke. Details can be obtained from the show secretary Mr. R. Power-Lynn, Park Lane, Old Basing, Basingstoke, Hants.
1st-2nd September: Bristol Tropical Fish Club open show and exhibition of tropical fishes at the Temple Ganton School, Victoria Street, Bristol. Schedules are available from the show secretary Mr. J. D. Brown, 78, Pearl Street, Bristol, 1.
2nd September: Federation of British Aquarist Societies general assembly.
2nd-3rd September: Accrington and District A.C. eleventh annual open show at the Town Hall, Accrington, Lancs.
8th-10th September: Wiltshire Open Show, Roundwood Park, London, N.W.10, 25 Gasson. Details from Mr. J. R. Hooton, 24, St. John's Avenue, Heston, London, N.W.10.
15th-16th September: Leeds and District A.C.
28th-30th September: Bristol Aquarist Society. Open Show to be held at Bishopscote Parish Hall, Gloucester Road, Bristol. Schedules available from Mr. V. Canfield, 18, Glen Park, St. George, Bristol (closing date 10th September).

GRO-WEL

SUPERIOR

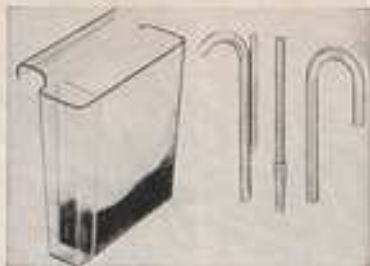
FILTERS

for BEST

AQUARIUM

CLARITY

OUTSIDE FILTERS *Moulded of strong, clear polystyrene to fit all aquarium frames up to 1 inch wide.*



◀ **"SLIM JIM"**: For tight quarters. The slimmest outside filter on the market. Popular self-starting type. Complete with removable partition, siphon, strainer and return stem. A quality filter for only 17s. 6d.

"KLEAR KING" 3-Compartment filter: Separate compartments for glass wool and charcoal. Removable partitions plus a larger siphon stem

for faster recirculation. Clog-proof return stem giving a steady, non-splash flow. Price 22s. 6d.

INTERNAL FILTERS

▶ **BOTTOM FILTER**: For filtering and aerating the tank. ▶ Handsomely styled. Unobtrusive and efficient. Price 8s. 3d.

• **Ornamental ROCK FILTER**: For ornamental filtration. Looks like a rock but is primarily an efficient filter and keeps tanks up to and including 10 gallons sparkling clear. Price 17s. 6d.



TRAPS



◀ **5-WAY CONVERTIBLE TANK TRAP**: The most versatile trap available. Can be used for breeding 1 or 2 livebearers, as a rod trap for breeding egg-layers or as a self-cleaning display tank for 1 or 2 Bettas. Price 28s. 6d.

These popular and well-tested products are made by

GRO-WEL FISH-ADE CO. INC., U.S.A.

and distributed in Great Britain by

THE LIQUIFRY CO. LTD.

CHURCH STREET, DORKING, SURREY

Obtainable through your dealer or post free from The Liquifry Co. Ltd.

IT'S THE TOPS

- WON'T FOUL THE WATER

- THE FOOD IN THE PLASTIC BOX, 1/6, 2/6, 3/6, 6/6, and POLYTHENE JARS 17/6.

- From all good Pet Shops or direct from:—

McLYNN'S AQUATIC FOODS
DORKING, SURREY

McLynn's
OF EWHURST
FISH FOOD

BRITISH AND BEST

- A COMPLETE DIET, ONE GRADE ONLY

MADE BY
D. McINERNY,
OF McLYNN'S
AQUARIUM
EWHURST, author of
"ALL ABOUT
TROPICAL FISH"

**THERE'LL BE NONE
LEFT AT
THE BOTTOM**

OPEN AQUARIA SHOW

*Sponsored by the Merseyside
Aquarist Society at the
Liverpool Show Wavertree
13th, 14th and 15th July, 1961*

Schedules and full details from:— Mr. T. Mitchell,
Room 13, or Liverpool Show Offices,
Liverpool 1. *Why not organize
your own stand for this year's show?*
(Please mention this advert.)

