

The Aquarist

and Pondkeeper

SEPTEMBER, 1962



MONTHLY
Vol. XXVII No. 6

TWO SHILLINGS

WALTER R. SMITH

*For Complete Tropical
and Coldwater Aquaria*

80 VARIETIES OF TROPICAL AND
COLDWATER FISH USUALLY IN STOCK

1,000 Gauge Polythene Sheeting. Ideal for Garden
Ponds. £1 per running yard. 12 ft. wide, including
P. & Post.

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 '30' AQUARIUM SEALER

Angle Iron Aquariums, Frames and Stands a speciality
Despatched in crates charged at 20/- each, returnable
full 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.

Send S.A.E. for 20 Page Price List

WALTER R. SMITH
39 Tib Street and 16 Whittle Street
(off Tib Street)

Manchester 4

Telephone: Deansgate 2961 and 2828

YOU ARE INVITED TO SEE AN
**EXHIBITION
OF TROPICAL FISH**
IN OUR NEW M.&R. AQUARIUM



Over 100 varieties on show and for sale. We are direct importers
of tropical fish. We stock Marine Tropicals. Fish for personal
shoppers only. Club visits by appointment.

M. & R.

466 PAINLEY ROAD WEST, GLASGOW S.W.3

Telephone: 2285 x 3421

Open Sundays 11 a.m.—2 p.m.



A close association with countless
friends, the "Elephant" Immersion
Thermostat makes a perfect
match with the famous
Evans Heater. For con-
trolled temperature
at all times—fit an
"Elephant" Ther-
mostat.

Heater 9/6

Thermostat 18/-



ELECTRONIC DEVELOPMENTS LTD

Evans Works, Shady Lane, Birmingham 22A
Telephone: Dial 401 2742

"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 egg-layer 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:

**INTER-PET SUPPLIES COMPANY, CHURCH STREET,
DORKING, SURREY**

(Sales Promotion Division of the Liquifry Company Ltd.)

FINE HOMES FOR FISH



THE MODERN
'GENYK-AQUARIA'

Cleanly and strongly made fishtanks in bright cream enamel frames with clear glass. A fine home for fish and a delightful showpiece in any room. 'Genyk-Aquaria' are available in five convenient sizes, priced from as little as 14/6.

HYGIENIC WIRE WORKS LIMITED
Miles Road Mitcham Surrey Tel: MITcham 3044

RUST! "Just forget it!" The new nylon coated aquaria
Do just that! FINISH—WHITE or BLACK Sizes stocked: 24x12x15 £3-19-6
 18x10x12 £2-7-6 Plastic Covers 25/- & 18/- resp.

Arbe Perspex Aquaria now stocked

NEW ARRIVALS
 Female ... 3/6 to 7/6
 Green Finch ... 3/- & 4/-
 Large Goldfinch 7-4" ... 10/-
 Small Goldfinch ... 5/-
 F. Collared Canary ... 15/-
 F. Collared Canary ... 5/- to 7/6
 Small Goldfinch & Shrike ... 1/- to 2/6
ALL FISH PLANTS STOCKED

THERMOSTATS
 Precision ... 25/-
 Control Thermal ... 25/-
 Control New Rational Type QK ... 25/-
 CNO ... 25/-
 On/Off ... 15/-
 On/Off ... 15/-
 "Pencil" with neon indicator ... 12/6
 Direct Read ... 24/6
 Wired ... 10/-, 12/6, 25/-

AERATORS
 Solo ... 87/6
 Cooker Type ... 75/-
 Turbo Jet ... 45/-
 Membrane Glass ... 25/-
 Membrane Glass ... 25/-
 Proctor ... 65/-
 Dymax Mk. I A.C. D.C. ... 49 0 0
 Dymax Mk. II A.C. only ... 29 0 0

PISTON PUMPS
 Hi-Lo Super New Super ... 107/6
 Hi-Lo "A" ... 120/-
 Hi-Lo "B" ... 145/-
 Hi-Lo "C" ... 200/-

Thermometers
 Mercury 4" ... 4/-
 Blue Gem 4" ... 4/6
 Mercury Gem 6" ... 6/-
 Dancy 6" ... 6/6
Sandlites
 Premier Biological Sub-merged ... 14/-
 Chloro ... 1/-
 Amazon ... 12/6, 15/-
 Tubing 96" ... 4/-
 Nylon ... 1/6
 Tubing 1/8" ... 1/6
 Glass Wool 1" ... 1/6
 Filter Carbon 2" ... 1/6

TROPICALS
Large Neons, 6 for £1 3/6 each
 Rosaline ... 5/-
 Angles 2 1/2 & 3 1/2 ... 2/6
 White Cloud ... 2/6
 Mosquitos ... 2/6
 Platy ... 2/6
 Black Widows ... 2/6
 Platys, various ... 2/6
 Swordtails ... 2/6
 Substrata ... 2/6
 Silversides ... 2/6
 Oopple (pair) 1 1/2, 2 ... 2/6
 Harlequin ... 2/6
 Cherry barb ... 2/6
 Nigger barb ... 2/6
 Chequer barb ... 2/6
 Red Eyed Tetra ... 2/6
 Swordtail ... 2/6
 Brown & Blue Atlas ... 2/6
 Kissing ... 2/6
 Opaline ... 2/6
 Gouramis ... 2/6

BREEDERS:
ALL GLASS AQUARIA 5 sizes, 10x6x8 to 10x9x9. Gallies only.
BOOK CASE BOW-FRONTED AQUARIUM
 48x10x15 ... £28 10 6
 36x12x15 ... £18 10 6
 Standard Bow £11, £15, £19 0 6

PLANTS
 Sagittaria ... 6d. each 2-6cm.
 Vallis ... 6d. 2-6cm.
 Vallis ... 6d. 2-6cm.
 Anubias ... 6d. 2-6cm.
 Ludwigia ... 6d. 2-6cm.
 Hydrophila ... 6d. 2-6cm.
 Cryptocoryne ... 2/- and 3/-
 Wataria ... 1/6 2-6cm.
 Giant Hydrophila ... 1/6 2-6cm.
HEATERS 15w to 150w
 Eco ... 5/6
 P.S. Standard ... 1/6
 Witted ... 8/6

ADULT RARE FISHES
 Pelmatocheilus Kribensis ... 7/6 each
 Elephant Nose Fish ... 25/- each
 Black Veil Guppy ... 15/- pair
 Brown Anana ... 1/6
 Knite Fish ... 10/6
 Clown Loach ... 12/6 & 15/-
 Siam from ... 7/6 to 20/-
 Malayan Angles ... 7/6 to 15/-
 Rummy ... 5/-
 Weather Loach ... 5/-
 Bushbark ... 15/-
 Firemouth ... 4/-
 Red Veil Guppy ... 10/- & 15/- pair
 Red Tail Shark ... 15/6 pair
 Adult Aplocheilichthys ... 12/6 pair
 Adult L. ... 12/6 pair
 Adult Britanica ... 12/6 pair
Our minimum order for fishes is £2, a charge of 12s. 6d. is made for container. Carriage charges, by fast passenger train and telegram during time of arrival.

REPTILES
 Small Common Alligator ... 25/- & 30/- each
 American Terrapin ... 7/6
 Green Snake ... 7/6
 Lizards, Green ... 7/6
 Lizards, Wall ... 5/-
STANDARD AQUARIUMS
 (Light Gauge) (Angle Iron)
 12x6x6 ... 10/- 24x12x12 ... 49/-
 14x8x8 ... 6/6 24x12x15 ... 52/6
 14x8x8 ... 14/- 30x12x15 ... 75/-
 18x9x9 ... 15/6 36x12x15 ... 82/6
 18x10x10 ... 21/- 48x12x15 ... 116/-

COVERS
 18x10 ... 14/6 18x10x36 ... 32/-
 24x12 ... 21/- 24x12x36 ... 40/-
 30x12 ... 26/- 30x12x36 ... 45/-
 36x12 ... 32/- 36x12x36 ... 50/-

FOODS
 Basic Fishes ... 1/6
 Hydro Fakes ... 1/-
 Drosac ... 1/6 & 2/6
 Hovis ... 6d. & 1/6
 Shrimp ... 6d. & 1/6
 Dry Cephalopods ... 6d. to 5/6
 Lumpy ... 2/6
 Infused ... 2/6
 Elix ... 2/- & 4/6
 Hovis ... 2/- & 7/-
 McLyons ... 1/6, 2/6, 4/6, 17/6
 Matis & Vega ... 2/-, 7/6, 15/-
 Sherman's ... 1/6 & 2/6
 Wardley's ... 8/-, 4/6, 2/6, 2/6, 1/6
 Fovelin ... 3/-

THE CENTRAL AQUARIUM
 Situated on the A41 Route, opposite Hendon Central Station

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



BIKO

The BIKO is the most powerful vibrator pump in the world. It is more powerful than some piston pumps. Double outlet pipes from separate diaphragms. (Two pumps in one, or one to spare!) Outside filter prevents dust and impurities from entering aquaria. On/off switch at side of pump. Long flex with plug attached. Extra deep solid rubber base: no vibration, absolutely silent. Consumption only 5 watts. Six months written guarantee.

PRICE £4-15-0d.



HALAMID

A certain cure for White Spot and Fungus. One wholesaler wrote: "It was only 'Halamid' that kept me out of trouble." Don't wait for disease to ruin your aquarium — keep a supply handy. (A pinch every week stops algae from forming in the aquarium.)

PRICE 2/6 plus 6d Purchase Tax = 3/- each

INFUSYL



Essential to all breeders. Simply drop a tablet into the aquarium and real infusoria is produced in about an hour. Not a substitute for infusoria, but the real thing!

PER VIAL
of TEN TABLETS 2/6



AQUARIUMSTOP

By applying a little 'Aquariumstop' to the outside of a tank, you can cure a leaky aquarium without having to empty the tank.

PRICE 2/6 each

IMPORTERS OF TROPICAL FISH AND AQUARIA EQUIPMENT

HILLSIDE AQUATICS

44, WOODBERRY WAY, N. FINCHLEY, N.12

Telephone: Hillside 5430

Members of the Pet Trade Association Ltd.



INTER-PET HAS ARRIVED!

The Inter-Pet Supplies Company
has been formed by the Liquifry Co. Ltd.,
to promote the sale of the finest pet
products available on the International
Market.

All Products sold by **Inter-pet** will
meet tests as stringent as those always
demanded by the parent company.

Watch for the world's Finest Aquarium Products!
Details to be announced soon!

The INTER-PET SUPPLIES COMPANY U.K. agents for Liquifry, Liquitox, Pleasure,
Sterasyl for Aquaria, Gro-Wel products, Biol.

Sales promotion division of
The LIQUIFRY COMPANY LIMITED,
Church Street, Dorking, Surrey.



We are specialists in aquarium installations. All sizes and styles to customer's own specifications carried out. We have many designs 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 £28.0/0 complete.
 36in. x 12in. x 15in. bow-fronted aquarium with wrought iron bookcase stand £18.18/- complete.
Available in penny bronze, black or gold, and cream

WITH FLAIN STAND

6ches 48 x 10 x 15	£21.6.0
" 36 x 12 x 15	£15.18.0
" 24 x 12 x 15	£11.18.0

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

We now stock the new rust-proof aquariums with nylon coated frames and plastic covers.

18 x 12	12	44	4	0
24 x 12	11	44	9	0

(Complete with plastic cover)

STANDS

18 x 10 x 36	35/-
24 x 12 x 36	45/-
30 x 12 x 36	50/-
36 x 12 x 36	55/-

REMEDIES, etc.

Broaden White Spot	2/-	Claris (Not by post)	2/-
Cure	2/-	Liquid	2/-
Vivo Salts	2/-	Dissolve	2/-
Sea Salt	1/6	Broaden Fertilizing Tablets	2/6

STRATA ROCKWORK

PEBBLE BEACH

SEA & SHORE

24in. long x 20in. high. 2/6 per sheet, or £3 per foot. (over feet)

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

THERMOSTATS

Control External	each 11/-
Control Near External	21/-
UND	
Out-let	15/-
In-let	15/-
In-let "Flood"	16/-
"Flood" with alarm indicator	12/6
"In-let" External	26/6

THERMOMETERS

Mercury	each 6/6
Glass	6/6
Plastic Backed	6/6
Spire Blue Glass	5/-
"In-let" External	6/6

FILTERS

"Wadwell" Plastic	each 18/6
Chemical Filter	18/6
"Wadwell" Biological Aquarium Filter 12.6	18/-
"Wadwell" Sponges Inside Filter	18/-
Cover Filter	8/-
Al-Li	2/6
"Sea-Tex" Outside Filter	17/6
"Elex-King" Outside Filter	22/6
Bottom Filter	8/6
Ornamental Bowl Filter	17/6

AERATORS & PISTON PUMPS

Mosses	each 21/-
"In-let" Fairy	24/-
"In-let" Fairy	27/6
Star	26/-
Zoochloa Total	18/6
Hydro-Jet	18/-
Hy-do "A"	18/-
Hy-do "B"	18/-
Hy-do "C"	18/-

HEATERS

"QUEENSBOROUGH"	each
2in. 40w. 6in.	25/-
3in. 60w. 12in.	35/-
4in. 80w. 18in.	45/-
"In-let" Electric Heaters (120w. and 150w.)	18/-
"In-let" Thermostatic Heaters, 60w. and 150w.	36/-
Heater Rulers	2/-

BACKING PAPERS

STRATA ROCKWORK

PEBBLE BEACH

SEA & SHORE

24in. long x 20in. high. 2/6 per sheet, or £3 per foot. (over feet)

LIVE FOODS

Brite Shrimp Eggs	1/6 and 4/6
Cultures of	
New Worm 1 set	7/6
2	13/6
White Worm	2/-
Micro Worm	2/-
Tadpole worms	1/6 and 2/6 per foot

BOOKS

Guide to Tropical Fishkeeping (J. H. F. Symes)	36/6
Diversity of Fishes (C. Van Diggel)	12/6
All about Tropical Fish (McLennan)	7/-
Encyclopedia of Tropical Fishes (H. R. Axelrod and W. Voelkerwisler)	62/6
Electricity in your Aquarium (G. Warrington)	8/6
Illustrated Dictionary of Tropical Fish (Hans Frey)	67/6

FOODS

"Chamferough" Tropical Fish Food	1/6 and 2/6
Flour Flakes	1/6
Wheat Flakes	1/-
Branzen	1/6 and 2/6
Siamang Fragrant	1/6
Branzen Bait	6d. and 1/-
Liquity Nos. 1 and 2	2/6
Intax	2/6
Stix	2/- and 4/6
Dried Daphnia	Our 6d.
Ground Shrimp	1/-
Fish Food	1/6 per 100 in 3 sizes
Amoeba Eggs	6d.
Wardley's Trout Pac.	6d.
7 kinds of food	8/6
Hi-Glow	4/6
Glow Tube	3/6

SEDIMENT REMOVERS

"Wadwell" Air Receptor	each 18/-
"Wadwell" Hand Receptor	18/-
Plastic	18/-
Synthetic Tubing	3d. ft.
Hard Type Plastic	4/6

FULLY-GLAZED AQUARIUMS

Pressed Steel	Angle Iron
Aluminium	
12 x 8 x 6	18/6
14 x 8 x 8	23/6
16 x 8 x 8	28/6
18 x 10 x 10	32/6

PLANTS

Valoniopsis Spiralis	9d.
Elodea Densa	9d.
Hydrilla	9d.
Ruppia	9d.
Sagittaria natans	9d.
Sagittaria mini	9d.
Valoniopsis tortu	9d.
Ludwigia	9d.
Myriophyllum	9d.
Spartanack	3/6 and 5/-
Cryptocoryne Beckwithii	2/-
Willisii	2/6 and 5/-
Condonii	2/6 and 5/-
Harrisonii	2/6 and 5/-
Water Wistasia	2/6
Guar Myriophyllum	2/6
Guar Sagittaria	2/6
Najas Microdon	2/6
Amazon Chain Weed	1/6
Decayed	per portion 1/-
Risks	per portion 1/-

SUNDRIES

Breeding Tray	15/-
Acqua Scissors	5/-
Acqua Tong	3/6
Buckley Knives or Shears	4d.
Double	6d.
Planting Slits	12
Dry Floating Rings	1/-
Squares	1/6
Hydro (4 in ones) Feeder	2/6
Worm Floating Feeder	1/6
Worm Cradle with Sucker	1/6
"Wadwell" Diffuser Stones	1/- to 1/6
"T" Place	1/-
Aerator Tipping Rubber	8d.
Plastic	8d.
4 Way Foot	1/-
Clamps	1/-
Carbon	1/-
Glass Wood	1/6
Nylon Wood	1/6
Colorfast	1/6
Coloured Chips	1/6
Artificial Glazing Compound—2 lb.	4/6
Wardley's pH sets	18/6 and 7/6

QUEENSBOROUGH FISHERIES

111 GOLDHAWK ROAD, SHEPHERD'S BUSH, W.12 (11 minutes from Shepherd's Bush Station)
 Telephone: 5948 2730
 Hours of Business: MON. to SAT.—9 a.m.—4.30 p.m. THURS. 9 a.m.—1 p.m.

