

MAY 1979 50p

Practical fishkeeping

The new look MONTHLY for Aquarists

FREE
CONTEST
Win a £150 aquarium

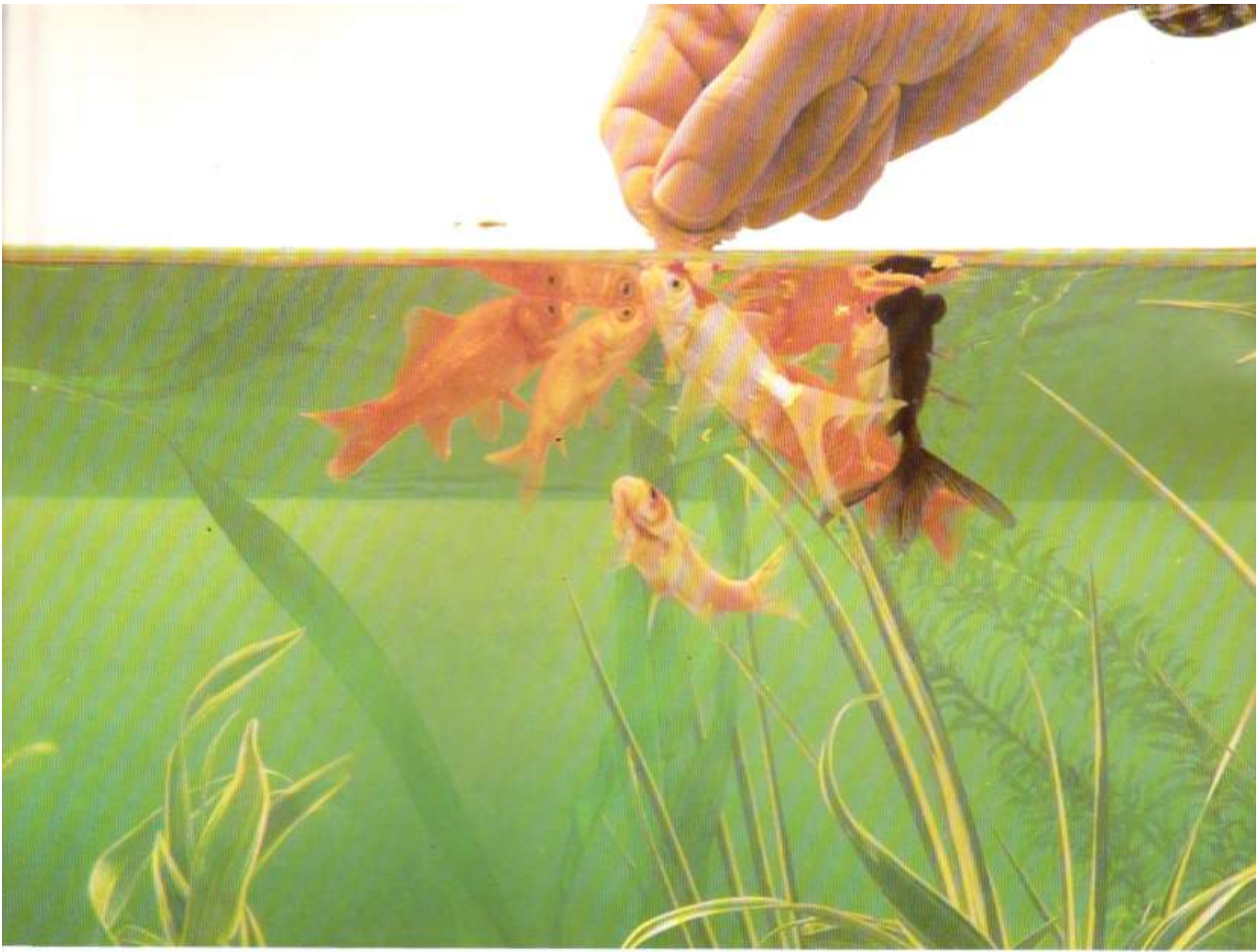


Marines-
How to keep them

*Radiant
Rainbow*



Discovering Koi
Spawning Mouthbrooders



Feed your goldfish TetraFin and you'll never use anything else

Over the years, goldfish have given more people pleasure than almost any other aquatic or outdoor pond fish.

And yet when it comes to food, goldfish are the poor relations.

Because they are hardy and uncomplaining, too many people ignore the quality of the food and settle for economy.

But, to give of their best, coldwater fish need just as many nutrients and vitamins as tropical fish.

TetraFin provides the answer.

Following years of study and trials, TetraFin has emerged as the ideal balanced coldwater fish diet – suited to both aquatic and outdoor fish.

Just one glance down the list of ingredients is enough to indicate how much nutrition is packed into every pinch.

Watch as the flakes settle in the water and see how eagerly your fish feed, and how easily they digest them.

Of course TetraFin does cost a little more. But the difference that you will see in the vitality, health and colour of your fish, not to mention increased life expectancy, is worth every penny you pay.

Tetra  **no one understands fish better.**



Practical fishkeeping

10

Win a £150 aquarium

Spot the Difference and enter our free competition.

14

Popular plants

A look at the best aquatic plants for your tank, how to grow them and how much they cost.



16

Starting a marine aquarium

Latest information on the PRACTICAL FISHKEEPING tank.

20

Aquatic queries

Six pages of expert advice to the problems readers send in.

27

Top Tank

News of a brand new contest sponsored by PRACTICAL FISHKEEPING and AQUARIAN.

28

Discovering Koi

Pond experts Roger Cleaver and Peter Bull explore the fascinating world of Koi carp.

31

Tank Talk

A look at the fishkeeping world with editor Norman Wright.

COVER PICTURE: The radiant rainbow colours of the Ramirez Dwarf Cichlid. Inset is an Electric Blue Damsel.

32

Mouthbrooders

How to spawn and raise these fascinating fish.



34

Old Whiskers!

A superb colour poster featuring Catfish and Loaches.

37

Plant Secrets

Plant expert David Shields explains how he grows his own aquatic plants in his garden.

38

Nutrition

Dr David Ford tells you how to keep your fish healthy.

40

Coldwater Scene

Dr Christopher Andrews puts the final touches to his pond after the hard winter and early spring.

43

On file

Technical writer Cliff Harrison reviews a new aquarium alarm system.

44

Letters

PRACTICAL FISHKEEPING readers have their say.

45 Scottish Festival

Report and full results of the first big festival of 1979.

46 Diary Dates

Shows . . . meetings . . . events. What's on in the fishkeeping world.

48

Subscription Form

Make sure of PRACTICAL FISHKEEPING regularly with a subscription for just £7 a year.

Editor: Norman Wright.

Editorial Manager: Bob Feetham.

Technical Writer: Cliff Harrison.

Art Editor: Dave Stirling.

Designer: Carolyn Harbour.

Advertising: Gerry Bellenger, 60 Church Crescent, London, N20. Tel: 01-368 8630.

Advertising Copy: Maureen Trowsdale, EMAP National Publications, Bretton Court, Bretton, Peterborough.

Publicity Manager: Peter Ward.

Classified Advertising: Beryl Smith, 41 Broadway, Peterborough, PE1 1RY. Tel: 0733-51456.

Editorial: Practical Fishkeeping, EMAP National Publications, Bretton Court, Bretton, Peterborough. Tel: 0733-264666.

Publicity/Circulation/Sales: EMAP National Publications, Bretton Court, Bretton, Peterborough. Tel: 0733-264666.

Publishers: EMAP National Publications Ltd. Printers: Worcestershire Web Offset, Droitwich, Worcestershire.

Postal

Subscriptions: Inland and overseas £7.00. Airmail rates on request.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Subscriptions Department, Park House, 117 Park Road, Peterborough, PE1 2TS. Telephone: Peterborough 0733-63100.

Give a the



your fish taste for good life

Keeping fish healthy is a serious business. And keeping them well fed is absolutely vital.

That's why so many aquarists insist on Phillips Fish Foods. They appreciate the research which goes into every product. Research which ensures that every ingredient is correctly balanced for the highest nutritional value.

But it doesn't end there. Our flaked foods for instance are made of the finest texture to ensure that your fish can easily absorb all the best ingredients which we put into them to keep them active and healthy.

Surprisingly, all this doesn't make Phillips Fish Foods more expensive. In fact the reverse is true. Because they're made right here in Britain, we incur no heavy import cost.

So although our quality is high, our prices aren't.

Who says the good life is expensive.

Phillips Fish Foods

Phillips Yeast Products Ltd, Park Royal Road, London NW10 7JX.

SHE SELLS SEA-SHELLS ON THE SEA-SHORE



**BUY THE CORAL ISLAND ADVERTISED IN LAST
MONTH'S ISSUE AND PERSONALLY SELECT YOUR
OWN SEA-SHELLS FOR ON-THE-SPOT CRUSHING**

Everything from Tiger Cowries to *Conus Gloriamaris*

OR

We can supply 5lbs wt bags of

"SeaShell"

The Ideal Base Layer for your Marine (or Malawi) Aquarium Undergravel Filterbed

"SeaShell" Crushed Shell Filtration Substrate—From Aquatic Wholesalers
and Retailers Throughout Britain.

WATERLIFE RESEARCH LTD



Specialist Books

from

WELLAND BOOK SERVICES



New!

AQUARIUM PLANTS

Niels Jacobsen
Blandford Colour Series

£3.95

Like its companion, *Aquarium Fishes in Colour*, this book is intended as an identification guide for aquarists. Some 200 species which can be bought and grown in the home aquarium are described and illustrated.



Marine Tropical Fish Identification Guide	£3.50
Freshwater Tropical Fish Identification Guide	£3.50
Marine Tropical Fish <i>Ken Denham</i>	£1.25
Tropical Fish <i>C J Harrison</i>	£1.25
Aquarium Fishes in Colour <i>J M Madson</i>	£3.25
Marine Tropical Fish in Colour <i>Braz Walker</i>	£3.25
Reptiles and Amphibians of Europe <i>W Hellmich</i>	£1.50
Reptiles and Amphibians in Colour <i>Hans Hvass</i>	£1.90
Tropical Fish in Colour <i>Braz Walker</i>	£2.75
Tropical Fish in the Aquarium <i>J M Lodewijks</i>	£2.50
Aquarium Fishes and Plants	
<i>A Schlotz and P Dahlstrom</i>	£4.50
Tropical Marine Aquarium <i>V B Hargreaves</i>	£7.50
Aquariums <i>Anthony Evans</i>	£0.95
Goldfish <i>Anthony Evans</i>	£0.95
Tropical Fish <i>Derek McInerney</i>	£0.95
Beginners Guide to Tropical Fish and Fish Tanks	£3.95
Encyclopaedia of Aquarium Fish <i>D J Coffey</i>	£6.75
Advanced Aquarist Guide <i>F N Ghadially</i>	£4.80
Aquarium Guide <i>Jim Kelly</i>	£4.80
Goldfish Guide <i>Y Matsui</i>	£4.80
Marine Aquarium Guide <i>Frank de Graaf</i>	£4.80
Aquarium handbook <i>Gunther Sterba</i>	£9.00
Anabantoids, Gouramis and Related Fishes	
<i>R J Goldstein</i>	£3.60
Beginning with Mbunas <i>H R Axelrod</i>	£1.30
Angelfish <i>Braz Walker</i>	£2.50
Aquarium, All About the <i>Earl Schneider</i>	£2.40
Aquarium Decorating and Planning <i>W Wigel</i>	£2.40
Aquarium Ecology <i>H Wachtel</i>	£2.40
Aquarium Plants <i>G Brunner</i>	£3.60
Aquatic Plants <i>K Rataj and T Horeman</i>	£12.10
Bettas, All About <i>W Mauras</i>	£3.00
Catfish <i>C W Emmens and H R Axelrod</i>	£1.80
Cichlids, All About <i>Braz Walker</i>	£1.80
Cichlids, Introduction to the <i>R J Goldstein</i>	£3.60
Cichlid Handbook <i>R J Goldstein</i>	£6.05
Discus <i>Gunter Keller</i>	£1.20

Discus, All About <i>H R Axelrod</i>	£3.00
Diseases of Aquarium Fishes <i>R J Goldstein</i>	£3.00
Ecology of Fishes <i>G V Nicholsky</i>	£8.50
Exotic Aquarium Fishes <i>W T Innes</i>	£3.00
Exotic Tropical Fishes (<i>Hardcover</i>)	£10.60
Exotic Tropical Fishes (<i>Looseleaf</i>)	£12.15
Exotic Tropical Fishes Supplement No 2	£0.85
Supplement No 23	£0.85
Fancy Guppies <i>C W Emmens and H R Axelrod</i>	£2.40
Fancy Swordtails <i>M Gordon and H R Axelrod</i>	£1.90
Genetics for the Aquarist <i>J Schroder</i>	£3.00
Guppies, All About <i>L F Whitney and P Hahnel</i>	£3.25
Guppy Handbook <i>C W Emmens</i>	£2.40
Goldfish, Starting Right With <i>Robert Gannon</i>	£0.85
Handbook of Tropical Aquarium Fishes	
—NEW EDITION—	£3.95
Keep and Breed Tropical Fish <i>C W Emmens</i>	£3.60
Koi For Home and garden <i>G Y Takeshita</i>	£1.80
Light in the Aquarium <i>R Kubler</i>	£2.40
Livebearing Aquarium Fishes <i>K Jacobs</i>	£7.50
Live Foods for the Aquarium <i>W Jocher</i>	£2.40
The Marine Aquarium <i>W Wickler</i>	£4.20
Marine Aquarium, Starting a <i>C S Barker</i>	£1.80
Marine Aquarium in Theory and Practice	
<i>C W Emmens</i>	£7.85
Marine Fish Diseases, All About	£1.80
Marine Hermit Crabs <i>P Giwojna</i>	£2.50
Marine Tropicals <i>W P Bracker and E L Fisher</i>	£3.60
Neon Gobies <i>P Colin</i>	£12.10
Nudibranchs <i>T E Thompson</i>	£3.00
Oscars <i>N Pronek</i>	£1.50
Photographs For Aquarists <i>H R Axelrod</i>	£1.80
The Piranha Book <i>G S Myers</i>	£1.80
Salt-Water Aquarium Fishes <i>H R Axelrod</i>	£6.05
Saltwater Tropical Fish in Your Home	
<i>G Campbell</i>	£4.25
Sea Anemones <i>U Erich Friese</i>	£4.80
Starfishes and Related Echinoderms <i>A M Clark</i>	£3.60
Sharks and Loaches <i>Braz Walker</i>	£4.20
Tropical Fish Breeding	£2.40
Tropical Fish, Dictionary of	£6.95
Tropical Fish, Encyclopaedia of—NEW EDITION	£7.85
Water Chemistry for Advanced Aquarists	£2.40
Water Plants Encyclopaedia <i>J Stodola</i>	£6.50
Frogs in the Aquarium <i>W Von Filek</i>	£2.40
Iguanas, All About <i>M F Roberts</i>	£1.20
Land Hermit Crabs, All About	£1.95
Lizards, All About <i>Robert Sprackland</i>	£1.80
The Complete Home Aquarium <i>Hans J Mayland</i>	£4.95
The Freshwater Aquarium <i>Henri Favre</i>	£3.95
Tropical Fish in Your Home <i>H R Axelrod</i>	£3.95

Please allow fourteen days for delivery.

