

The Aquarist

and Pondkeeper

JULY, 1962



MONTHLY
Vol. XXVII No. 4

TWO SHILLINGS



ANNOUNCING

THE
NEW
FULLY GUARANTEED
'PRESET-matic'

A precision built aquarium heater
with incorporated thermostat
and neon light.

Preset to maintain a constant
75°F year in—year out— but
readily re-set if required.

In three sizes:—

50 watt—8½"
100 .. —10"
150 .. —12"

IT'S
'ARSITAQUATIC'
TO GO
"PRESET-matic"

Price 24/6

(Tax Paid)

FROM YOUR DEALER

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

AN
ESs
PRODUCT

COACHES TO THE CENTRAL!

Manchester, Blackpool, Birmingham and Nottingham Express Coaches set down and pick up outside our premises. A visit to us will complete your trip to town.

NEW ARRIVALS

Parrotfish	20 to 24
4" Nympha	10-
Green Tetra	2-3-4-
Large Goldfish 7"-8"	10-
Small Goldfish	2-
7" Calico Catfish	15-
Mosses Goldfish	3- to 7-
Small Goldfish 2.5" - 3"	1- to 2-

ALL FISH PLANTS STOCKED

THERMOSTATS

Procter	25-
Constant External	25-
Constant New External Type OK	25-
UNO	25-
Out/Ad.	25-
In/Ad.	25-
In/Ad. "Poplar"	25-
"Poplar" with room indicator	25-
Wanted Goldfish	25-
Hi, Frost Mains	25-

AERATORS

Beck	25-
Zoochke Total	25-
Zoochke Junior	25-
Montrose Major	25-
Montrose Minor	25-
Procter	25-
Dynas MA, I A.C.D.C.	25 5 5
Dynas MA, D A.C. only	25 5 5

PISTON PUMPS

Hy-6a Junior New Type	25-
Hy-6a 'A'	25-
Hy-6a 'B'	25-
Hy-6a 'C'	25-

Thermometers

Mercury	4-
Blue Gem	4-
Mercury Gem 8"	5-
Dumpy	6-
Resistor	10-
Caseant	15-
T Probe	20-
Clamps	1-

Fishes

Cornet	4-
Onchoc	10-
Whitetail Banded	10-
Resistor	10-
Whitetail Air	10-
Resistor	10-
Caseant	15-
Probe	20-
Gravel Filter	10-

Sundries

Tubing 3/4 yd.	25-
Siphon	25-
Tubing 1/4 yd.	25-
Glass Wool 1-	25-
Filter Carbon 2-	25-

TROPICALS

Large Nouns, 6 for £1; 3/6 each

Parrotfish	20 to 24
Angels 2 1/2 & 3 1/2	10-
White Cloud	10-
Mosses	10-
Planes	10-
Black Widows	10-
Flare, various	10-
Severals	10-
various, from 3-	10-
Schubert barbs	10-
Scolofaxia	10-
Cuppy/pink 1.5, 3-	10-
Strepops	10-
Cherry barbs	10-
Nigger barbs	10-
Chaparr barbs	10-
Red Eyed Tetra	10-
Red Head Tetra	10-
Fluorocara	10-
Brown & Blue Acara 2 1/2, chick lip 3 1/2, dwarf or	10-
best 2 1/2, Kribia 4, Opaline 2 1/2, Gourami,	10-
Tetra 2, Pearl Oyster 2 - each	10-

BREEDERS!

ALL GLASS AQUARIA. 5 sizes, 10 x 6 x 6 to 24 x 12 x 3. Covers only.

BOOK CASE

BOW-FRONTED AQUARIUM

48 x 12 x 15	28 10 0
36 x 12 x 12	18 10 0
Standard Bow	27, 18 10, 10 10 0

PLANTS

Agave	8d. each	5- doz.
Vallis Nerii	8d.	5- "
Vallis Scabra	8d.	5- "
Anthurus	8d.	5- "
Castanea	8d.	5- "
Hypoxis	8d.	5- "
Cryptanthus	2- and 3-	
Wolfs	1.8	2-
Green Hyacinth	1.8	2-

By post, add 1/6d.

SEATERS 25 to 150

One	25
2.5 standard	7.6
Wood	8.8

RARE FISHES

Butterfly Fish	15-
Small Black Momo	15/1 5/- each
Electric Cat	41
Adult Aphania Siphia	12/6 pair
Castle Tetra	2- each
Large Oranda	15/1 18 per pair
7-8" Silver Shark	20- pair 48- each
Melanoichthys 2"	25- pair
Pelmatichthys Kribia 2"-3"	7.4 each
Elephant Nose Fish	25- & 30- each
Black Veined Guppy	15- pair
Red Veined Guppy	10.0 pair
Terrapin Cat	10-
Knifefish	10.0
Crown Loach	12/6 & 18-
Scout Trout	7/6 to 20-
Malaysian Angelfish	7/6 to 15-
Blackbarbs	15-
Pterapogon	4-

Our minimum order for fishes is £5. a charge of 12s. 6d. is made for container. Carriage charges, by fast passenger train and telegram stating time of arrival.

REPTILES

Salamanders	15- each
Green Lizard	7/6
Wall Lizard	5-
European Tortoise	4/6 & 5/6
American Tortoise	7/6
Giant Snake	7/6
Alligator	25- each

Freight 2/-

STANDARD AQUARIUMS

(Light Gauge)	(Angle Iron)
12" x 8" x 6"	16-
12" x 12" x 12"	46-
14" x 8" x 6"	8/6
14" x 12" x 15"	22/6
16" x 8" x 6"	14-
16" x 12" x 15"	29-
18" x 8" x 6"	13/6
18" x 12" x 15"	32/6
18" x 10" x 10"	21/-
48" x 12" x 15"	110-

COVERS

18 x 12	14/6
24 x 12	21-
30 x 12	26-
36 x 12	35-

STANDS

18 x 10 x 30	22-
24 x 12 x 30	40-
30 x 12 x 30	45-
36 x 12 x 30	50-

Aquarium covers sent by post only at customers risk.

FOODS

Bionic Fishes	1/6
Flyke Flakes	1/-
Brown	1/6 & 2/6
Bionic	6d. & 1/6
Shrimp	6d. & 1/6
Dry Daphnia	6d. to 3/6
Liquid	2/6
Lafury	2/6
Egg	2/- & 4/6
Hobby	2/- & 3/-
McLynn's	1/6, 2/6, 4/6, 11/6
Brown Shrimp	2/-, 2/6, 13/-
Mela & Vega	1- each
Barnes's	1/6 & 2/6
Wardley's	8/-, 4/6, 2/6, 2/3, 1/2

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

Ask your dealer for

No. 1

FOODEX

The greatest advance in aquarium feeding yet.

THE COMPLETE TROPICAL FISH DIET THE COMPOUND FOOD

CONTAINING

- PROTEIN CONCENTRATES
- LIVER
- ANIMAL FATS
- DEXTRISED WHEAT
- BLOOD
- LEAF MOULD YEAST
- CHLOROPHYLL
- BODY SALTS
- MINERAL TRACE ELEMENTS

3/- per box

including measuring spoon
and instruction booklet

ALSO ASK TO SEE

The Exotictrade tailor-made Fish Nets with their Gleaming
White Plasticised Frames.

EXOTICTRADE (NATURALISTS) LTD.
269 Goswell Road, London E.C.1

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



"WINDMILL"
HAND REJECTION
AQUARIUM
CLEANER
Complete with
Hand Bellows
12/- each



"ARGENT"
INSIDE
FILTER
Designed for
easy cleaning
12/- each

"WINDMILL"
AIR REJECTION
CLEANER

will work
connected to
any make of
Aerator

10/- each



"WINDMILL"
BREEDING
TRAPS
Beautifully
Designed and
Constructed
15/- each

RETAIL ENQUIRIES FROM
ALL LEADING WHOLESALERS

Tried, Proven and Tested

THE ORIGINAL
PREMIER BIOLOGICAL FILTER

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



They are saying

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

Made for 18" tanks at 12/6 each. 24" tanks at 15/- each
Other size tanks see fitting chart of filter box

Pamphlets willingly sent on receipt of 3d. postage

WINDMILL PRODUCTS

244 VAUXHALL BRIDGE ROAD, LONDON, S.W.1
Telephone: Victoria 5179

TROPICAL PLANTS

OFFER No. 1

Special collection for
24x15x12 tank ... 10/-

OFFER No. 2

Collection for larger tank including
Wistaria, Cryptocoryne, etc. ... 20/-

COLDWATER PLANTS

Collection for
24x15x12 tank ... 10/-

Special collection
(including water lily ... 20/-

Plastic Ponds — all sizes
and Cold Water Fish — many varieties

Send S.A.E. for complete list

BOW-FRONTED AQUARIUMS

48in. x 18in. x 15in. bow-fronted aquarium with
wrought iron bookcase stand £28/0/0 complete.
36in. x 12in. x 11in. bow-fronted aquarium with
wrought iron bookcase stand £18/18/- complete.
Available in penny bronze, black & gold, and cream

WITH PLAIN STAND

Jules 48 x 10 x 15 ... £11.0.0
" 36 x 12 x 15 ... £11.10.0
" 24 x 12 x 15 ... £11.10.0

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

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

STANDS

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

REMEDIES, etc.

Brownish White Spot ... 2/-
Clarex (Not by post) ... 2/6
Cure ... 2/-
Liquiton ... 1/9
Vivo Salts ... 2/-
Dissolve ... 2/6
Biosolun Fertilising
Salt ... 1/6
Tallies ... 1/6

Please add 1/- extra postage on appliance orders up to 10/-, 1.5 up to 20/-, 2/- up to 30/-.

THERMOSTATS

Control External ... each 22/-
Control New External
Type GK ... 22/-
UNO
ON/OFF ... 18/-
ON/OFF ... 18/-
ON/OFF "Popular" ... 10/-
"Popular" with sensor ... 12/6
"E-E" Remote ... 18/6

THERMOMETERS

Masonry ... each 6/6
Cord ... 6/6
Plastic Beaded ... 6/6
Swift Blue Glass ... 7/-
"E-E" Distant ... 6/6

FILTERS

"Wooloil" Plastic ... each 18/6
Outside Filter ... 18/6
"Wooloil" Biological
Aquarium Filter £2.8.15/-
"Wooloil" Regain
Inside Filter ... 18/-
Cotton Filter ... 6/-
Air Lift ... 2/4
"Slim Jim" Outside
Filter ... 17/6
"Kinet King" Outside
Filter ... 22/6
Bottom Filter ... 8/9
Overmounting Book
Filter (see Leaflet advert.) ... 17/6

AERATORS & PISTON PUMPS

Mossman ... each 21/-
"E-E" Heavy ... 24/-
"E-E" Heavy ... 24/-
Star ... 26/-
Zuraska Total
Hydro-Jet ... 27/6
Hydro "A" ... 15/6
Hydro "B" ... 18/6
Hydro "C" ... 28/6

HEATERS

"QUEENSBOROUGH"
2in., 4in., 6in.,
7in., 8in., 12in., 18in.,
24in. ... 8/-
"E-E" Electric Heaters
(120v. and 150v.) ... 18/-
"E-E" Thermomantic
Heaters, 100w. and
150w. ... 36/-
Heater Holders ... 7/-

BACKING PAPERS

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

LIVE FOODS

Brown Shrimp Eggs ... 2/6 and 4/6
Cultures of
New Worm 1 oz. ... 7/6
" 2 ... 13/6
White Worm ... 3/-
Mussel Worm ... 3/-
Tubifex worms 1/4 and 3/4
post free

BOOKS

Guide to Tropical
Fishkeeping
(J. H. F. Bryant) ... 26/6
Diseases of Fishes
(C. Van Dobb) ... 15/6
All about Tropical Fish
(McIntyre) ... 77/-
Encyclopedia of
Tropical Fishes
(H. B. Astrod and
W. Voordewijk) ... 62/6
Electricity in your
Aquarium
(L. Warburton) ... 8/6
Illustrated Dictionary
of Tropical Fish
(Hans Frey) ... 67/6
All prices include postage

FOODS

"Queensborough"
Tropical Fish Food ... 1/6 and 2/6
Exotic Flakes ... 1/6
Hydro Flakes ... 1/-
Protein ... 1/6 and 2/6
Zuraska Frylings ... 1/6
Worms Blood ... 4d. and 1/6
Liquify Nos. 1 and 2 ... 2/6
Infant ... 2/6
Elix ... 2/- and 4/4
Dried Daphnia ... 6d.
Ground Shrimp ... 1/-
Fish Food ... 1/6
18 1/2 sizes
Amo Eggs ... 6d.
Wardley's Trout Pac.
7 kinds of food ... 8/6
16-Glow ... 4/6
Glow Yell ... 3/6

SEDIMENT REMOVERS

"Windmill" Air ... each
Receptors ... 10/-
"Windmill" Hand
Receptors ... 15/-
Fubnal ... 3/-
Siphon Tubing ... 24/6
Hand Type Plastic ... 4/6

FULLY-GLAZED AQUARIUMS

Pressed Steel

Angle Iron

inches	Tank H x W x D	Aluminium	inches	Tank H x W x D
12	6 x 6	18/6	24	12 x 12
14	8 x 8	13/6	24	12 x 15
18	8 x 8	18/-	30	12 x 15
18	10 x 10	22/6	36	12 x 15

50/-, 21/-, 8/6
55/-, 21/-, 8/6
78/-, 27/6
85/-, 32/6
Carriage extra
Glass, China and Shells sent at purchasers' own risk.

QUEENSBOROUGH FISHERIES

111 GOLDHAWK ROAD,
SHEPHERD'S BUSH, W.12
(1 minute from Shepherd's Bush Market)
Telephone: SHE 2720
Hours of Business: MON. to SAT.—
9 a.m. to 4.30 p.m. THURS. 9 a.m. to 1 p.m.

QUEENSBOROUGH HOUSE,
Ferry Lane, Hylke End,
Wraysbury, Nr. Staines
Telephone: WRAYSBURY 3885
Sundays only from 10 a.m. to 4 p.m.

16 PICTON PLACE,
LONDON, W.1
(1 minute from Selfridges)
Telephone: WELBECK 6408
Hours of Business: MON. to FRI.—
9.30 a.m. to 4 p.m. SAT. 9.30 a.m. to 2 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 5s. 0d. Half-yearly 14s. 0d. Canada, U.S.A. \$4.00 yearly; \$2.00 half-yearly.

QUERIES

Printed replies are made to all specialised queries accompanied by a stamped, addressed envelope. The 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.

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

The Editor accepts no responsibility for views expressed by contributors.

Contents

	Page
Editorial	65
"George Guppy"	66
Sorting and Rearing the Fry	68
Far and Wide	69
The Sucking Loach	70
The Persian Pearl Fish	70
The Veilfish	71
Chameleons and Anolis Lizards	72
Keeping our Native Fishes	74
Amphibians	75
How Many Fishes?	79
The Puffer Fishes	80
Our Readers Write	82
The Garden Pond in Summer	83
News from Aquarists' Societies	84

VOL. XXVII No. 4

1962

Editorial

IF you keep livebearers and if you were uncommonly observant on the 18th June you might have seen an extra splash of colour, an enhanced vivacity and generally exuberant look about your guppies. All this you could have missed, but if you are a serious guppy fancier it is unlikely that the significance of the excitement would have escaped you. It seemed only right on the eightieth birthday of W. G. Phillips that the fish to which he has devoted so much interest and technical skill for so many years should have appeared to be aware of the special date. The name of this senior aquarist is in fact as well known among fishkeepers outside the large circle of guppy specialists in Britain and elsewhere, for as will be seen from the article on page 66, Mr. Phillips has by no means restricted his enthusiasm to the guppy, and he continues to be a familiar and expected figure at gatherings of aquarists. We wish to add our congratulations to the numerous messages of goodwill he has been receiving on and since becoming an octogenarian, and to express the hope that he will continue to show us all how to breed fancy guppies successfully for many years to come.

IT is just one year since we used this column, at the close of last summer's British Aquarists' Festival, to ask why no large-scale aquarium show is held in any part of Britain other than the north of England. We ask again the same question: why, in particular, are the densely populated areas of London and the Home Counties without such a show? There are already indications that this year's B.A.F. to be held in Manchester on 20th and 21st October, is going to attract as great an amount of interest and generate as much, if not more, enthusiasm as last year's show and those of previous years. We know that our Editorial mention of this matter caused its debate at the assembly of the Federation of British Aquatic Societies last September, but despite the interest of the delegates, nothing seems to have come of a lengthy discussion, and still, we think pitifully, the south is without a major show.



A Visit to Goodwood House to meet

"George Guppy"

written and illustrated by DEREK WARD

WHEN asked if I would like to run down to "Goodwood House" my thoughts turned to racing, and I was about to make some excuse. Then my friend continued, "To see George Phillips", and at once my thoughts turned to guppies, of course. Mr. W. G. Phillips ("George" in the hobby) is without any shadow of doubt one of the world's foremost guppy breeders. His name is known all over the aquatic world as breeder, experimenter and author of guppy articles in the aquatic journals, and it has long been my ambition to meet him and discuss guppy problems in his fish house. Here, at last, was to be my opportunity.