Heavy Gauge Steel SHELVING

£3.15.0

DELIVERED FREE.



**THE ONLY HEAVY GAUGE
SHELVING AT THIS PRICE**

- Brand new — Manufactured in our works.
 - Shelves adjustable every inch.
 - Heavy gauge shelves will carry 400 lb. each.
 - Stove enamelled dark green.
 - 6 shelves per bay — Extra shelves 6/- each.
 - Quantity discounts.
- Other sizes available.
Also available in white at 15 per bay

N. C. BROWN LTD.

A. P. WING

HEYWOOD · LANCS · TEL: 69018 (6 lines)

THE AQUARIST



over
10
years

experience in keeping Fish WARM. The quality and workmanship in Evans Heaters & Elephant thermostats guarantee customer confidence.

Write to Dept. 1 for illustrated literature.

EVANS ELECTRONIC Developments Ltd.
EVONIC WORKS,
SHADY LANE,
BIRMINGHAM, 22A.

Telephone:
GREat Barr 17645.

LETTY KREMNER

FOR PLANTS OF QUALITY!

For Pond and Coldwater Tanks

OXYGEN. Elodea Densa 2/6 doz.; Vallneria S.P. 2/6 doz.; Willow Moss 1/- bunch; Starwort 1/- bunch; Crowfoot 1/- bunch.

BOG PLANTS. Water mint 9d; Forget-me-not 9d; Iris 1/6; King-cup 1/6; Cates Riparia 2/6; Bulrush 1/8; Brooklime 1/8; White Lilies 5/- each; quality Red, Yellow, Pink, 12/6 each; Hyacinths, 7/6 each.
Box and post 2/6.

Tropical Plants

Myriophyllum, Vallneria tortu, Ludwigia, Bacopa, Sagittaria, Hygrophylla. All 5/- doz. in dozens.

Giant Sag. 1/- each; Wistaria 1/6 each; Cabomba 1/- each; Nymphae St. 2/6 each; Apogoneton 2/6 each; Pygmy chain swords 1/6 each; Amazon swords 4/6 each; Mad. Lace Plants 12/6 each; Floating Salvinia, 1/- portion.
Box and post 1/6.

Wrought Iron and Bow Front Aquaria and Stands. Tropical and Pond Fish.

12 page list free.

34 CHEETHAM HILL ROAD,
MANCHESTER 4 BLA 2163

(Ample free parking)

Author of *Exotic Fishkeeping*

MARSHALL'S AQUARIA

26 WESTBURY LANE, BUCKHURST HILL, ESSEX Telephone: BUCKhurst 4708

It is quite easy to get to Buckhurst Hill. By tube train on the Central Line thirty-five minutes from the West End, and we are three minutes from Buckhurst Hill Station. Or by bus routes 20, 30A, 143 to Bald Faced Bog, five minutes walk from there. There is always someone in attendance at the Hatchery so you can inspect at any time including week ends.

Over 130 different species of fish for sale. Fully stocked of plants available, collected from our hundreds of tanks for each order and sent direct to you, they cannot fail to grow.

We sell, buy, or exchange fish of any kind. We also purchase second hand tanks or complete 'set-ups'.

PLEASE NOTE

We still have a number of tanks left (see last advertisement) and we also have a quantity of frames for small tanks at prices from 2/6 upwards.

During 1961 we shall be glad to welcome any Club who wish to visit our establishment. Secretaries are asked to write to us for vacant dates. Tea will be provided and for any club wishing to avail themselves, arrangements can be made for a first class lunch at a local restaurant (Sundays included). We are situated on the borders of the famous Epping Forest. Make a day of it and write for details.

We have had so many inquiries that we have decided that during the Spring and Summer we will organize a service to send fish by rail from all the main London termini to ensure they reach you on the same day as despatched. Write to us with details of your requirements.