BOOK TOKENS are accepted in full or part payment. Prices are subject to change without prior notice and all books are offered subject to stock availability.

TRADE AND EXPORT ENQUIRIES WELCOMED FOR ALL TITLES

POST AND PACKING CHARGES	
ORDER VALUE	P & P
Under £2.00	£0.25
£2.00-£4.00	£0.35
£4.00-£6.00	£0.50
£6.00-£10.00	£0.65
Over £10.00	£0.80

Send your order with remittance to

WELLAND BOOK SERVICES

PF, Manor House, 58 Main Street, Middleton,
MARKET HARBOROUGH, LE16 8YU.

Telephone: Rockingham (0536) 771225

SPOT THE DIFFERENCE

Practical fishkeeping

FUN FOR ALL THE FAMILY COMPETITION



WIN A COMPLETE TROPICAL SET-UP WORTH £150

TANK WITH HEATER/THERMOSTAT PUMP, LIGHTING UNIT, GRAVEL, PLANTS, ROCK AND FISH.

All you have to do is spot the ten differences between the two cartoons below. Mark the ten differences with a cross using a ballpoint pen, and then cut out the coupon, fill in your name and address and send to Practical Fishkeeping (Spot

the Difference, May), 117 Park Road, Peterborough PE1 2TS. Every correct entry will go into a hat and first one drawn out will be declared the winner.

IT'S EASY — IT'S FREE — IT'S FUN — ENTER NOW

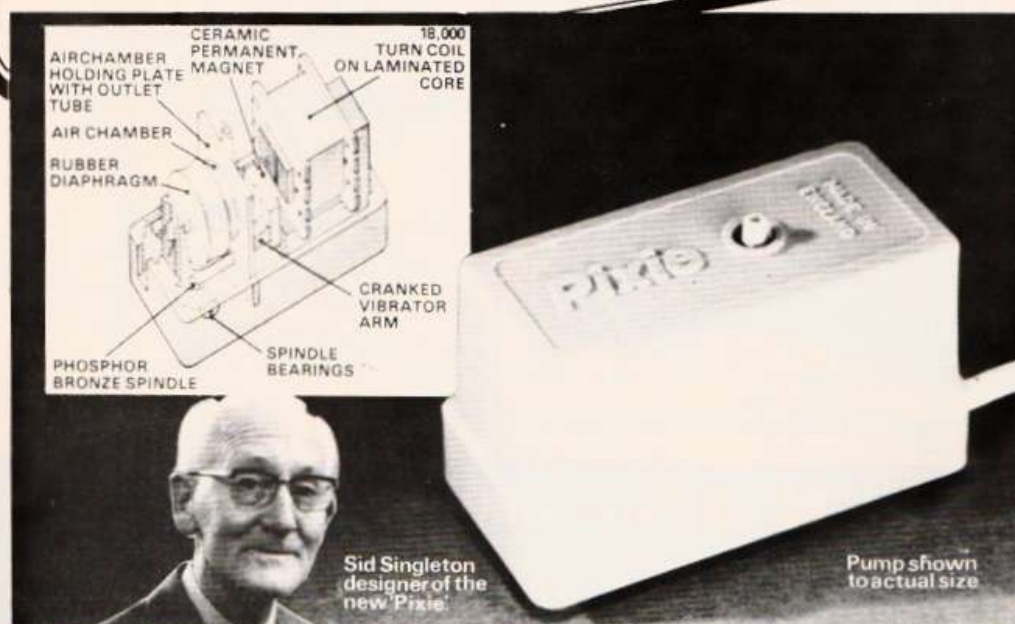


Send to:
Practical Fishkeeping (Spot the Difference May)
117 Park Road, Peterborough PE1 2TS.
Entries close on May 31st.

NAME.....
ADDRESS.....



A masterpiece of
micro engineering—designed and
manufactured in Britain.



Sid Singleton
designer of the
new 'Pixie'

Pump shown
to actual size

'Pixie' The new aquarium pump— quiet—powerful—economical.

The first vibrating-magnet aquarium pump made in Britain. It is designed by Sid Singleton, the creator of the Presetmatic, the Controlomatic and other quality aquarium heaters.

The "Pixie" is based on an entirely new concept. The vibrating arm is far more compact than in normal air pumps. In fact, it is the smallest vibrating-magnet aquarium pump in the world!

The internal design of the pump is so precise and simple that, by removing the four cover locking screws, all the working parts will slide out. They can

then be re-assembled in less than one minute - it's as simple as "Lego". There are no internal nuts or screws to set or adjust to get the correct air pressure. All working parts are made of tough, lasting materials. At the heart of the pump is the magnet coil which contains 18,000 turns of copper wire, two thousandths of an inch in diameter.

Every pump will automatically deliver the same amount of air - sufficient for the aeration requirements of two 3ft. aquaria.

Specifications:

Size	3 1/2" long x 1 1/2" wide x 1 1/4" high
Weight	Only 6 ozs. (170g)
Power	The "Pixie" builds up a back pressure of 2 PSI which means that it will operate air stones effectively up to a depth of 4ft. It will pump one litre of air per minute at a depth of 18".
Quiet	The new design concept ensures that the "Pixie" is exceptionally quiet - "as quiet as a cat's purr"!!
Economical	The normal retail price (inc. VAT) is £3.79. It's the compact design that allows such a low price on a precision engineered pump. Running costs are unbelievably low. The "Pixie" uses half a unit of electricity per week when running non-stop. At current electricity prices that is 1 1/2p per week!

The 'Pixie' from
 **Armitages**

Armitage Bros. Limited, Colwick, Nottingham.
NG4 2BA Tel: 0602-241031 Telex: 377921 ARMBRO G.

PIC-A-PET Ltd

DEPT. P.F. MAIL ORDER
38 ILFORD LANE, ILFORD, ESSEX
Telephone: 01-478 2619

**MARINE—TROPICAL—COLDWATER
FISH AND EQUIPMENT**

CREDIT TERMS
AVAILABLE

PERSONAL CALLERS
WELCOMED

Open 9 am—5.30 pm Monday—Saturday

NEW



pH METER

TO TEST THE ACID OR
ALKALINE CONTENT OF
YOUR WATER & PRESERVE
THE HEALTH OF YOUR
FISH & PLANTS

★ ★ ★

**NO BATTERIES
REQUIRED**

★ ★ ★

A self-contained complete
instrument

Nothing else required

★ ★ ★

pH Meter can also be used
for Soils
Plants
Gardens
Vegetables
Swimming pools
Plant effluent
Tap water
Ponds

**ONLY
£4.97**

Post paid
complete with
instructions

★ ★ ★

**N.B.—NOT SUITABLE
FOR MARINE SOLUTIONS**

TRADE
ENQUIRIES
WELCOMED

COMPLETE
WITH
INSTRUCTIONS
FOR THE
AQUARIST

*Now it takes just over
60 seconds to measure
your pH over and
over again!*

WHY TRAVEL MILES AND PAY MORE?

*Use our Mail Order service
Buy cheaper through the
post*

Just a sample of the 1500 items in our catalogue:

Tetramin Staple (Breeder Tin) rrp £1.30 Our price £1.27
Rena 301 Air Pump rrp £6.07 Our price £5.47
Interpet Hi Duty Heater rrp £3.67 Our price £3.31
TMC Marine Cure rrp 89p Our price 81p
Turbino Power Filter 500 L rrp £51.98 Our price £46.79
3 oz Dow Corning Sealer rrp £1.65 Our price £1.49
UNO Heater/Stat 150 watts rrp £6.00 Our price £5.40

Most orders only 15p postage per item, max. £1.00.
Packing free!

Catalogue price 50p, refunded on first order over £5.00.

MAIL ORDER SPECIAL

EHEIM 2018/386 POWER FILTER

only

£31.50

Normal Price
over
£47.50



**LIMITED
SUPPLY**







Marine
or
Tropical

including postage

Rotary pump type 1018 240w
Filter volume 2 litres
Litre output (approx 1/H) 180
Power consumption (app) 22w
For tank sizes up to 200 litres
Dimensions 160mm dia. by 370mm

All goods fully guaranteed

MAIL ORDER SPECIAL ★

- AQUARIUM PROTECTION 
- ACCURATE 
- EASY READ-OUT 
- SELF ADHESIVE 
- EXTERNAL FIXING 
- NO MAINTENANCE 



**Only
75p
WITH
SAE**

Just send
stamped
addressed
envelope
with order
enclosing
75p
(not cash)

**Digital Readout
Thermometers!**

74°

I enclose my cheque/postal order

No.....Barclaycard / Access

Name.....

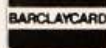
Address.....

POSTCODE

Signature..... Total Remittance £.....

Please send me (tick)

301 POWER FILTER	PH METER	THER- MOMETER	MAIL ORDER CATALOGUE
------------------------	-------------	------------------	-------------------------



Popular plants

A guide to the common aquatic species and how to keep them—by Clive Nash

CLIVE Nash is a keen tropical fishkeeper with a current special interest in catfish. But he is also keen on growing plants especially the more popular species which he keeps in his community tanks. Clive (26) is a reporter with *Angling Times*. His interest in keeping fish sprung from his interest in catching them! A native of South Wales, Clive now lives in Peterborough.

THE main plant in any aquarium needs to be a real showpiece. Something the eye can focus on and the rest of the tank decoration can be built around.

The perfect choice for this centrepiece is the Amazon Sword Plant. Cheap to buy—around 30p for a good specimen—and easy to grow, the Sword Plant has a lot to recommend it.

The leaves are long and broad, growing in circles around the stem—rather like a loose leaved cabbage.

And a healthy, strong-growing plant can soon begin to resemble a cabbage itself with a profusion of large, attractive leaves.

In fact, the Amazon grows so well that it can become too much of a showpiece in a

small tank, say under three feet. But don't worry if you haven't yet graduated into the larger tanks available.

There is a variety that grows to only eight or nine inches in height—the original plant, *Echinodorus bleheri*, can grow to 18 inches or more. This is *Echinodorus amazonicus*.

The smaller plant is called the small-leaved Amazon Sword, because the leaves are shorter and narrower.

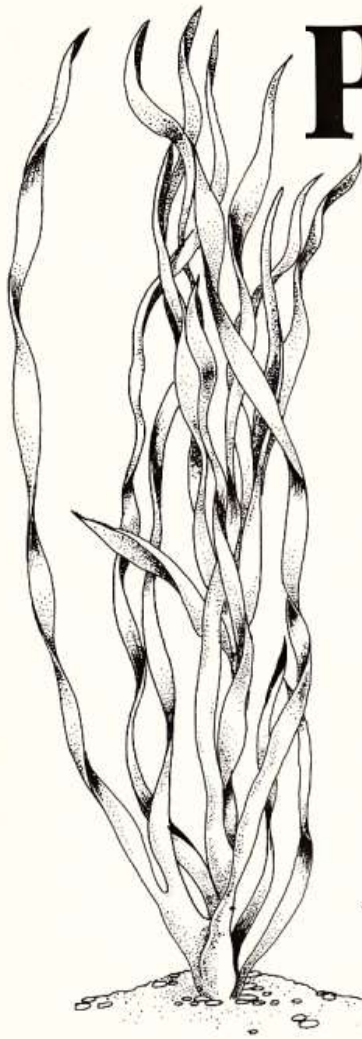
Both types propagate by runners, but don't expect new plants to grow if you keep moving the parents about. They like a settled existence and can take months to settle down in a tank.

The conditions that both varieties demand are very similar—and easy to produce.

The water shouldn't be too hard, with a temperature between 68-74 degrees Fahrenheit. Planting medium isn't too important—ordinary gravel is perfect—but the plants do need a fair amount of light.

Ten hours a day is recommended, though the small-leaved variety will do well with slightly less.