Three Ponds

We left Bedford one Sunday and arrived at Goodwood House, the home of George Phillips, at about 11 a.m., and found him busy at one of his garden ponds, of which he has three. One of these holds over 1,000 gallons, and he has another of about 400 gallons which he has reserved for breeding *Daphnia*, but told us regretfully that the *Daphnia* had got him beat, being much more difficult to breed (in quantity) than guppies, and that he has never been able to breed enough to feed all his guppies.

In a corner there is a smaller pond, reached by a flight of winding steps, in which he hatches goldfish eggs taken from his large pond, which up to quite recently held over a hundred good-sized fish. George told us that he has been keeping coldwater fishes as long as he can remember, and joined his first fish club, The Southsea Piscatorial, at the age of 17, in 1899. This club catered for anglers as well as fish-keepers, because if you wanted fishes in those days you



Award cards, trophies and plaques form a colourful display along one wall of Mr. Phillips' fish house



This large aquarium, built into a recess in Mr. Phillips' conservatory, has above-water scenery and a model suspension bridge (concealing a strip-light)

had to catch them. In another corner of the garden I saw a large galvanised-iron tank, and when I asked if there were any fish in it, he told us: "Plenty; that's where I breed my sticklebacks, and throw any unwanted guppies, rather than kill them. Of course, they do die when cold weather sets in, but I consider that is a more natural death than some fishes get from their keepers."

Mr. Phillips' guppies are maintained in two separate sections, from which they have been sent to new owners practically all over the inhabited world. In his conservatory are 11 tanks, one a very large one, built into a recess at one end, roofed in with glass and decorated above water at the back and both ends to represent a wild country scene, with trees and rockwork reaching up to the glass roof over the tank. Along the top at the front is a miniature suspension bridge, which hides the strip-light. Inside this tank are several large coldwater fishes which he keeps for showing at any of the four aquarist societies of which he is an honorary member. In the same tank we also saw a pair of large sticklebacks, with which he told us he has on more than one occasion taken the premier awards.

Large-bodied Guppies

In one of the other 10 tanks of various sizes, all of which contain guppies, we saw some very large-bodied fish. When asked how he obtained such large body size, and what he fed them on, he said it was not the kind of food which was in any way responsible but the nature of this particular strain (their genetical make-up, so to speak). In each tank I noticed that the compost was swept back, leaving a large clear oval swimming space, into which the muck and debris

fills down the sloping sand (not gravel) and is then more easily siphoned out when this becomes necessary.

The plants I saw consisted chiefly of *Hydrophilis*, and the large green baskets of this plant, with its bright-green leaves, made each tank look like a haven for guppies. I noticed, too, that in each of the tanks there was a *Cryptocoryne* plant, placed in a small pot. This, we were told, apart from being the best way to grow this lovely species, made possible the catching of any particular fish wanted for show, by simply lifting out the pot while the fish are netted from the clear space thus provided. Each tank, I noticed, had a cover light, some of which had been fashioned by hand out of baking tins. There were also two small tanks lined up as breeding traps, by the addition of a piece of sloping glass at one end, kept in place by rubber suckers. By this means, George said so, he saves most of the fry, which on one occasion last year amounted to 121 babies in one brood, and he has had many broods of 80 to 90, and more.

We then went out to George's garage, now used as a fish house, and there we saw 12 more tanks, four of which are 40-gallon galvanized-iron tanks. Not all these tanks had guppies in them at the time we were there, but we were told that before the summer is over he may be wishing he had more fish space. He told us that some time ago he did have many more tanks in this fish house, but decided to reduce, as it was getting too much for him. He disposed of all the lot except one (which he was unable to sell) and, of course, those in the conservatory. Thus like the smoker who tries to give up the weed by reducing the number of his cigarettes gradually, he soon found himself back to where he was before.

Trophies of Success

The white of one side wall of this fish house is covered with guppy awards, in every conceivable colour and from many aquatic societies, and there were rows of cups, shields, plaques and other trophies, medals and medallions, all displayed on a long glass shelf, in front of all these different coloured cards. These stretch the full length of the garage fish house, from waist-high up to the roof, and form a most impressive and fascinating display. Over 500 awards are on show here, award of the greater part of a life-time devoted to the aquarist's hobby.

George told us that he obtained his first pair of guppies from Harst Fish Farm, Warrimoolville, Harst, in the summer of 1934, and for some considerable time kept them in with his goldfish. Mr. Phillips was appointed the first official judge and official judge-instructor of the Guppy Breeders' Society, which he joined just 3 months after



Mr. Phillips at work in his fish house, in front of the tanks of his successes from 63 years as a fish-keeper.



An aquarium corner at Goodwood House. Pot-planted *Cryptocoryne* can be seen in some of the tanks.

it was founded, in 1938, and of which he has been an enthusiastic and active member ever since. He estimates that he has judged at nearly 300 shows, including the judging of other tropical fishes, and given more than 200 talks on fish-keeping, principally about guppies, which, by the way, he considers are much harder to keep and maintain in health than most of the other varied species of tropical fishes which he has kept during the past 29 years.

Eighty and After

Mr. Phillips is a Fellow of the Guppy Breeders' Society, and has been president of the Fancy Guppy Association, and very well known, by name at least, to most of those in the hobby, for his many and varied writings, bearing mainly on guppy matters, in the aquatic press. George said that he has one ambition remaining. What is it? To judge a class of guppies and sign his name on the award cards, after the 18th June this year (his eightieth birthday), and then to retire as a judge.

80 80 80 80 80 80 80 80 80 80 80 80 80 80 80

80 *Thanks* 80

80 So many were the birthday greetings and 80

80 messages received by Mr. Phillips that he 80

80 regretfully is unable to make individual replies, 80

80 but he sends his sincere thanks to all well- 80

80 wishers. More than 100 cards took the form 80

80 of "First—Special 80th Birthday" award cards 80

80 from Fancy Guppy Association members in 80

80 Britain and overseas, to whom Mr. Phillips is 80

80 affectionately known as "Mr. Guppy". 80

80 80 80 80 80 80 80 80 80 80 80 80 80 80 80

Sorting and Rearing the Fry

by A. BOARDER

IN previous articles I have dealt with the conditioning, spawning and hatching problems and now will give advice for the breeder to follow from the time that the youngsters are about a month old. Up to this time many things can go wrong, but provided that the fish have reached a month of age and are in good condition there is every chance that their rearing troubles are mainly over. Many failures with fry can be attributed to the fact that they have not had sufficient space in which to swim around and develop. This is most important. Whilst the fry are still very tiny it does not seem to matter how crowded they are but once they take on the shape of real fish and are from 3 weeks old upwards they must be given much more swimming space or there will soon be trouble. Some breeders suspect all sorts of reasons for their fry going wrong but it is often just the fact that they have become overcrowded which has accentuated the trouble. Many fish would escape the troubles that can worry fry if they were spread out to more tanks soon enough.

Sorting is an essential task and must not be deferred too long. In the first place it will be easy to sort out all those fish that have grown much larger than the others. If this is not done it is possible that these larger fish will eat most of the food and then grow on more quickly than ever. In many cases it is possible for young fish to eat or at least worry smaller fry in the same spawning and I have seen very small fish with smaller ones stuck in their mouths. It is not always the larger fish which make the best specimens when dealing with fancy goldfish. Often these are coarse and it is the smaller ones that develop into show specimens. Once the sizes are separated the task must be to work through all the others so that any which will never make good specimens can be discarded and the good ones left to receive more space and attention. This is especially the case when one is breeding exhibition-standard fish, as there is no sense in spending time, space and food on poor specimens to the detriment of the good ones.

The sorting of the fry can be fairly easy for the experienced breeder but the beginner will find it no easy task to sift out the good fish from the throw-outs. The variety of fancy goldfish can be most important now, as any that have divided tails will be far easier to sort than those with single ones. If a white bowl is used and a few fry at a time are placed in it the tails will show up clearly. It will then be seen if any have single tails or tri-tails and these can be discarded, as they will never make good fish. Some may not show the division at an early stage and so it is well to keep these back for a time in case the tail is actually divided but holds together when examined.

Little more can be done when the fry are in the bowl but if a clear-sided tank is now used many more faults may be seen. The dorsal fin can now be examined and those with a poor one can be taken out. It will also be possible to see what kind of body the fry have, and those with bad

shapes can be eliminated. While this examination is all right for the divided-tail varieties it will not help much for such kinds as shubunkins. With these the sorting will be more difficult as many may not show their true colours at an early age, although most of the shubunkins change colour far more quickly than the scaled types of fancy fish. Where such varieties as orandas and lionheads are being bred it is a slow job to sort out the good ones, as the bison-like protuberance on the head does not develop until the fish are over a year old, and sometimes much longer than that. With these varieties then, one will have to show considerable patience and rear many more fish than would be necessary with other kinds, to make sure that good fish are not discarded too soon.

When the better fish are segregated it will be far simpler to see that these get the maximum food and space. The food should be of varied kinds, with some Bemax, dried shrimp and dehydrated meat as the main dried foods, with frequent feeds of earthworms, *Tubifex* and white worms. Any maggots given should be broken first for any young fish. Also see that earthworms are cut up for these smaller fish. When heavy dried-food feeding is taking place watch the water carefully in case it turns foul. This can soon happen and not always because food has been left to go bad. Often after heavy concentrations of feeding the droppings from the fish can become very heavy and these, too, can pollute the water. Once the young fish are over a month old they can gradually be acclimatized to the natural temperatures.

There is no doubt that warmth plays a very important part in the development and speed of growth of very young fish and I suggest that up to the age of a month a temperature of about 70°F (21°C) should be maintained if possible. Do not be afraid of changing some of the water in the rearing tanks fairly frequently. Some aquarists would have you believe that it is bad policy to change any of the tank water, and they even sieve that which is taken when cleaning and return it to the tank. This idea I consider ridiculous, as nothing brightens up fish more than an addition of fresh water. Some of the water should be changed at least once a week, and where there are many fish or feeding has been heavy, twice a week will not be too much. I suggest that about a third of the total water can be changed. If tap water has to be used try to stand it in the open for a few hours so that the chlorine has a chance to escape into the air and it takes on a slightly warmer temperature. Not that I think that it is necessary to be too particular about the warmth of the water, as I find that cold-water fishes rarely mind a change of a few degrees at any time, in fact a slightly lower temperature often invigorates them considerably.

In my next article I shall consider some causes of failure to spawn, hatch and grow on various types of fancy goldfish.

Far and Wide

by RAYMOND YATES

Old Tanks

I NEVER recommended a hobbyist to buy a second-hand tank unless it has been stripped down and entirely replaced. One does come across some bargains from time to time, but it is courting trouble to buy old tanks. The longer a tank has stood in the same position the more likely it is to take unkindly to any change, and the larger the tank, the more the risk. It is true that small tanks can often be dried out and used again later without giving any trouble, although many club members could tell of difficult moments with tanks bottomed for show purposes. With tanks of the larger size the water pressure is considerable, and when empty the removal of pressure causes the glass to move back; but the mastic is not pliable and remains where it is. As a result there is a gap and as soon as the tank is filled the water comes through this gap.

All this has just been brought home to me because I have just dismantled a 400-l. tank which has stood in the same position in the dining room for 11 years. A tank the size holds a lot of water and gravel, and both water and gravel must be removed before attempting to move it. This done, I found the tank stuck fast to the rubber mat which covered the table on which it stood for so many years. However, this was quickly removed and the tank came away and set up in a shed, the time taken from removing the lot of the worst mastic being about 5 minutes. Shortly after I found that, in fact, happens. As soon as I had introduced about 2 gallons of fresh water into the tank I began to squirt out in every direction from the base of the front glass, and I reflected how fortunate it was that I knew what to expect and had not tried to fill this tank earlier. The structure Niagara surely fill on the concrete floor of the shed, but I have to think what any hobbyist would have thought of he had done the same thing in a living room of his home. Stripping down and replacing a tank is nothing to some aquarists, and the result is well worth the trouble. To those who, like myself, have hopes like diamonds, it is not usually worth while trying to effect a repair without stripping down; repairs are either permanent and easier or else, usually the former, trouble starts when last repaired.

The reason I took the tank down was because of electrical trouble which I had had a week earlier. This particular tank was connected to a wall switchboard which supplied several other electrical items in the room. One handy night, but after 10 p.m., there was a flash and then darkness. After going through 20 odd fuses I at last found the trouble and touched it. Another flash and more darkness. To cut a long story short I had about four or five blow-outs during the next hour or two and in the end both the main plugs and the switchboard were dead, although all the fuses seemed to be in order. This was a job for an electrician. Meanwhile the tank was going cold and something had to be done about the fishes. As I was placed the moment assembling another tank in another room, heating and filling and transferring the fishes. I worked two bed after 2 a.m. This particular set-up had never given any electrical trouble in all these years but something came to those who wait and I had waited a long time. Now the room looks much larger without

this long tank and its table stand and I feel quite lost with no fishes to look at almost every minute of the day.

The emergency tank was rigged up in the bedroom where there is another wall switchboard. This business of having fishes in bedrooms is all very well but they are so noisy they keep you awake. Gostamis make such sucking noises in the night that they would awaken the dead, but luckily I have none. However, a large catfish contrives to keep me from slumber by continually wriggling round the heater or heater lead, which produces a loud knocking noise.

My remarks about old tanks which have stood empty of water do not apply to plastic tanks. These are constructed in a very different way and, in my experience, can be dried out and refilled whenever wanted without the slightest risk of a leak. What do I intend to do with my old tank now that it won't be used for fish again? Well, at the moment it has dahlia tubers in it sheltering from the frost, but I suppose it will eventually be used for vivarium purposes or for small animal pets. I have at the present a very battered old tank with a very badly cracked glass base which has seen about 16 winters with me, some of them outside in the garden. It has been in several deep freezes and covered with snow, but it survives and contains three golden orfe and two dogfish which I have had for about 6 years. Don't ask me why one tank with a shattered base is leak-proof in spite of our worst weather whereas another one cannot survive a few minutes of emptying and being moved 20 yards!

Watery Binoculars

A EUROPEAN manufacturer of binoculars is using an advertisement showing these lying on the bottom of the "sea", where they had been for 12 months and are still in good condition. Unfortunately the picture looks rather like a tank set-up with well-known water plants from tropical freshwater sources. The fishes are brightly coloured but hard to place and the bottom contains driftwood, sticks and bright red and blue cockle shells. This may seem authentic to the lay public but squarists will not be impressed. One feels that with the excellent underwater photography which is done to-day something more realistic could have been produced. Talking of underwater photography in its real sense, any skin-diving aquarist may be interested to know that aquaphoto housings are available for most 35 mm. still and 8 mm. movie cameras. The York Photo Service, 20, Bootham, York, will be pleased to advise anyone who is interested in this new form of photography.

Lake Rudolf

LAKE RUDOLF in Kenya is a remarkable lake, as it appears to teem with fishes and, in fact, provides a food supply for man, bird and beast for a large area around it. It has been said that crocodiles will not bother human beings as fishes are so plentiful, and that it is therefore quite safe to swim inshore. The Nile perch breeds in Lake Albert in Uganda and then makes its way down the Nile to Khartoum, several thousand miles away. Anglers at Rhino Camp near Lake Albert have observed that the fish seem to move in age groups: one day all will be about 20 pounds, next all around 40 pounds and so on. A large specimen is just as good to eat as a small one. This is certainly one of the largest freshwater fishes in existence. The largest caught on rod and line was 226 pounds, but monsters of 336 to 360 pounds have been netted. Strangely enough all the large fish are females, males rarely exceeding 45 pounds. This fish is also common in Lake Rudolf, together with *Tilapia nilotica* and *gallana* (6 pounds) and tiger fish some 18 inches long. Further interesting notes on this area will be found in *No Room in the Ark* by Allan Moorhead (Hamilton), a book I can recommend.

The Sucking Loach (*Gyrinocheilus aymonieri*)

by BARRY R. JAMES

THIS fish is gaining a great deal of popularity among British aquarists because of its algae-eating habits.

This is hardly surprising, as it has been the largest selling sucking fish in the United States for some time now. Of late sufficient numbers have been imported into this country to enable us to get acquainted with this species.

Plecostomus and *Otocinclus* have both been v. "th us for a long time, and have won a justified place on the dealer's list of "regulars". However, I feel the time is not far off when *Gyrinocheilus* will be afforded a similar place of honour, as it fills a gap between the two before-mentioned both on account of its size, and its insatiable appetite.



Gyrinocheilus aymonieri, a "sucking catfish" from Thailand.

This species is imported from Thailand, where it is found in flowing as well as still water. Of stream-lined shape, the body is slightly compressed laterally with a dorsal fin closely resembling that possessed by the *Labeo* species. It is said to reach 8 inches in length in its native environment, but is usually offered for sale at about 3 inches or less.