QUEENSBOROUGH HOUSE, Ferry Lane, Hyde End, Wraybury, Nr. Staines
 Telephone: WRAYSBURY 285
 Sundays only from 10 a.m. to 4 p.m.

16 PICTON PLACE, LONDON, W.1 (11 minutes from Selfridges)
 Telephone: WELBECK 948
 Hours of Business: MON. to FRI.—9.30 a.m.—4 p.m. SAT. 9.30 a.m.—5 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.

VOL. XXVII No. 6

1962

Editorial

AN article in this issue recommends the use of fluorescent lighting for aquaria, and its author reports satisfactory results with this form of illumination. We discussed this subject in an Editorial earlier this year (March issue) in relation to plant growth, because there is not universal agreement among aquarists on the suitability of fluorescent lighting for this purpose. More information is obviously required, and we are pleased to publish Mr. Lawrence Mee's observations to this end. However, it is possible that there are effects of fluorescent lighting to be considered on aspects of aquarium life other than growth of plants, and a report that has appeared in *The Progressive Fish-Culturist* (U.S.A.) deserves to be brought to the attention of aquarists.

This concerns the excessive mortality of brook trout eggs in a new fish hatchery of the New York State Conservation Department at Cold Spring Harbour, Long Island. It was observed that of eggs placed in trays in light situations one November 90 per cent. failed to hatch. The cause of this failure was traced to the fluorescent lighting used over the hatching troughs. The tubes were of the 'cool white' type, which emit some rays in the blue region of the light spectrum, rays already shown to be capable of killing eggs of rainbow trout. Although fluorescent tubes have been widely used in fish hatcheries without reports of unfavourable results, it is pointed out by the authors from Cold Spring Harbour that lengths of time of exposure given and intensities of light used can vary, as can the type of tube employed, at different hatcheries. All types of fluorescent tube give maximum light emission in the harmless yellow-orange-red band of the spectrum, but the 'white' types also give significant amounts of the harmful blue emission. The authors conclude that the best type of tube for hatchery use is the 'pink', which gives no blue emission. Whether the eggs of trout are unique among fish species in their sensitivity to this kind of light is not known, but at least aquarists should be aware that the various types of fluorescent tubes are not all of equal suitability.

Contents

	Page
Editorial	107
Tropical Fishes on Stamps	108
'Wasting' Fishes	109
Breeding the Dwarf Gourami	110
An Aquarist and Fluorescent Lighting	111
Preparing Fish for Showing	112
Readers' Queries Answered	112
Spadefooted and Narrow-mouthed Toads	115
Standards of the American Guppy Association	116
Fancy Guppy Association's New Hand- book	119
The Oranda	120
Our Readers Write	121
News from Aquarium Societies	123

Tropical Fishes on Stamps



THE aquarist and the philatelist find a meeting point on the album page and in the designs of stamps gracing overseas correspondence. Britain now stands alone in retaining the sovereign's head style that has been traditional ever since Sir Rowland Hill first introduced his "little bits of gummed paper" back in 1840, as a means of simplifying Post Office accounting through prepayment of postage charges.

Other countries have long since taken a wider view of the functions to be served by their stamps, turning them into miniature advertising posters presenting a multi-coloured panorama of every aspect of their way of life, scenic beauties, flora and fauna. With such a wealth of subjects available to imaginative designers, it is not surprising that tropical and ornamental fishes have in recent years been increasingly featured on stamps from all over the world, among them parts of the Commonwealth, whose postal authorities are far less conservative than their British counterparts.

Singapore, for example, has this year issued a colourful new series of seven stamps depicting fishes found in Malayan waters, which include several popular aquarium varieties. One freshwater fish occurring all over Malaya, exported from Singapore in large numbers, is *Puntius tetraxoma*, better known as the tiger barb. Another is the marine anemone fish, *Amphiprion percula*, a small brilliant fish living among the tentacles of huge sea anemones on coral reefs: unaffected by their stinging cells, it attracts other fishes into the paralyzing tentacles of the anemones, with whom it shares the spots.

The beautifully coloured harlequin fish, *Rambusia heteromorphus*, makes another attractive stamp subject. This freshwater fish, from peaty streams and ditches of Malaya, is one of the most popular of Singapore's exports to aquarium stockists in Europe and America, along with that shown on a fourth companion stamp, the easily obtainable two-spot gourami, *Trichogaster trichopterus*. Occurring in fresh water all over the Malayan archipelago and known locally as Sepat Pahi, it is esteemed as a food fish, being bred in the rice fields at planting time and caught when the paddies are drained for harvesting.

All the new Singapore stamps are helpfully inscribed with the scientific names of their subjects, as also are the ten designs showing ornamental fishes in their natural colours which the Hungarian Post Office released this summer—not unmindful of their appeal to the collectors' market, which provides a useful source of foreign currency income to many countries, especially the smaller ones. Propaganda is the more effective for being indirect, and certainly these attractive productions help to create a favourable image.

by A. G. K. LEONARD

Taken in order of the stamp denominations, the Hungarian designs are devoted to *Xiphophorus helleri* (swordtail); the male of *Macropodus opercularis*, the paradise fish, imported from the rice fields of China and one of the first to arouse general interest in exotic fish-keeping; the males of *Labeo reticulatus*, the guppy, best known of all tropical species; *Betta splendens*, the fighting fish, aggressive only to those of its kind, and *Puntius tetraxoma*, usually sold as the tiger barb. The other stamps in this colourful series depicted at the top and bottom of this page show *Pterophyllum scalare*, the angel fish, an exception to the aggressive nature of the family of Cichlidae to which it belongs, the males of *Mangroveia chaetodon*, *Aphyoseion australe*, *Hypoclineryx innesi*, the neon tetra; best known of the characins, and *Symphysodon aequifasciata haraldi*.



The postal authorities of Communist China are likewise prolific in their output of propaganda stamps, among which the last few years have seen numerous attractively artistic series that make a strong appeal to collectors. Particularly colourful were the glorious set of 12 released in 1960, each showing a different variety of goldfish, rejoicing in the exotic names of out-folded operculum and nostril bouquet, black back dragon-eye, bubble-eye, red tiger-head, pearl-scale, blue dragon-eye, skyward eye, red cap, purple cap, red head, red and white dragon-eye, and red dragon-eye.

Japan had brought out a goldfish stamp 14 years earlier—issued without perforations during the difficult conditions of the early post-war period. This was followed in 1952 with a better version, quietly attractive although sober enough by comparison with the latest fish stamps of other countries.

More colourful and distinctive was the Japanese stamp





Four of the new stamps from Singapore issued this year

of 1955 commemorating the fifteenth International Chamber of Commerce Congress in Tokio, which had an unusual subject in a gay paper carp, symbolising sturdiness and prosperity.

Since independence, Ghana has released numerous attractive multi-coloured stamps, printed in London. The fish, value of the current regular series depicts a tropical African cichlid, from the design by a British artist, W. H. Brown.

Until its recent evacuation, the lonely volcanic island of Tristan da Cunha boasted 14 different stamps illustrating various fishes found in the surrounding waters of the South Atlantic. Generally speaking, the smaller and more remote the territory, the more eye-catching are its postage stamps, with tropical fishes an increasingly popular theme.

The French, Spanish and Portuguese authorities have all produced several such issues for their various colonies, with pride of place going to the multi-coloured set of no less than 24 separate designs brought out for use in Mozambique in 1951. Tropical fishes are even to be seen on stamps of the Spanish Sahara!

The former French colonies now known as the Congo

and Mali Republics have not been slow to capitalise on the philatelic appeal of tropical fishes, and the 1959 series for the French Somali Coast has this summer been followed by a similar set from independent Somalia. Away in the Pacific, New Caledonia has stamps depicting fishes from the Noumea Aquarium, and the enterprising Post Office of the Maldives Islands in the Indian Ocean is sure of a stamp bestseller with the eight triangulars it is bringing out this year, all showing tropical fishes.

The steadily expanding array of foreign stamps with these subjects already runs into three figures, more than enough to present a challenge to the philatelist wishing to form a sideline collection or the aquarist who would like to add an unusual extra to his hobby. Most of the stamps are obtainable quite cheaply from stamp dealers, several of whom now make a speciality of supplying stamps by themes and topics rather than by countries.

Mounted and written up, they make a fascinating and colourful display, which need not necessarily be confined to the pages of an album. One or two neatly arranged sheets in frames would make an original wall decoration in the fish room, sure to attract the interest of friends.



Left: two goldfish stamps from Communist China; right: Japanese stamps showing goldfish and paper carp

'Resting' Fishes

by R. E. MACDONALD

SEASONAL changes occur, however slight, regardless of geographical location. This applies to all corners of our planet, whether it be in the middle of the Kalahari Desert or at the North Pole! As a consequence, these seasonal pulsations cause an ebb and flow of life to varying degrees in all of Nature's creations.

One need not be astronomically observant to recognise the effect of seasonal changes, for we see the result all around us. For example, note how the leaves fall from the trees in autumn and flowers lose their blossoms. Note how the bear, squirrel and tortoise hibernate through the cold winter months.

Some fishes, such as the "annual" species (e.g. genus *Nothobranchius*), are severely affected by seasonal changes, but most simply suffer a slight fall in the water temperature which causes them to become less active in their sex life

and so allows them a period of rest and recuperation. There is absolutely nothing to be achieved by keeping fishes at summer temperatures all the year round, but an increase in vitality the following summer will be noticed if they are allowed to rest by lowering the temperature of the water in the aquarium to an average of 72°F for a period of 4 months at any time between October and the following March, the best period being from November to February. The temperature of the water during the "resting" period will vary according to the different species but, as a guide, 72°F is a fair average for the majority of tropical fishes.

The temperature should always be lowered gradually, for the fishes will suffer severely from a sudden drop and the fall in any case should never be allowed to exceed 8° below that at which the water is normally kept. During the summer months it hardens the fishes if the temperature is allowed to fluctuate slowly within 5° either way of the mean temperature.

The daily light period should not be decreased during the resting period for the vegetation will still require from 10 to 12 hours of light each day.

Breeding the Dwarf Gourami

by J. D. LOADER

THE dwarf gourami (*Colisa lalia*) is one of the most desirable of aquarium inhabitants. It is colourful, peaceful and hardy but tends to be rather nervous in a sparsely planted tank. It will eat any food, but notice must be taken of the very small mouth, particularly when fry are being raised. As this is intended to be a practical article it must be made quite clear that this species is easy to breed, even for the beginner, but that at least three tanks are required if the majority of the brood is to be raised to maturity. In the writer's fish room six tanks are reserved for this species. Two of these are planned 18 in. by 10 in. by 10 in. tanks for conditioning the parent fish, one is solely a breeding tank and the other three are 24 in. by 12 in. by 12 in. 'growing-on' tanks. Larger tanks would be even more desirable.

Water Requirements and Conditioning

The main requirements for breeding these fish, incidentally for all other fishes, is to have a pair of them, in first-class condition, together in a suitable environment within the correct temperature range. Let us first consider the water requirements of this species. I can only say that they breed satisfactorily in water supplied by our local water board, which measures slightly alkaline (pH 7.2, hardness 23). There is no reason to suppose that water supplied in any other part of the country should not be suitable.

Dwarfs are easily brought into breeding condition. The way this is done is to give them the best tank conditions possible. The sexes are separated and no more than six of each sex are kept in a clean, planted 18 in. by 10 in. by 10 in. tank with plenty of live food. At the present time I use quite a lot of *Daphnia*, only because I live quite close to an abundant source of supply. At a temperature of 74-78°F (23-26°C) they can be brought into breeding condition in a little under 2 weeks. I use no aeration, preferring to rely on ample surface area per fish.

Preparing the Breeding Tank

It is best to start with a clean dry tank, mainly to avoid snails or snail eggs. These hatch extremely quickly and may endanger the gourami eggs. The tank, which may be 18 in. by 10 in. by 10 in., or larger for preference, is filled to a depth of 6 inches only with clean tap water. There is no need for any gravel but there is no reason why it should not be used; the only point to bear in mind is to see that if any rooted plants are introduced no snails or snail eggs are present on them. What is necessary is a small portion of floating plants. I use *Salvinia* and duckweed only because I have plenty. *Riccia* is just as good, if not better, for the dwarfs to use to make their nest.

The plumpiest female is then selected and placed in half a jar of water from her own tank and floated in the breeding tank. Similarly the chosen male is transferred to the breeding tank. It is most important not to shock the fish by drastic changes of water or temperature so when the temperatures have equalised, after perhaps half an hour, the fish are allowed to swim out into the breeding tank. They will probably go to the back corners of the tank and stay there for several hours, but do not worry about this as they are very timid. The thermostat controlling the

breeding tank is then adjusted to be as near to 80°F (27°C) as possible but the fish are not fed during the time they are in the breeding tank.

You may be tempted to watch the nest-building and actual spawning, but I leave them strictly alone and remove the female 48 hours after introducing the pair to the tank. This is long enough for them to spawn if they are going to and short enough to prevent them eating the fry, which usually hatch within 24 hours of removing the female.

I find that the fry are free-swimming within 24 hours of hatching and the male may be removed at any time after this, although male dwarf gouramis do not seem to eat the fry. The next month is the difficult period. I feed for the first week on water green with algae, green water and tubed liquid fry food mixed or tubed liquid fry food by itself. My method is to mix five drops of tubed liquid fry food with half a one pound jam jar of green water and float this in the tank until it reaches the same temperature as the water in the tank. This amount is fed to the fry three or four times a day but no more should be added while it is apparent that there is still some food in the tank. Another point to watch if the breeding room is not space-heated is that there is an adequate cover on the tank, so that the air above the surface of the water is not much cooler than the actual water.

Diet for Rearing

In the second week tubed liquid fry food plus brine shrimp is fed as some of the fry will still be too small to take brine shrimp. At the end of the second week the temperature of the water is gradually reduced to about 75°F (24°C). In the third and fourth weeks brine shrimp and micro worm are used alternately for feeding. By this time some of the fry will be 1 to 1½ inch long. These are moved with a ladle or large spoon to the first growing-on tank, also adequately covered and carefully adjusted to the same temperature (75°F). A fortnight later, when the fry are 6 weeks old, a great difference in size will be noticed.

At this stage the fry are sorted into three different size groups in the three growing-on tanks whilst the breeding tank is cleaned out ready for another brood. The fry are fed rather heavily with dried food, alternated with gradual live *Daphnia* according to the size of the fry. A small *Corydoras melanatus* or *assau* is kept in each of the growing-on tanks to eat any surplus of food that falls to the bottom. Every fortnight the larger fry are moved on to the next tank.

At 4 months the majority of the fry will be about 1 inch long but it may still be difficult to sex them. At 6 months the males will be noticeably more coloured than the females, but it is true that they do not show their full colouring until they are brought into breeding condition and have mated once, after which they retain their full and beautiful coloration.

Although sometimes over 200 eggs hatch, at no time has the whole brood been raised. The reader will immediately jump to the conclusion that the larger fry eat the smaller fry or that the catfish in the growing-on tanks eat them. This is not the opinion of the writer, and there are several other possible reasons.

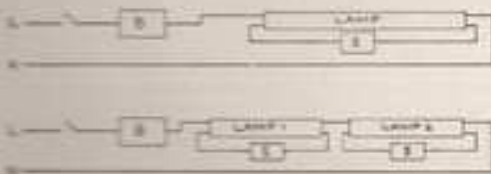
An Aquarist and Fluorescent Lighting

by LAWRENCE MEE

FLUORESCENT lighting is right for tropical aquaria. It is true that the initial cost is high, but the following report will indicate that to one aquarist at least the benefits outweigh this disadvantage.

My first essay at setting up a tank was a year ago, when my daughter asked for a tropical aquarium as a prize for passing an examination, and following the advice in a book on the subject I went ahead with tungsten-filament bulbs for lighting. 40 watts per square foot, the book said, so I fitted a 40 watt lamp in the centre and two 25 watt lamps at the ends.

It was not long before I had doubts about the lighting arrangements. The *Ladolepis* ran to the top, producing spade-like growth that could not be described as attractive, and the other species of plants made little progress. I considered this was partly because the water temperature showed an uncomfortably large gradient from the surface down, the water at the top being heated by the 50 or so watts dissipated by the tungsten bulbs and so maintaining the thermostat "off". The small *Ceratopteris thalictroides* and *Vallisneria spiralis* plants had only the colder water 12 inches down, which was evidently too cool for healthy growth.