When your plants start to propagate, and they do that by sending out runners which



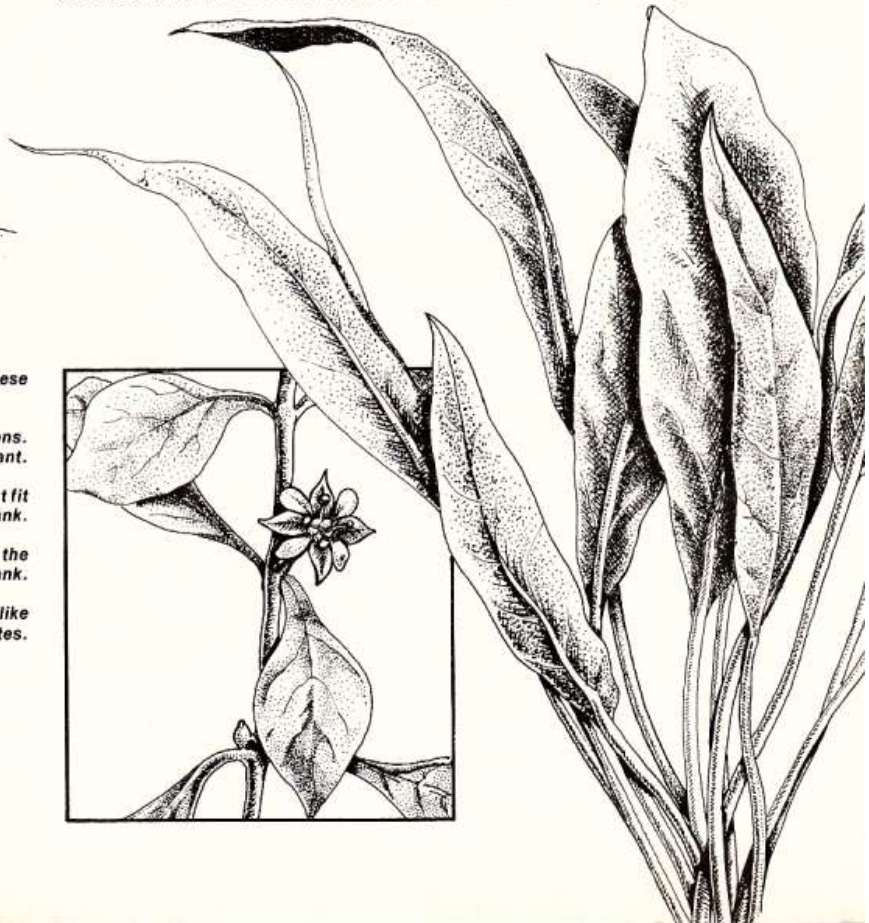
Above: *Vallisneria tortissima*—one of these excellent aquarium varieties.

First right: The flower of *Ludwigia repens*. This is a beautiful decorative plant.

Second right: The Amazon Sword—a plant fit to be the centrepiece of any tank.

Third right: Water Wisteria—perfect for the back and sides of your tank.

Far right: *Cabomba caroliniana*—fan-like whorls from the Eastern United States.



produce small plantlets that need anchoring down in the gravel, you will find careful pruning is needed to prevent them taking over your tank.

A smaller variety, the Dwarf Amazon Sword (*Echinodorus quadricostatus*), grows only a few inches in height—but it soon spreads by runners to form a lush, light-green carpet.

This makes it especially useful as a foreground plant, though it needs plenty of light for strong growth—around ten to 12 hours a day.

The Dwarf costs around 20p and is best planted in little clumps.

Some of the best background plants available are members of the Vallisneria family. These long, grass-like plants spread on runners to form a living "curtain". In fact, they grow so well that without careful and regular pruning of the runners, they can choke up the floor of the tank.

The largest member of the family, found in the Philippines, grows to over six feet, but several smaller members are far more suited to the home aquarium. Most popular of these is *Vallisneria spiralis*, which occurs naturally throughout the tropical, sub-tropical and southern European zones.

Water conditions and planting medium aren't critical, though the plant does like plenty of light for the best growth.

Vallisneria torta is another form of the plant, but with twisted leaves that have a very decorative effect and give a marked contrast to the straight form.

Both can grow to a foot or more in length, though their size is usually smaller in the home aquarium.

They will not stand temperatures down to the low 60's but grow well at the normal community tank setting of around 76 degrees Fahrenheit. They cost around 12p each.

A very similar plant to *Vallisneria*, but a smaller species suitable for planting in the foreground of a tank is *Sagittaria subulata*.

Found in the eastern states of North America, this Dwarf *Sagittaria* grows only a few inches high. And its habit of sending out plantlets on runners can soon cover the foreground of a tank with a lush growth almost like a lawn.

It can withstand quite hard water, but needs plenty of light—12 hours a day for the best growth. Water temperature isn't critical, and the community tank level of 76 degrees Fahrenheit suits it well enough.

Larger varieties are available, and the same conditions suit them too. *Sagittaria* costs around 15p each.

One of the prettiest plants available, and probably the easiest to cultivate, is Giant *Hygrophila* (*Hygrophila polysperma*), from India.

The main stem branches off into dozens of side shoots covered with pairs of beautiful, thin-bladed, pale green leaves.

Propagation is simple. Just carefully remove one of the larger side shoots and push it gently into the gravel. Dense bushy growth can be achieved by pinching out the main shoot so all the plant's energy is diverted to the lower shoots.

Hygrophila is fairly indifferent to water hardness and alkalinity, though it does love plenty of light—around 12 hours a day.

It is best planted in bunches, which soon provide a dense growth to shelter fry and shy fishes.

It withstands temperatures anywhere from the middle fifties up to around 86 degrees Fahrenheit. Shoots cost around 15p.

Another plant that is perfect for the back and sides of the tank is Water *Wisteria* (*Synema triflorum*), from Asia.

The fern-like plant flourishes in soft to medium-hard water at anywhere from 64-84 degrees Fahrenheit. It likes fairly subdued lighting, around eight hours a day, and normal aquarium gravel is a perfect planting medium.

The greatest attraction of this plant, apart from its lush green leaves, is that even the smallest fragment of stem—even a single leaf—will form a whole new plant.

Wisteria costs around 15p a shoot.

Another strikingly beautiful plant is *Cabomba* or *Fanwort* (*Cabomba caroliniana*), another aquarium import from the eastern part of North America.

Large, fan-like whorls form along the delicate stem, which can grow several feet in length. Propagation is by side shoots which can be carefully removed and pushed into the gravel. Or if you want a dense, bushy growth, nip off the tip of the main stalk so the plants strength is concentrated on the side shoots.

Cabomba prefer old, not too hard water and plenty of light—at least 12 hours a day. But avoid direct sunlight and excessive algae growth, which can damage the delicate plants.

It does best in a water temperature in the high 60's or low 70's Fahrenheit. The cost is about 12p a shoot.

The Water Milfoil (*Myriophyllum*) is very similar to *Cabomba*, but with tighter, darker green whorls.

The family contains around 40 different varieties found everywhere from tropical to temperate zones. Many of these varieties are suited to the aquarium, though they are very delicate plants.

Despite the little extra care that the Milfoil demands, it is a very attractive plant, especially at the back, sides and corners of the tank.

Strong light is needed for healthy growth, around 12 hours a day, and sand is a better medium than gravel. Milfoil also does better in deep tanks, which allow it to produce its full potential with side shoots forming a dense growth.

Propagation, like *Cabomba*, is by removing side shoots.

There is also a red variety, from Mexico and America's southern states. Water temperature for all varieties sold in Britain is not critical, with good growth at normal tropical tank temperatures. Milfoil shoots cost 12-15p.

A plant that adds colour to a tank is Red *Ludwigia* (*Ludwigia repens*). Coming from the southern states of North America, it flourishes equally well in tropical or unheated aquaria.

The upper surface of the short, wide leaf is a rich green, while the lower surface is coloured red-brown to purple. Water conditions are unimportant, though the plant likes a reasonable amount of light, around eight to ten hours a day. Propagation is by stem cuttings and this attractive plant costs around 15p.



PRACTICAL FISHKEEPING



WE started the *PRACTICAL FISHKEEPING* marine tank off with three common fish just to make sure that the system was working properly and would sustain fish life properly.

Now after a couple of months, with everything going well, we have decided to add more fish to bring our stocking level up and to add a couple of anemones for our Clown Fish.

We chose our fish carefully to find species that would live peacefully together.

All our fish—with the exception of the Fire Clown—featured in colour last month—are pictured overpage.

We are following the time honoured rule of stocking one inch of fish per four gallons of water for the first year or so.

After that we can increase the number of fish to one inch per two gallons.

Adding new fish can sometimes pose problems. The Domino Damsel in our tank is fairly aggressive and most are pretty territorial.

To minimise any quarrelling when we added new fish we started by switching off all lighting.

As with all fish stocking the plastic bags containing the new fish were floated in the tank to equalise the temperature for about 30 minutes.

Then we added small amounts of tank water to the bag gradually over the next 20 minutes or so.

Finally immediately after releasing the new fish we moved around the rock work and corals to disturb original territory.

Feed the fish at this point so that they are too busy eating to notice the newcomers!

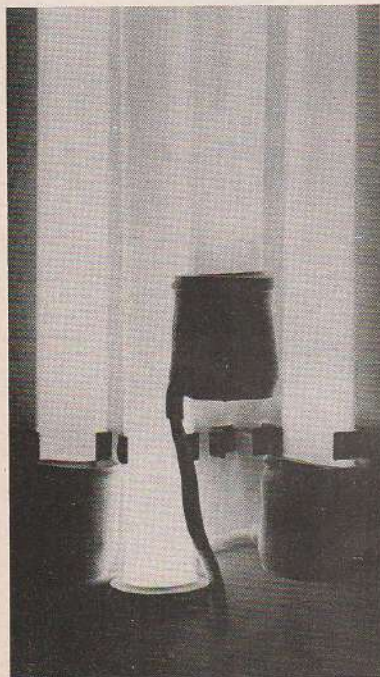
We left the lights off overnight and switched them on the following day.

There was little trouble and the new fish began feeding fairly soon.

When you introduce anemones you should follow the same plastic bag process of equalising temperature and mixing water.

Place the anemone where you can see it well. Our Clowns were soon plunging among their tentacles.

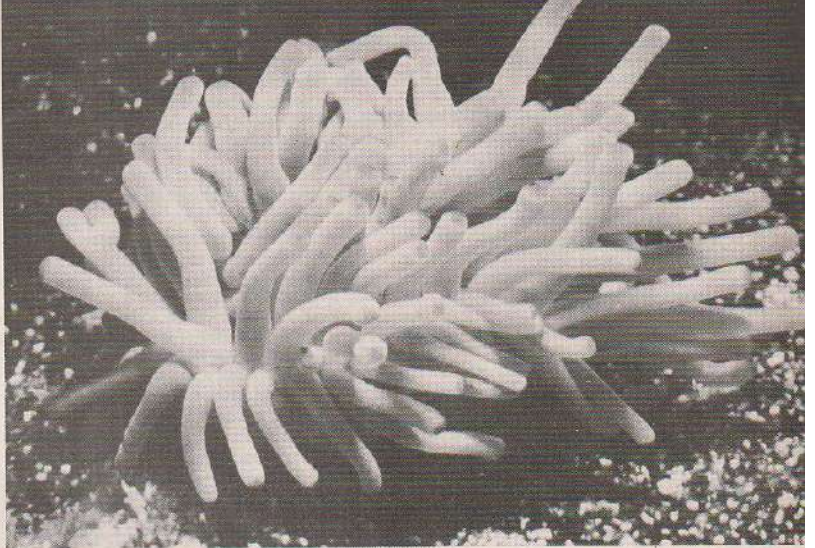
Right: The anemone—for Clown Fish.



Increase your lighting for invertebrates—we added two more 3ft fluorescent tubes.

Starting a Marine Aquarium

Part three of our beginner's guide—
By Norman Wright and Clive Nicholls.



Siphoning for a partial water change—hoover the debris from the filter bed.

Feeding the fish has posed few problems although sometimes fish can be notoriously difficult to tempt. Luckily our fish have been easy to feed.

Variety of food seems to suit the fish. We feed Aquarian Marine Flake food plus several types of Gamma frozen food.

Brine shrimp, mussel and razor meat are all equally popular with the fish. For the anemones try whole shrimps.

The Black Clown feeds his anemone with mussel!

If your anemones are filter feeders use a liquid food added to the water.

One important step to take before introducing anemones is to make sure your lighting is adequate.

They do need a great deal of light and unless you give them enough they will die.

We started off with two three foot fluorescent tubes—one Gro-Lux and one white light tube.

Now we have stepped this up by adding another two white tubes.

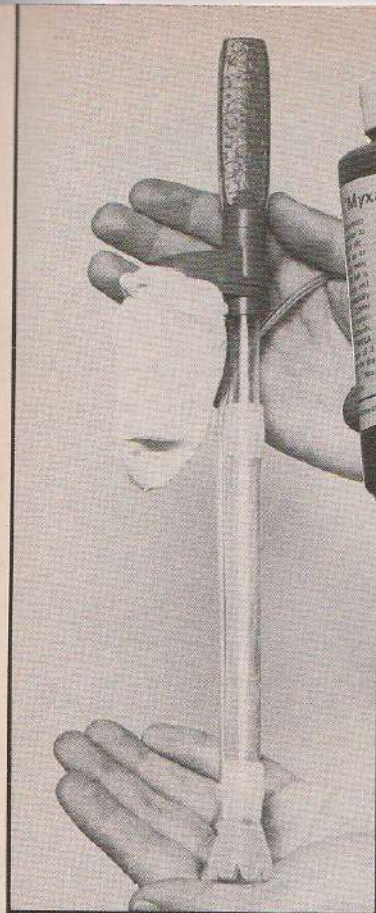
As well as the tubes we also had to buy another lighting starter and control unit.