Colour varies greatly among different individuals but generally the upper parts of the body are a light brown, with two rows of black blotches, one along the sides and the other following the dorsal ridge; the former is often interspersed with yellow, or running into itself to form a line. The belly is whitish and slightly flattened.

The fish is extremely active and schools when a sufficient number of its fellows are present. Constantly on the move in search of algal growths, they seem to prefer the slime types to those having a thread form.

One of my own tanks was heavily infested with a blue-green slime alga that was rapidly engulfing everything, to form a continuous coating, which no amount of scraping seemed to check. My ancient *Plecostomus* was far too enormous to be thrown into the fray, so I introduced a pair of *Gyrinocheilus*. Within a couple of days there was a marked improvement and by the end of the week the tank was virtually clear, with the exception of a thin band around the waterline, which they seemed to avoid.

As the tank in question was in the shop I was particularly relieved, and with this convincing demonstration of its efficacy my customers were very soon induced to this species and my stock of a dozen or so disappeared like magic, until it has now become in regular demand.

Besides algae this species appreciates live foods: more particularly reishi *Tubifex*, and also nibbles at crushed lettuce and spinach. They seem to appreciate a tempera-

ture of around 78°F (25°C). The tank should be well lit to encourage the growth of a certain amount of algae.

Apparently this species has never been spawned, although I should imagine that very little work has been carried out in this direction. *Gyrinocheilus* is very suitable for medium-sized tanks, about 12 to 15 gallons, whereas *Plecostomus* soon outgrows its quarters, and *Otocinclus* is rather too small to do an efficient job on excess of algae.

The Persian Pearl Fish (*Apbanus sophiae*)

by F. G. JONES

ONE of the most beautiful of the smaller fishes kept by aquarists, though one not often seen, is the Persian pearl fish. This fish, although very active in, because of its size, an ideal species for the aquarist who has only a couple of small tanks yet wishes to spawn a fish other than the ordinary run of zebrafish and such like.

On first seeing these in a dealer's tank one is apt to remark how dull they appear. Both male and female are about an inch long and dull gold in colour and although they appear quite pretty there is nothing outstanding about them. The only way that the male can be distinguished is by the bluish tinge in the dorsal fin.

When put in a tank by themselves, however, a miraculous change takes place. The male fish will chase the females and begin to change colour. In the space of 10 or 15 minutes he will become a deep midnight blue with bright electric-blue spots on his sides and fins. The spots can best be described as like pearls shining on a dark night, hence the name "pearl fish".

Apbanus sophiae belongs to the family of egg-laying tooth carps and is very easy to breed. The best method is to use a nylon-wool mop, which also provides a hiding place for the female. The male drives the female continuously and so it is a good idea to use trays of fish, one male to two females. There is no need to rush to remove the parent after spawning as they will not eat their eggs if well fed; they will, however, eat the newly hatched fry. The eggs hatch in 10 to 12 days at a temperature of 75°F (24°C) and the young are soon able to eat small brine shrimps.

Although this fish can live in ordinary tap water, it, like the mollie, prefers water which is slightly salt (containing about one teaspoonful to the gallon). This amount of salt will not harm the aquarium plants or most other fishes (an exception is the genus *Gerydorus*). This fish also prefers live food, though this does not mean that it will not eat dried foods.

The Persian pearl fish is easy to keep and has a wide temperature range, 60°-90°F (16°-32°C), although it prefers a temperature around 75°F (24°C). The pH value and hardness of the water do not matter; my fish are kept in alkaline water with over 18 degrees of hardness. This little fish has much to recommend it and it is strange, and also a great pity, that it is not more popular.

(6) The Veiltail

by A. BOARDER

The Veiltail is a short-bodied fish with long and flowing fins. It is one of the most handsome of the fancy goldfish and a firm favourite with many aquarists. A really good fish is seldom seen, that is, one to which a judge would not award an awarding 90 or more points. If a fish is of equal shape the colour is generally poor and if the colour is good there is something wrong with either the shape of the body or the fins. It would be correct to say that only about one in a hundred among a hatching from good parents would be of sufficient quality to win at a good open show. This uncertainty makes it a fascinating variety to breed, as it is a challenge to the experienced breeder. There will be great satisfaction if a real winner is bred and all the trouble will not have been in vain.

The body of the veiltail should be deep and round, approximating a sphere, encasing the head. The depth should be more than half the length with a good clean curve over the top of the body and a corresponding one below. Any suggestion of hump back will be frowned on

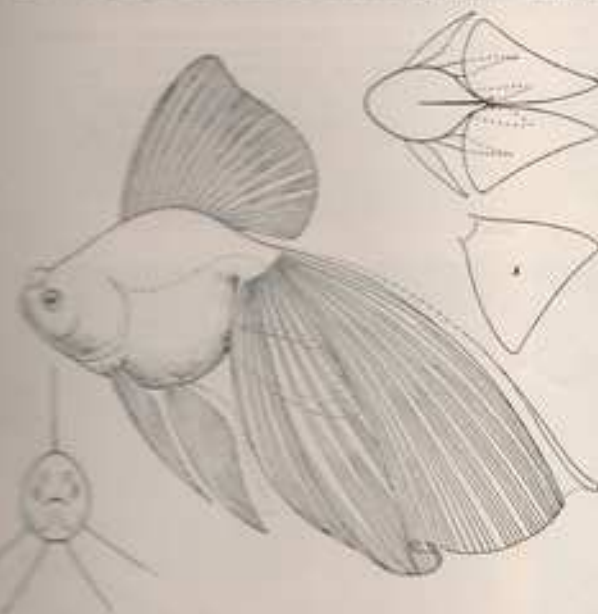
by the judge, but this is a fault often found. A flat back is also often seen and this will lose many points when being judged. The siting of the tail or caudal fin can also be bad, if it starts too low down. The caudal fin is one of the most important features of this fish. It must be completely divided and fall in graceful folds. It must not be stiff and held out from the body and the edges of the fin should be as near straight as possible; any tendency for forking at this point will lose many points for finnage. The dorsal fin is very well developed, held erect with a good curve in front. The back of the fin should start with an incurve and then sweep out in a good convex shape. The pectoral and pelvic fins should be long and well developed, rather pointed. The anal fins must be double; single anals will call for disqualification. The anals should be of equal length and be held separately.

The colour of the shubunkin type should be as for that fish, a blue ground with violet, red, yellow and brown markings and the whole speckled or splashed with black.

A self colour of either a rich red or a rich chrome yellow is also recognised, although I am right against an all red or chrome fish as I consider that such a fish would be hard scaled with stiff finnage. This stiff finnage would be quite out of character with a fish that should have soft flowing finnage. A variegated fish with two or more colours in a pleasing pattern is also recognised.

The minimum size for exhibition is 2 inches body length. The head of the fish should be short and broad with prominent nasal flaps. The shubunkin-type fish should have soft gill plates and show no hard shiny scales. The veiltail requires careful training if needed for an exhibition as so many of these fish will sulk at the bottom of the tank when being judged and it is almost impossible for the judge to see what they are like. Often another tank will be above the one being judged and so it is quite impossible for the judge to get the fish to move from the bottom to see if it has paired anal fins or not. If a fish is placed in a show tank each day for a little while and a few *Daphnia* are introduced the fish will expect such a treat when in the tank and so will keep more alert. Many a good fish has been passed over by the judge because it has been impossible to get it to move so that it can be examined.

The veiltail needs a good sized tank, say a 24 in. by 12 in. by 12 in. for a couple of fishes of adult size. Feed on a mixed diet, dried food every other day and give live food between. Garden worms and white worms are very good food for this fish. Owing to the delicate fins this fish is not suitable for an open air pond during the winter in cold districts as the fins are very liable to be attacked by fin rot and fungus.



Sketch of veiltail goldfish. The caudal fin (A) should be at least as stout as it is long and of the shape shown. (from the Federation of British Aquarists' "Show Standards")

THE OUTDOOR REPTILIARY

(5) Chameleons and Anolis Lizards

by ROBERT BUSTARD, B.Sc.

Photographs by the author

THE outdoor reptiliary can be put to several uses, and although many people consider lizards, such as chameleons and anoles, to be solely for the indoor heated vivarium, they are in fact seen to much better advantage out of doors, at least during the warmer weather.

There are about 75 species of chameleons, of which a fair number are available from time to time. Some of these are particularly hardy and naturally it is to such species that the herpetologist with an outdoor reptiliary must turn his attention. For many years I kept, in an outdoor reptiliary illustrated in the first article of this series, chameleons of several species and also anolis lizards (*Anolis carolinensis*). They went outside on the first of April and were there until the first week in October. As my reptiliary was situated on the east coast of Scotland (Dumfries) collectors in the south of England can see the scope which is available to them.

The Kenya highland chameleon (*Chamaeleo bitaeniatus elloti*), itself a dwarf species, and the South African dwarf chameleon (*Micromisaurus punctatus*), formed the basis of the chameleon collection. Both are accustomed to cold nights, which was just as well as some mornings when I came down to watch them shortly after 8 in the morning the temperature was well below 40°F (4°C). Indeed on several occasions it was only 37°F (2°C), and had presumably been colder during the night. This treatment did not seem to cause them any harm and although there were at this time about 60 of them in the reptiliary I had no fatalities. On these cold mornings they were resting on their perches or among the everlasting sweetpeas, and waiting for the sun. After basking in its rays for half an

hour they were sufficiently warmed up to move around and start feeding. There is one species of chameleon—the helmeted or two-banded chameleon (*Chamaeleo helioides*), that I kept at the same time. This species comes from even higher altitudes in Kenya (7,500 ft.) than those at which my Kenya highland chameleons were collected (6,000 ft.). The helmeted chameleons did not seem to be at all inconvenienced by these cold early spring mornings and were frequently moving about at temperatures just a few degrees above freezing. So much for their sub-tropical nature!

It is important that the outdoor reptiliary for chameleons be well planted. If foliage is scarce they may feel ill at ease. It is also important that it is sufficiently shaded to provide shade. No chameleon will feed unless it is properly housed and receiving adequate drinking water. As chameleons generally do not drink from a dish it is advisable to spray the foliage (the outdoor reptiliary recommended had a glass roof which kept out the rain) at least twice a week.

In this reptiliary the chameleons seemed to be completely at home and I used to sit and watch their antics for hours. Each specimen had its favourite "perch", a space on a twig, and prevented other chameleons trying to pass it by. Here it should be stated that chameleons hate being touched on the body by humans, other chameleons or indeed by any other creatures. When handling them try to persuade them to climb on to your hand, where they will cling on very securely, rather than pick them up by the body. The anoles were also a great source of interest as they are so unlike the chameleons. While the chameleons are so slow



Jackson's chameleon (*Chamaeleo jacksoni*)



Lambert's chameleon (*Chamaeleo lambertoni*)



Anolis lizards (*Anolis carolinensis*)

in their movements, yet different, the males rush here and there, stopping momentarily to bob their heads at another and when their faces point at a female or a rival male. Sometimes a chameleon would be deliberately calling to meet what an anole would rush in and grab it, and I have on several occasions witnessed a chameleon strike at to trigger a blowback which an anole was chewing. The two in effect met successfully against their wills.

Feeding

Many people ask me how I could possibly feed such a large lizard collection. The answer is simple—each week I put a tin containing one pint of gnats into the reptiliary. These at that time emerged as blowflies, which were eagerly consumed. The anoles and chameleons never seemed to tire of this diet and it was only occasionally noted when I collected a large number of larvae of the common cabbage white butterfly and put the pupae into the reptiliary. Frequently, I allowed them to become fly-catchers and so produced my own maggots, so that the reptiles did have a wide variety of different species of flies and blowflies. The larger chameleons are very fond of grasshoppers.

Other Species of Chameleons

I seldom kept specimens of the common chameleon (*Chamaeleo chamaeleon*) as I had discovered that they are very poor "keepers". I would state clearly that the common species should not be kept. The first specimen I ever had belonged to this species and I was lucky that he lived for 25 months, doubling his size from 3 to 6 inches in the interval. I was much less successful with adult common

chameleons, and they are often quarrelsome when kept together. The food required by any large chameleon is quite outside the resources of the average collector, since gnats and mealworms are seldom accepted.

Another species that has caused me some trouble is the three-horned chameleon (*Chamaeleo jacksoni*), often called Jackson's chameleon. Despite its attractive and unusual appearance I cannot recommend it. Specimens that I kept in my outdoor reptiliary lived satisfactorily but spent long hours down at the front trying to dig through the glass. This behaviour was entirely restricted to this species, all the others spending their lives high up from the ground among the foliage. Another species that lived successfully in the reptiliary was Lambertson's chameleon (*Chamaeleo lambertsoni*), a smallish species from Madagascar.

Breeding

I have bred the dwarf Kenya highland chameleon (*Chamaeleo bitaeniata elloti*) on a great number of occasions. Strangely enough the young have, to the best of my knowledge, been born indoors, although when placed in the outdoor reptiliary they flourished there. I say "to the best of my knowledge" because at times when I had put out babies I would not notice the presence of additional ones, but on many occasions when there were none put there by myself, none appeared. Life in the outdoor reptiliary appeared to slow down the rate at which the gestation period progressed and possibly this was a result of the lower temperature. This species, like the helmeted chameleon, and the S. African dwarf, is ovo-viviparous, i.e., it produces living young. I first had a birth of the South African dwarf chameleon in 1955 (reported in the *British Journal of Herpetology*, vol. 2, page 1, 1955), when 11

young were seen, and the Kenya dwarf was a consistent mother in the collection, the progeny varying between about 12 and 25 in number. Young chameleons, unless they are in spacious quarters out of doors, are best separated from their parents lest they eat them. They should be fed on *Drosophila* (fruit flies), which must be bred in large quantities to satisfy their eager appetites. The helmeted chameleon, on the other hand, gave birth to its young in the outdoor reptilary.

Anolis lizards lay eggs, usually one at a time, and at fairly frequent periods during the breeding season. Adult females may lay an egg every 6 weeks. Young anoles never appeared in the outdoor reptilary and I think it was not warm enough there to incubate the eggs. Eggs collected from females which laid indoors were hatched without difficulty if placed between layers of damp moss (kept damp). They hatched after an incubation period of about 6 weeks at 85°F (30°C).

The combination of chameleons and anoles makes a most attractive and interesting collection in any outdoor reptilary and there is no doubt that the lizards thrive in those conditions, which are as natural as we can make them.

Chameleons vary greatly in price, depending on the species, but may usually be obtained for between 15s. and 45s. each. Those described here usually cost about 35s. Carolina anoles cost 10s.



Kenya dwarf chameleon (*Chameleo biocoloratus* esch.) with four 2-day-old youngsters. It is not to be inferred that parental care is shown by this species.

Keeping our Native Fishes

by J. R. TINGLE

MENTION fish-keeping and most people immediately put their thoughts to tropical fishes. Eighty per cent. of our budding aquarists to-day start with the "little jewels" and, with a little success, soon become familiar with scientific and common names.

Tropical communal displays, with their marvellous variety of fishes and plants, give a wonderfully colourful display, and this, with the possibility of a little breeding now and again by livebearers, whets the interest of all budding fish-keepers. Old aquarists in this country used to say "you are not an aquarist until you have kept and maintained our own native fishes". They also said that "if you keep fishes long enough, you begin to look like one". I've kept all kinds for 50 years, but I don't see any sign of my dorsal fin growing yet!

Many anglers keep tanks of native fishes they have caught and find much interest in maintaining them. To start a native aquarium, thought must be given to the setting up of the aquarium. A tank 24 in. by 12 in. by 12 in. is a suitable size (but a larger one, say 36 in. by 12 in. by 20 in. high, gives a much better display). In any case, the rule of "1 inch of fish to 1 gallon of water" must always prevail for a well-balanced aquarium. The tank can be clear glazed at the front, with moulded ½ in. glass for the back and sides. The bottom of the tank is improved by a double thickness of glass, to support a tremendous weight of water, rocks and gravel or compost.

The tank should be given sufficient compost to allow 4 in. depth at the back and to taper to 1½ or 2 in. at the front; coarse sand, well washed, is suitable. Pieces of sand-stone, tufa stone or fancy rocks purchased from any dealer can make a suitable rock display. If it is possible to get some red shale, found on old colliery tips, well washed or boiled, will give a marvellous colour effect and will have

no harmful effects on fishes or plants. Limestones or quartz should not be used.

Planting should consist of small clumps of *Elodea* (*donax* or *crispa*); giant *Vallisneria* or *Sagittaria* should be planted well back in the aquarium. Small sprigs of *Ludwigia* can be planted at will near the front of the rocks. No hiding places should be left for freshly introduced fishes, as all native fishes are very shy on introduction but very soon become quite comfortable and tame. Artificial aeration is helpful for a start but should not be necessary when the plants are established.

Obviously, the smaller the fishes the bigger the variety that can be kept: 2 small roach or rudd (preferred), 2 perch (golden or green), 1 small perch, 1 carp, 1 gudgeon or 2 minnows or sticklebacks. Trout, miller's thumb or loach are not suitable, and all fishes from running streams and rivers do not adapt themselves to stagnant water so well.