The books written by Theo. H. Marshall: 'Brooding the Egg-layers', 'Brooding the Livebearers', 'Brooding the Labrets', 'Brooding the Cichlids', 'Aquarium Management and Fish Farming', 'Aquarium Plants and Snails', are all available from here at 6/- per volume, post free, or a complete set for 42/6 post paid.

We are always prepared to give advice on all phases of fish keeping and typical breeding tanks set up for many different species of fish can be seen in our Hatchery. Despite comments we emphasize our offer of a sample of fish food which is neither putty (far from it) or inferior, we repeat that it is the finest fish food that can be obtained.

Forty years experience at your service. We have been breeding fish since 1920

WE GUARANTEE

1. That here you will see a bigger and better display of Exotic Fish than anywhere else in the British Isles, and we do not exclude the Zoo's. The test is to ask anyone who has been here.

2. That our Fish Food is the finest obtainable and that it contains a very high proportion of the best liver and yolk (salmon hocks hair). Sent direct from here so that it is in perfect condition and ensures that it is not adulterated in any way. Your fish deserve the best food you can give them. N.G.F.F. (Nature's Own Fish Food) is the best. Any of the Cichlids eat it greedily. A generous sample will be sent post free for 2/6. Try it and give your fish a real treat. Trybe quantity 6/-.

3. That our plants (and we offer over fifty different subjects) are the very best obtainable, and that our 10/- parcel of 36 assorted plants and the 5/6 parcel of 18 plants are best on offer and both are post paid.

4. That everything we sell is the best on offer. We supply everything for the Aquarist in the way of equipment and post free. Our offer of a Thermostat, Heater and Thermometer at 20/- post paid is still open.



SUPER SHREDDERS

S S S

3 for Shabuckins. All sizes, quite a number ready for showing, from my strain that has won prizes in many Open Shows. Let me know your requirements. S.A.E. please.

3 for Shredders. Use these and discover the finest method of feeding young fish. Prices—The Shredders 10/-; Super Shredders 16/-; Coarse Tooth Shredders (for bigger fish) 12/-, all post free.

3 for Sagittaria (giant) a plant suitable for tropical, cold water and pond. Small plants 6/- dozen, larger plants 1/3 each.

AQUATIC DEVELOPMENTS

143-145 BURE LANE, CHRISTCHURCH, HANTS.

**REPTILES
&
AMPHIBIA**

*The largest
stocks and
greatest variety
in Europe.
Send stamp
for list.*

We are also distributors for the
"NORTHMERE"
rigid fibreglass water gardens

Robert Jackson (Naturalists) Ltd.

Holly Bank Nurseries, Grove Lane,
Hale, Cheshire. Telephone: Ringway 3301

I've Got Millions!

WORMS! FOODS! COMPOSTS! RESULTS!

- | | | |
|--------------------|-----|--------------------------------------|
| EUGLENA | 1/4 | —With 8 page instructional booklet. |
| MICROWORMS | 1/4 | —Complete with feeding powder |
| MICRO FOOD | 1/4 | —Specially developed for Platy |
| GRINDALWORMS | 1/4 | —Miniature W. Worms Easy to breed |
| GRINDALWORMS | 3/6 | —Massive cultures in wooden boxes |
| GRINDAL FOOD | 1/4 | —High protein content. Rapid results |
| GRINDAL COMPOST | 1/4 | —Fishes ground with organic base |
| WHITE WORMS | 1/4 | —With complete instructions |
| WHITE WORMS | 3/6 | —Platy cultures in wooden boxes |
| WHITE WORM FOOD | 1/4 | —Exclusive formula |
| WHITE WORM COMPOST | 1/4 | —Recommended for quilter breeding |

Breeding packs: five times 1/4 quantity for 7/4

Ask your dealer, or free delivery from

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

Matt Aitken

(MEMBER P.T.A.)