When your marine system is in action and the fish are thriving and feeding, it is obviously important to keep an eye on the water chemistry to make sure everything stays that way.

Do nitrite and pH tests weekly. Always use separate test tubes for the tests and never dip the tubes into the tank water. Use a different clean container.

You can keep the pH up to a certain extent by using a pH buffer once or twice a week.

But you will need to introduce fresh water every few months to make sure the aquarium is in top



Suction pump for cleaning the tank of surplus food and debris.

condition.

Do not change more than a third of the water at one time.

Mix up a pack of sea salt and add the trace elements. Then you must leave it for two days with strong aeration to remove the chlorine.

Use a plastic dustbin for storage—a white or grey one, not a brightly coloured version as the dyes can be poisonous.

Heat the water to the correct temperature just before you are ready to make the partial water change.

A water change is a good time to remove sediment from your tank. Stir up the oolitic sand and a grey cloud of debris should appear. Eventually it should settle near the front of the tank.

As you siphon out the water "hoover" this up with the siphon tube.

Incidentally you can use any plastic tubing for siphoning. However, we bought a siphon for a couple of pounds from a home brew shop which has a special pump to start off the siphoning action.

It also has a fairly wide bored tube which is also stiffened to make it easy to control.

When you have removed the water either siphon the new water in or pour it in gently to top up the tank.

Each feeding time we have been careful to remove any uneaten food. To do this use a tank vacuum cleaner—a simple device which connects to one of your airlines and sucks up the waste into a small bag which can then be removed and washed out.

And part of the regular maintenance should be to use a vitamin additive.

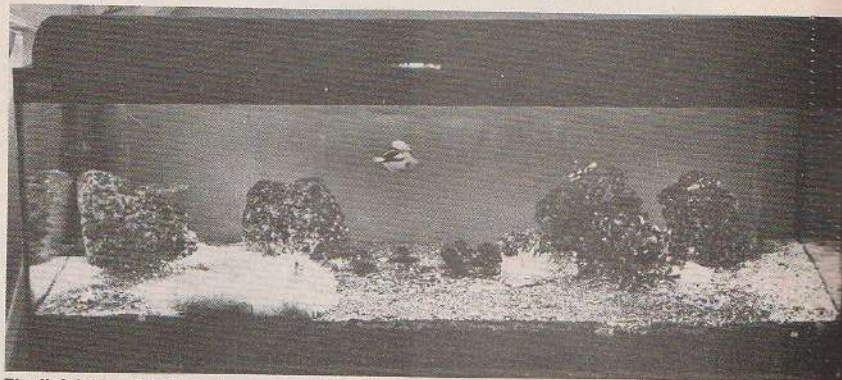
PRACTICAL FISHKEEPING



The three chemicals we used in our aquarium.



Float the new fish in the tank in its plastic bag to equalise temperature.



The finished tank with rocks, corals, fish and anemones.



An airstone for keeping high oxygen content is essential.



A selection of foods. Flake in the Aquarion tin and Gamma frozen.

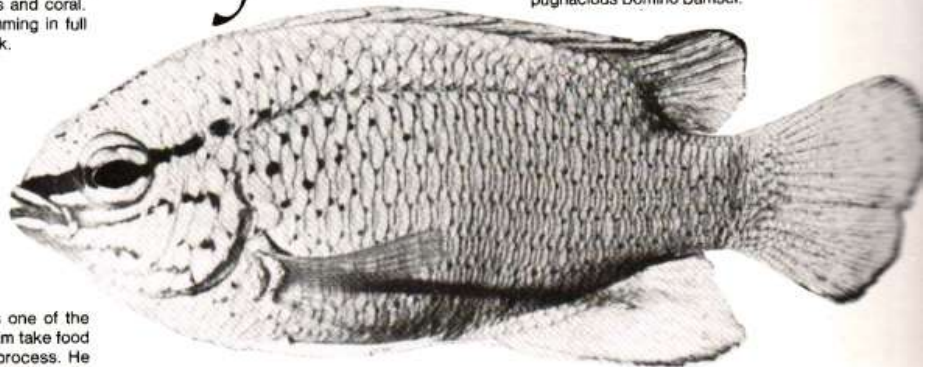
Starting a Marine Aquarium

Continued from previous page

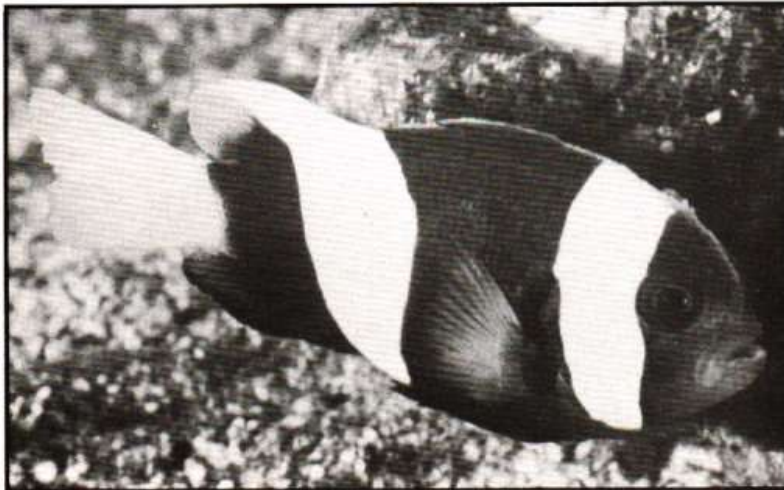


Above:
REGAL is the best word to describe the Regal Tang. It's beautiful blue body and the superb black marking make this species justifiably popular among marine aquarists. Ours can be shy at times and has his hiding place behind rocks and coral. But he spends most of his time swimming in full view—a magnificent addition to the tank.

The fish



Below:
THE Sebae Clown or Black Clown is one of the brightest coral fish we have. To see him take food over to his anemone is a fascinating process. He is lively and superbly coloured with his black back, white bands and yellow tail.



18



Above:
PUGNACIOUS, attractive and always active—that's our Domino Damsel. One of our first fish the Domino settled down immediately, feeds well and makes an interesting member of the tank. He tends to put the Electric Blue Damsel in its place, but lives happily with all the other fish. The Domino is found from the Red Sea through to East Africa and the Pacific.

Below:
THE magnificent glowing blue of our Electric Blue Damsel (*Pomacentrus coelestis*) is featured on the cover of this issue. And this little fish makes a superb addition to the marine aquarium. He is native of the Tropical Indian and Pacific Oceans. And he prefers the shallower waters of coral atolls. The Electric Blue can be quarrelsome, but not this one. He is kept firmly in his place by the pugnacious Domino Damsel.



Above:
WITH his orange/yellow body and black edged fins the Common Clown is the most popular marine fish and the easiest to keep. Give him an anemone to live in and he will be happy. Ours is bright and interesting and feeds well. He guards his anemone territory carefully. Clowns are found throughout tropical seas. They are one of the few marine species that will spawn in aquaria.

PRACTICAL FISHPKEEPING

**RELIABILITY
IS**

RENA

***R101**



R101 £3.80 + VAT
R301 £5.40 + VAT
R301R £8.30 + VAT

***R301R**

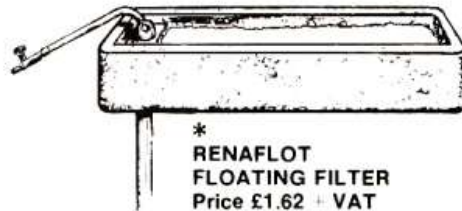


***R301**
(Without Potentiometer
Control)

***R505**

Water
Circulating
Pump
Shown complete
with carbon
and filter case

Price £17.00 + VAT
F' FILTER £1.40 + VAT
CARBON CASE 84p + VAT



***RENAFLOT
FLOATING FILTER**
Price £1.62 + VAT



***RENAMIC**
The little filter
with the Big Heart.
Complete with
Air Control and
Diffuser

Price 90p + VAT

ALL AVAILABLE AT YOUR AQUARIST
OR FROM

IMPELEC LTD.

THE BURY FARM
PEDNOR ROAD, CHESHAM, BUCKS
Tel: CHESHAM 6759



IF you have an aquatic problem the best, quickest and most effective way to get expert advice is by writing to the PRACTICAL FISHKEEPING Aquatic Queries service.

On hand to help you are Dr. David Ford of Aquarian—one of the most knowledgeable aquarists in the country. David will be answering freshwater queries and some marine problems.

Our marine expert is Graham Cox—managing director of the Middlesex firm SeQuariums.

All you have to do is write to Aquatic Queries, EMAP, Practical Fishkeeping, Bretton Court, Betton, Peterborough PE3 8DZ.

State your problem. Enclose black and white head and shoulders picture of yourself, if you have one.

Include a stamped addressed envelope if you want a personal reply.

If you're enjoying Practical Fishkeeping and want to make sure of your copy every month, cut out this coupon and take it to your newsagent.

MAKE SURE OF YOUR REGULAR COPY

TO MY NEWSAGENT

Please reserve/deliver Practical Fishkeeping every month until further notice from next month's issue.

Name.....

Address.....

AQUATIC QUERIES

Research by Dr David Ford.

Tank battle

CAN you tell me why tropical fish attack each other? The dealer said my fish would mix but there are fish that will not. The grey Gourami attacked the orange Gourami and the Platties went for all the fish in the tank.—**Jaqueline Anderson, Banbury, Oxon.**

The popular community fish are chosen by experience as those species that are compatible. However, a pecking order always becomes established in the aquarium and it is the fighting that establishes this natural order. Once every fish knows its place the fighting—usually this is just display—will stop. If a fish is physically attacked it must be removed and swapped if possible.

Golden Fighter

I AM writing to tell you that I have got a golden Siamese Fighter. My aquarist shop keeper said that it was very rare. Is that true? I have only seen blue and red ones. How does it happen?—**Mrs L. Miller, Glasgow, Scotland.**

There are many species of Siamese Fighters as well as many breeds. For instance *Betta bellica*, *Betta brederi*, *Betta imbellis*, *Betta smaragdina* and *Betta splendens*. The *splendens* has been bred into split-tailed, long-finned, red, greens and blues. I am not surprised to hear of a golden variety although I agree it is not common. Genetics is the answer to why it happens. It is possible to develop a certain trait in a fish over several generations. For further reading on this try *Genetics for Aquarists* by Dr J. Schroder, T.F.H. Publications (1976) ISBN 0-87666-461-3.

The beautiful freshwater Butterfly



Butterfly Fish—a species with grace and beauty.

CAN you tell me about the Butterfly Fish (*Pantodon buchholzi*). I would like to know if it has been bred in captivity?—**T. Campbell, Bangor, Northern Ireland.**

The Butterfly Fish is a peaceful species. But it needs to be kept on its own because other fish will attack its filamentous fins.

In its natural habitat of West Africa it lives in soft, slightly acidic water and feeds off live insects at the surface.

In the aquarium it can be trained to accept bits of meat, fish and shrimps from tweezers. It will grow to four inches but there is no record of it being bred in captivity.

Did aquarium worms kill Guppies?



Platties—they will eat the aquarium worms.

JUST before stocking the fish in my new aquarium I noticed a number of worms on the side of the tank. I started with three Guppies but they all died. Was it anything to do with the worms?—**John Bright, Sheppey, Kent.**

Free swimming worms often occur in aquaria and are of no

danger since a parasitic worm would be sited on the fish and not on the glass or in the water. Guppies and small Gouramies will eat them.

It is impossible to say what killed your Guppies. But it would not have been the worms. I suggest you start again and try hard to make your husbandry methods as perfect as you can.

Breeding Kissing Gouramies

IS it unusual to breed Kissing Gouramies? Some books I have say they are difficult to breed. My pair of Kissing Gouramies have spawned twice. I also have a tank full of Giant Gourami fry. Could you tell me as much as possible about these two species?—M. Johnson, Rayleigh, Essex.

Congratulations on breeding the Kissing Gouramies. Although it is not such a rare event now, it is still something to be pleased with.

Breeding details for these fish are as follows:-

Use a large tank, ideally 30 inches, with the water at pH 6.8 to 7.2 and 150 to 180 ppm hardness. The temperature should be around 80 F.

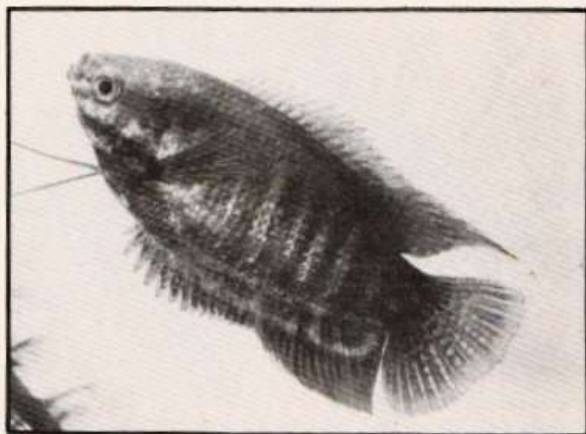
About 300 eggs are laid which

hatch at the surface in 24 hours. They are free swimming at day four and then require infusoria for at least a week before fine dried food can be used.

It is now known that only when the fish are fairly mature will they breed. It is impossible to sex them, except when the female is full of eggs. If infusoria runs out, hard boiled egg yolk can be used. Squeeze it through linen to make it fine enough.

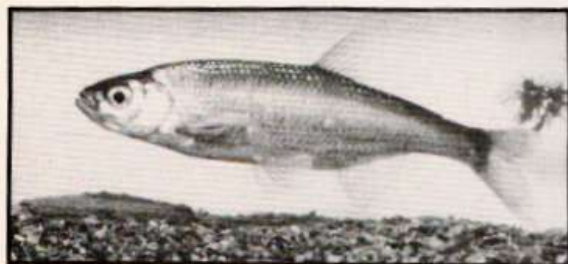
The Giant Gourami (*Colisa fasciata*) is a peaceful community fish, without critical water conditions. But it does prefer a temperature of 78 to 80 F.