Food such as chopped worms, maggots, a little ground liver and biscuit meal, and, of course, bloodworms, woodlice, water shrimps, will be readily accepted, but all foods must be eaten up at once and given very sparingly.

Freshly caught fishes, before placing into the tank, should be put into a bucket containing a light port-wine coloured mixture of water and potassium permanganate for 2 or 3 minutes; any fish lice, flukes and other parasites will then be removed and can be found in the bottom of the bucket. Careful "angling" of fishes (hooks) does no harm to them, and I have had roach and perch feeding happily in my tanks the day after being hooked.

Once a native aquarium is established, with the inmates settled, not only can a wonderful picture be achieved with memories of happy hours spent fishing, but it will be the object of envy and admiration from all the tropical fans who come to view it.

ANABANTIDS in General — and FIGHTING FISH in Particular



Dwarf gourami (*Colisa lalia*), a species that likes to incorporate small plants into the bubble nest

by H. LODER

THE Anabantid group has a charm all its own with its attraction I cannot put into words. It's a feeling you get on first seeing almost any of this family: something exotic, something "far away places" about them, and something else, a "we've been here longer than you" look in their brilliant fish eyes. And as they are fishes I suppose they have at that! No, I cannot analyse the feeling or put the charm into words, no more than I can tell you why I "love" horses and only "like" dogs. From a practical point of view, say a peacocking aquarist's point of view, this group is very satisfactory.

It is possible to keep anabantids of all sizes, from the small to the extra large, from the delicate chocolate gourami to the very tough paradise fish. The aquarist can run the gamut of fish-keeping within this group. He or she can experiment with the "difficult to breed" species, like the orange gourami or the specially difficult chocolate gourami, or have the fish that is easiest to breed of all, the blue or brown three-spot gourami (I once had 1,500 fry swimming from one spawning of a big pair of blues!). The aquarist can breed straight wild-type fish, as with most of the gouramis, with very little eye to improvement, but, of course, starting with good and perfect stock. Or he can go the whole hog on line-breeding for improvement in size, shape and colour, as is done with the Siamese fighting fish, but as commonly, with the paradise fish.

There is a blue strain and a red strain of paradise fish, and also a strain with very long caudal fin points has been

Colour photographs by B. PENGILLEY

developed. Of course, more should have been done with the paradise fish. He is the father figure of tropical fish-keeping in Europe. Samuel Pepys mentions "a fish from Cathay kept in ye glass of water other than the golden fish of Cathay." This must have been the paradise fish. From old Sam's description and the kind of treatment the fish would have received and yet still live it could have been no other. Of course, fish-keeping didn't catch on here as a popular pastime in the time of Charles II.

A good selection of anabantids for a 36 in. tank would be as follows (in trios: one male, two females): leeri gourami, three-spot gourami, thick-lipped gourami, striped gourami. This last is sometimes called the giant gourami—I suppose because it resembles the dwarf gourami in most things except size—although the real giant gourami is an Indian food fish that reaches 2 feet in length and is, incidentally, the only true gourami mentioned here, scientifically speaking, that is. I sold some to Belle Vue Zoo some years ago and I think they still have one, a real monster.

There is some difficulty about distinguishing one from the other with the striped gourami and the thick-lipped gourami, especially if the pair of thick-lipped are large and the striped gourami are of medium size. Things are also made more difficult by the hybrids of these two species



Blue gourami (*Trichogaster trichopterus*): male above, female below

turning up in dealers' tanks and being sold as one or the other. However, well-developed specimens of either species are quite distinct from each other. A good tip, if you have any difficulty, is to look at their mouths. Readers may wonder why I suggest two very much alike species for their show tanks. I admit they are not a contrast but they blend well and are good conversation pieces. It's good to have something to talk about in your tank—it gives you a chance to show off your piscine knowledge to your pals (that's how reputations are made!).

I've told you of a few anabantids that I am fond of. Let me tell you of a few things that anabantids are fond of. Food: as a group they are excellent eaters, refusing very little when healthy. The livelier the food the better, of course: white worm, chopped earthworm, *Daphnia* and, for the larger species, most water bugs and small frog tadpoles, and young guppies. They will eat almost any kind of dried foods, and I find that they relish, of all things, dried ant's "eggs". Chopped fine liver is a good food, and most good makes of dried foods can be recommended. In fact, anabantids are so obliging about food that, like a hen-pecked husband, they can be pushed off with anything until they die before their time through being given the wrong diet, and I suppose of broken hearts through waiting and hoping for the right kind of food. Anyway, experiment with them: give them a really varied diet but do see that it's all good tuck and plenty of it.

Anabantids like to be warm. The only one of this group who will stand low temperatures is the paradise fish, but though he'll stand low readings he doesn't like it, and the fish breeds better and looks better at around 77°F (25°C); for the rest 77°F is all right, but for breeding use 82°F (28°C) or a little higher.

Water condition for fishes is something that can be argued about, and a lot depends on what water the individual specimen has been born and reared in, but I think it is safe to say that old mature water should be used for this group. It does not matter so much what the pH reading is, but use water from a tank with old gravel and

with plenty of growing plants, and one not too well siphoned. The anabantids do seem to prefer water that is a little 'overfed' and very slightly green—a condition easy for a beginner to provide but sometimes rather hard for the old hand to achieve, since he has acquired the habit of underfeeding through long usage.

What kind of tank makes them feel at home? Naturally, the bigger the better. And the shy ones are not so shy in deep water, which applies to all fishes, I think: shallow water makes adult fishes nervous, just as "a beach-head landing with no cover" used to make the boys nervous. Plants, in good groves here and there, for the fish to use as cover, will in fact be used less and less provided that they are there to be used. Members of this family never look at their best in unplanted tanks at the dealers; they don't settle and colour properly in poorly planted or unplanted aquaria.

Anabantids will breed regularly and prolifically, provided that they are mature, healthy and have the right conditions. The breeding system described for fighters below applies with some slight variations to most of the anabantids; also, feeding and rearing the fry is about the same, with the exceptions of the dwarf gourami and the chocolate gourami. The fry of these species need green water at the start. They will not thrive without it. The distoms of green water are the only foods that these minute babies can manage at first, and if they get plenty of it they grow really fast, and inside 10 days they should be eating *Paramecium* and often large infusorians. Pond Infusoria is a good grade of food in some seasons of the year; late spring and early summer are best, before the larger inedible animals predominate. Of course, as the babies grow, they can have brine shrimp, graded *Daphnia* and fine dried foods, and when they start eating these they are on their way.

Spawning condition is easily noted in most anabantids: the females fatten, the males become more colourful. The pair of dwarf gourami illustrated here are, in my opinion, ready for spawning. Remember that anabantids like a warm tank, and they don't come into breeding condition

Keep the cool. The fry also need warmth: too high is better than too low for all this family. Also provide plenty of space if you want show fish. Don't believe anyone who tells you that it's all right to crowd gouramies because they are labyrinth fishes and breathe atmospheric air, giving you the impression that they take no oxygen from the water. I admit that they will be amongst the last to die in overcrowded conditions, but they do take oxygen from the water by gill action like any other fish. It is only occasionally that they use the labyrinth organ, when they are in very foul water or highly over-heated water that has lost its oxygen because of the heat. But as most aquarists should never be in this condition, treat your gouramies as you would your other fishes as far as space is concerned.

Now I come to my own personal preference in this group, and perhaps my choice in any group of fishes—the fish with the orient written all over him: the Siamese fighting fish.

The fighting fish must be the best known of all Siamese gouramies, with the possible exception of Yul Brynner (of "The King and I" fame), and until we received the red-tailed black shark the fighter was the best fish to come out of Thailand for the European aquarist. Of course, this fish has been receiving the attention of aquarists in its country of origin for a very long time, and is in consequence a cultivated species. Great care has been lavished on the fighting qualities and inherent pugnacity of this fish. Also the strains have been carefully preserved and improved: it was much easier to bet on a definite colour than to bet on immediate shades that might cause arguments and a fight after the fight! So definite colour was always important in the cultivation of this fish.

The head-in-beaverly of the *Betta* is really remarkable. A good male will take on all comers, one after another, and should he be finally beaten and give up, which sometimes happens, he will, and this is the remarkable thing, rise again the following day, provided that he has the physical strength to do so. The spirit value is never really quenched; only death ends it. This is different

from the behaviour of that other great fighting machine, the game cock. Once a cock has been beaten in battle (and allowed to live, which is not the usual practice), he will not fight again. It may be, of course, that the *Betta* is a creature without any natural caution, or perhaps it fights in a more gentlemanly fashion than the game cock. If you have ever seen a 'fish fight' you will know that the fights are in bouts arranged by the fish themselves. Each fish breaks off to rest at the same time, as if by mutual consent. This gives a rather artificial effect, as in all-in wrestling, but unlike wrestlers, the *Betta* contestants mean it. There is also "the moment of truth" in a fish fight: fatal as the moment is, the fish show only courage to the last.

Of course, for every one aquarist who admires the *Betta* for his fighting abilities, there are hundreds who admire him for his beauty alone. And western aquarists have helped a great deal in improving this beauty by breeding the fish to a really good well-balanced standard. We have lengthened and broadened his fins and shortened his body, giving him an appearance of compact grace that is hardly beaten by any other species. Also we have helped a little with colours, though not enough in my opinion. I will never forget the colours of a pair that I received from Siam before the war. These had golden bodies and purple fins; I dubbed them 'royal Siamese fighters', and sold them to a man who could afford them, and have never seen any fish like them since. I should have kept them but for "the wounds of hunger", as they say in Mexico.

By our attempts at gilding the lily, which, of course, have taken many years of inbreeding, we have lost possibly some of the hardness of the fish. Possibly we have now a slightly more delicate individual. We have lost some natural instincts in some of the well-bred individual specimens, but not much of the fighting instinct (although I have read somewhere recently of a split-tailed variety produced in Malaya that will not fight at all).

I have found that with well-bred specimens there occurs the odd individual who has lost the nest-building ability. These are usually very handsome males and well worth



Siamese fighting fish (*Betta splendens*): female above, male below



Two male fighting fish in battle struts at the two sides of a glass partition across the aquarium

breeding from. They will pair and embrace females and they do get fertile eggs, which they casually blow to the surface just anywhere, but build no nest and show no care. I usually collect these eggs and put them in a shallow saucer. The depth of water that can be put into a saucer from your wife's best crown Derby eggshell-china tea-set (left by her great-aunt Louise, who died at the age of 100 when she fell down the apple cellar), and which will still allow the saucer to float on the surface of the tank is about perfect for the youngsters until they can properly swim.

Under normal conditions I always leave the male with the young until they are properly swimming. By swimming I mean leaving the nest of their own volition and not falling head or tail first to the bottom of the tank. It's really very easy to know when to move the male. Observe him and you will see that he gets very ill-tempered when the babies can swim. He loves to put them back in the nest when they fall out, but he can't keep up with them when they swim out in every direction at once. So he usually eats a few and begins to lash his tail about, which scatters the nest and his wayward children (his tail action possibly saves them all from being eaten). It may be that in Nature it is a way of distributing the fish, breaking up related specimens and preventing to some extent incest breeding, which could take place easily with this short-distance swimming species. Anyway, you get fair warning when to move the male, so act on it. Many aquarists fail with fighters because they will persist in having only one or two females. They say, "Oh, the females are not very pretty—one's enough." It is policy to have a fair number of females on hand. For one thing a small shoal of females of different colours can look very pretty. For another, male fighters are rather choosy and great boys for the ladies. You will find also that the females are choosy and prefer some males to others.

I do not let my females become too heavy with eggs before I use them, as I believe that an over-tipe female experiences some difficulty in parting with eggs at the commencement of the spawning procedure. This difficulty of the female often infuriates the males to such an extent that they kill their mates. The ideal female is not too

heavy with eggs, quite lively and just as eager to spawn as the male.

The simple method of introduction is the best. The male is already in a 18 in. by 12 in. by 12 in. or 24 in. by 12 in. by 12 in. tank with old water, some good surface cover plants (one or two floating ferns or any floating plant except duckweed) and without snails, if possible; the temperature is 82°F (28°C). Introduce the female into this tank in a 2 lb. jam jar containing enough water for it to float. The male will commence building his nest at once. When he has built a good nest (1 1/2 in. in diameter and 1 in. high in the centre, at least) and his fin-spreading display has become really frantic, tip out the female gently so that the nest is not disturbed. I cannot give you a time limit for this nest-building and courtship. This bit of knowledge, of when to put the female in with the male, you must acquire yourself. But don't let it worry you unduly if you see the female get a terrific beating; should the beating be more than she can stand she will take cover (remember these plants) and remain in cover until the great lover's frenzy has worn off. She seems to know when it is safe to try again, I think, better than we do. If you have a really tough male, put in two or three ready females. He then will wear himself down on these three and finally will spawn with one of them.

The spawning act has been portrayed and described many times, so I won't attempt to describe it. It's better to see it than to read about it.

I have dealt with the spawning and care of fry by the male parent. We now come to the care of fry by the third parent—the aquarist. Before the fry start to swim the aquarist can begin to play his part. At this stage there is very little to do, but you can float a black banana skin in the tank. This rotting vegetation helps to produce small Infusoria, which are very helpful to the fry when they start to swim. I have also found that sun- or dried lettuce leaf powdered on to the surface is a very useful culture medium in the tank itself. As well as this, when the fry are swimming they need one 2 lb. jam jar of a good thick *Paramecium* culture poured into the tank

(Continued at foot of facing page)

How Many Fishes?

by PETER DENDY

The aquarium in the living-room or the lounge is a joy, and if well maintained comes in for much praise that warms the heart of the owner. A well-lighted, well-maintained and nicely planted aquarium with a careful selection of easy-moving inmates takes a lot of looking as a focal point in a room. Given an easy chair and a good view of a well-organized community tank I must say I can be left for hours just watching and enjoying.

You haven't really got to be an aquarist to keep a living-room community tank, of course, and I know one or two such tanks that are kept purely for decoration without too much account being taken in the fishes themselves and the remaining space these require, with the result that the tank has been heavily overstocked. I also know one or two aquarists who don't seem to have a clue about how many fishes a tank should hold and who simply cannot resist buying something else and adding it to the community and then work to work so that the piscine population becomes denser and denser.

The question of how many to a tank and the allied question of absorbed oxygen available in the water is one that vexes many people, who should know better, seem to give little or no thought to at all. It seems such a pity when there are so few many fishes in the tank, as then nothing grows to a proper size. Under these conditions when visible oxygen is gone through the complete tank like a dove of war. The owner usually adds a couple of aeration diffusers to keep things turning round and happily assumes that if he seems like mad he can pack in as many fishes as he likes to. Of course, aeration helps, but its actual value in adding extra oxygen to the water is very limited indeed.

If you keep an aquarium like the one I have described then for heaven's sake and your own peace of mind don't mistake further, and certainly don't grab a pencil and paper and work out the surface area you ought to have for the specimens of your tank, or you will have misery on the spot. A simple and useful guide can be obtained from the formula $2L^2 + 4$, where L is the length of fish in inches, and the result gives the surface area required for the particular fish in square inches. Remember, too, that if you are after a dense-stock and really healthy fish then the length L must be the final length that you expect the fish will attain and not the length it happens to be when you put it in the tank. Length is taken from the tip of the nose to the caudal peduncle and the caudal fin length itself is ignored.

Required Surface Area

The formula $2L^2 + 4$ gives the following surface areas for the various fish lengths shown:

- A fish 1 inch long requires 6 square inches
- A fish 2 inches long requires 12 square inches
- A fish 3 inches long requires 22 square inches
- A fish 4 inches long requires 36 square inches
- A fish 5 inches long requires 54 square inches
- A fish 6 inches long requires 76 square inches
- A fish 7 inches long requires 102 square inches

The use of aeration would allow you to reduce the above requirements very slightly, but as a general rule these

figures should be adhered to, particularly if you want to do any showing.

Your fishes should be given the very best conditions possible if you wish to get the maximum enjoyment out of them and you can't expect stunted growth due to overcrowding by feeding like mad, even if you always give them bags of live food.

Aquarium Proportions

The proportions of the aquarium can be important and it is much better to have a relatively shallow tank in proportion to the plan area than to go in for a deep tank that has a low volume to surface area ratio. As a general guide the depth of the tank does not want to be greater than one and a half times the width.

Fishes that have been badly stunted in early life by overcrowding never achieve their proper size even if optimum conditions are provided for them later. I recently carried out an experiment on some very stunted zebra danios, and found that the size could be increased a little, but nothing like that of a decent fish could be achieved. The runts bred satisfactorily and the offspring developed to normal size. It would obviously take several generations of stunting to affect permanently the size that a fish could grow to when again given good conditions.

Anabantids

continued from facing page

every day without fail until they are 3 weeks of age. I said poured into the tank but a better way is to immerse the jar fully into the aquarium and let the Infusorians swim or flow out gradually. This tends to cause the fry to concentrate around the jar and gives you a good chance of counting and observing the growth of the babies.