Circuit diagrams for a single tube (top) and two tubes (bottom). S, switch; B, ballast choke; L, lamp. For A.C. mains only.

I used different sizes of bulbs to put matters right. Neither three small bulbs nor a single larger bulb satisfied me from the decorative point of view, although the results in glass growth were better. I then purchased an air pump and filter and returned to the original bulbs. The idea now was that the operation of the filter would keep the temperature of the water even at all depths, despite the heating being mainly at the surface by the bulbs.

As about this time I began to wonder what it was all costing me in electricity, and I considered fluorescent lighting. When I found it would cost only about £2 to make the experiment in the aquarium I considered this further entry would be worth while in the interests of balanced conditions in the tank and a decorative show piece in the drawing room. The materials were obtained and I made a temporary fitting in the light cover and switched on.

It was an immediate success from the decorative point of view, and it was soon an apparent success for the plants. The grateful *Ladolepis* put out side growth and grew like normal plants, and *Ceratopteris* became bushy and produced charming plantlets just as the text-book described. More recently an *Echinodorus pinnatifidus* has been introduced and is making good progress, and the *Ceratopteris hookeri* which took the place of the *Vallisneria* are growing well. The air pump is seldom switched on. It must be

admitted, however, that *Cabomba caroliniana* has not grown well, but nor did it in the tungsten days so I have not lost anything.

I am now quite sure that fluorescent lighting is right. Two months ago I made the fitting permanent, and the 36 inch tank I am setting up at present will have it from the start. I recommend it for anyone taking up the hobby, as well as for aquarists of long standing.

The main advantage of fluorescent lighting is that the tube remains quite cool. It follows that water circulation is achieved by the tank heater, and the cost of an air pump is saved unless specially required for breeding or other purposes. Also the light hood can be made of plywood



Section through light hood to show arrangement and sizes of tube and starter (S); ballast choke is not shown.

or hardboard without risk, and the light can, if necessary, be subdued by wrapping tissue paper round the tube.

The electrical wiring necessary will not put off any keen aquarist, and the diagrams show the essential details. Except for the ballast choke (size 4 in. by 2 in. by 1 1/2 in., weight 1 1/2 lb.), the fittings are light and small, and are easily fitted in the light cover. For a 24 inch tank a Phillips MCFU 13 watt Warm White 29 tube, costing about 13s., will be found adequate, and being 21 inches long it gives illumination for the whole of the tank. A 36 inch tank would require two 8 watt 12 inch tubes at about 8s. 6d. each. In each case the ballast choke consumes 5 watts and costs just under £1. Each bulb requires two lampholders at 3s. each and a starter and holder at about 6s. 6d. The total cost is then about £2 5s. 6d. for a 24 inch tank, and £3 2s. for a 36 inch tank. Consumption of electricity is 18 watts and 21 watts respectively. Phillips Electrical Ltd. have produced a leaflet which gives all the technical details of the tubes and fittings.

Cacti in the Fish House

CACTI need to be repotted when they reach the side of the pot or are obviously too large for the pot they occupy. If the soil in a pot remains wet after others in the collection have dried out this is a danger sign. The drainage hole may have become blocked and if left like this the plants would soon die. Repot any such plant at once. When doing so remove all the old soil, as this will be "worn out". When placing the plant in a fresh clean pot see that there is sufficient drainage, but do not use too many cracks or there will not be enough space for good soil. If special cactus compost cannot be obtained use John Innes potting compost no. 1, to which add one-sixth part of coarse washed river grit.

BREEDING FANCY GOLDFISH

Preparing Fish for Showing

by A. BOARDER

AFTER rearing some fancy goldfish it will now be the ambition of the breeder to exhibit his fish. Unless a member of a club there is small chance of the exhibitor having much success against one who has exhibited first at a club show. At a club show a member has the opportunity of seeing his fish against other good ones and so is better able to realise what the prospects are of a win in open competition. He can also get many helpful tips about showing, which anyone not a member of a club would be unable to ascertain.

If anyone wishes to exhibit at an open show my advice is for him to join a club first and then gain experience there. Until the fish have been up against others it is very difficult for the owner to assess the value of his specimen. He may have overlooked a fault which might be apparent to an experienced aquarist. If there is no club or society in the near neighbourhood of the intending exhibitor it will be very difficult for him at the beginning. He should attend a big open show and take many notes of the type of fish that win in the classes in which he is interested.

Every intending exhibitor should be in possession of the standards for the fish he wishes to exhibit. These can be obtained through his club secretary or from the Federation of British Aquatic Societies. He must then make himself conversant with what is required, apply for the schedule of the show in good time and read it carefully. It is normal for all fancy goldfish to be shown separately, not in pairs. There may be a class for your particular fancy but nowadays it is probable that your fish may have to compete with other varieties. The general open show schedule calls for: (1) common goldfish; (2) shubunkins (usually London and Bristol together); (3) veiltails; (4) fantails; (5) moors; (6) any other variety.

At small shows these classes may even be reduced and your fantail may have to compete with veils or orandas. Make quite sure which class you are able to exhibit in, fill in the schedule correctly and send it off in good time. Having made up your mind which fish to exhibit it is a good plan to run them into a show-sized tank as often as possible; every day is the best. Give a few *Daphnia* each

time so that the fish expects this treat, and it will keep on the move when it is placed in the show tank. This procedure will get the fish used to a show tank, when it is likely to show off its good points to an advantage. It is not only that a good mover will get points for deportment but a healthy well-drilled fish can appear much better than the one which lies on the bottom of the show tank in a fit of sulks. I have had to pass over many a fish that has just refused to move and display finnage enough for it to be examined.

When you get to the show, report to the show secretary, who will give you your tank numbers and class position. Make quite sure that you have the right tank. Usually the first number on the slip is the class number and the second the number of the individual fish in that class. The tanks may have been filled beforehand. If the water is quite clear test it for temperature. In warm weather the carrying can may have warmed up to 80°F (27°C), and if the show tank has been recently filled from a tap, the temperature of this water may be in the upper forties. This will shock a fish and put it clean out of the running. It is a very bad policy to put your fish into tanks that have just been filled. If the water came from a high-pressure pipe it is certain to contain excess of oxygen. This can cause the fish to become covered with bubbles and be very distressed.

Once the fish are in the tank there is no need to feed them, apart from the few *Daphnia* at the start. A fish on the lookout for food is more likely to keep on the move than one which is so full that it has no need to move about at all. Do not be afraid that your fish will starve whilst it is in the show tank. All varieties of fancy goldfish can go for weeks without being fed.

When judging is finished it may be possible to have a word with the judge; whatever your success this is well worth while. Don't be too downhearted if you do not win. Your fish may have refused to move whilst being judged or have been a bit out of sorts. It may win next time out. Anyway, try again and with experience you will know which fish to show and how to prepare them. Good luck to your efforts.

OUR EXPERTS' ANSWER TO TROPICAL AQUARIUM QUERIES

Please give me the name and culture details of a live food that can be propagated indoors to meet the day-to-day requirements of about 20 small- to medium-sized fishes.

You cannot do better than cultivate the so-called Gravid worm in a warm airing cupboard, or between the cover glass and lighting hood of your tropical aquarium. The worms can be bred in almost any shallow receptacle measuring about 5 in. or more in length. Leaf mould or peaty hum, kept permanently damp, makes the most satisfactory culture medium. After the worms have been introduced into the soil, they should be fed every second day with about a teaspoonful of creamy Farex or mashed potato. Keep the food lightly pressed on to the compost under a piece of glass covered with a light-excluding lid. Fed regularly, the worms will multiply rapidly and form clean masses on the glass ready for instant use.

Many queries from readers of "The Aquarist" are answered by you 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.

About 16 months ago I set up a community tank and stocked it with neon tetras, harlequin fish, wagtail platys and various loaches. Recently, however, the wagtail platys have lost their appetites, look somewhat faded-in and spend a lot of time sleeping in the plant life. Do you think they have contracted a disease?

In all probability your wagtail platys are showing the effects of old age. Normally the life span of a platy does not exceed much over 2 years, and it is reasonable to assume

that your fish are well past their prime. Unless the other occupants of the tank worry them, there is no need to remove them elsewhere. But once they become really emaciated it is kinder to destroy them.

Polychaete worms are cheap to buy and I have been wondering whether I could use them for keeping and breeding the smaller kinds of tropical fishes.

Yes, you can keep and breed the smaller tropicals in polychaete bowls, but as they are awkward things to accommodate in a limited space, we believe that you would find shallow, wooden boxes lined with 500-gauge polythene offering a better proposition.

I want to make a 12hr. train journey with a can of tropical fishes and would like to know a way to keep the water warm?

Normally there is very little loss of heat if you wrap the carrying can in several thicknesses of corrugated paper or wadding fabric. In cold weather, however, it is a good idea to place the wrapped can in a hold-all containing a filled hot-water bottle.

Do fishes or water plants deteriorate in colour, size and/or health if they are raised under artificial lighting alone?

Fishes and submerged plants appear to flourish just as well under certain types of artificial illumination as they do under natural lighting.

Please give me some information about the characin called *Cyprinodon*.

This species swims in a head-downwards position and is an avid eater of plant life as well as all the regular live and dried foods. In a large tank maintained at a temperature range of 72-80°F (22-26°C) it will sometimes attain a length of 3 in., and at this size it is an accomplished jumper. Small specimens are ineffective, but large specimens are genuine bullies of smaller companions.

I have been waging war on some yellow stripes that have taken up residence in my white worms box, but up till the time of writing I do not appear to have made any difference in their numbers. Please tell me a way to get rid of them.

Leave the box uncovered for a while so that the worms breathe down into the culture medium. Then light a rolled up sheet of newspaper and pass it to and fro across the soil. Not many of the stripes will survive this scorched-earth policy. Those that do can be given repeat treatments.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

I have cleaned a number of goldfish from a mill pond. They are all colours, silver, red and black, with variations of these colours mixed. There were roach and carp in the pond. Is it possible that the fishes are the result of crosses with these fish and goldfish? Also there appear to be few males and I have been told that males are always very scarce and swim on one in thousands of females. Is this true?

The goldfish are not likely to cross with the roach but could do so with the carp. I think that it is more likely that various colours of goldfish have interbred and so you get the colours you describe. When goldfish breed indiscriminately in a pond you get all colours and many fish do not change from the original bronze to red or silver. If these fish are left in the pond it is probable that many of this type will be head each year. It is not true to say that males appear as one in thousands. In a large tank of fish it is probable that the sexes are fairly equally divided.

I have some goldfish in a tank 18 in. by 9 in. by 9 in., and on winter when I do they keep swimming about just under the surface with their noses at the top but not breaking surface. Their bodies are at an angle of 45 degrees most of the time. What is the matter with them?

I know the signs and have seen the same thing happening many times. This is usually when a tank is first set up and

I'm not very successful with mollies. What are their basic requirements?

Plenty of swimming space in shallow, slightly saline water maintained at a temperature in the mid-seventies, green food such as mossy algae or puree of cooked spinach, and strong light, natural or artificial, for at least 7 hours every day.

Does protrusion of a fish's scales always indicate dropsy?

No, in certain other bacterial infections the scales stand out from the body and often slough away in patches if the fish struggles in a net. These diseases, fortunately not common, are more likely to occur and make headway in a neglected (polluted or dirty-bottomed) aquarium maintained at a high temperature than in a clean tank kept at a temperature in the lower to middle seventies.

A dealer has some *Heterandria formosa* for sale. Their distinctive size and pearly appearance gives them great charm. Would a pair or two of these less-common livebearers settle down satisfactorily in a community tank?

The mosquitofish (*H. formosa*) will settle down nicely in a community tank housing non-aggressive fishes averaging 1½ in. in length. We recommend the following as ideal tank companions: White Cloud Mountain minnows, bloodfins, *Nannostomus aximolator*, neon tetras and *Barbus platanus*. To save any of this livebearer's fry you will need dense masses of vegetation near or at the surface of the water.

I have just bought several young *Barbus fasciatus*. How does one tell the sexes apart?

The sexes are much alike, but in mature fish the male's stripes are more clearly defined than the fuller-sided female's, and his fins are redder.

Please tell me the sort of conditions and food best suited to the livebearing half-beak.

Firstly, the half-beak is a surface hunter and there is no need to keep it in water deeper than 8 in. A temperature range of 70-80°F (21-26°C) suits it very well. It is not fussy about its food, but doesn't feed from the bottom. What it needs is dried food that floats for a while before sinking slowly in the water, or tiny worms dispensed from a perforated, top-feeding feeder.

the fish have been put in too soon, that is before the water plants have had a chance to get established. It must be realised, however, that goldfish do like to be in the top section of a tank and normally go to the bottom only to feed. Even then, as soon as they get a mouthful of food they return to the top of the tank. However, they should not be always scouting about at the surface in the position you describe, and usually this is done only when the water has insufficient oxygen for the fishes. It is always more difficult to keep fishes healthy in a small tank and yours is quite small, especially as your fish are on the large side. The ideal way is to set up the tank and get a good healthy growth of water plants in it before thinking about fish. I cannot imagine a farmer buying a stock of cattle unless he had a good growth of grass in his meadows to accommodate them! I suppose it is useless for me to try to convince aquarists that the proper way to start a tank is to get it in a flourishing condition as far as the plants are concerned. Then fishes, a few only, should be introduced, and they will have every opportunity of thriving and remaining healthy. Remember goldfish only nose and mouth at the surface when there is a lack of oxygen in the water, or when it contains too many foul gases or too much dissolved mineral in it.

Can you suggest a suitable book on breeding and rearing coldwater fishes, particularly the Bristol shubunkin?

Coldwater Fishkeeping, 2s. 10d. post paid, is obtainable from *The Aquarist*. This book not only deals with the making, setting up and maintenance of a pond but also deals with the preparing for breeding, the breeding and rearing of the young, feeding and general care, and also plenty of information on diseases and pests. The breeding of shubunkins does not involve any special method and the only points to bear in mind are the required standards for that type of fish, and you should try to breed to them.

My goldfish fry have developed the following symptoms: the fish have swollen gills; some have reddish markings around the gills and also on the body; the pectoral fins are somewhat contracted and the fish rub themselves on the gravel. What is the matter with them and what is the treatment?

The description is a typical one of a fluke infestation. Probably the flukes are *Gyrodactylus*, very tiny worm-like creatures which feed on the fishes and worry them considerably. The cure is to give the fry a bath in a solution of Dermal; use a quarter of a teaspoonful to a quart of water. Have a clean bowl ready for the fry when treated. Then place them in the solution and keep watch over them. They may dash about for a bit and then will become quieter. After 5 minutes remove them to the fresh water. Should the fry turn over before this time remove them at once to the fresh water, when they will soon recover. See that their tank is thoroughly disinfected before they are put back.

I have a fantail goldfish which has developed a lump on its side. It does not seem to be ill but I would like to know what it is and what to do about it. Are these lumps common in this variety?

The lump is probably a cyst. These form on many animals and are sometimes caused by a malformation of tissue. A lump can form as the result of a knock or other injury. It is possible to make a cut in the skin and press the cyst out, but if the fish does not appear to be inconvenienced at all it will be better to leave the lump alone, when it might burst and clear up on its own.

I wonder if you can identify a coldwater fish I bought at a dealer from among a batch of imported fishes. It is 4 inches long and the tail fin is rounded at the tip. The body is slim and about half an inch at its deepest point. The colour changes from a dull buff to a pink when the fish is excited. The scales are very smooth and regular. The mouth is blunt and the lower jaw larger. I cannot find the fish depicted in any books and no-one seems to know what it is: can you help?

From your description and sketch I think the fish is an American mud minnow, probably *Umbra pinnata*. There are said to be about 300 different species of the mud minnow in North America. I saw one of these some time ago at a Hendon show, when I was judging there, and was able to identify it. This fish had been caught in a pond where it had no doubt been introduced, as the fish is not native to Britain. It is quite a hardy fish but not very good in a community tank as it will attack other fishes and eat small ones.

I have 40 shubunkins from a quarter to half inch long to a 24 in. by 12 in. by 12 in. tank with three 1 in. shubunkins. The larger fish have started to go wrong, with hollow bellies and a loss of appetite. I feed on live and dried foods and give some variation. What is the trouble?