They will eat anything and are very easily bred. They need some floating plants to anchor a bubble nest. The fry are large enough to be fed fine dried food at day two.



Giant Gourami—peaceful fish but big eaters.

Catch your own native fish



Bleak—one of the native freshwater fish that can be kept.

I HAVE just started reading your excellent magazine. However, having carefully searched the ads, I found no reference to coarse fish. You know, all the species found in this country's rivers and lakes. Could you tell me if anyone deals in these and if there is information concerning them?—G. Martin, Templecombe, Somerset.

Why should dealers sell fish that are freely available for collection in our own island? For the same reasons, you can't buy freshwater tropicals in Florida or coral fish in Hawaii!

A few aquarists keep local species in coldwater fresh or marine tanks, but they collect their own specimens.

The same husbandry techniques used for the imported aquarium fish apply so there are no special books devoted to British fish.

You have one major problem

—the fish will have all the endemic diseases and parasites that occur in these islands. So disease control and quarantining is very important.

Water Authorities are responsible for the fish in Britain's freshwaters. They all have different rules governing taking fish from these waters. It would be wise to check with the fisheries department of the authority which controls the area where you intend to collect your fish. It would also be wise to check whether the stretch where you collect is run by an angling club. Obtain their permission and possibly their help before going ahead.

Commercially bred coarse fish like rudd, orfe, carp and tench are available mainly for pond keepers. These are not wild stock and do not carry the diseases and parasites you are likely to find with natural species.

Fixing a hole in my tank

I WAS given a fish tank as a present but when I set it up discovered a leak. I tried mending it with Bath Tub Caulk, but the leak was even stronger when I refilled the aquarium. What can I do?—Adam Walker, Virginia Water, Surrey.

I assume your tank is a silicone sealed all-glass model. Strip it bare and fill with tap water until the leak starts. Then dribble a little ink into the still water near the leak. The ink should trace out the path of the leak through

the silicone seal.

Siphon out the water and dry thoroughly. Strip the silicone ribbon away from the affected area with a scalpel. Clean with any dry cleaning solvent and re-seal with an aquarium grade silicone sealer.

If the leak varies with position of equipment you should suspect non-stable support. Make sure the stand is solid, flat and square. Use a polystyrene ceiling tile under each corner of the tank to take up minor irregularities.

How to replace pond liner



Garden ponds—they must have a liner.

MY 12 x 9 pond is lined with a pond liner. This now is holed in several places. But I am loath to replace it because of the high cost.

Considering that my soil is very heavy clay about a foot down, and that natural ponds do not have liners, can I dispense with the liner and just use the clay?—K. McFarlane, Hindlip, Worcester.

I think you will have many problems with an unlined pond. Although natural ponds are unlined, they have a continuous inflow of water from a stream or spring. Or the "hole in the ground" is below the natural water level of the surrounding area—the water table.

If you cannot afford another liner, consider using concrete. If you can mix your own it can be low in cost.



Sailfin Mollies

MY Dad and brother are converting our main tank to goldfish. But as I prefer tropicals Dad said I could have a 24 x 12 x 12 tank of my own. How many Sailfin Mollies can I have in this tank? What type would be best and do they need any special water requirements?

Do they need a high vegetable content in their diet? What are the best plants for them and what is the price range of these fish? Could you also tell me if a Siamese Fighting Fish male can be kept safely with a few females?—Paul Lesurf, Milton Keynes, Bucks.

Your aquarium can hold 15 average tropicals. Some Sailfin Mollies can grow very large so only half this number of Mollies is advisable.

Sailfin Mollies (*Poecilia latipinna*) prefer slightly alkaline water with one teaspoon of rock salt per gallon with a temperature of 80 F or as near as possible.

There are no different types of sailfin. But the colour varies and they can have differing quality fins.

They are mainly vegetarians and so should be fed Aquarian Vegetable Diet with occasional pieces of chopped earthworm, shredded meat and fish and scalded lettuce or boiled peas.

Mollies prefer a well planted tank, so use lots of Vallisneria, Elodea, Nomaphila, Cabomba plants that will spread well. Do not use undergravel filtration. This will encourage dense foliage.

A good pair of Sailfin Mollies will cost anywhere between £1 and £2. Individuals are only a few pence.

Your one male Fighter can be kept with several females.

AQUATIC QUERIES

Research by Dr David Ford

Quarrelsome Banded Chromide and the Plecostomus

SIX weeks ago I bought two *Etroplus suratensis*. Can you tell me about this species? I would like to keep some kind of catfish to clear up uneaten food from the gravel. What do you recommend?—J. Parry, Sandown, Isle of Wight.

The *Etroplus suratensis* is the Banded Chromide. It comes from India and Ceylon and is a quarrelsome fish and will cause trouble if it outgrows any of the other species in your tank. Wild specimens can be 12 inches or more, but aquarium fish are usually three inches.

It comes from slightly

brackish water, and prefers a tablespoon of rock salt per gallon of water.

The Banded Chromide is carnivorous and needs chunks of meat, earthworms, fish and shrimps.

It is wrong to think of including a catfish to remove excess food. You should remove this as part of your husbandry technique. Feed any catfish species with the same care as any other of your fish. The Plecostomus is a good choice for mixing with the Banded Chromide because it can tolerate salty water.



The Pluto—a *Plecostomus* species.

Golden Medaka from the East



Fantail—are my Weather Fish harming it?

PLEASE tell me more about the Golden Medaka as I have nine of these fish. My two Weather Fish chase my Fantails and appear to be cleaning them. Could you explain this behaviour? One of the Weather Fish previously died and I found it with a chunk bitten out of him. What could have caused this?—K. Morgan, Maidstone, Kent.

The Golden Medaka (*Oryzias latipes*) hails from China, Japan and Korea and is a good community fish. It accepts all foods and is easy to breed.

The usual breeding method is to set up a tank with several bunches of fine-threaded plants and use two males and three or four ripe females. The chase

expels the eggs which have fine threads to fix them to the plants.

The bunches of eggs attach to the foliage and hatch about nine days later. They need infusoria, newly hatched brine shrimp and them the usual fry foods.

The Weather Fish (*Cobitis taenia* or *Misgurnus fossilis*) is so called because its activity varies with the barometric pressure. It certainly is not attacking your Fantails, being a peaceful, even shy, fish.

It is a scavenging, bottom feeder and may be just blundering into the goldfish which also browse along the bottom.

The Weather Fish with a piece missing probably died for some unknown reason and the corpse was bitten as a food item.

Danger coral

A GEOLOGIST friend of mine has given me a most attractive piece of fossilised coral, which I would like to use as a rockwork feature in my freshwater tropical tank. Are there any dangers attached?—G. Atkinson, Burnley, Lancs.

Unless you are sure what type of rock you are using, steer well clear. Many fossils are composed of soft limestone, which dissolves in acid water and plays havoc with the pH, not to mention fish which have to exist in the water. For the same reason, be wary of any 'petrified' wood, or indeed any decorative additions to your set-up which haven't been vetted by an experienced aquarist. Whatever you put in the tank, wash it thoroughly.



Coral—steer clear of this for freshwater aquaria.

PRACTICAL FISHKEEPING

Overcrowding the coldwater tank

MY 24 x 15 x 12 tank contains two small Koi, an extra large Veiltail, a large Fantail, a Black Moor and several goldfish.

Could you tell me the plants to have in this tank?

I use a 60 watt strip light for nine hours a day. Filtration is a corner box filter with a water change every ten days. I also have a couple of Sucking Loach which help keep algae off the glass. Am I doing anything wrong?—Mrs A. Scarborough, Bolton, Lancs.

A 24-inch tank needs two 40 watt bulbs or a 15 watt fluorescent tube, so you could have a little more light than you are using.

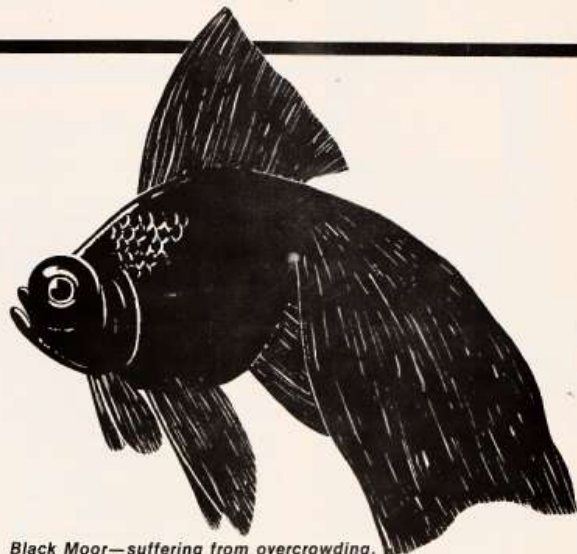
Your tank sounds over-

crowded. A 24-inch tank can only comfortably house five goldfish. To keep the fish you possess you will have to increase the water changes.

It is better to do partial changes—a quarter or half—more frequently than massive changes when the tank is dirty.

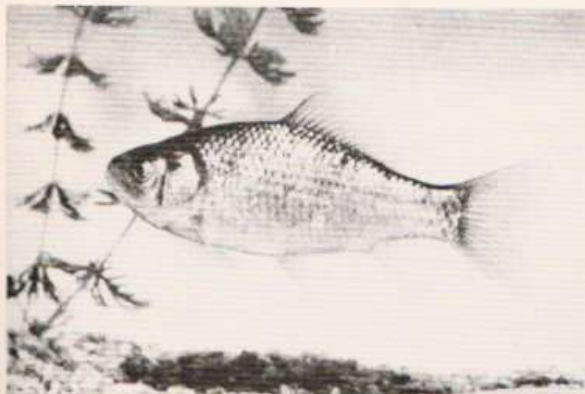
Do not worry about the pH or hardness because goldfish are not critical of water conditions. Remove the chlorine with a dechlorinator or by boiling.

In such a crowded tank you may have problems with real plants being eaten. Try *Elodea canadensis*. But if this is torn up stick to plastic plants. If you do try plastic plants do not increase your lighting to prevent algae growing excessively.



Black Moor—suffering from overcrowding.

Goldfish in the pink!



Crucian Carp—colouring is not altered.

THE goldfish in my garden pond are all in the pink of condition—literally! The pond was built over ten years ago with a butyl rubber liner, and since then, goldfish from a variety of sources have been added. These fish were all colours—reds, blues and yellows—but all, without exception, have turned a pale, washed-out pink colour. This has not affected their appetite or their breeding capabilities, but I'm getting funny comments from visitors about my 'ghost' fish. I would add that a couple of small crucian carp in the pond have kept their rather drab colouring intact.—D. Fulcher, Norwich.

This one has us beaten. If your pond was concrete, I would

suggest that it had not been properly sealed, and chemicals dissolved in the water were making your fish look and feel 'off colour'. But butyl is inert, so the problem cannot lie there. You do not say when your crucian carp were introduced, but if they were from a wild source, it is just possible they brought in some disease such as gill flukes or fish lice, which might have affected the goldfish. As you have had no casualties, though, this seems unlikely. Some goldfish undergo natural colour changes as they grow older, and certainly if you have had yours for up to ten years, some of them will be going over the hill, and may not be as brightly hued as they were in youth.

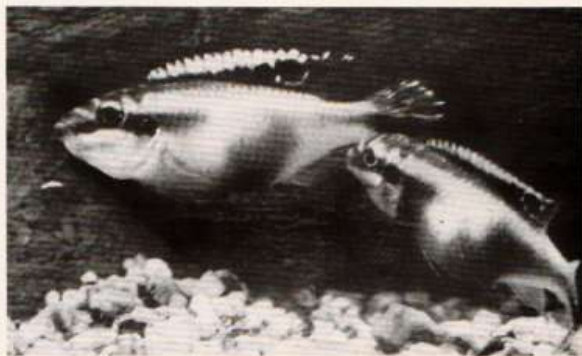
Ideal seashore rock decoration

CAN I use rocks from the seashore in my new freshwater aquarium if they are washed thoroughly or boiled?—G. Perkins, Brixham, Devon.

Yes, you can use rocks from the seashore providing they are washed free of salt. The rocks

must be insoluble, of course. Some seashore rocks may be calciferous and so will make the water in the aquarium very hard. To check the rocks you gather, dab the washed rock with vinegar—if it fizzes it is alkaline and unsuitable.

Is there a cure for Dropsy?



Kribensis—affected by dropsy.

IS there a cure for dropsy? I had a pair of Kribensis dwarf chichlids and the male fish developed a bloated appearance with the scales standing out from the skin. Despite a salt bath, it died in a couple of days.—A. Wootton, Dover.

Dropsy is not a separate disease, but a symptom of other disorders. Some say you can alleviate the symptoms by draw-

ing away the excess body fluid with a hypodermic syringe, but I would advise you to painlessly destroy any fish with dropsy. It's false economy to try and cure something that will certainly crop up again.

The only way to kill diseased fish is to place them between two sheets of newspaper, place a brick on the top and stamp down hard on the brick.



Strange Angel

MY Queen Angel has been acting strangely ever since we had a warm spell which caused the tank temperature to rise to 84F, at which it stayed for two or three days. It hovers head first in a hole in the coral work. When the temperature was up to the 80's I had quite a few copepods in the tank and I removed most of them with a filter. When I first noticed this strange behaviour I thought the increase in temperature may have brought it on. So I lowered the temperature from its normal 78F to 76F. This made the fish a bit more active. But it is still not eating as his tank mates are. In the tank are a Lipstick Tang of seven inches, a Powder Blue of four inches, a Regal Tang of three inches, a French Angel of six inches, a Queen Angel of five inches, an Emperor Angel of two inches, a Majestic Angel of three inches and a Blue Damsel. The tank is 48 x 24 x 24.—D. Whitehorn, Tottenham, North London.