*** Aquarium and Pet Supplies**

*** Tropical Fish Specialist * 50 Tropical
Tanks on display * Best Selection of
Fish, Plants and Equipment in Scotland**

44 LEVEN ST.
EDINBURGH
FOU 3139

15 BALFOUR ST.
EDINBURGH
Leith 38386

NEW WARDLEY FOODS!

Keeping a Terrapin? You'll need Wardley's
Turtle Food 1/3 and 2/3.

Breeding Seriously? You'll need Wardley's
Infusoria Powder 3/6, Infusoria Tablets 2/6.
In the shops now.

COMING SOON!

The English Edition of Hans Freys
"Illustrated Dictionary of Tropical Fish"
which, in German, sold 18,000 copies in less
than 2 years making it a National bestseller.
There is no book like it that compares in size,
scope, or completeness. Illustrated with more
than 1,000 photographs and drawings in
colour and black and white.

Watch for further details and publication date.
Another T.F.H. introduction naturally.

T.F.H. PUBLICATIONS

(LONDON) LIMITED

34 Nutley Lane, Reigate, Surrey

REPTILES — AMPHIBIANS

Imports from all Continents

Write for current price list

Sole agency for England:

G. A. IZZARD

13, Romney Close, Chessington, Surrey

DRS. W. DE ROVER,

Spreldeweg, 2

Putten (Gld.), Holland

AQUARIA FRAMES & STANDS

These frames and stands are made from 1 x 1/2 ins. steel angle by expert craftsmen, guaranteed square, welds invisible from inside and coated with anti-rust metalized paint. Stands with welded on feet on porous carpets. Frames 24 x 12 - 12, 20s. 24 x 15 - 12, 21s. 30 x 15 - 12, 23s. 36 x 12 - 12, 24s. 36 x 15 - 12, 25s. Stands for two tanks 24 x 12 - 36 high, 22s. 36 x 12 - 36 high, 23s. All over shades made from polished Aluminium, 24 x 12, 18s. 30 x 12, 21s. 36 x 12, 22s. Shades sent only with frames or stands. Any size frame, stand, or shade made to order. Money back if not satisfied, cart. post prompt despatch. Glazed tanks to orders only.

MOLLIFUD

The food for all Molluscs and Livebearers. 2s., post 6d. Breeders Pack 4 times the quantity 6s., post free. Fry Food 2s. 6d., post 6d.

W. HUTCHINSON,
BANKHEAD TROPICAL FISHERIES,
SEAHAM, CO. DURHAM, Tel: 3182

Shell Life on the Seashore

PHILIP STREET

W.M.C., F.L.S., F.R.S.

This introduction and guide to the common sea shells of Britain gives detailed instructions for preserving shells both with and without their inmates, for observing them alive in an aquarium, and for taking close-up photographs of them in their natural surroundings. *With a frontispiece in colour and 40 drawings by Noel Gregory.* 18/-

FABER AND FABER LTD

24 Bevil Street, London WC2



British Aquarists' Festival

10th and 11th June, 1961

Belle Vue Zoological Gardens, Manchester

26 CLASSES COVERING TROPICAL, COLDWATER AND AQUASCAPES

The Show with a new approach

Hours of opening

Saturday, 10th June	-	-	10 a.m. to 8 p.m.
Sunday, 11th June	-	-	10 a.m. to 7 p.m.

Admission to the Festival, including also the Belle Vue Zoo and Amusement Park, will be 2/-; children half price.

PREPAID ADVERTISEMENTS

5d. per word (12 words maximum) Box number 6d. extra

FOR SALE

GLAZED aquaria in all sizes including 36 x 15 x 12, 62x 6d., 18 x 10 x 10, 15x 6d.; 24 x 12 x 12, 37x 6d., tanks dispatched to any part of Britain, carriage extra. Plants, Accessories, Fish. Wright's, 10, Laine Road, London, N.4. Phone Archway 3820.