It is probable that most of the trouble is from overcrowding. You may be giving aeration so that the fish get enough oxygen, but this is not enough. Without plenty of space the fish will not keep healthy for long. It may be that some have flukes on them and if so you can expect all the fish to become infested. I find that although it is possible to overcrowd small fish in a tank, if they do not get more space once they are about an inch in length they soon start to fail, but a lot depends on the way they are looked

after. The recommended number for your tank is 12 fish of 1 inch body length; but if the tank is very well planted and the water in good condition as many as 16 fish can be safely kept. They would probably grow quicker if they had more room. I suggest that you spread the fish and see if the condition improves. Examine for flukes and if signs signify their presence immerse them in the Dermal bath as recommended above.

In my coldwater aquarium I had two catfish but one died. Before it did so it lost its sense of balance and now the other one seems to be affected. What is the trouble and what can I do about it?

I suppose that you have not been sold tropical catfish in error? These would soon go off colour in cold water. Coldwater catfish are usually very hardy and are little trouble to keep. Perhaps your treatment is incorrect; check up on all points and read a practical coldwater-fishkeeping book.

Can you tell me if there is any cure for swim-bladder trouble in a fantail 3 months old? It is now in a bowl of salt water and is on its side. It does not seem to be able to move to get at food.

It may be possible to cure this fish but whether it is likely to get the same trouble another winter is another question. These short-bodied fish are always more liable to have swim-bladder trouble than are the ordinary types of goldfish. The trouble usually starts when the temperature of the water drops to below 50°F. It can also be hastened by feeding too much, especially with starchy foods once the water cools. These types of fish can go through the winter with scarcely any food at all and be none the worse for it. One can easily recognise the fact that with such a short body the swim bladder can be soon upset if the belly is distended with food. Keep the fish in very shallow water and warmer than before, at least 50°F if possible. Provided that care is taken with the feeding during cold weather the fish may not be troubled again.

I have four shubunkins 2 inches long and shall be obliged to you if you can tell me when they will be large enough for breeding?

Your fish are already large enough for breeding. All varieties of goldfish can breed the year after being hatched provided that they have been fed well and grown on to a fair size. It all depends on their size and health. I have bred from fantails 11 months of age but not all fish of this age may breed. Feed well with garden worms and give your fish plenty of space and they should breed.

Some of my pond goldfish have developed a few white patches on them. They just appeared about July and show no signs of fungus. The fish appear quite healthy. What is the cause of this?

If the white patches show no signs of fungus then they are just normal coloration. Many goldfish to-day show some of this silver coloration. This is probably because one of the parent fish had some silver in the strain. This will continue to crop up for many generations and even goldfish which are completely red can have youngsters with silver patches on them. It is noticeable that these white patches increase in size as the fish gets older and a fish can even become silver all over in time. It is not a disease and will not harm the fish in any way.

Can you tell me which are the best kinds of water plants for oxygenating our water in the garden pond?

You need not worry about oxygenating plants in an outdoor pond. They can help a bit but they are not as important as they would be in an enclosed tank. Water in a pond has a large area of its surface in contact with the atmosphere, where it is able to give off any foul gases and be reoxygenated. Some plants would help but a pond with too such plants could still be quite healthy for fish. You can use *Lagotisphen major*, *Elodea canadensis* and *Egeria densa*.

Spadefooted and Narrow-mouthed Toads

by ROBERT BUSTARD, B.Sc.

ALTHOUGH both of these toads belong to families with a wide distribution and a good number of species, only a very few are commonly available to British collectors. Hence it is possible to discuss them both within the space of a single article.

The spadefooted toads are so called because their hind feet show adaptations for digging. They occur in Europe, north-western Africa, southern Asia and in North America. The European spadefoot (*Peleobates fuscus*) and the American eastern spadefoot (*Scaphiopus holbrooki*) are the only two species likely to be available. The European spadefoot is a small toad, measuring about 2½-3 in. Above it is marked with brown or red-brown on a background of grey or brown or even yellow; below it is dirty white. One characteristic feature of this little toad is the presence of a metatarsal digging spur on each heel. The U.S. eastern spadefoots shown in the accompanying photograph are attractively marked in shades of green and yellow, mottled with black. They measure about 2½ in. Their vertical pupil, indicating their nocturnal habits, can be seen in the illustration.

In Nature spadefooted toads spend long periods in their burrows, which are constructed in loose ground by a kind of shuffling movement aided by the adaptations of the hind feet. Their food includes the normal toad diet of earthworms, slugs and insects, and feeding in captivity presents no difficulty as the three stand-by items—mealworms, gentles and bluebeetles, are all acceptable. My specimens have always been fed largely on gentles and earthworms, but if not immediately eaten the worms may come to the soil surface at night when the toads are active and uneaten gentles are later consumed as bluebeetles.

The vivarium for both species should contain damp soil or mud to a depth of not less than 4 inches. They are strong swimmers but out of the breeding season need have access to only a small pool. In setting up the vivarium it is a good plan to have a sunken region which can contain the pool and be surrounded by mud. Higher regions can



Photo: Robert Bustard
American spadefooted toads (*Scaphiopus holbrooki*) in shallow water in spring

consist of damp soil, which should not be water-logged. No hiding places need be provided as the toads burrow into the ground.

The eastern narrow-mouthed toad (*Microhylis carolinensis*) is the species of the family Microhylidae most likely to reach the amateur. The head is small and the mouth region certainly narrow. The total length is about 2 in. The dorsal colour is greyish olive with faint darker markings. In their natural surroundings these little toads are said to be creatures of habit rather like our common toad (*Bufo bufo*). At night they regularly forage along the same paths and return just before dawn to their home by means of short, rapid jumps. They feed on small insects, spiders, small earthworms and slugs.

My three specimens were housed in a 20 in. by 20 in. by 20 in. vivarium, which proved sufficiently large for these small creatures. Later they were put into an outdoor repitery, where they do well, at least during the warmer months, but like the European midwife toad (*Alyce obstetricans*) and fire toads (*Rhombina bombina*) are seldom seen there because of their small size. The indoor vivarium had a floor covering of 2 inches of garden soil, on which two pieces of turf were placed. These covered almost three-quarters of the floor area. In one corner a small dish was sunk into the ground to act as a pool and at the back a few small flat scoops were provided as hiding places. Later I discovered that these were really unnecessary as the toads had made their homes in small burrows below the grass roots.

Perhaps the quaintest members of the family are those of the genus *Brevicero*, of which the flat-faced *Brevicero macromphium* is typical. These little creatures are remarkably fat, almost balloon-like, and have very short limbs. They are most unusual among amphibians, and indeed among animals in general, in being unable to swim. They are the most ridiculous-looking amphibians that I have kept, and would undoubtedly be better known among vivarium enthusiasts but for their specialised feeding habits—their diet is mainly termites.

Specimens of these toads are likely to cost about 7s. 6d. to 10s. each.



Narrow-mouthed toad (*Microhylis carolinensis*)

STANDARDS of the American

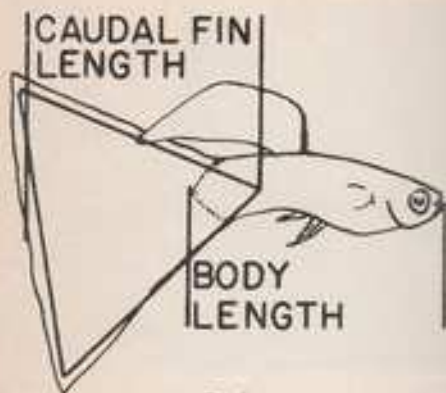


Fig. 1

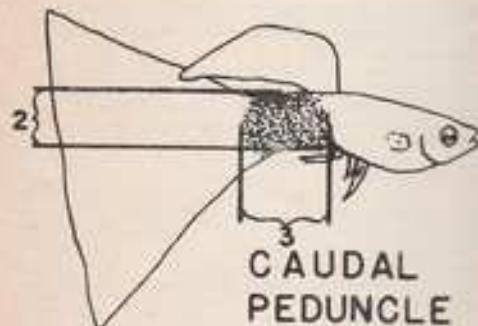


Fig. 2



Fig. 3

THE guppy has come a long way, by means of mutations and selective breeding, from the wild type *Lebistes reticulatus* found in Trinidad and Venezuela. As a result of extensive and highly competitive exhibitions of the improved varieties, much controversy has arisen over just what exactly is a fancy guppy. The following are the standards of the American Guppy Association for the three most widely exhibited, and therefore most controversial, types of fancy guppy.

Deltatail Guppy

This type of guppy is thought by many to be the ultimate achievement in guppy breeding. Many fish are shown each year that are placed in the deltatail class, and although many approach the following standard, few if any equal it in all respects. It is important to bear in mind when reading this and the following standards that the illustration shows an ideal fish, and that the word description is concerned with proportions and not size. It is usual to see male guppies from 1½ to 2 inches in length exhibited to-day, although the wild type seldom, if ever, exceeded 1 inch in length.



Body. The proportions of the body to the caudal fin shall be in the ratio of 4 to 5 (see Fig. 1). The ratio of length to depth of the caudal peduncle shall be 3 to 2, that is to say, strong enough to carry the caudal fin (see Fig. 2). The body must be well rounded and neither hump-backed nor flat-headed.

Dorsal fin. The dorsal fin shall approximate a parallelogram (see Fig. 3). The ratio of length to depth of this fin shall be 2 to 1. The posterior margin is seldom even; it is usually fringed.

Caudal fin. The caudal fin shall approximate an equilateral triangle (see Fig. 3). The posterior margin of this fin should be even. Very few mature male guppies display an even margin; most are fringed, scalloped or frayed. In addition, nearly all deltatails have rounded corners. This fin must be spread and carried erect at all times.

Colour. Both dorsal and caudal fins should be entirely coloured, with colour in at least half of the body itself. Some strains show colour in the pectoral and anal fins, but the pelvic fins are seldom, if ever, coloured.

Fig. 1. Deltatail: proportions of length of body and length of caudal fin (4:5)

Fig. 2. Deltatail: proportions of the caudal peduncle (length to depth 3:2)

Fig. 3. Deltatail: a parallelogram and an equilateral triangle are superimposed over the outlines of the dorsal fin and caudal fin respectively

Guppy Association

Veltail Guppy

This tail type was considered to be the last word in caudal-fin development 20 years ago; to-day too many of the entries in this class are culled from deltatail strains. Most of these fish exceed the width requirements for a veltail and cause much controversy about whether they are superior veltails or poor deltatails.



It has been suggested that the name "veltail" be dropped in favour of "wide tail". The members of the Standards committee feel that wide tail would be equally applicable to rail- and delta-tail types and therefore is not an acceptable name.

Body. The proportions of the body to the caudal fin shall be in the ratio of 1 to 1; that is, the length of the body shall equal that of the caudal fin (see Fig. 4). The ratio of length to depth of the caudal peduncle shall be 3 to 2; that is, strong enough to carry the caudal fin (see Fig. 2). The body must be well rounded and neither hump-backed nor flat-headed.

Dorsal fin. The dorsal fin shall approximate a parallelogram (see Fig. 5). The ratio of length to depth of this fin shall be 3 to 1. The posterior margin is seldom even; it is usually fringed.

Caudal fin. The caudal fin shall approximate an isosceles triangle (see Fig. 5). The posterior margin of this fin should be even. Very few mature male guppies display an even margin; most are fringed, scalloped or frayed. In addition, nearly all veltails have rounded corners. This fin must be spread and carried erect at all times.

Colour. Both dorsal and caudal fins should be entirely coloured, with colour in at least half of the body itself. Some strains show colour in the pectoral and anal fins, but the pelvic fins are seldom, if ever, coloured.

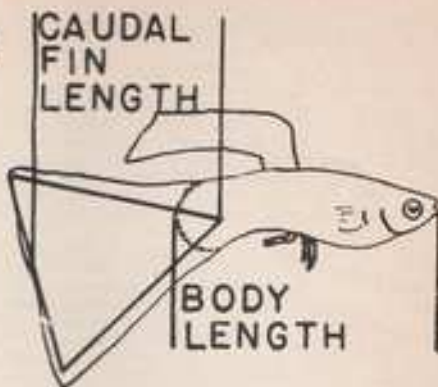


Fig. 4. Veltail: proportions of length of body and length of caudal fin (1:1)

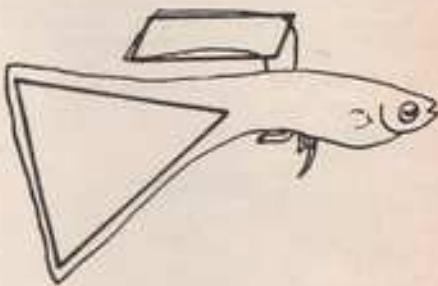


Fig. 5. Veltail: a parallelogram and an isosceles triangle are superimposed over the outlines of the dorsal fin and caudal fin respectively



Top sword



Bottom sword



Double sword

Varieties of swordtail guppies

Standards of the A.G.A. (continued)

Swordtail Guppies

Before the development of the veil- and delta-tail types, the various swordtail types were very popular with guppy breeders. Although they have fallen off sharply in popularity since the advent of the wider tail types, they still rank far ahead of the many other tail types that have been exhibited. Here again, many of the swordtail guppies exhibited are culls from deltatail strains; they tend to have club-shaped rather than sword-shaped caudal fin ray extensions.

Body. The proportions of the body to the caudal fin shall be in the ratio of at least 2 to 3, and preferably 1 to 2 (see Fig. 6). The ratio of the length to the depth of the caudal peduncle shall be 3 to 2; that is, strong enough to carry the caudal fin (see Fig. 2). The body must be well rounded and neither hump-backed nor flat-headed.

Dorsal fin. The dorsal fin shall be long and narrow, extending well beyond the caudal peduncle. The ratio of length to depth of this fin shall be 5 to 1. The posterior margin is seldom even; it is usually fringed.

Caudal fin. Top sword: The upper rays of the caudal fin shall be elongated into a sword-like extension.

Bottom sword: The lower rays of the caudal fin shall be elongated into a sword-like extension.

Double sword: Both the upper and lower rays of the caudal fin shall be elongated into sword-like extensions of equal length.

On all swordtail types the fin ray extensions are usually club-shaped rather than sword-shaped. Breeders should strive to attain an evenly tapered sword-shaped caudal fin ray extension.



The three main types of tail outline recognized in female guppies

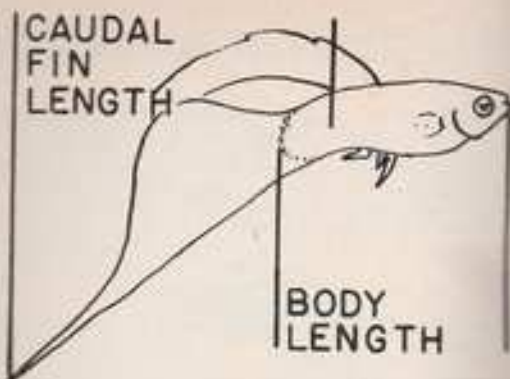


Fig. 6. Swordtail: proportions of length of body and length of caudal fin (at least 2:3, preferably 1:2)

Colour. The dorsal fin for all swordtail types must be coloured entirely. The caudal fin is usually clear except for the extended rays, but may be entirely coloured. Some strains show colour in the pectoral and anal fins, but the pelvic fins are seldom, if ever, coloured.

Other Tail Types

Many other guppy tail types exist, but the American Guppy Association experience has shown that those types standardized in this material are by far the most popular in this country. In exhibiting guppies the Open Class will allow for all other types that may be shown and judged.

Female Guppies

Female guppies are much larger and less colourful than male guppies. Many varieties of female guppies exist, but as they are not judged under existing American Guppy Association rules, no standards have been set for them at this time. The following outline could be expanded into a set of standards if the need were to arise.

Body. The body of the mature female guppy is larger than the male. The proportions are 6 to 5 in overall length and approximately 3 to 1 in volume.

Dorsal. The dorsal fin of most female guppies is small and rounded, although some strains show elongated dorsals.

Caudal fin. The caudal fins of most female guppies fall into three main types, as shown by the Figures. These tail types are not necessarily indicative of the caudal fin type of males from that strain; i.e., round-tailed females occur in many deltatail strains.

Colour. Female guppies may or may not show colour in the dorsal and caudal fins, or elsewhere on the body and other fins. The colour shown is not necessarily indicative of the colour of the males of that strain.

Colour Strains

Colour strains refer to the background colour of the body of the guppy. The three main colour strains are: grey—the colour of the wild type guppy; gold—a mutant colour, almost butter-yellow; albin—true albino, with pink eyes.

An Open Class for colour strains will include blonde, bronze etc.

Colour Varieties

Colour varieties refer to the colour of the caudal fin of

the male guppy. In all cases except multicolour the colour should be pure, and usually extends well into the body and into the dorsal fin. The recognised colour varieties are: blue, black, red, green, multicolour.