My first observation would be to advise you not to buy any more fish until one of your existing stock dies. Your stocking level is already very high and is no doubt contributing indirectly to the factors which have brought your Queen Angel to this low state.

You do not mention what the fish's respiratory rate is like and I must therefore assume that it is quite normal at 80 to 90 gill beats per minute. A more rapid rate than this would suggest that it is suffering from oodiniasis—that is marine velvet disease.

However in the absence of any symptoms in your letter other than lethargy and refusal to eat, together with you having seen

All about Marines

Research by Dr David Ford and Graham Cox

non-parasitic harpactide copepods in the aquarium, I would ask you to conduct a simple test.

Pick up a handful of coral sand from the filter bed of your aquarium and, raising it a foot above the floor, let it fall back to the filter bed. I am certain that you will see a cloud of greyish fawn detritus swirl up from the floor of the tank.

This organic material is called Sea Humus and is virtually non-biodegradable, that is nitrifying bacteria and other types of bacterium are NOT able to break down this material. And so it is gradually accumulating in the tank's filter bed.

Eventually it will reach sufficiently high level to sustain large populations of copepods and flukes. The former are only a minor irritant to fish, since they are not parasitic. Furthermore they are easily disposed of by adding a very beautiful little member of the Dragonet family to your aquarium—the Mandarin Dragonet. These interesting and colourful little fish eat copepods on a grand scale and will soon empty the tank of these unsightly scavengers.

On the other hand the flukes are a serious menace to every fish member of your sea aquarium. Almost every species of fluke is parasitic upon fish at some stage in its development.

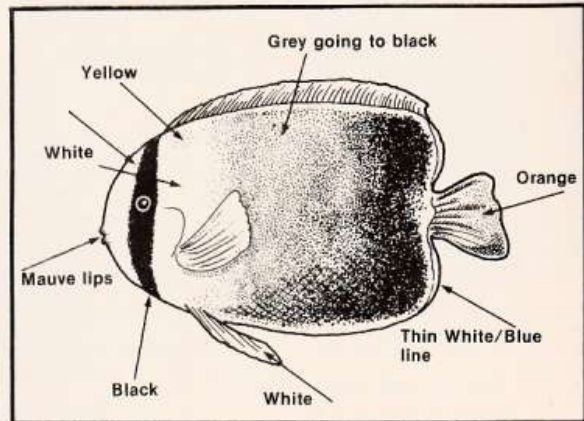
To remove these microscopic parasites from your system you should proceed as follows:-

Remove all the sea humus from your filter bed. To do this temporarily remove all rocks, shells and corals from the aquarium and stir up the coral sand layer of the filter bed thoroughly so that all sea humus is released into suspension in the sea water. Then siphon off to waste a maximum of a third of the old sea water and as much as possible of the humus at the same time. Replace with freshly made and chemically matured sea water. It is not necessary to remove any live occupants of the tank during this process—just the rocks and coral.

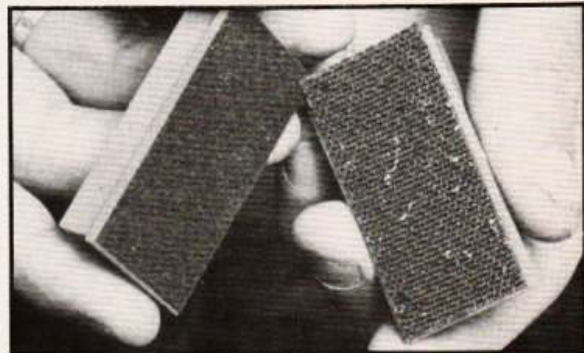
After a couple of days repeat the process and keep repeating it until your filter bed is free from humus. You can prevent the build up again by using this process every time your pH and nitrate tests indicate that a partial water change is necessary.

You must then destroy the fluke by using a proprietary treatment.

Can you identify this fish?



Mystery Fish—do you recognise it?



Algae magnet—useful for keeping the glass clean.

I KNOW my 29 x 15 x 12 tank is small for marine keeping. But I have set up a marine system and I have stocked a Blue Devil Damsel, a Dragon Wrasse a Copper Band Butterfly, a Jewel-Spot Grouper and an Angelfish. I am unaware of the exact species of the Angel. Can you identify it from the drawing I enclose?

I seem to have an algae problem—very little growth and all of it is brown, not green. All the chemistry seems OK. What is wrong?

Going back to the fish. Does the Dragon Wrasse spend most of time under the gravel. If so, they seem to be a bit of a waste of time, although they are fun to watch when they are up.—Chris Arnold, Bath, Avon.

You certainly do not have an algae problem. The set-up and husbandry is ideal and it is only

a question of time before green algae grows. The sequence for a new tank like yours is:- no algae at first, then brown algae, then green slowly replaces the brown, then filamentous algae develops. You need to continuously harvest the filamentous algae to remove nitrates.

Wrasse do bury themselves and there is nothing you can do about it. Some zoo aquaria use glass beads instead of coral sand so you can see the fish!

It is very difficult to identify a marine fish from colour patterns, because species vary so much.

Your fish has the general shape of a Chaetodon (Butterfly Fish) but the colour of a Chaetodontoplus (Angelfish). If there is a small spine on the head at the lower corner of the gill flap, it is an Angel.

All about the Mandarin

CAN you give me details concerning the Mandarin Dragonets (*Synchiropus splendidus* and *S. picturatus*). I would like to know their maximum size, eating habits and any other information.

Secondly, could you tell me anything about a most beautiful sea slug I have just bought which I think is called *Chromodoris quadricolor*.—K. Moyle, Hartlepool, Cleveland.

Mandarin Dragonets are most entertaining and ornately patterned little bottom dwellers rarely exceeding four inches in overall length. The average specimen of both species imported into Europe is two to two-and-a-half inches.

The great disadvantage of these species is that few individuals learn to eat non-living food in the marine aquarium. They seem to spend all their time hunting around rocks and corals for copepods—small, harmless scavenging crustaceans measuring about one millimetre in length.

Should your aquarium not support a large enough population of copepods—and very few hygienically-maintained marine aquaria do sustain copeheads in adequate numbers to feed even one Mandarin—then you should not buy a dragonet unless you are prepared to do several hatches of brine shrimp eggs each week.

Just before adding the newly hatched nauplii to your aquarium remember to turn off all filtration for half-an-hour and increase the air supply to your wooden micro-diffuser for the same period of time. Incidentally, most of your invertebrates will also benefit from this feeding of brine shrimp nauplii.

I'm afraid that I do not recognise this nudibranch sea slug by the name you mention. I wonder if it is a synonym or archaic name you have given. Most nudibranchs are browsers—they "rasp" microscopic encrustations of invertebrates and algal life from the surfaces of the rocks and corals. However, there are a few species which eat various anemones, living corals, hydroid polyps etc. So I recommend that you watch this creature's behaviour very carefully over the next few weeks.

PRACTICAL FISHKEEPING

Swapping Damsels for Butterfly Fish

MY marine tank contains all Damsel fish which consist of two Dominoes, a Yellowtail, a Black Velvet, a Blue Chromis and a couple of Humbugs. They are all living in relative peace with each other apart from the Humbugs. When I am more experienced I hope to keep Butterfly Fish and Seahorses. Should I sell off my Damsels first? And if so which fish would live with Butterflies and Seahorses?

My heater has a built in thermostat and during the day and evening seems to work. But in the morning the temperature seems to have dropped by four or five degrees.

Is this normal or do you think the thermostat is not working

properly?—John Faver, Tranent, E. Lothian, Scotland.

Yes, Humbugs can be very aggressive fish and it is a good idea to part exchange them for your Butterfly Fish.

Seahorses are very difficult to keep, especially in a community tank. They need a constant supply of live food that will swim past their mouths, because they are not built to chase food. A few aquarists have weaned them on to frozen foods. But they refuse to eat convenience food such as flake or freeze dried.

A five degree drop in temperature is rather a lot overnight. The heat may be inadequate for the tank. A 36 inch tank needs 100 watts.



Butterfly Fish—will he live with Damsels?

Old testers



Testing for pH—chemicals could be too old.

I AM at present setting up a marine aquarium after a period of four years without one. I have some trace elements and pH and Nitrite test kits which are about five years old. Will they still be useable? I also have a Dynaflo power filter, driven magnetically, which was used on a freshwater aquarium. What would the magnetic impeller be made of, and would it be suitable for use in a marine set-up?—Raymond King, Swindon, Wilts.

I doubt if the kits are reliable after five years. But you could contact the manufacturer and ask their opinion.

The Dynaflo has a plastic impeller and so can be used for seawater.

Algae magnets

Are algae magnets safe for use in marine aquaria?

I have a small internal filter filled with charcoal. Are marbles safe to weigh it down?

My tank has been running for 12 days now. But the nitrate reading is still high. Should the bed have matured by now?—R. Ferrett, Tongham, Surrey.

The temperature variation is rather wide. The temperature of coral seas tends to be very stable and usually higher than your tank. Try a larger wattage heater to maintain a uniform 80F.

There is no minimum lighting for the fish because photosynthesis is not involved in their nutrition, unlike some invertebrates and all plants.

Beginners fish are usually hardy ones such as Dominoes. These may become aggressive when you stock your other fish. Better to try and part exchange your original fish. Rather than list the fish you would like it is far better to choose what is available from good, robust, disease free stock. Beware of the Batfish choice as these can grow very large indeed.

Rather than worry about the turnover rates it is better to prove that the filter is adequate by measuring the nitrite value. Once over the nitrite crisis, regular tests will show if the biological filter is functioning. If nitrate appears you must increase the flow rate, reduce the density of fish or cut back on food addition—or a combination

of all three.

A plastic dustbin is safe to use providing it is not brightly coloured. Some dyes are poisonous. White or grey bins are satisfactory. But give it a good scrub out, of course.

You can buy algae magnets manufactured for use in marine aquaria.

And you will find that marbles are safe ballast.

Your nitrite reading will not occur until biological material is available for the chemical reactions. A good source is the Black Molly which will adjust to a marine tank.

Huge Batfish



Black Clown—more suitable for a home aquarium than the Batfish.

I WANT to buy a Batfish for my six foot marine aquarium. Would it grow too large for my tank or would it stay at a suitable size?—John Stewart, South Shields, Tyne and Wear.

Sorry, but the Batfish will grow and grow and grow! Eventually it will be so big you will have to swap him for smaller fish. But it may take a few years if you don't overfeed him.

EHEIM

QUALITY AQUARIUM FILTERS

Filters available for tank sizes from 50 to 1500 Litres



EHEIM products are manufactured to exacting standards to provide years of trouble-free constant use.

This engineering excellence has given them the position of brand leaders throughout the world.

John Allan AQUARIUMS
LIMITED

John Allan Aquariums Limited
Eastern Way Industrial Estate
Bury St. Edmunds Suffolk IP32 7AB
Telephone (0284) 5051-2-3.

Practical fishkeeping

TOP TANK! That's what PRACTICAL FISHKEEPING and AQUARIAN, the fish food manufacturers, are looking for at shows all over Britain this year.

And there's prize money, samples of Aquarian's flake food and the chance of a fabulous holiday at stake for every aquarist who enters his fish in a Top Tank show.

All show organisers need to do to become a PRACTICAL FISHKEEPING/AQUARIAN Top Tank show is to fill in the form on this page and send it off to Practical Fishkeeping Publicity Dept, Bretton Court, Bretton, Peterborough.

If you make your show a Top Tank entry this is what you will get.

First we will send you posters to advertise your show and let everyone know the Top Tank class is available.

The Top Tank prize will be for the best fish in the show.

The winner will receive a diploma plus a £5 cash prize and Aquarian products. Second place will be awarded £3 and third £2.

The winner of the Top Tank award at each show will go forward to a draw. The first

name pulled out of the hat will win a superb holiday for two. And the society where he or she won the Top Tank class will receive £50.

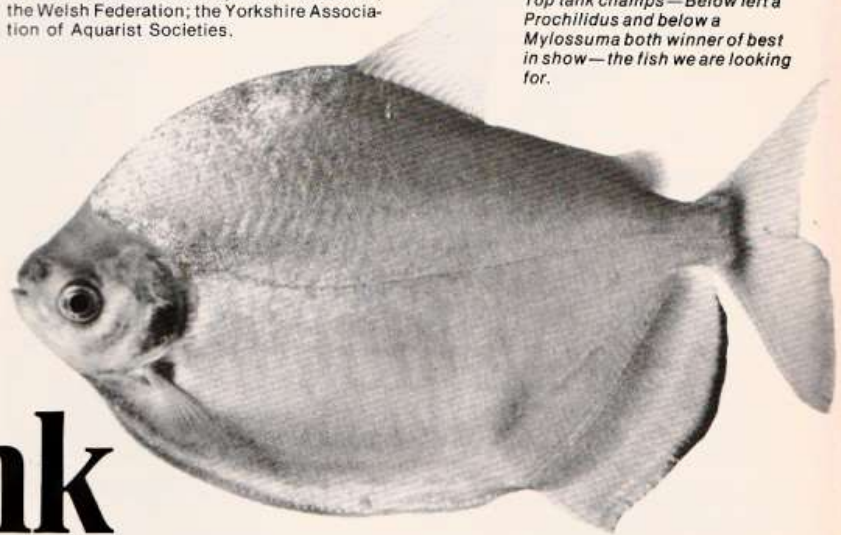
Full details of the holiday will be announced later.