AQUARIA FRAMES. For quality and accuracy buy direct from the manufacturer. 1 x 1 x 1 steel angle, 36 x 15 x 15, 25x, 36 x 12 x 12, 24x, 30 x 15 x 15, 25x, 6d., 30 x 15 x 12, 25x, 30 x 12 x 12, 25x, 6d., 34 x 12 x 12, 20x, 6d., also 28 x 15, 15x, 6d., 18 x 12, 15x, from 1 x 1 = 12x. All nitrided and welds ground flush. Any size to order. Immediate dispatch carriage paid. C.W.O. Money refunded if not satisfactory. For complete list, tanks, shades, etc., S.A.E. J. E. Heaney, 52, Charter Street, Accrington.

FERRY'S for Plants. 1st and 2nd Awards British Aquarist's Festival. Assorted selections. Tropical or Cold 5s. 6d.; 7s. 6d.; 12s. 6d. Vii. Torii, Myriophyllum, Sagittaria, Najas, 9s. per dozen. Cryptocoryne Cordata 1s. 6d. to 2s. 6d.; Willisia 2s. 6d.; Beckwith 1s.; Hygrophila 1s. 6d.; Seven assorted 15s.; Water Wistaria, Giant Hygrophila 2s. 6d. Post 6d. All Advertised Accessories. C. R. Ferry, Professional Aquarist, 415, West Street, Crews.

McLYN'S Stainless Steel Breeding Trays, 12" x 5" x 6" ideal for raising livebearers, and spawning the egg-eaters, large enough for several adults at once. Strong, last for years, initial cost saved on one brood. Sent flat ready to be assembled, only 21/- each including postage. McLYN'S Aquarium, Dromchurn, Ewhurst, Cranleigh, Surrey.

WHITE WORMS. Culture and Instructions 2s. Baker, 41, Bartholomew, Brighton.

TAYLOR'S AQUARIUM, 76, Manchester Road, Burnley. Tropical Fish in variety. Our top quality Plants gained for us 1st in Tropical Pests and Aquaria, British Aquarist's Festival, 1959.

BRINE Shrimp Eggs. Breeder's Half Pint Bulk Packs. One for 38s. Two for 75s. engineers post paid. C.W.O. Hatching guaranteed. Box 2015, 73a, Aquaria, The Butts, Brentford, Middle.

PERFECT SPECIMENS. Live bred Blue Scottish Guppies 15s. per pair. Live bred Blue Fighters 15s. per pair. Apr. Trifasciatus (5s. pair). Madagascar Rainbow 1s. 6d. each, carriage 3s. 6d. C. R. Ferry, Professional Aquarist, 415, West Street, Crews.

FEED RIGHT, and there's nothing LEFT, McLYN'S of course.

AQUARIA Stands, Shades, Frames. Guaranteed square. 1 x 1 = 4 in. steel angle. Stands to take two tanks, 15 1/2 x 12 1/2 x 36 in. high 25s. 24 1/2 x 12 1/2 x 36 in. high 32s. 30 1/2 x 12 1/2 x 36 in. high 37s. 6d. 36 1/2 x 12 1/2 x 36 in. high 42s. Frames 24 x 12 1/2 x 12 1/2 in. 20s. 24 x 15 x 12 in. 21s. 30 x 15 x 12 in. 22s. 36 x 15 x 12 in. 24s. 48 x 15 x 12 in. 11 1/2 x 11 1/2 x 14 steel angle 36s. Glazing Compound 1s. 6d. 2s. 6d. tin, despatched. Any size Frame, Stand Shade made to order. Carr. paid. C.W.O. Money back if not satisfied. Prompt dispatch. Hookery Engineers, 30, Somers Street, Leeds, 1. Tel. 25081.

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

TROPICAL fish, fully guaranteed, over 100 species offered at lowest prices. All Aquarist's requirements supplied. Starling Fisheries, 62, Mayes Road, N.22. (Not new address).