All colours occur in various shades, with preference usually being given to the most intense shade shown. An Open Class for colour varieties will include colours not specifically mentioned here, such as yellow and purple.

(Reproduced by permission of the American Guppy Association)

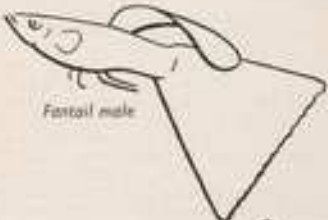
Fancy Guppy Association's New Handbook

THE Fancy Guppy Association has adopted the A.G.A. Standards for international shows, as a step towards establishment of world standards. All the guppy outlines shown below at the actual desired size of the fish are reproduced by permission from the *Standards Handbook* of the F.G.A.

The *Handbook*, which gives full details of judging standards and pointings, is obtainable from Mr. T. R. Hale, 22 Watford Road, Radlett, Herts., price 3s. 6d. post free.



Multicolour veiltail male



Fantail male



Delta male



Flettail male



Original female



Wedgetail female



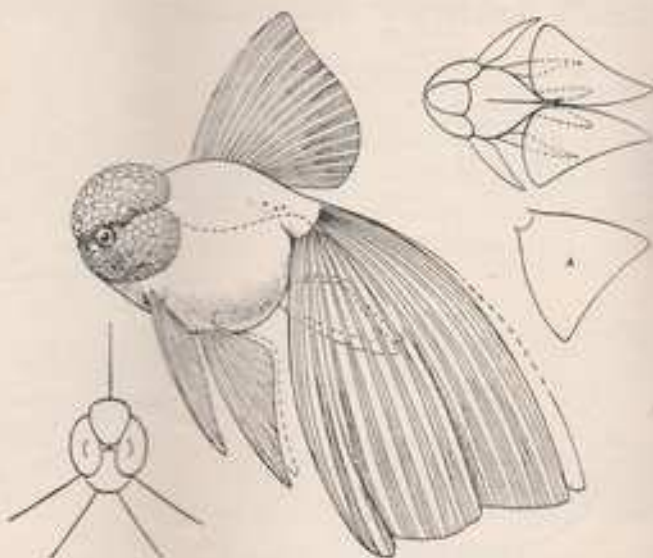
Superba female



Scolloptail female

(8) The Oranda

by
A. BOARDER



THE oranda is one of the most spectacular of the fancy goldfish. In general shape it resembles a veil-tail but has a large protuberance all over the head and gill plates like the head of a bison. The fish is of the double-tailed type, and the tail should be large and flowing with little or no forking. The body is very short and compact and should approach a sphere in shape. The head must have the raspberry-like growth (the hood) over it and the gill covers; the more coverage by this growth the better the specimen. Often one finds at shows specimens that have only a partial growth, and these would lose marks. The dorsal fin is well developed and should be held well upright. It should be evenly curved in front and slightly concave at first at the rear but convex towards the body. The pectoral and pelvic fins should be pointed but long. The anal fins must be double and well developed. The caudal fin should be at least as broad as it is long, completely divided and hanging in graceful folds.

Development of Hood

The colour of the self variety should be entirely a rich warm red. A variegated fish is also recognised, with two or more colours. A shubunkin-coloured fish is recognised as well and this should be coloured as for the shubunkin. I have noticed of recent years that all the good shaped orandas have been gold or red and silver. I have not seen a shubunkin-coloured fish with a good hood. The difficulty in breeding this type of fish is that the hood does not always develop on young fish. It is therefore essential that many fish should be kept for 2 or 3 years so that it can be seen if they are going to have the desired hood or not. This makes their breeding very precarious, as one needs

Outlines of the oranda goldfish from the Federation of British Aquatic Societies "Show Standards"

plenty of space as well as patience to succeed with this unusual variety. The fish is not particularly difficult to keep but it does not lend itself to open ponds during the winter. The flowing finnage would then be very liable to attacks by fungus and fin congestion and so it would be necessary to take the fish inside, at least in the colder parts of the country.

The feeding of orandas presents few difficulties, as any normal goldfish food will be eagerly taken. The chief fault I have noticed in orandas at recent shows is that the tail or caudal fin is too forked. The end of the tail should be almost straight and not forked at all. Another fault is that the hood is not developed enough and so does not cover enough of the head and gill plates. This fish needs careful training for exhibition purposes as it is inclined to sit on the bottom of the tank when being judged. A frequent run in a show tank would help and a small feed of live food at the same time might tend to keep the fish more alert when in the show tank at an exhibition.

Judging the Hood

When judging this fish under the present Federation rules the judge must use a lot of discretion in assessing the value of the hood. Under the old rules points were allotted for the head, which included the hood (20 points could be awarded for this feature alone). I consider that it was a grave mistake in making up the new rules to omit any special pointing for the one outstanding feature of this handsome fish.

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.

Stones for Aquaria

MAY I, yet again, draw the attention of readers and contributors to the fact that few limestones will cause any harm in freshwater, cold or tropical, or British marine aquaria. Those "limestones" which will cause trouble are of such a soft texture that even the beginner will have doubts about them (i.e. chalks).

Your contributor J. R. Tingle (*Keeping our Native Fishes*; *The Aquarist*, July) condemns limestones and quartz but praises sandstone (mainly quartz) and "tufa" (calcareous) and the decorative rocks purchased from a dealer. These latter usually consist of such rocks as "Westmorland" (limestone), "Devon Black" (limestone), "Cheddar Pink" (limestone).

Experiments with limestones, dripstones etc. over periods of several years have shown that no measurable differences occur in aquarium water contents and that none of the above-mentioned rocks (other than chalks) can be faulted.

Why Mr. Tingle condemns quartz I cannot imagine, unless it be that any sharp fractures present may cause damage to the fishes (and I wonder what the actual truth is on this point, for many people use sharp-edged vein-quartz without troubles).

Please, experts, leave us our limestones, for some of the most attractive aquarium rocks are limestones and have been used in this manner "from time immemorial".

H. J. VOYLES,

London, S.W.16.

Judges

NORMALLY I don't reply to comments or criticism on my articles in *The Aquarist*; after all, isn't that why we write—to promote interest? However, I feel this subject of training judges so important that Mr. Skinner's letter (*The Aquarist*, June) warrants a reply.

According to him I rushed into print without giving the matter sufficient thought. This is furthest from the truth, because as long ago as February I raised this very subject at the Annual General Meeting of the F.N.A.S. If this is rushing into print then we are living in a faster day and age than I realised. As to who said "Who judges the judges?" first, does this really matter so long as it is said and asked often enough?

You accuse me of asking a lot of questions and not giving the answers Mr. Skinner. The answers surely must come from the respective governing bodies, but incidentally my answers, along with my suggestions for a training scheme, were sent to Mr. G. Cooke (Chairman, Judges and Standards Committee, F.N.A.S.) months ago, but please

remember it is up to you all to put forward your comments and suggestions—hence the question mark.

In all fairness, I learned while judging a show in Yorkshire where Mr. Skinner was judging, too, that he already runs an excellent scheme for training would-be judges. It was not at this type of person that my barbs were aimed, rather the 'untrained' man, commendable for his enthusiasm but lacking in the 'know how' to do justice to the fishes given him to assess.

JAMES L. KELLY,

Judge, Fancy Guppy Association.

Aquarium Gardening

MAY I compliment you on the continuing high standard of *The Aquarist*, in the face of increasing American competition, and the fact that you have been able to continue publication whilst a contemporary magazine had to close down. I particularly enjoy the articles on tropical marine fishes and wonder whether it might be possible for you to include photographs of these truly exotic jewels in your occasional colour supplements. This would be magnificent publicity for this branch of the hobby and should encourage people like myself, who always mean to try marines, to finally take the plunge.

I am, however, afraid that, looking back over the years, the breeding reports tend to repeat themselves and follow the same pattern over and over again. Surely the majority of us in the hobby have many failures in our breeding attempts. I personally must have lost many thousands of fry through having Infusoria cultures run out too early, power and equipment failures in the small hours, and, I must admit, neglect! I have had moderate successes, nothing wonderful, but I have never bred neons. Most of us know or can read in the text-books how to breed a fish but very little is said about what not to do.

I found Dr. R. O. B. Liu's article ("Does your back ache when gardening"; *The Aquarist*, August) most refreshing after the general run of—"I put a pair in a tank—they spawned—I fed the fry on Infusoria—I fed them on sifted *Daphnia*—I took umpteenth dozen to a delighted dealer" type of essay. However, I must disagree with him on two points.

Firstly, the case of adding small pieces of raw liver to the aquarium compost for the sake of the plants. Now plants are completely unable to assimilate solid food of any type, let alone meat; their intake of "nourishment" is by inorganic salts such as nitrates by their roots and carbon dioxide through their leaves. Plant foods consist of relatively simple inorganic compounds which they succeed



Photo: Laurence E. Perkins
Tubifex in a plastic holder are the cause of the interest shown by these paradise fish (*Macropodus opercularis*)

in building up into complex organic molecules. Now let us consider the piece of liver in the compost: this will putrefy, increasing the bacterial and protozoan populations to uncomfortable proportions. These organisms may, if we are lucky, be all harmless and only cause annoyance and irritation to the fishes, but they may equally well contain amongst their numbers pathogenic species.

If you doubt this process takes place, take a piece of liver and drop it into a jam-jar of tank water; the smell that greets you the next day has to be experienced to be believed! Although in the aquarium there is far more water involved, a given size of liver will give rise to approximately the same number of micro-organisms in the jar as in the aquarium. In fact in the aquarium oxygen will be more plentiful, the temperature more comfortable, and so the bugs will breed much faster, surely to the detriment of our fishes? But, you say, the contributor gets away with it, how does he do it then? I think he is lucky enough to have a sufficient number of Malaysian snails to clear up the carrion that he pokes into the sand. The droppings of the snails and fishes are in turn fed on by benign bacteria who produce salts that can be readily assimilated by the plants.

Secondly, may I say that adding copper and other chemicals to aquaria is a dangerous thing to do. Some people do claim cures for velvet, for instance, with copper, but those same people have asked me how to treat copper poisoning! I am not saying that copper will not cure a tank of algae or a fish of velvet, but the margin between a therapeutic and a toxic dose is only a matter of a few parts per million, if that, and how on earth can we maintain the correct dose in such a complex system as an aquarium? But, you say again, Dr. List gets away with it, how does he do it? Well, say water in contact with copper will dissolve a few parts per million of the metal, the quantity depending to a great extent on the pH of the water—the lower the pH (the more acid) the greater the amount of copper that will go into solution. I believe Dr. List is lucky enough to have both alkaline and hard water in his tanks. The higher the pH of his water the less copper will dissolve (we all know how acids attack metals), and the calcium bicarbonate pres-

ent in his water as part of the hardness reacts with the little copper that does go into solution to give an insoluble material, copper carbonate, which is greenish in colour, discolours the penny and gives rise to the idea of copper sulphate being formed.

As for the older coins being safer this is due to their being purer copper whereas modern pennies have larger proportions of zinc and nickel. Halfpennies prove fatal because two of the coins contain far more copper than one penny.

May I also put in a plea for efficient isolation of new stock; many troubles can be avoided by this method and perhaps most important of all—money saved! *Daphnia* ponds in the wild are also a source of infections and pests; although they do not contain fishes, they will contain frogs and newts that can carry disease, and birds often visit these ponds from infected waters.

Of course we cannot avoid all diseases by culturing *Daphnia* at home, a difficult task in itself, but we can protect our fishes from as many as possible by resisting the temptation to collect live food from possible sources of infection.

P. CARON,
Billericay, Essex.

Inter-Pet Supplies Co.

THE Liquify Co. Ltd. has formed the Inter-Pet Supplies Co., a division specially intended to promote sales of the Company's present products, and to provide a marketing service to other manufacturing firms in the pet industry. Only the best products available on the international market will be sold (hence the name Inter-Pet). Some of these will be marketed in their original packs and others in packs designed with the Inter-Pet symbol as the predominant theme. Any product sold by Inter-Pet will have to meet stringent tests. In general two products will not be marketed if they are in competition with each other. The possible exception to this rule is fish foods, since each aquarist has his individual preference.

Inter-Pet will take over the marketing in the U.K. of the present range of products sold by the Liquify Co. Ltd. These include Liquify, Liquinox, Pleasure, Steraxyl, Geo-Wel products, Biol. Other major items are to be announced.

Mr. A. C. Lambart has been appointed Sales Manager of the newly formed Inter-Pet Supplies Co. Mr. Lambart is a keen aquarist and pet-keeper. He started fish-keeping as a hobby in 1946 after leaving the Army. He was a Founder Member of the Thames Valley Aquatic Society and show secretary for 3 years. Mr. Lambart served as a judge for the F.B.A.S. and A.S.L.A.S. besides being an A.S.L.A.S. lecturer and acting as technical adviser at Aquarist Shows.

The Liquify Co. Ltd. was formed when several enthusiasts found that the most convenient way of feeding their baby fish was with a suspension in a liquid of minute food particles. They found this product to be so successful that it was decided to sell it nationally under the name of Liquify. Since the product was first launched in 1952, various improvements in the formula and process have been made and Liquify now has large sales all over the world.

Other products for aquarium use were subsequently developed and marketed by the Company. The directors of the Liquify Co. Ltd. are Mr. O. L. Carrington and Dr. J. N. Carrington, two qualified chemists with more than 50 years' total fish-keeping experience. The Carringtons also have retail pharmacy businesses in Surrey. In the last 9 years the Liquify business has become as important as the other concerns.



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.

This membership of the **Thames A.S.** has increased to nearly 50 during the last six months. The results of the last three table shows were as follows: **Summer Fishery:** 1, Mr. N. Sanders; 2, Mr. K. Hardwick; 3, Mr. A. Clark; **Catfish:** 1 and 2, Mr. M. Johnson; 3, Mr. N. Sanders; **Female of any Species:** 1, Mr. M. Johnson; 2, Mr. G. Sweeney; 3, Mr. N. Sanders.

The Society held its first open show recently and it was a great success, there being over 200 entries. The results were as follows: **Livebearers:** 1, Mr. Walker (Oxton); 2, Mrs. Mackill (Goole); 3, Mrs. McGill (Lancaster); **Characin:** 1, Mr. Walker (Oxton); 2, Mr. Gougeon (Don Valley); 3, Mr. Marshall (Goole); **Anabantids:** 1 and 2, Mr. Gougeon (Don Valley); 3, Mr. Sweeney (Thorne); **Barbs:** 1, Mr. Hill (Goole); 2, Mr. Paterlough (Lancaster); 3, Mr. Whistler (Lancaster); **Fighters:** 1, Mr. Whistler (Lancaster); 2, Mr. Hunter (Lancaster); 3, Mr. Smith (Lancaster); **South Cerys:** 1, Mr. Hunt (Goole); 2, Mr. Paterlough (Lancaster); 3, Mr. Grouard (Lancaster); **Catfish:** 1, Mr. Jackson (Don Valley); 2, Mr. Marshall (Goole); 3, Mr. Johnson (Thorne); **Danio, Raddwin and Misonis:** 1, Mr. Sanders (Thorne); 2, Mr. Taylor (Goole); 3, Mr. Mackill (Thorne); **Cichlids:** 1, Mr. Grouard (Don Valley); 2, Mr. Duckitt (Barnes); 3, Mr. Kabery (Goole); **A.O.V.:** 1, Mr. Walker (Oxton); 2, Mr. Shove (Oxton); 3, Mr. Clayton (Lancaster); **Breeders:** 1, Mr. Taylor (Goole); 2, Mr. Mackill (Thorne); 3, Mr. Mackill (Goole); **Coldwater:** 1, Mr. Hill (Goole); 2, Mr. Wells (Thorne); 3, Mr. Shove (Goole); **Best Fish of Show:** Mr. Walker (Oxton); **Silver Shark:** Mr. Walker (Oxton).

This summer the **Bedford and District A.S.** held two open shows, the first at the Bedford County Agricultural Show, the second at the European Annual Show. **Results—Agricultural Show:** **Parrotfish Tropical:** 1, Mrs. D. Hill (71 pts.); 2, Mrs. M. Merrill (82 pts.); 3, Mr. S. Dargis (79 pts.); 4, Mr. J. Barke (77 pts.); **Emulated Cichlids:** 1 and 2, Mr. R. Thompson (78 and 77 pts.); 3 and 4, Mrs. D. Hill (72 and 64 pts.); **Broad Tropical:** Mr. R. Thompson (Aplocheilichthys 94 pts.); Mr. S. Dargis (Anguila 89 pts.); Mr. R. Shady (Had Tardis Platys 78 pts.); **Breeders:** 1, Mr. R. Shady (Pelmatochromis quadrimaculatus 90 pts.); 2, Mr. Price (Blanchi) (Hare Tilapia 89 pts.); 3, Mr. R. Shady (Varicatus Ptery 87 pts.); 4, Mr. Wells (Sahnon Doreus) 86 pts.; **European Show results:** **Parrotfish Tropical:** 1, Mrs. D. Hill (80 pts.); 2, Mr. M. Merrill (84 pts.); 3, Mr. S. Dargis (83 pts.); 4, Mr. Tysoe (82 pts.); **Emulated Cichlids:** 4, Mr. Tysoe (79 pts.); 1, 2, Mrs. D. Hill (78 pts.); 3 and 4, Mr. R. Thompson (77 and 73 pts.). The show was judged by Mr. R. E. Page.