After about 21 days the babies should be on the usual fry diet of graded *Daphnia*, micro worm, fine dry food etc. At 80°F (27°C) their growth, if they are well fed, is really fast. The few odd ones who don't grow are soon eaten by their larger brothers and sisters. If you have many that do not seem to grow then they are not getting enough to eat, so double your quantities of foods. Plenty of food is the rule for anabantid fry, and temperature too is important: keep 80°F (27°C) all the time for babies. Do not allow cold air to reach the surface of your tank. Use close-fitting covers and keep out cold draughts for anabantids of any age.

Well, as most of you will have realised by now, fighters are a bit of a fetish of mine, and I could go on with quite a lot more about them. I am making a study of inherited fighting abilities in animals; I have found a relative nurtured ferocity in the game fowl, the *Berta*, the Spanish fighting bull and the Malay domesticated fighting partridge. But all this is another story.

The Puffer Fishes

by R. E. MACDONALD

PUFFER fishes are a genus of the family Tetraodonidae, belonging to the order Plectognathi, and are called by this name because of their ability to puff themselves up like balloons with either water or air.

There are about 90 different species to be found throughout the tropical waters of the world, particularly the Indo-Pacific region and central Africa, and while the majority of this number are strictly marine species a few are to be found in fresh or brackish waters. As marine fish-keeping is not yet established in this country reference is made only to those that may be kept in fresh-water tanks, although the habits and qualities are more or less general for all species. The fresh-water species that are briefly described below can sometimes be purchased from dealers in this country and most of these generally prove to be imports.

The leopard puffer (*Tetraodon lineolatus*) is native to the Belgian Congo and is a sprightly little fish. Its body is covered with very small spines or prickles and it has dark spots on the back area and a plain, yellow belly. It grows to about 4 inches in size.

The figure-eight puffer (*T. palembangensis*) is quite a new fish for aquarists in Britain and is native to Thailand and Borneo. It has the usual spotted back and light-coloured belly but the spots join in places to form figure eights, hence its name. It is a rather shy fish even though it may grow to a length of some 8 or 9 inches.

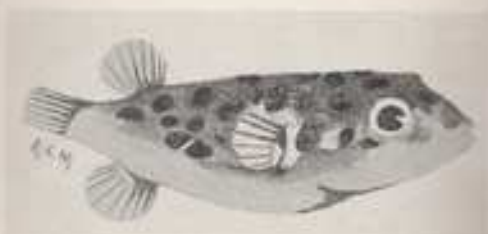
The valise puffer (*T. mura*) is different in shape from most of its cousins, for the body is flattened, with both eyes on the upper part of the body. The colouring of this fish is yet another example of the natural camouflage that Nature provides for her creations. The fish will bury itself in the sand so that only its eyes and mouth are showing and as the back of the fish is a speckled, sandy colour, detection is possible only at close quarters. It is native to the Belgian Congo, grows to about 6 inches in length and is rather partial to small fishes *à-la-carte* for lunch!

The green puffer (*T. fluvianalis*) is a fresh-water species found in India and Malaya and sports the usual spotted back and light-coloured belly; it also has peculiar "whiskery" appendages sprouting from the nasal pit. A length of 7 inches is sometimes reached and the female of the species is said to eat her young with the utmost relish!

The common puffer (*T. caranx*) is typical in shape and characteristics and is exceptionally adaptable, for it may be found in the coastal region of the Malayan Archipelago or in fresh and brackish waters. In a good-sized tank the fish may grow to about 8 inches in length.

The size of puffers varies a great deal with the different species. Some fishes of this genus (particularly the marine varieties) may grow to 36 inches in length, which is pretty good going!

The most prominent feature in the appearance of puffer fish is the size of the head in relation to the rest of the body. Discounting the caudal peduncle, the head represents nearly half the total size of the body! Another feature is the presence of spines on some species which are similar to "goose pimples" in appearance, although they bear no



Leopard puffer fish (*Tetraodon lineolatus*)

comparison to the magnificent spines displayed by the marine porcupines and burrfishes. By far the most remarkable feature is the ability to puff themselves up with either water or air.

This phenomenon is performed quite voluntarily by the fishes and is achieved by retaining gulps of water or air in the abdominal cavity. As one would expect, the surrounding wall of the belly is elastic, to prevent serious internal injury. Mature fishes can puff up without causing any harm to themselves but young specimens have been known to die if they perform this feat too vigorously at an early age. When the fish is inflated with air it will float upside down at the surface of the water and present the observer with a spectacle not often seen in the home aquarium.

Some puffers like to inflate themselves just for the sheer lunacy of it, and on other occasions it may be performed to discourage other fishes from ingesting it! A further reason for *Tetraodon* inflation is that of bluffing. This is where two fishes face each other and put on a show of aggression (without actually fighting) when someone's territorial rights have been infringed. Puffers are very sensitive to territory ownership and will sometimes fight in a most determined manner to retain their favourite cave or hiding place. If a number of puffers are placed together in a tank it is essential for their welfare to provide enough room and hiding places for all the inhabitants otherwise the odd man out will find his life hardly worth living.

Puffers do not make very good additions to the general community tank, for they possess a very nasty temper, although the smaller species are sometimes better tempered than their larger cousins. Baby fishes are more sociable but once they reach maturity they rapidly become irritable and extremely touchy and will let the slightest inconvenience upset them. It is also wise to keep puffers well clear of expensive vegetation, for they show no respect in most cases for delicate plants no matter how treasured they may be. The mouth of a puffer is bony and has the appearance of a budgerigar's beak, and can cause serious damage to

other fishes if a scrap takes place. The skin is hard and scaly and locomotion is achieved with the sole use of the pectoral fins (a method rarely practised by any other fish) and is probably the result of the acute stubbiness of the body, which prohibits effective use of the caudal peduncle or after-part of the body. The eyes are rather unusual for they can be used independently of each other to some great extent and are quite large.

As puffers spend most of their time nesting in the sand in their hide-outs, the sand in the tank should not be too coarse. When the fish leaves its lair it is nearly always found inhabiting the upper regions of the tank, where it should soon learn to recognise the hand that feeds it and will quickly remember feeding places.

Puffers are essentially warm-water fishes and do not take readily to low temperatures. The best temperature lies between 80° and 85°F (26.6°-29.4°C). Puffers are not too hard about pH and hardness but should they be imports and not truly acclimatised to fresh water a percentage of sea water must be added to the fresh water in the tank at the beginning and gradually reduced each day until the tank contains only pure fresh water. The dealer supplying the specimens will provide the necessary information about the percentage of salt water required.

As with most other fishes, the problem of feeding is important. Puffers are slow eaters and extremely fickle about the food they eat. If they are not given the food of their choice they may refuse all other foods and eventually starve themselves to death. When first introduced to a new home the fishes will probably subject themselves to a severe test but as they become accustomed to their new surroundings their appetite will return.

Puffers are omnivorous fishes and generally reject all prepared food offered to them, so *Tubifex*, mosquito larvae, white worms, earthworms, brine shrimp and *Daphnia* may be tried in an attempt to find the most acceptable live food. These fishes undoubtedly prefer live foods and in some cases it may be found that even such are accepted.



White puffer fish (*Tetraodon lineatus*)

Feeding the puffers should not prove to be too difficult provided that the fish are conditioned first and given the best living conditions. Conditioning is, of course, achieved by (and is if acceptable by the fish) varied feeding. The living conditions are enhanced by paying strict attention to such matters as cleanliness, acidity, water composition etc.

When the breeding cycle is near, the females become extremely heavy with eggs and will mate spontaneously with the male of their choice. The mating and spawning process will vary according to the different species but may be grouped generally under either of the following two patterns.

(1) e.g. *T. lineatus*. The female makes her choice from the males present and both of them prepare a spawning site on a rock by cleaning it with their mouths in typical circular fashion. The male will then snuggle the female by swimming in circles about her until the excitement induces



World distribution of various puffer fishes

her to release and deposit the eggs on the spawning site, where they are fertilised by the male. When all the eggs have been laid the male will guard and "fan" the eggs until they hatch. "Fanning" the eggs is a ritual performed by many fishes and is used to cause a circulation of water over the spawn, thus preventing fungus spores from attaching themselves to the eggs and at the same time washing away any sediment that may settle on them and promote a bacterial infection. Should any danger arise during this period the male will completely cover the eggs with his body to protect them from harm; the most probable axiom being—out of sight, out of mind! When the eggs have hatched the male will dig a depression in the sand and keep the newborn fry within its limits for the next few days. After the female has spawned she should be removed from the tank, as she possesses few scruples about infanticide!

(2) e.g. *T. shanensis*. In this case the female may have two males attendant upon her instead of just one. The males may be described as "lingers-on", for indeed that is just what they do. Taking a firm bite on the belly skin of the female they will rarely release their hold until she has completed spawning. In this manner, they will be dragged around the tank as the female scatters up to 300 eggs aimlessly upon the scene. Fertilisation by the males is achieved when the eggs are released from the body of the female. From this it can be deduced that fertilisation of the eggs is not thorough.

Puffer's eggs hatch after 3 to 8 days, according to the species concerned, and the fry feed first from a very large yolk sac that disappears after about 3 days. When this yolk sac has been consumed the fry may be fed with powdered egg-yolk that has been strained through a fine sieve, followed by Infusoria and brine-shrimp nauplii.

Should the puffers become too much of a problem they may be prepared in a special way and cooked to form a rare dish known as "fugu". Warning should be given, however, that unless the fish are prepared in the correct manner a fatal food poisoning will probably be the result for the organs of many puffers contain a deadly poison known as tetrodotoxin!

Puffer fishes are a most absorbing genus and for me the day when these fascinating creatures lose their interest will come only when guppy-breeders acknowledge the value of the stock as food for large, carnivorous fishes, when people wearing two monocles cease to make a spectacle of themselves and when Mr. MacMillan leads three rousing choruses of "The Red Flag" from the steps of St. Pancras Town Hall!

our readers



write

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

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

Large Brine Shrimps

I HAVE read with some interest an article by R. E. Macdonald in your January issue, on hatching brine shrimp.

Here in Mombasa, most of the live foods used with such success in the United Kingdom are unavailable, mainly because of climatic factors. For this reason I make regular use of large brine shrimps, up to 4 inch, for conditioning my fish.

I grow the shrimp in a tank 36 in. by 18 in. by 9 in. and use ordinary sea water, to a depth of 4½ in. They are fed 3 times a day on a tubed liquid food sold for the fry of tropical egg-layers, and do very well indeed on it, providing me with a steady supply of large shrimps.

I have often wondered why U.K. aquarists do not make use of large *Artemia*, during hard weather when other live foods are difficult to come by. They are certainly easy enough to rear and the fish certainly lap them up.

J. BALDWIN,
Mombasa.

Shark Fancier

SOME time ago, I started keeping tropical fish. Taking experts' advice, I commenced by keeping guppies, platys etc. I then proceeded on the usual community tank set-up of neons, angels, zebrafish etc.

Then, quite by chance, whilst thumbing through a book on tropical fish I came upon the name red-tailed black shark; accompanying the brief summary on the fish was a photograph. I have always been intrigued by sharks, that is the type whose dorsal fin horribly and menacingly cuts the water, and so decided to purchase one.

On acquiring the fish I found it had none of its namesake's characteristics (except for its shape), but on the other hand I was delighted with its colouring, being jet black with a vivid red tail and a white tip on its rather large dorsal fin.

It was placed in the community tank, where it was quickly joined by another member of its species. There they remained for a few months, proving good community fish, easily fed, very hardy (surviving a couple of heat losses without any ill-effects whatsoever) but remaining rather shy.

After a while I decided to find out more about this group—and presently came upon the ordinary black shark. Two of these were quickly purchased and placed in a largish tank by themselves. When I bought the fish I was very disappointed indeed; all I could see were a couple of dark

brownish catfish-like objects skulking in the corner of the tank. I lost one after a very short time, but the other proved to be even easier to keep than the red-tailed shark. To my amazement and delight it simply grew and grew. It is now about 7 inches long, has changed from the drab brown to a lovely black and possesses enormous fins.

I have since bought another pair of black sharks and also a pair of red-finned sharks (of which I know little about as yet).

If anyone is interested in keeping these fish they can gladly have the benefit of my meagre knowledge.

H. GREENWOOD,
Grimsby, Lincs.

Correspondents Wanted

THE Aquarist Club of Kenya are anxious to contact clubs in the United Kingdom who have films or slide sequences covering the hobby of tropical and/or marine fish-keeping.

A number of members have had considerable success in collecting and rearing marine fishes off the East African Coast, where a magnificent selection abound in the coral pools. Scats, puffers, clown, sergeant majors, damselfish, dragons and butterfly fish are comparatively common, and fairly easy to naturalise to the indoor aquarium.

Although Nairobi is 5,400 feet above sea level, and 350 miles from the coast, the fish travel well and settle down fairly quickly. If any club is interested in exchanging news on marine or tropicals, the secretary is Mr. F. W. Jeffery, P.O. Box 30061, Nairobi, Kenya.

F. W. JEFFERY,
Secretary, Aquarist Club of Kenya.

European Salamanders

IN the article "European Amphibians" (*The Aquarist*, May) it is said that "There are only two species of salamanders in Europe". This is not so. There are *Salamandra atra*, *Salamandra atra*, *Salamandra atra* and *Glossy Hellgramite* besides the two mentioned in the article.

W. M. WHITE,
Godalming, Surrey.

Robert Burtard writes: The words "newt" and "salamander" are lay terms which are used very loosely. In North America the word "salamander" is used to describe all species of urodeles including what we would describe as newts. Alfred Reusch, writing on "salamander" in *Vicarian Life*, says, "In European species the word is

usually confined to *Salamandra salamandra* and the alpine salamander (*Salamandra atra*)? Many people would add to the three species that Mr. Whose mentions those of the genus *Hydromantes*, including *H. italicus* and *H. genoi*, and those of the genus *Euproctus*, of which three distinct species are recognised: *E. platycephalus* in Sardinia, *E. asper* in the Pyrenees and *E. montanus* in Corsica. I have recently seen *Euproctus* referred to by different writers in the *British Journal of Herpetology* both as newts and salamanders. When one remembers that *Euproctus*, together with our typical newts (*Triturus*) and salamanders (*Salamandra*), are all contained within the one family Salamandridae the quibble in terms becomes apparent. However, in conclusion, I would suggest it would have been more had my original sentence included the section in italics: "There are only two species of salamanders in Europe that are likely to be available in this country, the spotted salamander (*Salamandra salamandra*) and the alpine salamander (*S. atra*)."

F.B.A.S. Standards

RECENTLY I overheard some aquarists discussing Mr. A. Boarder's articles on "The Goldfish and its Varieties", and one of the remarks made was "what a pity the Federation of British Aquatic Societies does not

produce standards for tropical fishes." They were quite surprised when I informed them that such Guides and Standards were available.

If any other of your readers wish to know more about them I would be pleased to send them a complete list of all Guides and Standards available, upon receipt of a stamped and addressed envelope.

J. A. HOWE,
19 Bodsworth Road, London, S.E.19.

New Coldwater Fishes Wanted

ON looking through Otto Schindler's *Guide to Freshwater Fish* I came across several European fishes which would seem suitable aquarium inmates, notably stromer, zeppe, schneider and moderiuschen, and yet, to the best of my knowledge, these species are unobtainable in Britain.

Why should this be so? Surely, if as seems likely, European aquarists keep them, it should be an easy matter for some enterprising British dealer to arrange for some to be imported from the continent via one of his opposite numbers over there. After all, it is not as if they were in some remote place as is the case with some of the tropic fish. I know that I, for one, would welcome the appearance of these fishes on the market.

T. PRIDDINGTON,
Ormskirk, Lancs.

The Garden Pond in Summer by ASTILBES

DURING the summer months the garden pond should be almost self-supporting. Provided that care has been taken with the water plants and the feeding of the fishes has been carried out with caution, all should be well. The water lilies should have grown well and can provide plenty of shade, not only for the fishes but also to help to keep the water free from green algae. I suppose this plant is the worry of many pondkeepers, especially those who have started a pond during the year. It is very difficult to make and stock a new pond without having a very green water once the sun gains power. Changing the water does not always help but if the pond has been recently planned it does give the water plants a chance to become established.

One of the most frequent causes of green water is the presence of leaks in the pond. This necessitates the frequent running in of fresh tap water. This encourages the formation of green algae very quickly. The remedy is to see to the repair of cracks early in the year. A pond that can stand through the summer with only an occasional top up with fresh water is more likely to remain clear than the pond which is repeatedly being given fresh doses of tap water. The amount of plants in the pond also has a strong bearing on the clarity of the water. A good crop of *Elodea canadensis* or *Laguncularia major* will do a lot towards keeping the water clear. Judicious feeding will also help. The presence of duckweed on the surface of a pond helps considerably to shade out excess of sunshine and it also provides food for the goldfish. Occasionally the duckweed will grow at such a rate that the whole surface of the water becomes completely covered. The fishes will like this condition but the pondkeeper will not, as it prevents him from seeing his stock.