GUARANTEED Quality Plants—Hornwort, Hygrophila, Ludwigia 5d., 4s. 6d. dozen, Riccia, C. Beckwith, Dwarf Amazon, Cabomba 1s. each, Apocynum Undulatum, Utricularia, C. Hamilliana, Coruba 2s. each. Postage 9d. on all orders. Large selection plants and over 120 varieties Tropical and Coldwater fish including Breeding pairs/guides from 10s. Personal shoppers only. Kingfisheries, 138, Gosden Road, Beckenham, BE2 3719. Closed all Wednesdays.

GOLDFISH, Orfe, Tench, Minnow and plants for ponds. List from Raymond Jackson Ltd., 17, Daux Ave., Billingshurst, Sussex.

Bristol Blue Shubunkin pairs and yearlings. S.A.E. please, Overham, 49, Park Lane, Winterbourne, Bristol.

EASY TERMS. Extend your hobby the easy way. Air Pump, Heaters and Thermostats, Filters, Breeding Trays, Nets, Thermometers, Frames and Stands and all accessories. Send a stamp for list "A" Joseph Stanley Ltd., Church Hill, Northfield, Birmingham 11. Phone FROXY 4630.

USED TANKS, Heaters, Thermostat "Constat" standard, Mercury Thermometer, all at half usual price. Post paid except for Tanks and Fish House. H. C. Parsons, Ashford, Ash, W. Alderbury.

SPARKLING clean tank; it's CLEAR for every McLYN'S fish food.

TANK 3 ft. x 12 in. x 18 in. deep; stand and shelf; patent white, excellent condition. £3 20/6 1417.

READY FOR BREEDING. Live bred Ocellid Red Fighters £1 per pair. By rail anywhere. Carriage to Kingston Aquarist, 287, Manchester Road, Hyde, Cheshire.

FOUR Aquaria on Stands, heaters, thermometers, etc., £12. Wright, 109, East Street, Watworth, S.E.17.

AQUARIUM and pond complete 3d. 6s. Always available 25s. each, for personal callers only: at Wolverhampton Aquarist, 147, Horsley Field, Wolverhampton.

BRITISH and BEST, McLYN'S fish food.

WATER garden kit, the Northman "Do It Yourself" Water Garden comprising rigid glass fibre good shell (not cheap plastic sheeting). Possibly no cement or brickwork required. Direct delivery. Now is the time to install. Trade supplied. Send 3d. stamp for free booklet and price list to: Commissioner (Rochdale) Limited, Offshore Road, Rochdale.

TROPICAL Plants in wide variety. Trade only. S.A.E. Joe Grayth. See display ad.

FISH tanks by the score, you need a J.L. Master Constat model JL for your control, 10s.

COLOUR slides, 35 mm., tropical fishes, glass-eyes, useful features, etc. Sample list 3s. 6d. Matkyo, Lilliput, Puckwood, Dorset.

FANCY Goldfish fancy McLYN'S fish food.

LARGE Red Ramborn Snails. 1s. each, 7s. dozen. 125, Whalley Road, Clayton-le-Moors.

TROPICAL Fish in variety, by rail anywhere. S.A.E. for list. Naylor, 44, Dudley Dean Road, Selby, York, Birmingham.

MAKE no mistake your Thermostat must be a J.L. Master Constat model JL, price 35s.

GUARANTEED thermostat, heater and thermometer. 25s. post paid. Free heater warranty. Starling Fisheries, 62, Mayes Road N.22.

MASTER Constat model JL will control from one to twenty heaters, costs only 35s.

THERE was a young lady from Sarcel.

Who's Mollie produced a fine brood,

They grew to such size

She won all the prizes,

She fed 'em of course, McLYN'S Food.

WANTED

WANTED. Adult male Corydoras Paleatus, also pair Blue Platies, Hat, Shillingford, Berks.

BREEDERS Scorpion Fish and Plants. Wimbleson Aquaria, 4, Stanley Road, S.W. 18.