The **Manchesterfield A.S.** are holding an open show on Sunday, 22nd September at the County Hall, Cavendish Street, Manchesterfield, starting at 10.30 a.m., and judging at 4 p.m.

At its annual general meeting of the **Drucknell and District A.S.**, the following officers were elected: Secretary, Mr. P. Denny; S. Harcourt; Treasurer, Mr. C. Denny; President, Mr. C. Denny; Vice-President, Mr. P. Denny; Secretary, Mr. C. Denny.

Livebearers, Mr. R. Jordan; **Shov** Secretary, Mr. K. Phillips.

The above Society would welcome any new members at the meetings which are held at the Red Lion Hotel, High Street, Bradford every second and fourth Thursday of each month.

The last table show was judged by Mr. L. Titman from the Oxford Society who also gave a very interesting talk on tropical fish-keeping and breeding in general. The table show results were: **Characins:** 1, Mr. B. Hill (New Tetra); 2, Mr. E. Withers (Black Widow, Male Guppy); Mrs. L. Jordan; **Female Guppy:** 2, Mrs. L. Jordan in the open class.

LEEDS and District A.S. held their meeting for August in the Church Institute, Leeds, and although many of the members were on holiday it was quite an interesting evening with a number of subjects being discussed. On the table were two classes for judging—Cichlids and A.O.V. The results were a win for Mr. B. Mann who won both classes.

The **News Letter of the Merseyside A.S.** contains a number of interesting items and also the results of the Liverpool show. There were as follows: **Parrotfish Aquaria:** 1, J. Grouard; 2, S. Conway; 3, F. Mullis; **Guppies:** 1, J. Grouard; 2, H. Swanson; 3, R. Stamp; **Barbs:** 1, H. Stamp; 2, S. Conway; 3, R. Stamp; **Millers:** 1 and 2, S. Conway; 3, E. Swanson; **Swordtails:** 1, H. Stamp; 2, E. Pillsbury; 3, J. Grouard; **Best Livebearer:** H. Stamp; **Labyrinth:** 1, E. Swanson; 2, H. Stamp; 3, F. Mullis; **Best Characin:** 1 and 2, H. Swanson; 3, J. Grouard; **Large Characin:** 1, E. Swanson; 2, S. Conway; 3, H. Stamp; **Best Characin:** E. Swanson; **Small Barbs:** 1, J. Foden; 2, J. Conley; 3, J. Foden; **Large Barbs:** 1, 2 and 3, H. Stamp; **Best Barb:** H. Stamp; **Cichlids:** 1, H. Swanson; 2, S. Conley; 3, H. Stamp; **Best Cichlid:** H. Swanson; **Top Albinos:** 1 and 2, H. Swanson; 3, F. Mullis; **A.O.V.:** 1, R. Parker; 2, S. Conway; 3, H. Swanson; **Breeders:** 1 and 2, J. Conley; 3, H. Swanson; **Best in Show:** H. Swanson.

The first inter-Society table show ever held in Derby was judged recently and proved a great success. The **Regent Society of Derby** were the hosts and the three other competing Societies were Nottingham and District, Mansfield and Burton-on-Trent. The number of fish on exhibition was strictly limited to 12 in each of the three classes and Burton was the only Society which failed to show its full quota. They were one short in one class.

All fish were pointed and award certificates presented to the first four in each class. Nottingham scored most points (71), Mansfield coming next with 70). The **Regent Society's** total was 62 and Burton's 52). First prize winners were: **Characin:** Mr. Swales, Mansfield; **Broad Tropical:** Mr. Swales, Mansfield; **Catfish and Loach:** Mr. Lloyd, Burton (Brown Cat); **Cichlids:** Mr. Smith, Nottingham (Pommoth). The judges were: Messrs. W. Thompson (Regent), A. Asham (Mansfield), F. G. Bolger (Burton), and W. E. Christian (Nottingham). Mr. P. Hanks (chairman of the Regent Society) presided and the Society's president, Mr. H. P.

finch, presented the award cards. During judging, a programme of vocal and colour films of aquatic interest was presented by special arrangement with the Geonew British Film Library, Mr. J. Bayliff being the presenter. The next inter-Society show will be held at Burton-on-Trent in September.

The results of the **Tadcaster and District A.S.** open table show were as follows: **Livebearers:** 1, D. Machin (Thorne); 2, G. Holmes (Bradford); 3, C. Walker (Oxton); **Barbs:** 1, P. Mackill (Goole); 2, T. P. Jerram (Derby); 3, M. Davis (Nottingham); **Characins:** 1, C. Walker (Oxton); 2, J. Hockley (Ayrington); 3, L. Lewis (Barley); **Breeder-Danio Minnow:** 1, F. Taylor (Goole); 2 and 3, F. Pinner (Derby); **Fighters:** 1 and 2, E. Whitlock (Tadcaster); 3, J. Baxter (Tadcaster); **Anabantids:** 1, C. Walker (Oxton); 2, D. Carr (Bradford); 3, L. Lewis (Derby); **Cichlids:** 1 and 2, F. Mackill (Goole); 3, F. Pinner (Derby); **Catfish and Loach:** 1, C. Walker (Oxton); 2, H. Cranswick (Southeyton); 3, P. Marshall (Goole); **Tench:** 1, L. Grouard (Tadcaster); 2, R. M. Fairclough (Tadcaster); 3, G. Lowe (Thorne); **A.O.V.:** 1, J. Hockley (Ayrington); 2, F. Derby (Goole); 3, P. Marshall (Bradford); **Coldwater:** 1 and 2, L. Booth (Bradford); 3, Mrs. Machin (Thorne); **Breeders:** Livebearers: 1, F. Pinner (Derby); 2, D. Penherson (Tadcaster); 3, R. M. Fairclough (Tadcaster); **Barbs:** Guppies: 1, D. Machin (Thorne); 2, W. Hillard (Celnic); 3, D. Wells (Thorne); **Breeders:** Tappetors: 1, M. Davis (Nottingham); 2, G. Holmes (Bradford); 3, D. Penherson (Tadcaster).

A VERY interesting talk was given recently to the **Ilford and District Aquarists' and Pondkeepers' Society** by Mr. A. Leitcher, F.Z.S., on reptiles and amphibians. Mr. Leitcher brought with him some very fine specimens from his collection, including turtles and salamanders. At the last meeting a discussion was held on the preparation of formalin aquaria for shows, with particular reference to the results at the recent Dagenham open show where in the formalin aquaria section the Ilford Society came second and fourth.

Individual items from members resulted in the following awards: **Goldfish Class:** 1 and 2, Mr. Beger; 3, Mr. Brill (Gostommes); 4, Mr. Cook (Sheffield).

The secretary, Mr. V. Price, 1a, House Road, Barkingside, Ilford, will be pleased to forward further information about the Society to anyone interested and wishing to attend future meetings.

The table show of the **Dunfermline A.S.** was for the Scott Trophy—Catfish and Dwarf Cichlids. The judge was W. Cockburn and the results were: **Catfish:** 1, P. McNaughton (Gardons); 2 and 3, P. N. Grouard (Gardons); **Dwarf Cichlids:** 1 and 2, P. N. Grouard (Gardons); 3, C. D. Smith (Palmontown); 4, F. McNaughton (Palmontown).

The present position for the Scott Trophy is as follows: P. N. Grouard, 11 pts.; F. McNaughton, 4 pts.; W. Cockburn, 4 pts.; W. Lowden, 3 pts.; C. D. Smith, 2 pts.; J. McKeogh, 1 pt.

The programme at the October meeting will be given by Mr. John Alexander, whose subject will be "Wading" and the talk will be illustrated by colour slides.

The recent activities of the **Yaxley and District A.S.** have included a plant show judged by Mr. N. Staines, the result being: 1, W. Sharpe (Oxley Hyacinth); 2, V. Collins (Eccles Coleridge); 3, G. Aston (Cypressus Herculana). The winners at the annual table show were as follows: **Stainer Shield for Best Tropical Fish (Amphip):** C. Bushell; **Best Coldwater Fish (Shrimps):** N. Stainer; **Thomas Small Cup for most points won jointly by G. Aston and N. Stainer:** Other results were: **Goldfish:** 1, N. Stainer; 2, W. Harvey; 3, M. Elliott; **Parrotfish:** 1, 2 and 3, V. Collins; **Parrotfish River Fish:** 1 and 2, V. Collins; 3, N. Staines; **Breeds (Shrimps):**

L. N. Stainer; 1, T. Perry; J. D. S. Langdon. **Breeding Coldwater:** 1 and 2, D. S. Langdon; J. V. Collins. **Geometric:** G. Aron. **Fighting:** G. Aron. **Burbs:** J. N. Stainer; 2, M. Eastcott; 1, T. Perry. **Charmers:** 1, N. Stainer; 2, G. Aron; 3, M. Eastcott. **Catfish:** 1, C. Booth; 2 and 3, G. Aron. **A.A.V. Tropical:** J. G. Aron; 2 and 3, N. Stainer. **Catfish:** 1, A. Goodland; 2, G. Aron; 3, M. Eastcott. **Molluscs:** 1 and 2, H. Dodds; 3, T. Perry. **Guppies (male and female):** G. Aron. **Swordfish and Flashes:** L. N. Stainer; 2, T. Perry; 3, H. Dodds. **Breeding:** **Loach:** 1, T. Sharp; 2, N. Stainer; 3, D. Silver. **Breeding:** **Engelmann:** 1, D. Silver; 2, G. Gillard.

The judges were: for the Tropical—Mrs. W. Meadows, of London; and for the Coldwater—Mr. V. Capaldi, of Bristol.

THE British Ichthyological Society has recently appointed the following branch secretaries for their areas: Northern England—Mr. J. W. Massinger, 61, Hirsings Road, Dunnington, Workington, Cumberland. Wales—Mr. Peter E. Jeffrey, 27, Victoria Road, Postypool, Mon.

AMONG the forthcoming items in the Nottingham and District A.S. programme are a lecture by Mr. Wehby on photographing fish on the 25th September, and also an open table show which is being held on Saturday, 30th September, at the Gladiolus Liberal Club, St. Anne's Wall Road, Nottingham. The results of the recent table show for Catfish was 1 and 2, Mr. G. Wood; 3, Mr. H. Smith. The Catfish and Loach competition result was: 1 and 3, Dr. Porter; 2, Mr. H. Smith.

SECRETARY CHANGES

Changes of secretaries have been reported from the following societies: **Middlesbrough and District A.S.** (Mr. H. F. Laidler, 41, Prince's Road, Middlesbrough). **Prestwich and Bury A.S.** (Mr. F. Jennings, 11, Barrowwood Avenue, Bury). **Scottish A.S.** (Joint Secretaries: Mr. Kenneth I. Brown, M.F.P.L., M.S.S.Ch., D. P.E., 21, Sandale Avenue, Clarkson, Glasgow and Dr. A. Young, M.B., F.R., 8, Spence Street, Glasgow, N.W.).

AQUARIST CALENDAR

19th-22nd September: Leeds and District A.S. Open Show to be held at the Trinity Church Hall, Leeds.

20th September: Kingston and District A.S. Intra-Club Open Table Show. Schedules obtainable from Mr. H. Towell, 11, Belmont Terrace, Chiswick, W.4.

20th September: Blackpool, Fylde and A.S. annual show in conjunction with F.G.A. at Portman School of Dancing, 67, Station Road, Blackpool.

7th October: Bradford and District A.S. Open Table Show, at Unity Hall, Rawson Square, Bradford. Schedules from Show Secretary: R. Wainhouse, 15, Woodhall Place, Thurstrey, Bradford, 3.

11th-13th October: Scottish A.S. Annual show at McLellan Galleries, Glasgow. Details from Mr. K. I. Brown, 21, Sandale Avenue, Clarkson, Glasgow.

20th-21st October: British Aquarists' Festival, Belle Vue Zoological Gardens, Manchester. Schedules available from Hon. Show Secretary, Mr. Geo. W. Cooke, "Spring Grove", Fielding, Balby, Yorks.

18th November: Prestwich and Bury A.S. Annual Open Show, Church House, The Wyldie, Bury. Schedules from Mr. F. Jennings, 11, Barrowwood Avenue, Bury.



BRITISH AQUARISTS' FESTIVAL

20th, 21st October, 1962

Belle Vue Zoological Gardens
Manchester

26 Classes covering Tropical, Coldwater and Aquascapes



THE SHOW WITH A NEW APPROACH

Hours of opening

Saturday, 20th October - - - 10 a.m. to 8 p.m.
Sunday, 21st October - - - 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.

INTRODUCING

● THE

NEW

'SUMMIT'

VIBRATOR

AIR PUMP



NOW AVAILABLE FROM YOUR DEALER

PRICE **21/-** RETAIL

THE 'SUMMIT' IS EXCEPTIONAL VALUE BECAUSE

- Its OUTPUT would not shame a more expensive pump.
- Its 'SNAP-ON' COVER permits immediate removal.
- Its exclusive cup-shaped diaphragm lasts longer.
- It is RUST-PROOFED throughout.
- Its plastic body is practically unbreakable and is of beautiful design and finish.
- A complete set of pneumatic spares are included and its mechanism guaranteed.
- It employs the most up-to-date plastic technology in its manufacture.

Manufactured by

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

AN
ES&S
PRODUCT

FOR THE BEST FISH-FOOD

McLYNN'S FISH-FOOD

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

*From your Pet Shop
or direct from us:—*

McLYNN'S AQUATIC FOODS
DORKING, SURREY
Telephone: DORKING 2373

FOR THE BEST BOOK
"ALL ABOUT
TROPICAL FISH"
by D. McNEERY OF
McLYNN'S AQUARIUM
75/- Postage 2/3

McLynn's

FOR THE BEST FISH & PLANTS

McLYNN'S AQUARIUM

CLUBS AND
VISITORS WELCOME
BUY DIRECT FROM
THE BREEDER

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

S.A.E. FOR LIST WHOLESALE, OR
RETAIL.

Direct from:—

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

CLAROX

THE SAFE WATER CLARIFIER!

CLAROX keeps ponds crystal clear. They look nicer and are healthier for fish and plants. CLAROX water Clarifier and Oxygenator clears the cloudiest water, destroys all algae. Harmless to fish and plants.

10 oz. bottle treats 160 gallons water 2/6d.
1 gallon can treats 2600 gallons water 25/-
Tablets, 12 per box treats 2 gallons water 1/-

KALORA FISH FOOD

Balanced Vitamin diet keeps fish healthy.

Medium Drum 9d.
Large Drum 1/6d.

DRIED MONGOLIAN DAPHNIA

First quality, Medium Drum 1/-

GROUND SHRIMP FISH FOOD

Ensures correct protein.

Small Drum 6d.
Medium Drum 1/-
Large Drum 1/6d.

ANT EGGS (Scandinavian)

Grade A, Small Drum 9d.



WHEAT GERM MEAL

The Germ of sun-ripened wheat is the natural form of Vitamin E. Eagerly taken by all fish, bird and animal life with the most beneficial results.

Large Drum 9d.

KALIUM PRODUCTS

From your usual supplier. If in difficulty write to:—
KALIUM PRODUCTS (REDDITCH) LTD.,
Adelaide Street, Redditch, Worcs.

GRO-WEL
superior
filters
for best
AQUARIUM
CLARITY



Moulded of strong, clear polystyrene. These popular and well-tried products are made by GRO-WEL FISH-ADE CO. INC., U.S.A.

OUTSIDE FILTERS

To fit all aquaria from up to 1' wide. "SLEEK JIBE": The slimmest outside filter on the market. A quality filter for only 17s. 6d. "CLEAR KING" 3-Compartment filter: Separates compartments for glass wool and charcoal. Removes particles plus a larger siphon stem for faster maintenance. Clog-proof return stem giving a steady, non-splash flow. Price 22s. 6d.

INTERNAL FILTERS

Ornamental **ROCK FILTER**: Looks like a rock but is primarily an efficient filter and traps loads 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 fishbears, as a red trap for breeding egg-layers or as a self-cleaning display tank for 1 or 2 Bettas. Price 26s. 6d.