Should the duckweed become too plentiful it can be removed off easily from a small pond and even removed without much trouble from a large pond. The method in the former case is to play a strong jet of water from a hose from one side to the other of the surface. It is possible in the manner to roll the duck weed into a mass that can be dragged out with a rake from the other side.

Keep a watch out for dragonflies, as these often visit the pond and lay their eggs there. Those of the long-bodied dragonfly will not be found easily but those of the short-bodied one can be seen as blobs of jelly on weeds in a shallow part of the pond. The larvae of the flies are dangerous to fry in a pond, as they are very voracious. They can seize and eat small fishes and are difficult to catch once they are present. Pond skaters, the spider-like creatures that skid about on the surface of the water, will do no harm. They will also serve little useful purpose. I have never seen a fish take any interest in them and make any attempt to eat one. I have also never seen a pond skater attack even the smallest fry.

The water louse is a good food for some fishes but they should be cleared from the fry tanks. They can attack and devour a sickly fish and I suspect that they would do the same with a resting fish which was inactive. Most of the water newts will be leaving the pond now as they will have finished brooding. Their tadpoles will remain in the pond until their fringe-like gills have become absorbed. They are now miniature newts and cannot remain in the water. The frogs and toads will also have left the pond although it is almost certain that at least one frog will remain in or around the pond for most of the year.

Water snails that may have been introduced into a pond may become too numerous. In such a case it is a good plan to catch as many as possible and crush them. They will then be eaten by the fishes in the pond. Green or golden trench are very fond of the snails. Any dead water lily flowers should be removed as soon as possible and also any dying leaves. They not only spoil the look of the pond but as they decay they can set up pollution in the water. Keep the lilies in check, as there is nothing much worse than to see a fish pond that is so overgrown with lily leaves that the water cannot be seen, never mind the fishes. Once a lily becomes too rampant the leaves are unable to find space on the surface of the water. They then grow up into the air and never look as well as when they lie nicely spread out. Other water plants may have made excessive growth and these should be pruned back to give plenty of swimming space for the fishes.



from AQUARISTS' SOCIETIES

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

THE death is reported from **Bradford and District A.S.**, of Mr. A. E. Thornley, who was one of the older members and last year was elected president. He had also served on the committee for a number of years during which time he held the office of Treasurer and his death is a great loss to the Society. The Society has recently enjoyed a talk for Dr. R. M. Ghahally and the results of the Open Table Show were as follows: Guppies (Non-S.G.B.S.): 1, P. Moorhouse; 2, K. Riding; 3, P. Radworth. Livebearers: 1, G. Holmes; 2, C. B. Wilson; 3, Mr. Collins. Barbies: 1, R. Marshall; 2, Mr. Hutchins; 3, Mr. Cranwick. Characins: 1, Mr. Walker; 2, Mr. Collins; 3, Mrs. Swanson. Carps and Minnows: 1, Mr. Walker; 2, R. Mitchell; 3, N. Booth. Anabantids: 1, Mrs. Clark; 2, Mrs. Swanson; 3, Mr. Colley. Fishes: 1 and 3, Mr. Buxton; 2, Mr. Whitlock. Goldfish: 1, D. Gorr; 2, Mr. Poynting; 3, P. Burley. Catfish and Loaches: 1, E. Lertz; 2, Mr. Hill; 3, Mr. Aron. Toothcarp: 1, Mr. Greenall; 2 and 3, Mr. Cranwick. A.O.V.: 1, Mr. Walker; 2, Mr. Hodgson; 3, Mr. Hill. Hydras—Tadpoles: 1, Mr. Williamson; 2, Mr. Moss; 3, Mr. Hodgson. Boulders—Live: 1, Mr. Burnside; 2, Mr. Moshay; 3, Mr. Whitlock. Coldwater: 1, Mrs. Norris; 2, L. Booth; 3, Mrs. Little. The Best Fish in the Show was a Silver Shark award by Mr. Walker of Ocean Society.

NEWS from the **Coventry Pool and Aquarium Society** includes a proposed visit to Kew Gardens and also their table show results which were as follows: A.V. Barb: 1, Mr. Prosser; 2, Mr. Grant; 3, Mr. Ransell. A.V. Livebearer: 1 and 3, Miss Barnard; 2, Mr. Grant. A.V. Coldwater Fish: 1 and 2, Mrs. Coatt; 3, Mr. Ransell.

AMONG the activities of the **Bethnal Green Aquatic Society** has been the annual social which was a success despite extremely bad weather. It has been decided to hold the annual show on Friday the 1st August to Saturday the 1st September. The secretary is Mr. A. W. Collins, 11, Arnesmith Road, Chipwell, Essex.

AN excellent display of aquaria was recently installed by the **Reading and District A.S.** by the Ocean Cinema where fifteen terrarium tanks, tropical coldwater and marine were on view to the public for a fortnight. The society has had talks by Mrs. Meadows and also Mr. Parsons of Farnborough. A visit has also been made to Basingstoke for a Three Counties Bottle Show league contest and this was narrowly won by Reading.

THE class winners at the second annual table show of the **Sheffield & District A.S.** were as follows: Guppies: 1, 2 and 3, D. Wells (Thores); 4, M. Hillen (Bradford); 5, C. Walker (Oxam); 6, E. White (Sheffield). A.O.V. Livebearers: 1, C. R. Wilson (Bradford); 2 and 3, J. G. Hudson (Sheffield). Characins: 1, G. R. Collins (Oxam); 2, B. Norris (Bradford); 3, G. Dyer (Notre & Derby). Goldfish: 1 and 3, A. A. Poynting (Sheffield); 2, L. Lewis (Burnley). Barbies: 1, M. Blacklow (Mansfield); 2, B. Marshall (Bradford); 3, B. Norris (Bradford). Egg-laying Tooth-

carp: 1, G. R. Wilson (Bradford); 2, B. Torrison (Sheffield); 3, W. Taaffe (Sheffield). A.O.V. Livebearers: 1, L. Lewis (Burnley); 2, J. Whitmore (Oxam); 3, R. C. Feala (Sheffield). Rabbits and Doves: 1, B. Neal (Sheffield); 2, J. Richardson (Mansfield); 3, D. Martin (Thores). Bivalves: 1, G. Holmes (Bradford); 2, J. Bower (Mansfield); 3, J. E. Shure (Oxam). A.O.V. Inland Labors: 1, G. Dyer (Notre & Derby); 2, J. Ostrake (Thores); 3, R. V. Dixon (Mansfield). Tadpoles: 1, N. Sanders (Thores); 2, B. White (Sheffield); 3, R. Smith (Sheffield). Best Fish in Show (Orange Chromis): 3, A. A. Poynting (Sheffield). The total points in each of the various classes were: R. Wilson, 1st pt.; W. Taaffe, 2nd pt.; J. Poynting, 3rd pt.

THE second annual show of the **Middlesbrough and District A.S.** was a huge success the attendance showing a marked increase over last year. There was also an excellent entry which resulted with over 200. Full details both for the results and the annual awards were: Furnished Aquarium: 1, W. Payer; 2, Mrs. S. Whitson; 3, D. Blackburn. Furnished Jar: 1, Mrs. S. Whitson; 2, B. Aberton; 3, A. Goodchild. Fishes: 1, B. Aberton; 2, A. Goodchild; 3, R. Sumner. A.O.V. Livebearers: 1, R. Aberton; 2, E. Rodgers; 3, A. Aron. Apple: 1, W. Payer; 2 and 3, J.

Bowyer. Dwarf Goldfish: 1, B. Lertz; 2, D. Poynting; 3, B. Aberton. A.O.V. Goldfish: 1, A. Rixon; 2, D. Raine; 3, B. Lertz. Guppies: 1, Mrs. R. Torrison; 2, Mrs. S. Whitson; 3, A. Robson. Swordtail or Platy: 1, L. Collins; 2, J. W. Dixon; 3, A. Aron. Molluscs: 1 and 2, D. Blackburn; 3, L. Collins. A.O.V. Livebearer: 1 and 2, R. Whitson; 3, B. Clark. Barbies: 1, B. Adams; 2, A. Goodchild; 3, J. Poynting. Barbies or Danis: 1, A. Aron; 2, H. Lutzler; 3, P. W. Dixon. Egg-Laying Toothcarp: 1, R. Goodson; 2, J. Sanders; 3, P. W. Dixon. Characins: 1, 2 and 3, D. Aron. Catfish or Loach: 1, A. Aron; 2, P. W. Dixon; 3, W. Dixon. A.V. Coldwater: 1 and 3, W. Croxson; 2, A. Aron. A.O.V. Egg-laying: 1, B. Clark; 2, Mrs. S. Whitson; 3, Mrs. S. Smith. Breeding Pair: 1, D. Aron; 2, A. Robson; 3, A. Goodchild. Breeding—Tadpoles: 1, B. Aberton; 2, A. Aron; 3, D. Lutzler. Breeding—Livebearers: 1, A. Robson; 2 and 3, W. Payer. Club Stand: 1, Poynting; 2 and 3, Middlesbrough. Schoolchildren's A.V. Coldwater or Tropical: 1 and 3, Miss K. Mason; 2, K. Suggs. Annual Awards: Best Fish in Show: Mr. S. Adams (Scarland) with a Tinted Barb. Best Barb: Mr. R. Adams; Best Catfish: Mr. A. Aron; Best Dwarf Goldfish: Mr. B. Lertz; Best Characin: Mr. D. Aron; Best Fighter: Mr. R. Aberton; Best Swordtail or Platy: Mr. L. Collins; Best Goldfish: Mr. E. Goodson; Best Apple: Mr. W. Payer; Best Breeding Pair: Mr. D. Aron; Best Furnished Aquarium: Mr. W. Payer; Best Catfish or Loach: Mr. A. Aron; Best Livebearers: Society Class: Mr. Robson; Best Molluscs: Mr. D. Blackburn; Best Guppy: Mrs. B. Torrison; Best Fish Shown by a Lady: Mrs. B. Torrison.

RECENT meetings of the **Weekend Aquarists Study Group** have included discussions on how often to change aquarium water, the control of algae and breeding livebearers. The syllabus for the year includes a number of outings to shows, breeding establishments and dealers.

THE results of the **Chelsea Aquarium Society Open Show** were as follows: A.V. Barb: 1, J. E. Cobden (Cattford); Wagtail Barb: 2, E. Arthur (Chelsea); Yellow Wagtail Barb: 3, D. V. Jones (Fleetwood); Wagtail Barb: A.V. Swordtail: 1, J. Kendall (Fleetwood); Red-eyed Red Swordtail: 2, J. Harper (Hendon); Red-eyed Red Swordtail: 3, J. E. Cobden (Cattford); Red-eyed Red Swordtail: A.V. Mollie: 1, D. Woodburn (Hendon); Yellow Mollie: 2, A. Nozley (Black Mollie); 3, J. E. Cobden (Cattford); Veilfin Mollie: A.V. Characins: 1, B. Cleveland (Riverside); Breeder: 2, B. Cleveland (Riverside); Silver Mollie: 3, Mrs. P. Rose (Chelsea); Floating Heart: A.V. Barb: 1, D. J. Woodward (Hendon); Checker Barb: 2, G. Fellowship (Cattford); Fairy Barb: 3, B. Elders (Tottenham); Tinfo Barb: A.V. Toothcarp: 1, B. Cleveland (Riverside); Juncusella Ferida: 3, A. Aron (Hendon); Aphocryptus garlandi: 3, H. White (Hendon); Pachygnathus playfordi: Dwarf Goldfish: 1, A. G. Jessop (Letch); Palumbochromis fasciatus: 2, K. Green (Hendon); Palumbochromis kribiaensis: 3, A. Babcock (Hendon); Palumbochromis kribiaensis: A.O.V. Goldfish: 1, H. Atterworth; Tilapia moombia: 2, J. Moorish (Chelsea); Gourami cichlid: 3, J. Towel (Kingston); Brown Arow: A.V. Fighter: 1, L. Taggart (Riverside); Red molly: 2, G. Fellowship (Vauxhall); Red molly: 3, J. E. Cobden (Cattford); Red molly: A.O.V. Livebearers: 1, J. Merrith (Chelsea); Thick-lip Gourami: 2, B. Mould (Hendon); Paradise Fish: 3, Mrs. J. Tucker (Chelsea); Linn. Gourami: 2, Mrs. W.C.M.M. and Rainbow: 1, D. W. Ellis (Kingston); Harlequin: 2, K. Reynolds; Pearl Danio: 3, R. D. Biggs (Riverside); Flying Barb: A.V. Tropical Catfish or Loach: 1, D. Biggs (Riverside); Pinnacled Catfish: 2, D. Biggs (Riverside); Claret Catfish: 3, Miss J. Stewart (Chelsea); Suckling Loach: A.V. Guppy: 1, 2 and 3, G. W. Buxton (Gold); Male Guppy: A.O.V. Tropical: 1, R. Chas-



The Aquarist's Badge

PRODUCED in response to numerous requests from readers, this attractive silver, red and blue submersible metal emblem for the aquarist can now be obtained at one price by all readers of *The Aquarist*. The design is pictured here (actual size). Two forms of the badge, one fitting the lapel button-hole and the other having a brooch-type fastening, are available.

To obtain your badge send a postal order for 2s. 6d. to *The Aquarist*, The Batts, Mill Lane, Brentford, Middlesex, and please specify which type of fitting you require.

lost Riverside, Scar; 2, D. G. D. Lucas (Wolverhampton); Butterfly Fish; 3, D. Rags (Wolverhampton); African Knifefish; Tropical Breedingfishes; 1, J. Hayes (Hendon); Red Breedingfish; 2, G. D. Forrest (Chelms); Marine Plant; 3, A. Nozley, Marigold Plant; General Breeding—Eggs; 1, C. A. Brown (Chelms); Aphrosynonid; 1, R. H. Atterworth, Pterygopoda; 1, R. W. Ellis (Kingston); Aphrosynonid; Common Goldenfish and A.V. Struettia (Wolverhampton); 1, 2 and 3, D. W. Ellis (Kingston); Best Fish in Show; Jordanella Boudier; 1, Cleveland (Riverside); Club attending largest number of points—Riverside (27 pts.).

The monthly table show results of the Leith A.C. were as follows: Egg-layers; 1, G. Wilson (White Cloud mirror); 2, J. Paterson (Blind Lion fish); 3, L. Wilson (Jewel fish) and H. Funnell (Corydoras Snowflake); Livebearers; 1, D. Wain (Female Vellid Guppy); 2, D. Hird (Male Vellid Guppy); 3, G. Wilson (Female Vellid Guppy); Fishart; 1, D. B. D. B. (Romanus tetra); 2, D. Johnston (Rocora sword); 3, G. White (Berlin sword); 4, J. H. (Goldfish Barb).

Some of the members went to the open table show of the Sunderland Aquarium Society and in spite of many competitors two second and two thirds were obtained. The club will also be competing in the open table show of the Kilmarnock Aquarist Society.

RECENT events at meetings of the North Warwickshire Aquarist Society have included a table show for Barbs, when Mr. J. H. Smith took 1st, 2nd and 3rd awards, these being judged by Mr. E. Wright. The Society has also had a talk and demonstration on breeding of swordfish by Mr. T. Latham, a member, who also spoke on the varied uses of plants, and the Club has also addressed a meeting. A table show will be held in the Club Hall.

The Society has presented six ravy chairs to the Birmingham Accident Hospital for use in the Children's Ward in addition to the 100, which were given to the Ward at Christmas.

Visitors are always welcome at the meetings which take place on the last Wednesday evening of each month, at Cooksey Lane, Kingsstanding, Birmingham.

At the June meeting of the Leeds and District A.S. the results of the table show were as follows: Livebearers; 1 and 2, Mr. J. Moss; 3, Mr. E. Wilkinson; Livebearers Breeders; 1 and 2, Mr. P. Bryson; 3, Mr. D. Lorch; members' problems were also dealt with during the evening. The date for this year is in December and the Annual Dinner is to be held in November. The home furnished aquarium competition is going ahead again this year and will be judged at the end of July by Mr. A. Bray and Mr. C. Skilford.

At the June meeting of the Bedford and District A.S. a discussion on Guppies was arranged several fish of this class were exhibited, discussions were each given judging cards and were used to point the fish. The cards were then compared with one done by the Chairman and the results were quite encouraging.

Two very successful meetings were held recently when the Tottenham and District A.S. had two inter-club table shows with Clapham A.S. Tottenham was one and the other was Clapham. These meetings proved so popular that arrangements are being made to hold similar shows. The Tottenham A.S. welcome new members and full details can be obtained from the Secretary, Miss P. Hovson, 26, St. George's Road, Edmonton, N.9.

At the May assembly of the Guest, Keen & Southfields Pond and Aquarium Society the main items were two table shows.

The one for G.K.S. members only was for Claret and the results were as follows: 1, Mr.