Shows held after June 1 1979 are eligible. And to stage a Top Tank class the organising society must be members of the following federations:

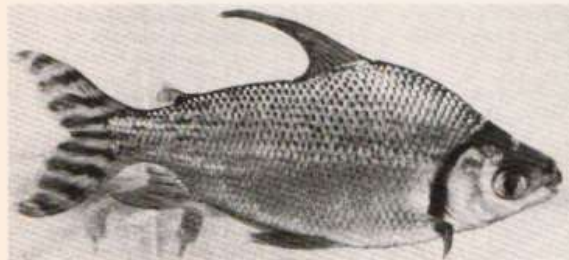
The Federation of British Aquarist Societies; the Federation of Northern Aquarist Societies; the Scottish Aquarist Federation; the Welsh Federation; the Yorkshire Association of Aquarist Societies.

aquarian

Top tank champs—Below left a Prochilodus and below a Mylossoma both winner of best in show—the fish we are looking for.



Top tank



Cut out this coupon and send it to Top Tank, Practical Fishkeeping Publicity Dept, Bretton Court, Bretton, Peterborough. Please send it at least one month before the date of the show.

We would like to stage a PRACTICAL FISHKEEPING / Aquarian Top Tank class at our show. We agree to abide by the rules of the competition.

Name of society

Date of show

Venue

Name of your Federation

Name and address of secretary or show secretary



Rail-a-marine

Marines for everyone everywhere

Choose from usually over 200 species. Regular imports, strict quarantine and total dedication ensure you get the finest specimens.

LIVE ARRIVAL GUARANTEE

or 10% free fish with every order

Send now for your up-to-date price list and order form or for further details, please phone Matlock 4221 or 4699

personal callers welcome at

Matlock Waterlife Centre

Nottingham Road, Tansley, Matlock, Derbyshire DE4 5FR

Koi are generally regarded as the King of all the varieties of pool fish. Quite apart from their brilliant colours and size, the way in which they deport themselves in the pool, with such majestic grace supports the claim.

Before continuing we should state that the word Koi is very much an Anglicized word as in Japan its correct meaning is love, and not carp!

Their correct Japanese name is NISHIKIGOI which stands for fancy or brocaded carp, and it was in Japan that Koi were really developed.

Originally they were developed from a wild black carp known as Magoi which was common in Central Asia. These fish were brought to Japan from their original home in Iran and were used as a food fish.

Even today black carp is quite a delicacy in Japan and some restaurants serve nothing but carp. Tradition has it that Koi as we know them today originated in the Niigata Prefecture of Japan.

An exact date is not known but records show that by 1615AD, apart from breeding carp for food, the villagers were breeding colour mutations as a hobby.

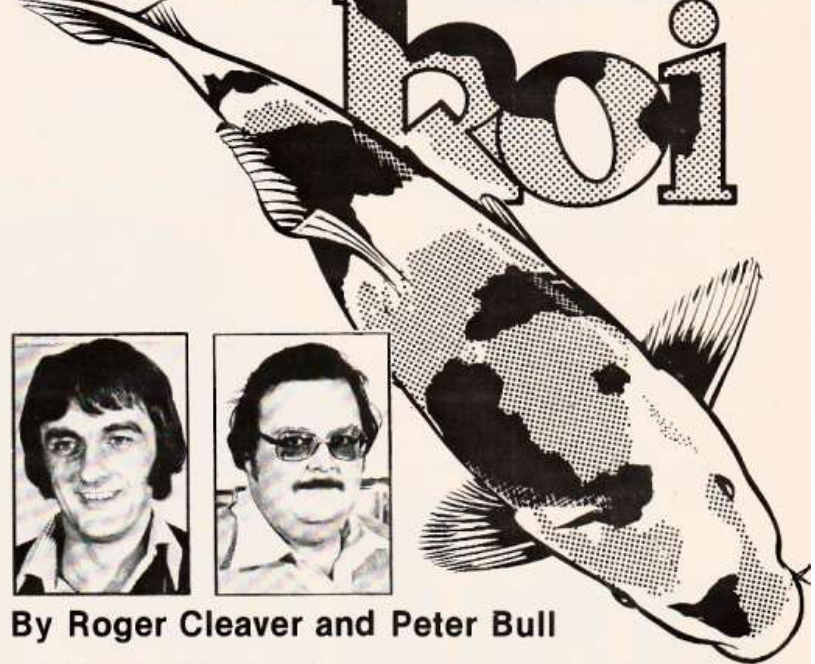
By the first half of the 1800's a strain of carp with red and white markings had been established, these were followed later in the same century by a light yellow koi. By the 20th Century several strains had been stabilized and in 1914 at an exhibition, 28 Taisho Sankes were displayed.

These white fish with red and black markings were much admired and eight were presented to the Crown Prince.

This was the first step in making fancy carp known to the public. After 1914 a great deal of development and expansion was made in the hobby and business of raising koi. Many new types were bred and established and even today new varieties are being produced.

The hobby did not really spread to this country until the late 1960's and we are still quite raw beginners in the field.

DISCOVERING



By Roger Cleaver and Peter Bull

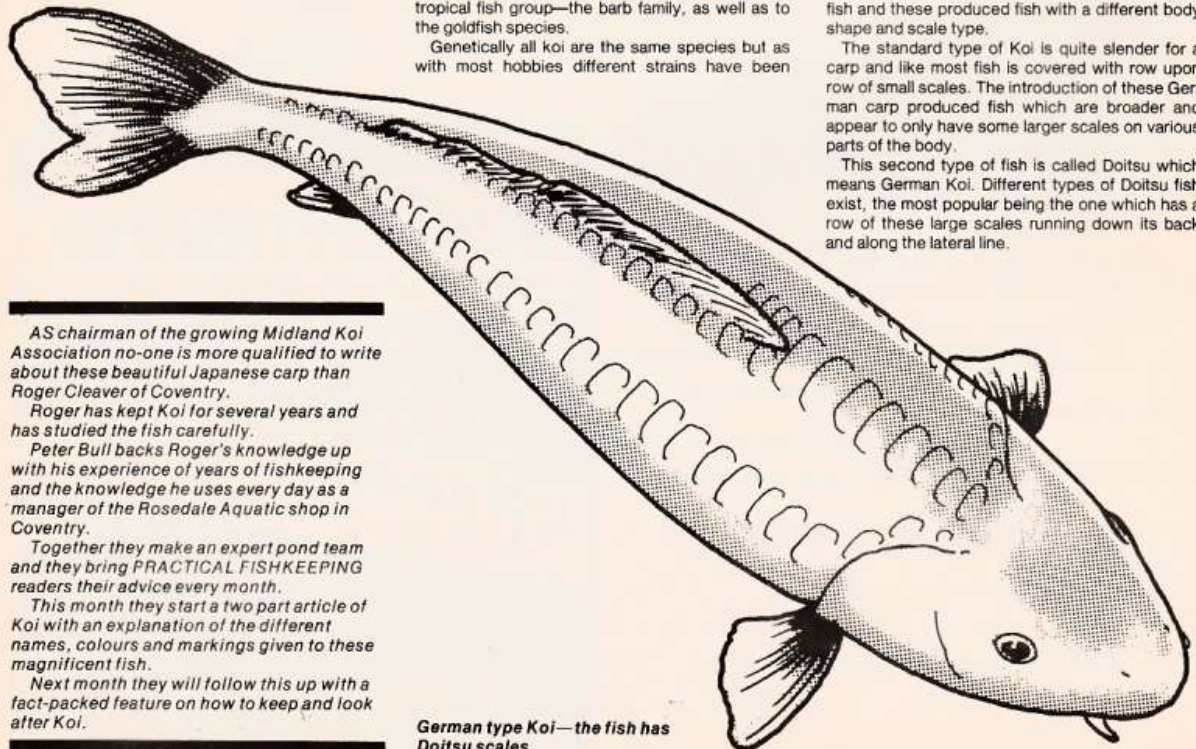
What then are Koi? Scientifically they belong to the Cyprinidae family of fish which has over 2000 species. Their correct scientific name is Cyprinus Carpio and they are related to many of the popular tropical fish group—the barb family, as well as to the goldfish species.

Genetically all koi are the same species but as with most hobbies different strains have been

developed. Apart from differences in colour and pattern Koi are also classified by the type and placing of the scales. At some time in the past carp from Germany were crossed with the Asiatic fish and these produced fish with a different body shape and scale type.

The standard type of Koi is quite slender for a carp and like most fish is covered with row upon row of small scales. The introduction of these German carp produced fish which are broader and appear to only have some larger scales on various parts of the body.

This second type of fish is called Doitsu which means German Koi. Different types of Doitsu fish exist, the most popular being the one which has a row of these large scales running down its back and along the lateral line.



German type Koi—the fish has Doitsu scales.

AS chairman of the growing Midland Koi Association no-one is more qualified to write about these beautiful Japanese carp than Roger Cleaver of Coventry.

Roger has kept Koi for several years and has studied the fish carefully.

Peter Bull backs Roger's knowledge up with his experience of years of fishkeeping and the knowledge he uses every day as a manager of the Rosedale Aquatic shop in Coventry.

Together they make an expert pond team and they bring PRACTICAL FISHKEEPING readers their advice every month.

This month they start a two part article of Koi with an explanation of the different names, colours and markings given to these magnificent fish.

Next month they will follow this up with a fact-packed feature on how to keep and look after Koi.

Another form exists which only has these scales just below the dorsal fin, whilst some fish are produced which have a random selection of these scales on them.

Although the term Doitsu helps to classify a fish in itself it is not a type or variety of Koi and must only be used as a prefix, the general classification comes from colour and pattern and as with most pets certain characteristics are desirable.

The Japanese enthusiast usually splits Koi into thirteen classes or groups. Some of these groups are made up of several types of Koi whilst others have only one in them. It is probably better to discuss Koi by means of the classes rather than picking out individual types or varieties.

KOHAKU

This is probably the oldest of the various varieties of Koi and in Japan is deemed to be the main pedigree line. The term in Japanese means red and white, and this variety only has these colours. Most Koi shows in Japan are won by fish of these varieties and it is often said that a pool should contain more Kohakus than any other variety.

Its popularity in Japan is probably one of the main reasons why not many of the really good quality Kohakus seem to come to this country so you should not expect to find a really high class fish unless you buy direct from Japan and spend a great deal of money.

Although we do not see the top quality fish of this variety in this country many fine fish are obtainable. What should you look for? Depth of colour is one of the most important factors. The

Gotem-Kakura—one with a lot of small red patches.

Two faults sometimes appear in Kohakus and these should be avoided if possible. The first is if a small white or black patch appears in the red and the second is if the red takes the form of a stripe along the body.

TAISHO SANKE

This is possibly the second favourite variety in Japan and seems to be a particular favourite with the majority of people in this country. Sanke means tri-colour and this fish has red and black patches of colour on a white background.

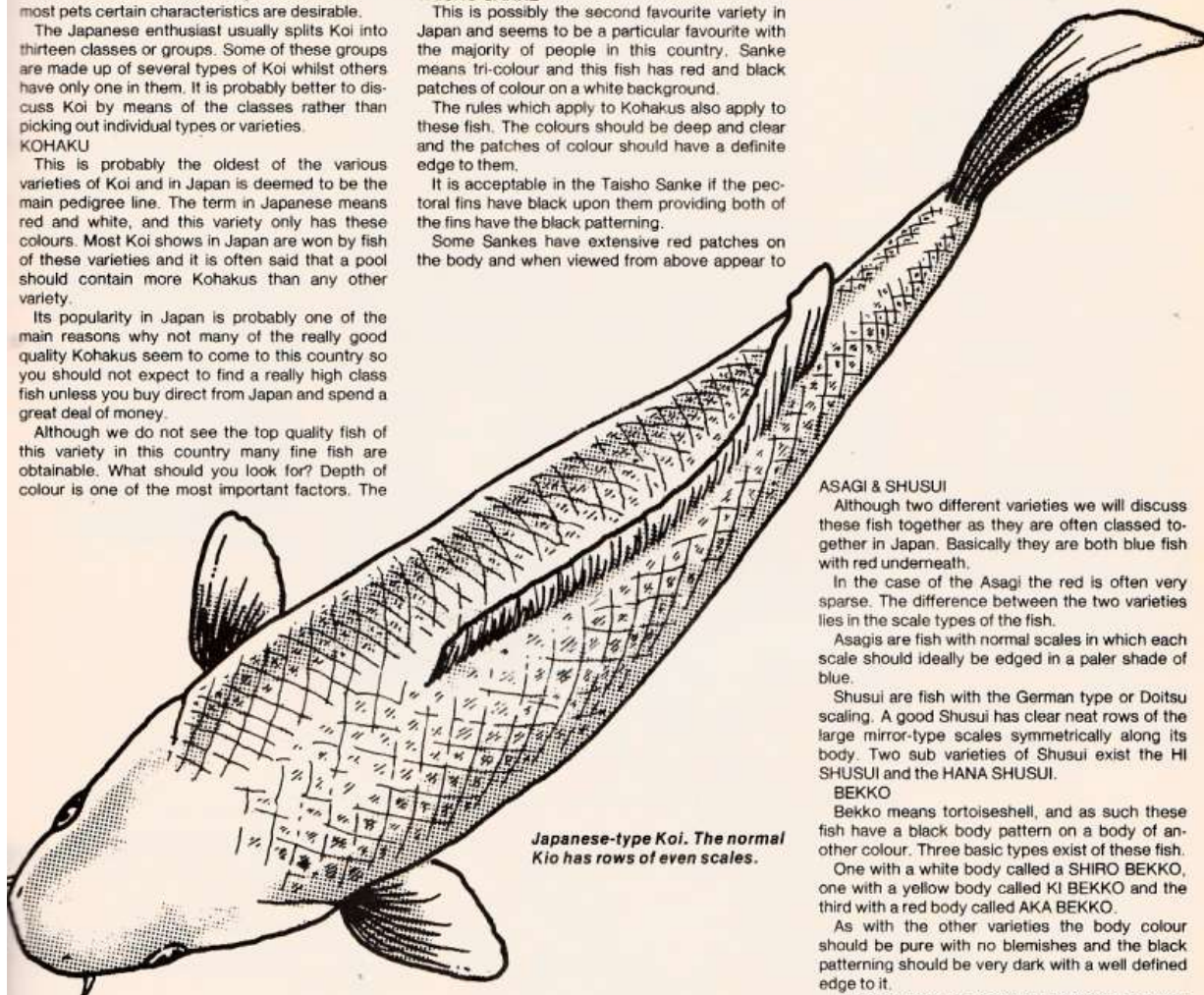
The rules which apply to Kohakus also apply to these fish. The colours should be deep and clear and the patches of colour should have a definite edge to them.