Obtainable through your dealer or post free from

INTER-PET SUPPLIES COMPANY U.K. AGENTS FOR
GRO-WEL FISH-ADE INC.

A HIGHLY SUCCESSFUL DIET SUPPLEMENT

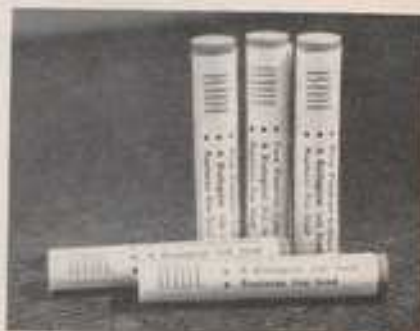
BIOL - Plankton Culture

- * Ideal for growing young fish.
- * Conditioning food for adult fish.
- * A Biological fish food.
- * Replaces live food.
- * Will not foul the tank.

Prepared from a pure culture of Plankton and other biological materials.

Your fishes will be mad about it!

Price 2/6 per vial.



Obtainable from your dealer or post free from

INTER-PET SUPPLIES COMPANY CHURCH STREET,
DORKING, SURREY.

(Sole U.K. agents for Tigre Biological Laboratories, Utrecht, Holland.)

BUYERS' GUIDE

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

BERKSHIRE

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

CHESHIRE

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

Robert Jackson (Naturalists) Ltd.
Holly Bank Nurseries, Grove Lane, Hale
Telephone: Ringway 3301
WR. C.T.P.A.A. R.&A.

DURHAM

Metcalf, G. R.
2, High Northgate (near A.B.C. Cinema)
(On main A.1 road) Darlington
Telephone: Darlington 5991
E.C.D. Wednesday. R. C.T.P.A.A. R.&A.

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

The Fish Bowl
Laura Street, Sunderland
Telephone: Sunderland 69192
E.C.D. Monday. R. C.T.P.A.A. R.&A.

ESSEX

Goodmayes Aquaria
Shaffesbury Parade, High Road, Chadwell Heath
Telephone: Goodmayes 2594
E.C.D. Thursday. R. C.T.P.A.A.

Shilton, C. J.
"Ridgeway", 139, Galleywood Road,
Chelmsford
Telephone: Chelmsford 56878. WR. C.T.P.A.A.

HAMPSHIRE

Arundel Aviaries & Fisheries
241, 243, Arundel Street, Portsmouth
E.C.D. Wednesday. WR. C.T.P.A.A. R.&A.

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

HERTFORDSHIRE

Cura, L. & Sons
Water End, Hemel Hempstead
Telephone: Water End 44
E.C.D. Saturday. W. C.P. R.&A.

Wat-Pet Organisation Ltd.
66-68, London Road, St. Albans
Telephone: St. Albans 54409-55507
E.C.D. Thursday. WR. C.T.P.A.A.

KENT

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

LANCASHIRE

Hornby's
Trafford Bar, Old Trafford,
Manchester, 16
Telephone: Trafford Park 2089
E.C.D. Wednesday. R. C.T.P.A.A. R.&A.

Latty Kremner
13, King Edward's Building,
Cheetham Hill Village,
(opp. Woolworths, Manchester)
Telephone: Cheetham Hill 3246
E.C.D. Wednesday. WR. C.T.P.A.A. R.&A.

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

LONDON (North)

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

Paramount Aquarium
95, Haverstock Hill,
Hampstead, N.W.3
Telephone: Primrose 1842 and 9452
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

LONDON (South)

Aquatic Suppliers
7, David's Road, Forest Hill, S.E.23
Telephone: Forest Hill 3816
(Open every afternoon and all day Saturday).
WR. C.T.P.A.A.

The Jaynor Organisation
(James North (London) Ltd.)
316, Lee High Road, Lewisham, S.E.13
Telephone: Lee Green 3577
E.C.D. Thursday. W. C.P.A.A.

"Our Corner"
310, Lee High Road,
Lewisham, S.E.13
E.C.D. All day Thursday. R. C.T.P.A.A.

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

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

LONDON (West)

Owen Reid's, Aquarium Dept.
12, Spring Bridge Road, Ealing Broadway, W.3
Telephone: Ealing 3259
E.C.D. Wednesday. WR. C.T.P.A.A. R.&A.

NORTHAMPTONSHIRE

The Aquarium
192, Wellingborough Road,
Northampton
Telephone: Northampton 34010
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

The Pet Shop
120, Kettering Road,
Northampton
Telephone: Northampton 841
E.C.D. Thursday. R.C.T.P.A.A.

OXFORDSHIRE

The Goldfish bowl
5, East Avenue, Cowley Road,
Oxford
Telephone: Oxford 41825
E.C.D. Thursday. R. C.T.P.A.A. R.&A.
Headington Pets Supplies
150, London Road,
Headington, Oxford
Telephone: Oxford 61706 and 58673
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

STAFFORDSHIRE

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

SURREY

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

SUSSEX

Preston Aquarium
44, Beaconsfield Road, Brighton
Telephone: Brighton 29620
(Open all week). R. C.T.P.A.A.
Regency Aquaria (Prop. R. A. Bassett)
49, Surrey Street (outside Brighton Station),
Brighton. R. C.T.P.A.A.

WARWICKSHIRE

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

Fanday Aquaria
Fanday House, 129, Stratford Road, Sparkbrook,
Birmingham
Telephone: Victoria 3537
E.C.D. Wednesday. WR. C.T.P.A.A. R.&A.

WORCESTERSHIRE

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

YORKSHIRE

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

SCOTLAND

Aquarists' Rendezvous
164/168, Albert Drive, Pollokshields, Glasgow, S.1
Telephone: South 4258
E.C.D. Tuesday (1 p.m.) WR. C.T.P.A.A.
Forbes, James L. (Prop. P. R. Greening)
176, Blackness Road, Dundee, Co. Angus
Telephone: Dundee 66409
E.C.D. Wednesday. R. C.T.P.A.A.

NORTHERN IRELAND

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

I've Got Millions!**WORMS! FOODS! COMPOSTS! RESULTS!**

EUGLENA	14—With 8 page instructional booklet
MICROWORMS	14—Complete with feeding powder
MICRO FOOD	14—Specially developed for Platy
GRINDALWORMS	14—Miniature W. Worms Easy to breed
GRINDALWORMS	30—Mature cultures in wooden boxes
GRINDAL FOOD	14—High protein content. Rapid results
GRINDAL COMPOST	14—Finely ground with organic base
WHITE WORMS	14—With complete instructions
WHITE WORMS	30—Mature cultures in wooden boxes
WHITE WORM FOOD	14—Exclusive formula. No milddew
WHITE WORM COMPOST	14—Comounded for quicker breeding

Breeders' packs five times 14 quantity for 74

Ask your dealer, or free delivery from

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

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

Spriedeweg, 2

Putten (Gld.), Holland

AQUARIUM PUTTY

Made specially for AQUARIUMS

- ★ WATERPROOF
- ★ A SMOOTH PUTTY
- ★ EASY TO USE

Makers of the famous Fillers & Stoppings.
If unobtainable write direct to manufacturers.

BRUMMER LTD, Oyster Lane, Byfleet, Surrey

USE "CORAL" AS YOUR BASIC FOOD

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

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

Keep Them Healthy on Coral

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

Author of Basic Fishkeeping

MARSHALL'S AQUARIA

26 WESTBURY LANE, BUCKHURST HILL, ESSEX Telephone: BUCKHURST 4709

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 26, 306, 167 to Shaft Road Bus, 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 100 different species of fish for sale. Fifty varieties 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'.

WE NOW OFFER

Calico Veiltails, large fish, Calico Veiltails, medium and small, Large Moons and young Moons, Young Otoclinus, some especially fine *Stenotomus* of Show Standard, Four Blues and Callions, Four Seals and Bubble eyes. All prices according to standard. No fish of any kind by rail.

Discus	40/-, 80/-, 120/-	Adamant	25/-
Red-tail Black Shark	18/-	Crown Loach 7"	17/6
Black Shark 7"	18/-	Whynada	10/-
Red Fin Shark	18/-	Plecomatus	17/6

120 other species of fish. S.A.E. for list.

PLEASE NOTE

The books written by Thos. H. Marshall: 'Breeding the Egg-layers', 'Breeding the Livebearers', 'Breeding the Labyrinthics', 'Breeding the Cichlids', 'Aquarium Management and Fish Farming', 'Aquarium Plants and Soaks', are all available from here at 8/- per volume, post free, or a complete set for 42/- post paid.

WE GUARANTEE

1. That here you will see a bigger and better display of Basic Fish than anywhere else in the British Isles, and we do not include the Zoo's. The rest 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 young pullocks hearts. 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.O.V.F.' (Nutrition Over 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. Tretly 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 7/6 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.

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. We are pleased to welcome Club visits, see previous advert. At the moment we have many breeding pairs of various fish to offer—several species of Large and Dwarf Cichlids, write for details.

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

the new London aquarist shop

An excellent display of Tropical Fish now on view. Over 100 varieties all in excellent condition, at very reasonable prices. New Ember Barbs, new Honey Dwarf Gourami and 100 other new varieties. Large Fish and Killy fish often in stock. All accessories. Tanks any size made to order. Also stocking, Indoor Plants, American Box Turtles, Alligator Snapping Turtles, and other Reptiles. Our service and advice is at your disposal at any time, s.a.s. with all inquiries and for Fish list.

MACAW PET STORES

12 Crouch Hill, N.4 - Telephone: ARC 3178

Stepney Corner, 212 bus from
Finsbury Park tube station

HYKRO PRODUCTS

Hykro, Famous Fish Foods and Aquatic Appliances. Filters, Breeding Traps, Siphon Sets are available at all good Aquarists and Pet Shops. In case of difficulty drop us a line and we will put you in touch with the nearest Retailer.

We have for the trade only good stocks of Ludwigia Cabomba-Lysimachia, Hygrophila, Bacopa and Lace Leaf Plants.

•
JOE GRASSBY, F.R.H.S.
THE HYKRO DEPOT
MOBBERLEY NEAR KNUTSFORD
CHESHIRE
Phone Mobberley 3272

WARDLEY'S AQUATIC FOODS AND REMEDIES

The widest variety of quality foods and remedies on the market. These include the sensational colour food Hi-Glow 30, Beef Meal, Crab Meal, Liver Meal, Salmon Eggs and many others. All Wardley products have a guaranteed analysis on every packet.

NEW! WARDLEY'S SASKATCHEWAN BRINE SHRIMP EGGS COMPLETE WITH INSTRUCTIONS AND HATCHING MIX. THE IDEAL FIRST FOOD FOR GROWING FRY FAST.

All at your local stockists now.

U.K. Distributors: **T.F.H. Publications (London) Ltd.**
59 Station Road, Redhill, Surrey.

PREPAID ADVERTISEMENTS

52 per word (12 words minimum) Rate number 2/- extra

FOR SALE

GLAZED aquaria in all sizes including 56 x 15 x 12, 70 x 62, 18 x 10 x 10, 15 x 62, 24 x 12 x 12, 28 x 62, tanks dispatched to any part of Britain, carriage extra. Plants, Accessories, Fish. Wright's, 10, Lorne Road, London, N.4. Phone ANdover 3520.

PERKY'S for Plants. 1st and 2nd Awards British Aquarists' Festival. Assorted selections Tropical or Cold 3s. 6d., 7s. 6d., 10s. 6d., Van Tetta, Saginaria Natans, 6s. per dozen, Cryptocoryne Cordata 1s. 6d. to 2s. 6d., Willow 2s. 6d., Beckham 1s., Harrietiana 2s. 6d., Scum assorted 10s., Water Wisteria, Giant Hygrophilla 2s. 6d., Scapularia 2s. 6d., each. Post 1s. All Advertisers' Accessories. C. R. Perry, Professional Aquarist, 615, West Street, Crews.

WHITE WORMS, Culture and Instructions 2s. Compost 2s. 6d. Baker, 41, Bartholomew, Brighton.

PERFECT Specimens, Line Bred Blue Scarfhead Guppies 15s. per pair; Line bred Blue Fishers 15s. per pair; Madagascar Rainbows 4s. 6d. each, Butterfly Fish (1 each, carriage 3s. 6d.). C. R. Perry, Professional Aquarist, 615, West Street, Crews.

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, Wallingborough Road, Northampton. Phone 94655.

EASY TERMS. Extend your hobby the easy way. Air Pumps, Heaters and Thermostats, Filters, Breeding Traps, Nets, Thermometers, Frames and stands and all accessories. Send a stamp for list "A" Joseph Searley Ltd., Church Hill, Northfield, Birmingham 31. Phone PRIORITY 4630.

L.G.M. GRINDALWORMS, ever-ready source of live food. Culture, special food, (complete and instructions) 7s. 6d. complete.

AQUARIA STANDS, Shelves and Frames. Guaranteed square 1 1/2 x 1 1/2 ins. steel angle. Stands to take 2 tanks 18 1/2 x 12 x 36 ins. high, 30s. x 24 x 12 x 36 ins. high, 22s. x 30 x 12 x 36 ins. high, 30s. x 36 x 12 x 36 ins. high, 43s. Frames 24 x 12 x 12 ins., 20s.; 24 x 15 x 12 ins., 25s.; 30 x 15 x 12 ins., 28s.; 36 x 12 x 12 ins., 24s.; 36 x 15 x 12 ins., 25s.; 48 x 12 x 12 ins., 11 x 11 x 4 ins. Steel angle 60s. Stand 48 x 12 x 36 ins. high, 60s. Aluminium Covers 24 x 12 ins., 10s.; 30 x 12 ins., 21s.; 36 x 12 ins., 25s. Covers dispatched only with frames or stands. Any size to order. Money back if not satisfied. All Gov. Patd. C.W.O. Hicker's Engineers, 30 & 32, Smeaton Street, Leeds 1. Tel. 25081.

L.G.M. GRINDALWORMS, disease and pest free live food, give your fish the high glow of wellbeing.

AQUARIA FRAMES. For quality and accuracy buy direct from the manufacturer. 1 x 1 x 4 steel angle, 36 x 12 x 15, 28s., 36 x 12 x 12 28s., 30 x 15 x 12, 29s. 6d., 30 x 15 x 12, 22s., 30 x 12 x 12, 22s. 6d., 24 x 12 x 12, 20s. 6d., also 18 x 10, 13s. 6d., 18 x 12, 15s., from 1/2 x 1/2 x 1/2 ins. angle. All mixed and sorted ground fish. Any size to order. Immediate despatch carriage paid. C.W.O. Money refunded if not satisfactory. For complete list, stands, stands, etc., S.A.E. F.B. Henry, 52, Charter Street, Ayr, Ayrshire.

L.G.M. GRINDALWORMS, from your dealer or post free if any difficulty, from E. L. Arnold, 80, Monaga Road, London, E.7.

RUSTPROOFED Aquarium Frames, including bow and center type. Ornamental Stands, Glazing Cases and Equipment Manufacturers - Wintley's Barton, Ormskirk.

VENNER TIME SWITCHES, Repositioned, 14 Day Clock. 250V. 1 Amp. Ideal for automatic switching Aquarium Lighting, Cigarettes, Radios, etc. 25s. Post Paid. A. R. Bathhouse, Dept. A, 4, Park Road, Bromley, Kent.

L.G.M. GRINDALWORMS, ideal live food for tropicals. Full of body building protein.

GOOD selection Tropical Fish. Puppies bred, mostly tank bred. Kenn prices. Greenwood, Abbot Norton, Newton, Nr. Eddisbury, Lancs.

TROPICAL fish, fully acclimated, over 100 species offered at lowest prices. All aquarists' requirements supplied. Personal shoppers only. Strating Fisheries, 62, Myres Road, Wood Green, N.22.

GUARANTEED thermoses, heater and thermometer, 28s. per pair. State heater settings. Strating Fisheries, 62, Myres Road, N.22.

COLD AND TROPICAL Aquarium Plants our speciality, sent to various including many uncommon and rare types. Also available large selection of Food Plants including named water lilies, house plants, rock garden plants, etc. **TRADERS SUPPLIED**. Plants sent for lists. J. Ellis, Heading, Gillingham. (Visitors by appointment only.)

INFORMATION about profile depths made available by Fred Semple, Newark offered. Funds where depths can be obtained in winter especially welcomed. Thomas, 94, Truro Road, N.22.