H. Fallow; 2, Mr. A. Ragnall; 3, Mr. T. Lorch; Best fish was a Blind Cave fish.

The other table show was an inter-society table show with Wolverhampton A.S. which was won by the visitors by 10 pts. to 8 pts. The results were—Barbs; 1 and 2, Mr. Denton (Wolverhampton); 3, Mr. J. Gant (G.K.S.); Livebearers; 1, Mr. Jordan (G.K.S.); 2 and 3, Mr. Williams (Wolverhampton); 4, Mr. Williams (Wolverhampton); 5, Mr. Hyde (G.K.S.); 6, Mr. Jordan (G.K.S.). The return contest at Wolverhampton was won by Wolverhampton Society, 10 pts. to 8 pts. making a total was for Wolverhampton Society by 20 pts. to 16 pts.

At a recent meeting of the Northampton and District Aquarist Society members heard a talk by Mr. J. Wright on his experiences with breeding Angel Fish. He also explained the use of the Society's microscope.

Monthly table show winners were: 1, H. Shadley; 2, G. Chadwick; 3, R. Webb; 4, John Snow; 1 and 2, M. Gurney; 3, R. Hodges.

At the Annual General Meeting of the Beshill and District Aquarist Society, it was decided that in the large majority of instances (some from Hastings) the society should compete in Hastings, and that the name should be changed to denote this. The title is now Hastings and Beshill Aquarist Society. The meeting place is the Foresters Hall, Wellington Square, Hastings, on the last Friday of each month.

Officers elected or re-elected for 1962/3 were as follows: Secretary, Mr. A. L. McCormack, 7 Cambridge Road, Beshill on Sea; Chairman, Mr. J. Rorer; Vice-Chairman, Mr. New; Treasurer, Mr. V. Down; Show Secretary, Mr. P. Morris; Committee: Misses, B. Duggan and P. Martin; FRAS Delegates: Mr. P. Smet; Press Officer, Mr. J. Brown.

At the last meeting of the Lancaster, Morecambe and District A.S. the members presented a visit from the Accrington Society and a number of excellent coloured slides of tropical and coldwater tanks taken at an Accrington show were shown. During the evening a table show of tropical fish was held and six varieties of fish compared. Mr. E. Hertz of Wyndesore judged and the results was a close win for Accrington by 18 points to 15 points. Best Fish of the Show award was given to a beautiful example of an Apistogramma rainieri displayed by an Accrington member.

At the Annual General Meeting of the Association of Yorkshire Aquarist Societies the following officials were elected: Mr. E. Winterburn (Bradford), Chairman; Mr. L. Gosnell, Vice-Chairman; Mr. D. Duffield, Hon. Treasurer and Mr. A. Singleton, Hon. Secretary. The treasurer reported that with the increased membership and a successful show, the financial position of the Association is in a happy state.

The second annual show was held at Tadcaster and proved once again to be a success, there being 207 entries, an increase on the one held last year. The A.Y.A.S. diploma for the best fish in show, was this year won by Mr. G. Holmes of Bradford. The general standard of fish was very good, and gave the judges Mr. Skipton and Mr. Drunford a very difficult job indeed.

The new Secretary of the A.Y.A.S. is Mr. A. Singleton, 28, Badale Avenue, Othaldwick, York.

An Inter-Club contest was held at the last Williston and District A.S. meeting. Classes were the pleist and opponent and were winners by 12 pts. to 8 pts. Sixteen assorted fish were bench by each club in an open contest, and the two first positions were taken by Williston with a Catfish (Mr. Walker) and Butterfly fish (Mr. Lucas). Mr. Maurice of Clifton filled the next five places and Mr. Arthur of Clifton the others. The judging was

performed by Mr. E. Riddell who congratulated both clubs on the quality of the fish touched. A very interesting lecture was given by Mr. Clumet on aquarium equipment to conclude an admirable evening. Williston are interested in promoting this kind of show contest and would welcome enquiries from any club. New members will be cordially welcomed, and the Hon. Sec. Mr. W. Halls, 48, Deanscroft Avenue, Kingsbury, N.W.9, welcomes enquiries.

At an inter-society table show Rugby A.S. were the winners at a three-cornered contest. The societies competing were Coventry, Atherstone and Rugby and the results were as follows: 1, Rugby, 431 pts.; 2, Atherstone, 311 pts.; 3, Coventry, 30 pts. A plaque was awarded for the best fish in the show to Mr. R. Denton by the Rugby Chairman, Mr. V. Robinson.

The Nottingham and District A.S. would like to exchange magazines with any other Club in the British Isles that is producing one. Any interested Society should contact Mr. T. W. Barth, Secretary, 47, Mountfield Drive, Beeston Park, Nottingham.

At the last meeting of the Dundee Aquarium Society the final table show for the Scott Trophy was held and P. N. Greening filled the first three places. The final placings for the trophy were: 1st equal P. N. Greening and A. Robertson, 13 points; 2nd equal, J. McGilvie and G. M. Gibson, 8 points. The open show of the Society was held recently but the results are not yet to hand.

SECRETARY CHANGES

Changes of secretaries and addresses have been reported from the following societies: Association of Yorkshire Aquarist Societies—Mr. A. Singleton, 28, Badale Avenue, Othaldwick, York; Bath A.S. (Mr. D. Lovgrove, 15, Marlford Street, Bath).

AQUARIST CALENDAR

7th-11th August: Portsmouth A.S. Open Show in Twyford Avenue Theatre, Stanbury, Portsmouth. Schedules from Mr. W. T. Ryder, 65, Commercial Road, Mill Lane, Portsmouth.

13th-15th August: North-Eastern Federation of A.S. Annual Show at the Exhibition Park, Newcastle-upon-Tyne. Schedules available directly from the Secretary, Mr. R. Francis, 39, Douglas Terrace, Newcastle-upon-Tyne.

21st-25th August: Midland Open Show, Fingley Hall, Birmingham. All enquiries to Mr. T. Edwards, 6, Ayle Terrace, Oley Street, Birmingham, 19.

24th-27th August: The North-Eastern Federation of A.S. Annual Show at the Exhibition Park, Newcastle-upon-Tyne. Schedules available directly from the Secretary, Mr. R. Francis, 39, Douglas Terrace, Newcastle-upon-Tyne.

31st August-1st September: Bedford Green A.S. Open Show. Schedules available from the Show Secretary, Mr. R. Frogley, 119, Grafton House, Globe Road, Luton, E.2.

1st August and 1st September: British Tropical Fish Club Open Show of Tropical Fish, Plants and Pseudo-Aquaria will be held at the Temple Grafton School, Victoria Street, Bristol, 1.

18-22nd September: Leeds and District A.S. Open Show to be held at the Trinity Church Hall, Leeds.

20th September: Kingston and District A.S. Inter-Club Open Table Show.

20th-21st October: British Aquarist's Festival, Belle Vue Zoological Gardens, Manchester. Schedules available from Hon. Show Secretary, Mr. Geo. W. Cooks, "Spring Grove", Fairfield, Bally, Yorks. Society secretaries are invited to send details of forthcoming exhibitions and shows for inclusion in this feature. Full details to help visitors wishing to attend these events should be given.



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

WHAT'S THIS?



IT'S ONE OF THE NEW WARDLEY MERCHANDISERS!

You'll be seeing more and more of them at the leading Aquatic suppliers from now on. Each one holds over 35 different Wardley foods and remedies. With Wardley's you've always had quality plus variety. Now, with the new Wardley Merchandisers, you get added convenience as well. Make a point of helping yourself from your local Wardley Merchandiser, you'll be a better Aquarist!

BETTER BUY WARDLEY'S. THE BETTER BUY

U.K. DISTRIBUTORS

T. F. H. PUBLICATIONS (LONDON) LTD., 59 STATION ROAD, REDHILL, SURREY

**The
"SILENTA DE LUXE"**



One of the most powerful pumps on the market. Internal filter prevents dust and impurities from entering aquaria. Built-in magnet giving tremendous power. No vibration; noiseless. Long flex with plug attached. Spare diaphragm. Six months written guarantee.

PRICE 55/- each

"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.

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. McINERNEY 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.

30-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 proteins.

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



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

OUTSIDE FILTERS

For fit all aquarium frames up to 1' wide.
"SLIM JEM". The slimmest outside filter on the market. A quality filter for only 12s. 6d.
"BLEAR KING". 3-Compartment filter. Separate compartments for glass wool and charcoal. Removable partitions plus a larger siphon stem for faster recirculation. Clap-proof covers, 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 keeps tanks up to and including 10 gallons sparkling clear. Price 75s. 6d.

TRAPS

4-WAY CONVERTIBLE TANK TRAP. The most versatile trap available. Can be used for breeding 1 or 2 livebearers, as a red trap for breeding egg-layers or as a self-cleaning (weekly) tank for 1 or 2 fishes. Price 28s. 6d.

Obtainable through your dealer or post free from

THE LIQUIFY COMPANY LTD. CHURCH STREET, DORKING, SURREY.

Author of *Exotic Fishkeeping*

MARSHALL'S AQUARIA

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

It is quite easy to get to Buckhurst Hill. By tube train on the Central Line there are minutes from the West End, and we are three minutes from Buckhurst Hill Station. Or by bus routes 20, 38s, 167 or Bald Faced King. Inconvenient walk from there. There is always someone in attendance at the Hatchery so you are helped at any time including week ends. Over 120 different species of fish for sale. Fifty varieties of plants available, selected 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'.

E. Radicans	each 10/-
Celoxanthum Sword plant	15/-
Broad Leaf Anemone	5/6
Cape Fear Spatterdock	5/6
Bakana Plants	5/6
Five Wisteria	2/-
Water Oxalis	2/-
Calceola	8/6
Anemone	4/-
Red Ludwigia Tonsils	4/-
Twisted Vallis	3/-
Red Stem Myriophyllum	4/-
Sagittaria Natrix	4/6
Five young Divosa	30/- and 40/-

No fish by rail during heat weather. 120 species for sale, a species of cichlid in stock.

We have a number of breeding pairs for sale. Large Angels, Cichlids, etc., and many other fish. All too large to list on list. Ring us for details.

PLANTS PLANTS PLANTS

We are now offering a wholesale supply of aquatic plants including the rarer species. Send for our wholesale list with S.A.S. please.

We are now booking dates for Club Visits.

Our 10/- parcel of 30 mixed plants 4 varieties is the finest on offer. Half parcels discontinued until May. Malaysian usually 3/- des. mixed usually 3/6 des.

Our Fish food is the finest obtainable and contains a very high proportion of the best liver and young bullheads heart. Best divers 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.F.F. (Newest Own Fish Food) is the best. Any of the Cichlids eat it greedily. A generous sample will be sent post free for 2/6. Try it and give your fish a real treat. Treats quantity 6/-.

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.

PLEASE NOTE

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

We are always prepared to give advice on all phases of fish keeping and typical breeding tanks set up for many different species of fish can be seen in our Hatchery. We are pleased to welcome Club visits, see previous adverb.

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

**SHREDDERS
SAGITTARIA (Giant)
and SHUBUNKINS**

Have you used Shredded White Worms or Tablets for your fish? You need not bother with Tablets (it can be dangerous and pollute the water in your tank).

Giant Sagittaria suitable for tropical, cold water or pond. Young plants 4/6 and 8/8—larger plants 1/3 and 1/4 each (average and packing, 8/3).

Shubunkins (Belant) type from Japan—winter. Send your enquiries S.A.E. P.S. Fish can be used by attachment.

The Shredders 10/6 Super Shredders 18/6—
Course Youth Shredders 18/6. All post free.

AQUATIC DEVELOPMENTS,
142-145 Boro Lane, Christchurch, Hants

**LETTY KREMNER
AQUARIUM & PET SHOP**

For all aquarium and Pond Plants, Fountains, Garden Ornaments and Plastic Ponds, Tropical Fish, Stands, Tanks, Aerator and all equipment. S.A.E. for 1962 List, which includes Water Lilies, and details of water depths.

Pets—ground floor, aquarium—upstairs.

Open all day Saturday. Good parking facilities.

13 KING EDWARDS BUILDINGS,
CHEETHAM HILL VILLAGE,
OPPOSITE WOOLWORTHS
MANCHESTER, 8.

TEL: CHEETHAM HILL 3246

**MIDLAND OPEN SHOW
AND TRADE EXHIBITION**

Bingley Hall—Birmingham
August 22nd-25th 1962

Tropical and Coldwater

Attractive Exhibits—Trade Stands

REFRESHMENTS, BAR AND COACH PARK

ADMISSION: Adults 1/6d. Children 5d.
WED. 7-10-10 p.m. THUR, FRI, 12-10 p.m. SAT. 10-9 a.m.



**Keep
Them
Healthy
on Coral**

USE
"CORAL"
AS
YOUR
BASIC FOOD

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

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

FORMULA 61

A FISH BOWL PRODUCT

A new British fish food—

scientifically blended

—suitable for all tropical

and coldwater fish

2s. 6d. per carton (post free)

or from any good Aquatic Dealer

THE FISH BOWL
LAURA STREET - SUNDERLAND

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
MOBBLEY NEAR KNUTSFORD
CHESHIRE
Phone Mobbsley 3272

I've Got Millions!

WORMS! FOODS! COMPOSTS! RESULTS!

EUGLENA	2/4—With 8 page instructional booklet
MICROWORMS	2/4—Complete with feeding powder
MICRO FOOD	2/4—Specially developed for Micro
GRINDALWORMS	2/4—Moisture W. Worms Easy to breed
GRINDALWORMS	2/4—Moisture culture in wooden boxes
GRINDAL FOOD	2/4—High protein content, Rapid growth
GRINDAL COMPOST	2/4—Finely ground with organic base
WHITE WORMS	2/4—With complete instructions
WHITE WORMS	2/4—Moisture culture in wooden boxes
WHITE WORM FOOD	2/4—Exclusive formula. No milky
WHITE WORM COMPOST	2/4—Composed for quicker breeding

Breeders' packs: five times 2/4 quantity for 7/4

Ask your dealer, or free delivery from

E. ARNOLD, 80, MONEGA 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 ROYER

Sprilledweg, 2

Putten (Gld.), Holland

NOW IN STOCK

"A Simple Pond for the Amateur"
1/6 (post free 1/8)

"The Guppy"
2/6 (post free 2/10)

"Keeping Reptiles and Amphibia"
2/6 (post free 2/10)

"Coldwater Fishkeeping"
2/6 (post free 2/10)

"Exotic Egg-Laying Fishes"
2/6 (post free 2/10)

"Fish Foods and Feeding"
4/6 (post free 4/11)

Obtainable from:

"The Aquarist"

The Butts, Half Acre, Brentford, Middlesex
OR FROM ALL THE LEADING PET STORES

MIDLAND OPEN SHOW

BINGLEY HALL—BIRMINGHAM

AUGUST 22nd - 25th, 1962

50 CLASSES—70 TROPHIES

Attractive Exhibits—Trade Stands
Tropical and Coldwater

ESQUIRIES AND SCHEDULES—

J. Edwards, 6 Amy Terrace, Osler St.,

Birmingham, 16

ENTRIES CLOSE LAST POST AUGUST 7th



BRITISH AQUARISTS' FESTIVAL

1962

20th and 21st October

BELLE VUE ZOOLOGICAL
GARDENS, MANCHESTER

Schedules which will cover all varieties
of Tropical and Coldwater Fish are
now available

Hon. Show Secretary:

GEO. W. COOKE,

"Spring Grove," Fieldhill, Batley, Yorks.

PLAQUES, SHIELDS, ETC.

WANTED

WANTED PRICE paid for back copies of pre-1960 English language

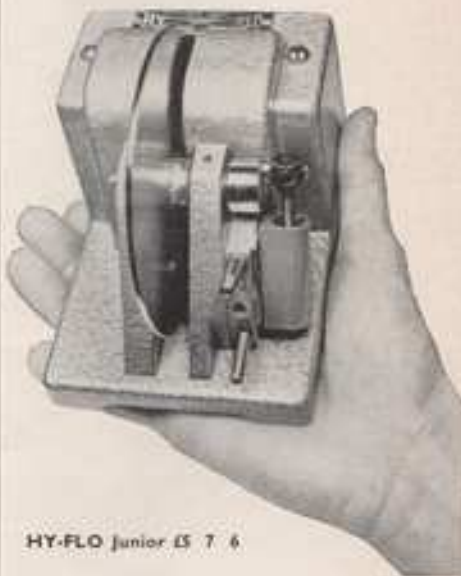
Without interference to the Radio and Television. Suitable for A.C. Supply only. Guaranteed for one year from the date of purchase.

Further information available upon request

MEDCALF BROTHERS LIMITED
CRANBORNE ROAD, POTTERS BAR, MIDDLESEX
Tel. Potters Bar 56925

80% more output INTRODUCING the new 'Super' Hy-Flo

pumps, models Junior, 'A' and 'B' finished gold
dimple enamel paint are now fitted with nylon double
acting pistons. SILENT and self-starting.



HY-FLO Junior £5 7 6

Prices unchanged are as follows:

HY-FLO 'SUPER' JUNIOR	£5 7s. 6d. each, Retail
MODEL 'A' 'SUPER'	£6 10s. 0d. each, Retail
MODEL 'B' 'SUPER'	£8 5s. 0d. each, Retail
MODEL 'C'	£12 10s. 0d. each, Retail

Without interference to the Radio and Television. Suitable for A.C. Supply only. Guaranteed for one year from the date of purchase.