PROPERTY FOR SALE

SOUTH COAST seaside aquarium, fully equipped ready for opening except livestock. Large breeding room. Scope for sales development. 10-health unexpected force sale. £2,500. Box 9600, The Aquarist, The Butts, Brentford, Middle.

LUTON—large modern semi-detached 5-roomed house with garage and centrally heated aquarium with 60 separate fish tanks, fully stocked, price complete £3,500. Messrs. Cricknell, 59, Whippendell Road, Watford. Tel 26295.

REPAIRS

RECONDITIONED heaters, 6s. plus your old heater, guaranteed twelve months. New heaters 7s. 6d. We have built our reputation on these. Trade enquiries welcomed. Repairs to Ottona, Proctor and Oymac pumps. Quotation by return, without obligation. Guaranteed workmanship. Warburton & Co., 78, Brixbury Green, Romley, Cheshire.

THE CONSTAT
THERMOSTAT TYPE Q.K.
OUTSIDE FITTING

21/-

ASK TO SEE IT AT YOUR LOCAL DEALER
Distributed by
BARRY M. AUSTIN,
95, Crown Road, Twickenham, Middx.
WHOLESALE TO THE AQUATIC TRADE

Shirley Aquatics Ltd.

WATER PLANT NURSERIES AND FISH HATCHERIES—Phone: SHIRLEY 130

Stratford Road, Monkspath, Shirley, Solihull, Warwickshire

SPECIAL OFFER OF TROPICALS

(May — June only)

GREEN SAILFIN MOLLY (Velifera)
LARGE ADULT PAIRS 40/- pair

Siamese Fighters
NEW ORCHID STRAIN
Unsexed young 5/- or 6 for 20/-

SHIRLEY RED VEILTAIL GUPPY
Good pairs 60/- — Small 30/-

TROPICAL FISHES IN ENORMOUS VARIETY
Call or send s.a.e. for list

The World's Greatest Selection of Aquarium Plants

(Send S.A.E. for list)

OVER 100 PLANTS ILLUSTRATED AND
220 PLANTS DESCRIBED IN OUR BOOK
A MANUAL OF AQUARIUM PLANTS
7/6 POST PAID

SPATTERDOCKS
(*NUPHAR PUMILUM*)
2-3 year old plants
WONDERFUL CENTRE-PIECE
ONLY 5/-

THE LARGEST AND BEST SELECTION OF POND FISHES EVER

40,000 SMALL GOLDEN ORFE, GOLDEN TENCH, GOLDEN RUDD. SEVERAL THOUSAND OF OUR FAMOUS BLOOD-RED GOLDFISHES. SHUBUNKINS IN RAINBOW COLOURS—BEAUTIFUL COMET TAILED GOLDFISH.

Most Species in sizes from 2"—10" (send S.A.E. for list).

£10 assortment will give you the finest value ever offered.
MANY BREEDING PAIRS AVAILABLE.

GIANT VALLISNERIA
FOR POND OR AQUARIUM
3/6 each — 5 for 10/-

**PLEASE NOTE OUR NEW
HOURS OF BUSINESS**

SPECIAL WATER LILY OFFER
20/- each

MARLIACEA FLAMMEA
AMARANTH FLOWERS AND
MOTTLED FOLIAGE
Ideal for Small Shallow Pools

PLEASE NOTE—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 4 miles from Birmingham, Midland "Red" Bus No. 120 from Bull Ring, Birmingham, passes the door, slight at "The Cross", Monkspath.
HOURS OF BUSINESS—Weekdays 10 a.m.—5 p.m. Sundays 10 a.m.—12.30 p.m. May—July Sunday afternoons also from 2 p.m.—5.30 p.m.
CLOSED ALL DAY EVERY MONDAY
TERMS OF BUSINESS—Cash with order please. Fish sent by rail. Tropical minimum order £5, insulated container and carriage 10/-. Cold water minimum order £2 plus 10/- can and carriage. Plants by post (minimum order 10/-) please add 1/6 post and packing.

Printed and Published by BUCKLEY PRESS LIMITED, London and Brentford