GUARANTEED Quality Plants—Anubias, Hygrophilla, Ludwigia, Heteranthera, Vallisneria, spinnis, totia, dwarf sagittaria all 6d., 7s. 6d., 10s. 6d., 12s. 6d., 15s. 6d., 20s. 6d., 25s. 6d., 30s. 6d., 35s. 6d., 40s. 6d., 45s. 6d., 50s. 6d., 55s. 6d., 60s. 6d., 65s. 6d., 70s. 6d., 75s. 6d., 80s. 6d., 85s. 6d., 90s. 6d., 95s. 6d., 100s. 6d., 105s. 6d., 110s. 6d., 115s. 6d., 120s. 6d., 125s. 6d., 130s. 6d., 135s. 6d., 140s. 6d., 145s. 6d., 150s. 6d., 155s. 6d., 160s. 6d., 165s. 6d., 170s. 6d., 175s. 6d., 180s. 6d., 185s. 6d., 190s. 6d., 195s. 6d., 200s. 6d., 205s. 6d., 210s. 6d., 215s. 6d., 220s. 6d., 225s. 6d., 230s. 6d., 235s. 6d., 240s. 6d., 245s. 6d., 250s. 6d., 255s. 6d., 260s. 6d., 265s. 6d., 270s. 6d., 275s. 6d., 280s. 6d., 285s. 6d., 290s. 6d., 295s. 6d., 300s. 6d., 305s. 6d., 310s. 6d., 315s. 6d., 320s. 6d., 325s. 6d., 330s. 6d., 335s. 6d., 340s. 6d., 345s. 6d., 350s. 6d., 355s. 6d., 360s. 6d., 365s. 6d., 370s. 6d., 375s. 6d., 380s. 6d., 385s. 6d., 390s. 6d., 395s. 6d., 400s. 6d., 405s. 6d., 410s. 6d., 415s. 6d., 420s. 6d., 425s. 6d., 430s. 6d., 435s. 6d., 440s. 6d., 445s. 6d., 450s. 6d., 455s. 6d., 460s. 6d., 465s. 6d., 470s. 6d., 475s. 6d., 480s. 6d., 485s. 6d., 490s. 6d., 495s. 6d., 500s. 6d., 505s. 6d., 510s. 6d., 515s. 6d., 520s. 6d., 525s. 6d., 530s. 6d., 535s. 6d., 540s. 6d., 545s. 6d., 550s. 6d., 555s. 6d., 560s. 6d., 565s. 6d., 570s. 6d., 575s. 6d., 580s. 6d., 585s. 6d., 590s. 6d., 595s. 6d., 600s. 6d., 605s. 6d., 610s. 6d., 615s. 6d., 620s. 6d., 625s. 6d., 630s. 6d., 635s. 6d., 640s. 6d., 645s. 6d., 650s. 6d., 655s. 6d., 660s. 6d., 665s. 6d., 670s. 6d., 675s. 6d., 680s. 6d., 685s. 6d., 690s. 6d., 695s. 6d., 700s. 6d., 705s. 6d., 710s. 6d., 715s. 6d., 720s. 6d., 725s. 6d., 730s. 6d., 735s. 6d., 740s. 6d., 745s. 6d., 750s. 6d., 755s. 6d., 760s. 6d., 765s. 6d., 770s. 6d., 775s. 6d., 780s. 6d., 785s. 6d., 790s. 6d., 795s. 6d., 800s. 6d., 805s. 6d., 810s. 6d., 815s. 6d., 820s. 6d., 825s. 6d., 830s. 6d., 835s. 6d., 840s. 6d., 845s. 6d., 850s. 6d., 855s. 6d., 860s. 6d., 865s. 6d., 870s. 6d., 875s. 6d., 880s. 6d., 885s. 6d., 890s. 6d., 895s. 6d., 900s. 6d., 905s. 6d., 910s. 6d., 915s. 6d., 920s. 6d., 925s. 6d., 930s. 6d., 935s. 6d., 940s. 6d., 945s. 6d., 950s. 6d., 955s. 6d., 960s. 6d., 965s. 6d., 970s. 6d., 975s. 6d., 980s. 6d., 985s. 6d., 990s. 6d., 995s. 6d., 1000s. 6d.

STICK giving money over to all Traders! By generous discounts for Cash with Order. You can't do better than send to the Provincers' Leading Wholesaler—Tom C. Saville, Ltd., 9, Station Road, Beccles, Notts.

THERE was a young lady from Crews, Who complained that her fish never grew; A friend in her Club, Said McLynn's is the grub And by golly she's found that it's true.

WHEN IN STOKE visit Evers' for tropical fish, plants and accessories. Finest selection for the aquarist in the Province. 15, Harbottle Road, Stoke-on-Trent.

TROPICAL Fish in variety. By call anywhere. S.A.E. for list. Naylor, 44, Derby Drive Road, Selly Oak, Birmingham.

THE PROVINCES' Leading Wholesaler—Tom C. Saville, Ltd., of Beccles. Best variety of stocks, best quick service, best big C.W.O. discounts.

TO South-West Tropical Aquarists. We can supply you with the best for your hobby. Healthy Fish, Plants and all equipment. Why not give us a call. Summers Pet Stores, 88, Middle Street, Yeovil, 187.

ALL TRADERS send for our Wholesale Price List of Aquarium Equipment. We stock all best-selling items, including DATAM PRODUCTS. Personalize despatch service, generous C.W.O. discounts. Tom C. Saville, Ltd., 9, Station Road, Beccles, Notts.

SPARKLING clean tank, it's CLEAR by use McLynn's fish food.

CHELTENHAM Largest selection of Tropical and Coldwater fish in Gloucestershire. Equipment, Plants, Polythene, Plastic, Fibreglass, Frodo, Houseplants. Parriss Press (Print. Mr. R. R. James), Chert. & Aquarist, 10, Suffolk Parade, Cheltenham. Tel. Chert. 4449.

BRITISH and BEST, McLynn's fish food.

BREEDERS of high class fancy guppies invites enquiries. Pairs available. Foxwell, Halfpinks, Delta (Triangle). W. G. Phillips, 164, Hagel Way, Kenyon, Middx. S.A.E. for reply.

If you sell Aquarium Equipment, you'll want our Trade Price List—send today to Tom C. Saville, Ltd., 9, Station Road, Beccles, Notts.

24 HEALTHY TROPICALS for 50s.: Two of each—Roses, Guppies, Angels, Zebrafish, Neon, Parrot, Plagues, Serpae, Wishes, Glo-fishes, Cherrys, Harlequins. Many others from 6d. to 12s. 6d. each. Fine selection plants (21 plants by post). Sterilized aquariums and equipment; reasonable prices. Rawlings, No. 1, Ballour Road, South Wimbledon, S.W.19 (close Underground).

PLAQUES, SHIELDS, ETC.

R. HOLTOM & SON, 309, Oldbury Road, Smethwick, 40. Plaques, Shields, Medals, Cops and Medallions for Aquarist and Bird Societies. Tropical and Coldwater fish centres in full colour. Write for details to above.

WANTED

POSD KEEPERS—are you cleaning out? Surplus coloured water glass, marginal plants and large containers made urgently required. Best possible prices paid. Offers gratefully received. Bennett, Ornamental Pond Specialist, Coombe Avenue, Weymouth.

REPAIRS

GUARANTEED heater repairs, 7s. 6d. each. Send old heater and cure settings. New guaranteed heaters which will give long, reliable service, 7s. 6d. each. J. Watt, 7, The Drive, Welwyn, Herts.

WANTED TO PURCHASE OR EXCHANGE

WANTED: Aphyoseion, Pancha, Pleurodon, eggs. Rare Australian fish eggs in return.

Wanted: Aquatic Plants and/or Seeds for Aest. Plants. L. Loftus, Box 65, Grenville St., Perth, S.I., Victoria, Australia.

THE CONSTAT 22/-
Thermostat Type Q.K. Outside Fitting
Also the Perkolasee Sub-Gravel Filter Requires no pumps. 15/- and 12/- each. Tropical only

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

TACHBROOK TROPICALS

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

Telephone VICTORIA 5179

THIS MONTH'S BARGAIN OFFERS

Redtail Sharks	10/6 each, 3 for 29/6	Discus Fish	19/6 each, 3 for 50/-
Large Cardinals	7/6 each, 4 for 27/6	Large Discus	£4 10s. each
Black Angels	5/6 each, 4 for 20/-	Very Large Discus	£6 10s. each
Large Anostomus Anostomus	19/6 each	Bleeding Heart Tetras	7/6 each
Flying Foxes	17/6 each	Neon Tetras	4 for 12/-, 8 for 20/-
Clown Loach	15/- each	Hawaiian Mouthbreeders	4/6 each
Red Simpson Swordtails	42/6 pair	Late Veiltail Angels	7/6 each
Black Sharks	7/6 each	Albino Tiger Barbs	12/6 each
Red Fin Sharks	7/6 each	Phantom Tetras	7/6 each
Butterfly Fish	22/6 each	Mosquito Fish	4/6 each
Sucking Loach	7/6 each	Spiny Eels	12/6 each
Whipsail Catfish	9/6 each	Veiltail Guppies	15/- pair
Congo Salmon	17/6 each	Ashanius Sophieae	9/6 pair
Copeina Arnoldi	5/- each	Aphyosemin Australe	12/6 pair
Copeina Gutata	4/- each	Barbus Aurilius	4/6 each

We despatch fish by British Railways to be called for at Main Line stations to avoid delay. 10/- extra to cover packing and carriage.

WE CAN OFFER YOU A COMPLETE RANGE OF AQUARIUMS, STANDS, COVERS, AND ALL OTHER AQUARIUM ACCESSORIES.

LIGHT WEIGHT PRESSED STEEL TANKS AND COVERS

Size L. H. W.	Aquarium Price	All Over Cover 14/6	Size L. H. W.	Aquarium Price	All Over Cover 14/6
10 x 7 x 7 in.	10 0	12 0	16 x 9 x 9 in.	17 6	18 0
12 x 8 x 8 in.	12 0	12 0	16 x 10 x 10 in.	£1 0 0	17 4
12 x 9 x 8 in.	12 6	12 0	18 x 10 x 10 in.	£1 5 0	£1 1 0
14 x 9 x 8 in.	14 0	14 0	18 x 12 x 12 in.	£1 10 0	£1 2 4

STRONG ANGLE IRON AQUARIUMS

Size L. H. W.	Aquarium Price	Covers Price	Stands Price	Size L. H. W.	Aquarium Price	Covers Price	Stands Price
18 x 10 x 10 in.	£1 15 0	£1 1 0	£1 7 6	20 x 15 x 12 in.	£3 7 6	£1 12 6	£2 7 6
18 x 12 x 12 in.	£1 12 6	£1 2 4	£1 12 6	24 x 12 x 12 in.	£3 15 6	£1 16 0	£2 15 0
18 x 12 x 12 in.	£1 12 0	£1 2 4	£1 12 6	24 x 15 x 12 in.	£4 8 0	£1 17 6	£3 19 0
24 x 12 x 12 in.	£2 7 6	£1 3 0	£1 17 6	24 x 15 x 18 in.	£4 15 0	£1 17 6	£3 19 0
24 x 15 x 12 in.	£2 12 6	£1 3 0	£1 17 6	48 x 15 x 12 in.	£5 18 0	£2 8 0	£3 12 6

Bow Fronted Aquarium (Angle Iron) Complete Assembly of Tank, Stand and Canopy

L. H. W.	Price
48 x 15 x 10 in.	£21 0 0
24 x 15 x 12 in.	£16 0 0
18 x 15 x 12 in.	£14 0 0
24 x 15 x 12 in.	£11 10 0
36 x 15 x 12 in.	Aquarium Tank case and Stand with Ornamental Spirit Work £14 11 6
36 x 15 x 12 in.	Bow Front Sockcase and Stand with Ornamental Spirit Work £19 18 0
48 x 15 x 10 in.	Bow Front Sockcase and Stand with Ornamental Spirit Work £22 8 0

The Bow Fronted ARBE AQUARIUM made from Perspex

L. H. W.	Price
18 x 12 x 11 in.	£ 8 5 0
24 x 12 x 11 in.	£ 9 17 6
24 x 15 x 12 in.	£12 19 6
36 x 12 x 14 in.	£14 19 0
36 x 15 x 14 in.	£22 20 0

Full catalogue containing many more lines sent on application, postage 3d.

Freight charges on Aquariums, Stands & Covers invoiced after despatch.

POST!!!

ALL PARTS OF THE U.K.

ALL PARTS OF THE WORLD

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

Shirley Aquatics Ltd.

WATER PLANT NURSERIES AND FISH HATCHERIES—Phone: SHIRLEY 130

Stratford Road, Monkspath, Shirley, Solihull, Warwickshire

TROPICAL FISHES FOR SEPT./OCT.

RED-TAILED BLACK SHARKS (lovely specimens)	7/6 each
ORANGE CHROMIDES	4/6
MONODACTYLUS IN FRESH WATER	10/6 each
LARGE BLACK ANGELS	10/-
PELMATACHROMIS KRIBENSIS (unsexed)	7/6
	6 for 40/-
CLOWN LOACHES (brilliant colouring)	10/- each
BOTIA HORAE (rare and beautiful)	37/6
NEON TETRAS (large)	8 for 20/-
GOLDEN CORYDORAS PALEATUS	12/6 each
LYRETAILS	10/6 pair
CARDINALS (well grown)	12/6
GYRINOCHEILUS AYMONIERI	7/6
EPALZEORHYNCHUS SIAMENSIS	7/6
EPALZEORHYNCHUS KALLOPTERUS	17/6, 25/-
LEOPARD CATFISH	7/6 each

RUST-PROOF AQUARIA (Finished in stove enamel)

27 x 15 x 12 (all 1/2 plate glass)	Tank	£5 0 0	Stand	£3 0 0
24 x 15 x 12 (1/2 oz. glass)	Tank	£3 11 0	Stand	£3 0 0
24 x 16 x 13 Box front	Tank	£7 11 0	Stand	£3 3 0

Callers only, cannot be sent by rail.

GOLD FANTAILS

1 1/2" BODY, COLOURED
10/- each

Breeders Surplus
Calico Veiltails
Send s.a.e. for list

HIGOI JAPANESE GOLDEN CARP FOR ORNAMENTAL GARDEN POOLS

*These beautiful fishes grow to a length of over 24 ins.
and become extremely tame*

JAPANESE BRILLIANT COLOURS 30/- & 40/- each
EUROPEAN BRED HIGOI (usual gold & gold-bronze
colours) 5/- & 7/6 each or 12 of the best coloured for 60/-
SMALL GOLDEN ORFE 2/6 each or 20/- dozen
GOLDEN RUDD 2/6 each or 20/- dozen

Minimum order sent by rail for these offers £3

PLEASE NOTE.—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 3 miles from Birmingham, Midland "Red" Bus No. 150 from Bull Ring, Birmingham, passes the door, slight at "The Crown," Monkspath.
HOURS OF BUSINESS—Weekdays 10 a.m.—6 p.m. Sundays 10 a.m.—12.30 p.m. (Sunday Afternoons May-July Only)

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/- Gold water minimum order £2 plus 10/- case and carriage. Plants by post (minimum order 10/-) please add 1/6 post and packing.

The World's Greatest Selection of Aquarium Plants

(SEND S.A.E. FOR LIST)

LARGE CLUMPS OF HAIR GRASS
2/- each, 6 for 10/-

SPATTERDOCKS (Nuphar Pinnatifidum)
2-3 YEAR OLD PLANTS
Wonderful Centre Piece Only 3/-

HYGROPHILA GUAYANENSIS
(WILLOW LEAFED HYGROPHILA)
2/6 each, 5 for 10/-

ACORUS INTERMEDIUS HORTORUM
New large Japanese cultivated rush growing up to 18" with
broad leaves. Small plants 7/6. Large plants 12/6
(Stocks very limited)

A HUNDRED CRYPTOCORINE
C. Huxell de Wit (1900). The newest species introduced.
Plants grow up to 12" with broad 6" leaves
6" plants 25/-

SHIRLEY SPECIAL PLANT PARCELS

Tropical or Coldwater
30 Plants in variety — 10/-
50 Plants including unusual species — 30/-
Post and Packing 1/6

CAROMBA BEAUTIFUL STRONG STOCK
£3 each, 12/- per dozen

NEW GIANT HAIR GRASS
(ELEOCHARIS OBUSA)
5/- each

UMBRELLA HAIR GRASS
(ELEOCHARIS PROLIFERA)
5/- each

MICRANTHEMUM MICRANTHEMOIDES
DAINTY TROPICAL
5/- bunch

4 SPECIES OF SACOPA
SACOPA MONNERA — SACOPA CAROLINIANA
SACOPA RHODOPHYLOIDES — SACOPA SPECIES
4 of each of above for 5/-

BARCLAYA LONGIFOLIA
12/6 each

WATER LETTUCE
2/6 each, 6 for 10/-