Further information available upon request

MEDCALF BROTHERS LIMITED
CRANBORNE ROAD, POTTERS BAR, MIDDLESEX
Tel. Potters Bar 56925

PREPAID ADVERTISEMENTS

5¢ per word (12 words minimum) per number 2¢ extra

FOR SALE

GLAZED aquaria in all sizes including 36 x 15 x 12, 70, 61, 18 x 20 x 10, 17, 60, 24 x 12 x 12, 70, 61, tanks dispatched to any part of Britain, carriage extra. Plants, Accessories, Fish. Wright's, 16, Limes Road, London, N.4. Phone Archway 3625.

FERRY'S for Plants. 1st and 2nd Awards British Aquarists' Festival. Assorted selections Tropical or Gold 3s. 6d.; 7s. 6d., 25s. 6d. Val. Terra, Sagittaria, Najas, 6s. per dozen. Cryptocoryne Cordata 1s. 6d. to 2s. 6d.; Willisia 2s. 6d.; Beckfordia 1s.; Heterostigma 2s. 6d.; Seven assorted 6d.; Water Wacteria, Giant Hygrophila 2s. 6d. Fish 1s. All Advertised Accessories. C. R. Ferry, Professional Aquarist, 515, West Street, Crews.

WHITE WORMS, Gorgeous Colours and Instructions 2s. Baker, 41, Barnhill Avenue, Brighton.

PERFECT Specimens, Live Broad Blue Starfish 50p. per pair, Live Broad Blue Fish 15s. per pair; Madagascar Rainbows 4s. each, carrying 3s. 6d. C. R. Ferry, Professional Aquarist, 515, West Street, Crews.

INTERPET is coming!

FALLING ALL AQUARISTS. Call and see our large selection of Tropical and Coldwater fish, Plants in variety. We also stock all accessories at "The Aquarium," 192, Wellington Road, Northampton. Phone 34810.

EASY TERMS. Enjoy your hobby the easy way. Air Pumps, Heaters and Thermometers, Filters, Breeding Trays, Nets, Thermometers, Frames and Stands and all accessories. Send a stamp for the "A" Joseph Sazley Ltd., Church Hill, Northfield, Birmingham 31. Phone PRIORITY 4830.

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

AQUARIA Stands, Shades and Frames. Guaranteed square. 1 x 1 x 1 in. steel angle stands to take 2 tanks 18 1/2 x 12 x 36 in. high 35s. 24s. 17 x 36 in. high 35s. 30 1/2 x 12 x 36 in. high 35s. 30 1/2 x 12 x 36 in. high 35s. Frames 24 x 12 x 12 in. 20s., 24 x 12 x 12 in. 21s., 30 x 12 x 12 in. 23s., 36 x 12 x 12 in. 26s., 36 x 15 x 12 in. 28s., 48 x 12 x 12 in. 14 x 12 x 4 in. steel angle 40s., Stand 48 1/2 x 12 x 36 in. high 45s. All ever shades 24 x 12 in. Aluminium 18s., 30 x 12 in. 21s., 36 x 12 in. 25s., Shades sent only with Frames or Stands. Any size frame or stand made to order. Money back if not satisfied. Hockney Engineering, 31 and 33, Seemers Street, Leeds, 1, Tel. 25061.

I.G.M. GRINDALWORMS, disease and pest free live food, give your fish the high gloss of self-gloss.

AQUARIUM PLANTS at 5s. per dozen: Schizandra (pygmy plant-wool), Hygrophila, Ludwigia, Myriophyllum (green or purple-leaved), Sagittaria, dwarf (various or natural), Vallisneria (straight or reared). 50 species usually in stock from 2d. to 5s. each.

Try a generous 15s. cold or tropical plant parcel. Mr. Bamford of Mowbray writes me: "I have purchased several of these parcels and have always been extremely pleased with the contents which I consider to be unobtainable for value."

Add 1s. 6d. for postage, etc., for orders below 15s. please.

Fish Also Now Available, delivery by rail.

Send S.A.E. for detailed list (read or trade). Business by post only, to Frank Stone, 51, Newington Road, London, N.W.3.

WHO IS INTERPET?

AQUARIA FRAMES. For quality and accuracy buy direct from the manufacturer. 1 x 1 x 1 steel angle, 36 x 15 x 15, 26s., 28 x 12 x 12 34s., 30 x 15 x 15, 25s. 6d., 30 x 15 x 12, 21s., 30 x 12 x 12, 22s. 6d., 24 x 12 x 12, 25s. 6d., also 15 x 18, 15s. 6d., 18 x 12, 15s., from 1/2 x 1/2 in. angle. All painted and welded ground finish. Any size to order. Immediate despatch carriage paid. C.W.O. Money refunded if not satisfactory. For complete list, stands, shades, etc., S.A.E. I. E. Hamer, 72, Clarendon Street, Nottingham.

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

GUARANTEED Quality Plants—Hygrophila, Ludwigia, Horwort 6d. 5s. 6d. dozen. Heterostigma 6d. 7s. 6d. dozen. Indian Fern, Dwarf Amazon, Riccia, 1s. each. Wisteria, Giant Hygrophila, Dwarf Lily, 2s. Post 6d. all orders. 150 Varieties Tropical and Coldwater fish and other plants personal shoppers only. Kingsbury, 139, Claydon Road, Beckenham, Kent. Box 3718 Green Way, Woburn.

RUSTPROOFED Aquarium Frames, including bow and curve type. Ornamental Stands, Glass Covers and Equipment Manufacturers—Worley's Barns, Oswestry.

YENCHER TIME SWITCHES, Recommended, 14 Day Clock. 250V. 1 Amp. Ideal for automatic switching Aquarium Lighting, Car lights, Radios, etc. 25s. Post Paid. A. R. Hutchins, Dept. A. 6, Park Road, Buncly, Kent.

I.G.M. GRINDALWORMS, ideal live food for reptiles. Full of body building protein.

WHITE WORM (weight—1 oz., 4s.; 1/4 oz., 15s. Post Paid. Custom Orders welcomed. We produce the largest quantity of white worm in the Midlands. Culture Compost—mounting worm and egg mix, sterilized and ready for use. 5 B., 7s. 6d., post paid. BRITISH Pond Trading, V. J. and A. Dene and Son, "Devedon", Alverstoke Road, Fareway, via Alverstoke, Waverley, Surrey. Tel. No. WYBRO 2364.

GOOD selection Tropical Fish. Popular breeds, mostly tank bred. Kent prices. Greenwood, Alton Nurseries, Newson, Nr. Eickham, Essex.

WHY ARE INTERPET?

TROPICAL fish, fully quarantined, over 100 species offered at lowest prices. All aquarist requirements supplied. Personal shoppers collecting Fisheries, 62, Mayer Road, Wood Green, N.22.

GUARANTEED (thermostat, heater and thermometer, 25s. post paid. State heater warranty. Sorting Fisheries, 62, Mayer Road, N.22.

WHY INTERPET?

MY GOODNESS! Fish feel better on "Peacock" Better get "Peacock" 1s. 3d. and 2s., post paid. Cox, 51, Neomun Lane, Chesham.

WHEN IN STOCK visit Drayton's for tropical fish, plants and accessories. Prices reduction for the aquarist in the Petitioner. 18, Harnhill Road, Stoke-on-Trent.

FISH A GOOD BETTA BEST, food McLevy's fish food.

MOONWORT, 100 shoots 12s., 250 22s. 6d., 1,000 70s. (postage paid). Coopers, 7, New Road, Northbourne, Bournemouth.

WHY PAY MORE? Beautiful aquarium-grown tropical plants. Tawata Vallisneria, Ludwigia, Myriophyllum, Dwarf Amazon Swords, all 4s. 6d. doz., Wisteria 1s. 6d., Anagallis Umbellata and Dwarf Lily 1s. 6d. each. Post 6d. all orders please. 24, Cranford Road, Luton.

TROPICAL PLANTS. Special 5s. package, post paid. 21 plants, 4 species. Vallisneria, tongue and rooted, Eclia Densa, Ludwigia, Sagittaria, Myriophyllum. Anchor Fish Farm, Whyton Nurseries, 4, Whiston Lane, Andover, Hants.

BRITISH and BEST, McLevy's fish food.

THE GOLDWAYER SPECIALIST. Liveheads 17s.; Scaled Parrotfish in colour 5s., breeding pairs (3 fish), Extra Golden Kudd, tropical (colour 5s.—7s. 6d. each; Golden Oryz 30s. doz.; small Golden Vain 7s. 6d.; Golden Torch 10s.; Giant Torch 4s., 5s., Carr. 5s. The Fish Bowl, Laura Street, Sunderland. Write for free colour catalogue.

HYLO JUNIOR PUMP for sale. Almost brand new, perfect condition, £2 12s. 6d. Write, MDX, 5, Melton Road, Ealing, W.5.

FLYING FISH. Impressive wooden apparatus, 14 inches long. Hand carved by South Sea Islanders. Offer 1/69, Stanley Road, Tollymore, Middlesex.

COLD AND TROPICAL Aquarium Plants our speciality, over 50 varieties including many uncommon and rare types. Also available large selection of Pond Plants including named water lilies, lesser plants, rock garden plants, etc. TRADE SUPPLIED. Plants sent for free. J. Ellis, Hunting, Gwent. (Visitors by appointment only.)

CONTENTS of Tropical Fish House for sale as follows:—Aquariums: 1—40 x 15 x 15 in. (1 in.) plus glass, 12—24 x 12 x 12, 6—24 x 12 x 7, 1 custom stand. All fully rasped and with fixed glass tops, thermists, and heat lamps, also 1—60 x 18 x 18 and 6—24 x 12 x 12 frames, also water filter, pH meter—hardness test solutions. Tanks for tanks available. (120 the lot n.p.m.) will not split up. Box 1122, The Aquarist, The Barns, Brentford, Middx.

REISTOL SPUNBUNKINS, excellent 1962 11-12 in. pond-raised youngsters, £2 per 5. No rubbish sent. Can/carrage 7s. 6d. Mayfield Nurseries, Stanborough Road, Newcastle-on-Tyne.

THERE was a young lady from Cardiff Docks. Some fishers see all the rocks. To grow extra long fins she feeds them McLevy's. The original food in the Plastic Box.

PREPAID ADVERTISEMENTS continued on page 101

THE CONSTAT

Thermostat Type Q.K.
Outside Fitting

22/-

Also the Perkolator Sub-Gravel Filter Requires no pumps. 12- and 12 1/2 inch. 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



"PREMIER" BIOLOGICAL AQUARIUM FILTER

The most up-to-date method of Aquarium Filtration.

For 18" TANKS - 12/6
For 24" TANKS - 15/-

Other sizes available



"WINDMILL" BREEDING TRAPS

Beautifully Designed and Constructed

13/- each

"WINDMILL" AIR REJECTOR CLEANER

will work connected to any make of Aerator

10/- each



Uno Popular (load up to 300 watts) ..
Uno Inside Control (load up to 300 watts) ..
Uno Comet Top Control (load up to 300 watts) ..
Es Es Minor Inside Control ..
Es Es Sentinel with Neon outside control ..
T.T. Thermostat outside fitting ..
Constat Master Model J.L. Outside Fitting with Neon Indicator Load up to 1,000 watts ..
Uno Popular with Neon Indicator (load up to 300 watts) ..
Uno Outside Control (load up to 500 watts) ..

THERMOSTATS

	Price		Price
Uno Comet Top Control with Neon Indicator (load up to 300 watts) ..	10 0	Es Es Major Inside Control ..	17 6
Es Es Major Inside Control ..	15 0	Es Es Thermostat and Heater Combined outside control 100 watts and 150 watts ..	18 0
Es Es Thermostat and Heater Combined outside control 100 watts and 150 watts ..	15 0	Constat Model QK Outside fitting with Neon Indicator ..	£1 15 0
Constat Model QK Outside fitting with Neon Indicator ..	10 0	Froctker Outside Fitting with Neon Indicator ..	£1 2 0
Froctker Outside Fitting with Neon Indicator ..	26 6	Elephant ..	£1 16 0
Elephant ..	17 6	Es Es "Preset-matic" Combined heater and thermostat, 50, 100 and 150 watts ..	18 0
Es Es "Preset-matic" Combined heater and thermostat, 50, 100 and 150 watts ..	£1 13 0		£1 4 6
	12 6		
	18 0		

THERMOSTAT SPARE PARTS

Froctker Spare Neon Bulbs ..	3 9	Froctker Spare Fixing Plates ..	4 6
Uno Spare Thermostat Tubes ..	1 6	KT Thermostat Holder Fixing Bracket ..	2 0

AQUARIUM HEATERS

Uno Regal Heaters Guarantee one year, 25, 40, 60, 75, 100, 125, 150 watts ..	9 6	T.T. Heater Guarantee one year, 40, 60, 75, 100, 125, 150 watts ..	9 6
Es Es Standard Heaters, 25, 50, 75, 100 watts ..	7 6	Es Es Superb Heaters, 25, 50, 75, 100, 125, 150 watts ..	10 6
Es Es Flexible Heaters, 100 watts only ..	19 6		

HEATER HOLDERS

Windmill Heater Holder ..	1 6	Uno Uni-Clip Heavy Moulded Plastic ..	1 6
KT Heater Bracket ..	2 0	Spare Knob Suckers for Heater Holders ..	3

THERMOMETERS

Es Es Dumpty Thermometer ..	6 6	Floating Spirit Thermometer ..	2 6
S.F. Plastic Back Spirit Thermometer ..	3 6	Uno Blue Line Thermometer ..	4 6
Uno Silver Line Thermometer ..	5 0	Uno Perspex Back Mercury Thermometer ..	5 6
Uno Spirit Fish Tank Thermometer ..	5 0		

THERMOMETER SPARE PARTS

Es Es Dumpty Spare Section Rings ..	6	Spare Thermometer Sockers Knob Type ..	3
		Shank Type ..	3

Full catalogue containing many more items sent on application—charge 5/-

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

SPECIAL TROPICALS FOR JULY/AUGUST

KILLIFISHES

JORDANELLA FLORIDAE	5/- each
APLOCHEILUS DAYI	7/6 "
APLOCHEILUS LINEATUS	5/- "
APLOCHEILUS PANCHAX	7/6 "
EPIPLATYS CHAPERI	7/6 "
EPIPLATYS GRAHAMI	10/- "
EPIPLATYS SEXFASCIATUS	7/6 "
PACHYPANCHAX PLAYFAIRI	7/6 "
APHYOSEMEON AHLI	7/6 "
APHYOSEMEON ARNOLDI	6/- "
APHYOSEMEON AUSTRALE	8/6 "
APHYOSEMEON BIVITTATUM	8/6 "
APHYOSEMEON CALLURIUM	10/- "
APHYOSEMEON COGNATUM	10/- "
APHYOSEMEON GARDNERI	10/- "
APHYOSEMEON FILAMENTOSUM	10/- "
APHYOSEMEON SJOESTEDTI	12/6 "
NOTOBRANCHIUS GUNTHERI	10/- "
NOTOBRANCHIUS PALMQUISTI	17/6 "
NOTOBRANCHIUS RACHOVI	15/- "

DWARF CICHLIDS

APISTOGRAMMA RAMIREZI	7/6 each	—	7 for 40/-
GOLDEN RAMIREZI	37/6 each	—	5 for £7 10
APISTOGRAMMA REITZEGI	8/6 each	—	6 for 40/-
APISTOGRAMMA AGASSIZI	8/6 each	—	6 for 40/-
APISTOGRAMMA TAENIATUM	10/- each	—	5 for 40/-
NANNACARA ANOMOLA	7/6 each	—	6 for 37/6
PELMATOCHROMIS KRIBENSIS	8/6 each	—	6 for 40/-

KAISER TETRA
NEMATOSRYCON PALMERI
25/- each

CARDINAL TETRAS
Large Size
8/6 each — 6 for 40/-

DISCUS
HALF GROWN FISHES
Wild stock — £6 each

ANOSTOMUS ANOSTOMUS
17/6 each
(Full adults 25/- each)

NEON TETRAS
(LARGE)
2/6 each

GREEN SAILFIN MOLLY
Unsexed 5/- each
Pairs (Young) 12/6

WONDERFUL DISPLAY OF OUR FAMOUS STRAINS OF
VEILTAIL GUPPIES
ON VIEW TO CALLERS

PLEASE NOTE—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 2 miles from Birmingham, Midland "Red" Bus No. 120 from Bull Ring, Birmingham, passes the door, sign at "The Crown," Monkspath.
HOURS OF BUSINESS—Weekdays 10 a.m.—6 p.m. Sundays 12 a.m.—1.30 p.m. (Sunday Afternoons May-July Only)
CLOSED ALL DAY EVERY MONDAY
TERMS OF BUSINESS—Cash with order please. Fish sent by rail. Tropical telegrams order £5, insulated container and carriage 10/-, Cold water telegrams order £2 plus 10/- cart and carriage. Prices by post (minimum order 10/-) please add 1/6 post and packing.