It is acceptable in the Taisho Sanke if the pectoral fins have black upon them providing both of the fins have the black patterning.

Some Sankes have extensive red patches on the body and when viewed from above appear to

Japan's national bird—the Red Crested Crane.

Tancho varieties are much sought after in this country, and a good one will have a symmetrical red patch centrally on the head which, like the Kohakus head patch does not reach the level of the eyes or nostrils.



Japanese-type Koi. The normal Kio has rows of even scales.

red should be very deep and the white should be the colour of snow with no specks or stains. Of equal importance is that the borderline between the red and white should be sharp and clear. That leaves the third important factor that of pattern. A good Kohaku should have a red patch on the head which whilst crowning the head, should not reach the eyes or pass the nostrils.

The only other acceptable red on the head is if the fish has red around the lips. The red patterns on the body should be clear and symmetric and ideally the red patterns should finish before the tail.

Each of the various patterns for Kohakus has its own name, and a few of the more common are listed below.

Nidan Kohaku—two red patches.

Sandan Kohaku—three red patches.

Yondan Kohaku—four red patches.

Godan Kohaku—five red patches.

Inazuma Kohaku—one with a single zig-zag of red along the body.

be almost a red and black fish rather than a tri-colour fish and these are called AKA-SANKE.

SHOWA SANKE

Again this is a tri-colour fish and unfortunately for the beginner the colours are red, white and black! This time, however, the fish has white and red patches on a black background. An easy way to tell the difference between Taisho and Showa Sanke is to look at the stomach of the fish. If it is white it is a Taisho and if black a Showa.

Ideally in the Showa the red patches should be on top of the white and not alongside them. In small specimens the red on a Showa is usually orange, so you must gamble that the red will deepen as the fish grows.

Showas which have predominantly red markings are called HI SHOWA, whilst those with white markings are known as KINDAI SHOWA.

TANCHO

If in any of the three varieties already discussed the red pattern only appears on the head then they are known as Tancho which is named after

ASAGI & SHUSUI

Although two different varieties we will discuss these fish together as they are often classed together in Japan. Basically they are both blue fish with red underneath.

In the case of the Asagi the red is often very sparse. The difference between the two varieties lies in the scale types of the fish.

Asagis are fish with normal scales in which each scale should ideally be edged in a paler shade of blue.

Shusui are fish with the German type or Doitsu scaling. A good Shusui has clear neat rows of the large mirror-type scales symmetrically along its body. Two sub varieties of Shusui exist the HI SHUSUI and the HANA SHUSUI.

BEKKO

Bekko means tortoiseshell, and as such these fish have a black body pattern on a body of another colour. Three basic types exist of these fish.

One with a white body called a SHIRO BEKKO, one with a yellow body called KI BEKKO and the third with a red body called AKA BEKKO.

As with the other varieties the body colour should be pure with no blemishes and the black patterning should be very dark with a well defined edge to it.

Although black on the head is acceptable in this country, most people seem to prefer fish of this type to have a clear head.

Unfortunately although a few Shiro Bekkos are seen not many Ki or Aka Bekko reach our shores, and even in Japan a good fish of this type is not too often seen.

UTSURI-MONO

Mono means group whilst Utsuri stands for reflection. Basically the Utsuri Monos are fish with a black body with a pattern of another colour which breaks up the black.

Again three basic types are found. The SHIRO UTSURI with white markings, the KI UTSURI with yellow pattern and the HI UTSURI with red pattern.

As can be seen some confusion can arise if you have a Utsuri with a lot of white on it or a Bekko with a lot of black on it. In this case they can look like the same fish but as with Sankes their identity can be confirmed by seeing what colour covers the belly region of the fish. If it's white it's a Bekko, if it's black it's an Utsuri.

DISCOVERING



HIKARI UTSURI-MONO

Some confusion would seem to occur between this group and the last, the Utsuri-Mono, as both of these groups contain fish with the same colour and pattern.

How then do they differ? Hikari stands for metallic or shiny, and all fish in this group have a metallic lustre over their bodies.

The three main types are KIN KI UTSURI, a black fish with yellow markings and a golden sheen, KIN HI UTSURI with red markings and golden sheen, and GIN SHIRO UTSURI with white markings and a silver sheen.

Sometimes fish are found with the pattern of a Showa Sanke, but covered with a metallic sheen. When they are, they join this group of fish and not the normal Showa Sanke group—and are known as KIN SHOWA if it has a golden sheen and GIN SHOWA if it is silver.

HIKARI MUJI

This is a second group of metallic type Koi and probably more of this type are seen in this country than any others.

It is often possible to find very good specimens of this variety of fish and many good ones can be obtained at reasonable prices. Hikari, as before, means metallic whilst Muji means sabel colouring.

The most common fish in this group is the Oghan. Oghan is a name which applies to several colouration types but in Japan the Oghan is a metallic gold in colour and all other sabel metallic coloured fish must have a prefix before the word.

The more commonly found colours are:—
YAMABUKI OGHAN—very brilliant yellow, metallic.

NEZU OGHAN—silver metallic.

PURACHINA OGHAN—platinum metallic.

OVERGI OGHAN—orange metallic.

BERI OGHAN—red metallic.

Apart from the Oghans this group contains several other varieties called MATSUBA's. This at first glance does not appear to be a sabel coloured fish but one with a pattern on.

This arises because in Matsubas the centre of each scale has a black shading over it giving them the appearance of a pine cone which is what Matsuba stands for in Japanese.

Four coloured types of Matsubas are usually found KIN MATSUBA, a gold coloured Koi, GIN MATSUBA, silver, AKA MATSUBA, with a red body and KI MATSUBA, with a yellow body.

A point of interest to the average pool keeper is that Oghans are usually the variety of Koi which most easily comes to be hand fed. And many examples are around which will come to any hand which is placed in the pool.

HIKARI-MONO

The third type of metallic Koi available. Into this

group, falls all the various types of patterned metallic Koi which are not included in any other of the classes.

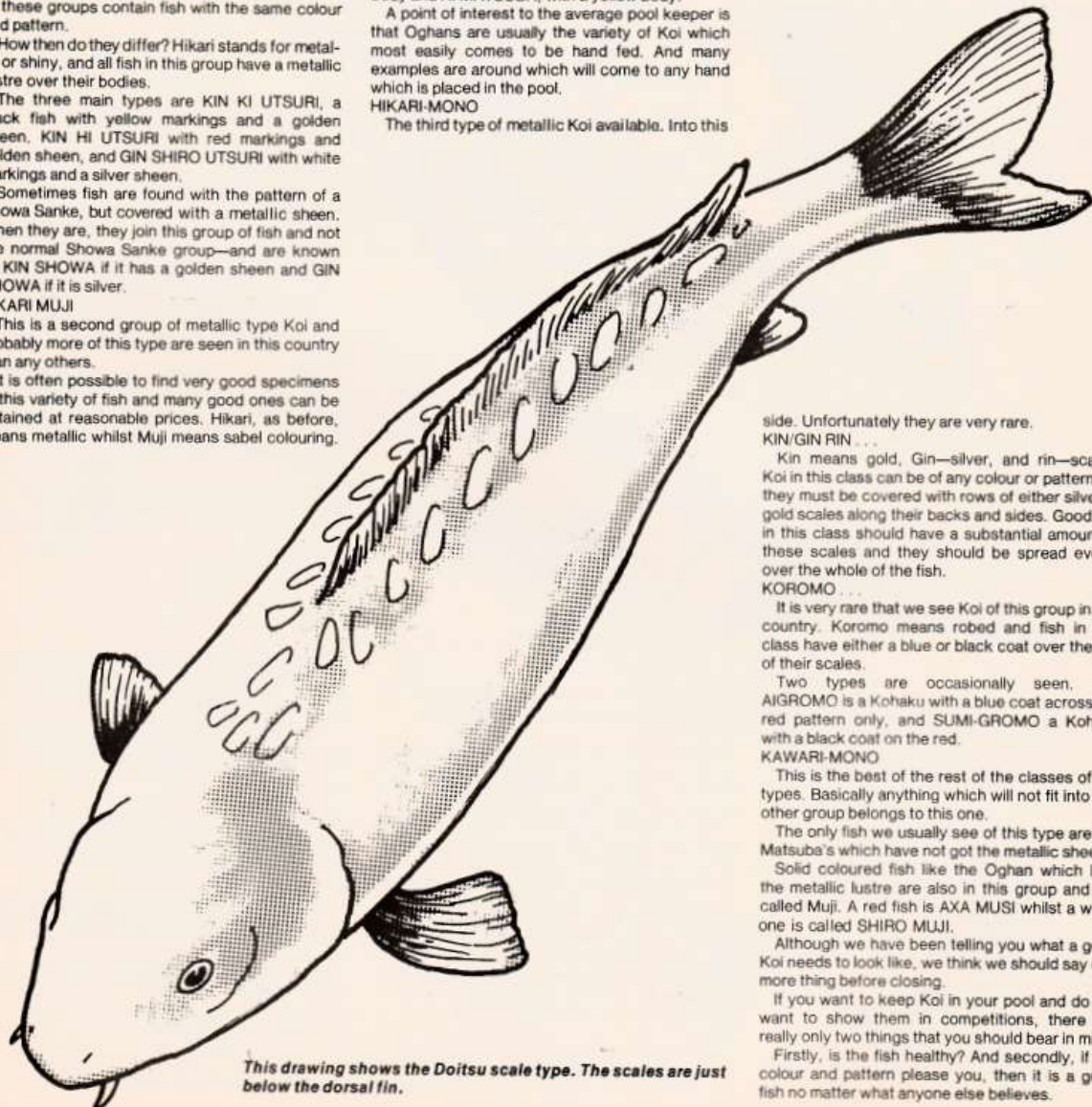
A tremendous number of varieties exist within the group, but unfortunately not many of these fish arrive at our shores.

With the increase in interest in keeping Koi in this country there does appear to be some improvement in this situation but it will be a few years yet before fish of this group really become quite common.

Two varieties which are becoming common are the KUSAKI and YAMATO-NISHIKI.

A group of fish which is often in this country, from this group are the HARIWAKE varieties of Koi. Hariwake means foiled, and these fish have either a basic body colour of metallic platinum or silver with pattern of either yellow orange or gold wrapped around them.

A fish often confused with Hariwake is the KIKUSUI which means Chrysanthemum water. Kikusui's are a Doitsu fish with platinum body and a really brilliant orange pattern along its belly and



This drawing shows the Doitsu scale type. The scales are just below the dorsal fin.

side. Unfortunately they are very rare.

KIN/GIN RIN

Kin means gold, Gin—silver, and rin—scales. Koi in this class can be of any colour or pattern but they must be covered with rows of either silver or gold scales along their backs and sides. Good fish in this class should have a substantial amount of these scales and they should be spread evenly over the whole of the fish.

KOROMO

It is very rare that we see Koi of this group in this country. Koromo means robed and fish in this class have either a blue or black coat over the top of their scales.

Two types are occasionally seen. The AIGROMO is a Kohaku with a blue coat across the red pattern only, and SUMI-GROMO a Kohaku with a black coat on the red.

KAWARI-MONO

This is the best of the rest of the classes of Koi types. Basically anything which will not fit into any other group belongs to this one.

The only fish we usually see of this type are the Matsuba's which have not got the metallic sheen.

Solid coloured fish like the Oghan which lack the metallic lustre are also in this group and are called Muji. A red fish is AXA MUSI whilst a white one is called SHIRO MUJI.

Although we have been telling you what a good Koi needs to look like, we think we should say one more thing before closing.

If you want to keep Koi in your pool and do not want to show them in competitions, there are really only two things that you should bear in mind.

Firstly, is the fish healthy? And secondly, if the colour and pattern please you, then it is a good fish no matter what anyone else believes.

START June the right way by getting your copy of **PRACTICAL FISHKEEPING** . . . it's too good to miss!

Lined up for you next month are some great items.

Starting a Tropical Tank.

Join us as we set up a community tank for the **PRACTICAL FISHKEEPING** office. There will be tips and practical information for everyone.



Washing the gravel—part of our tropical freshwater aquarium guide.



Filtration

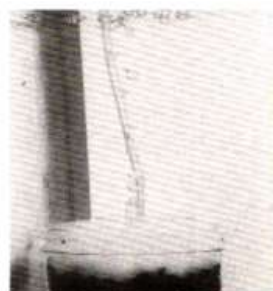
Dr. Christopher Andrews explains the different types of filters and their best uses. Essential information for all aquarists.

Coldwater keeping.

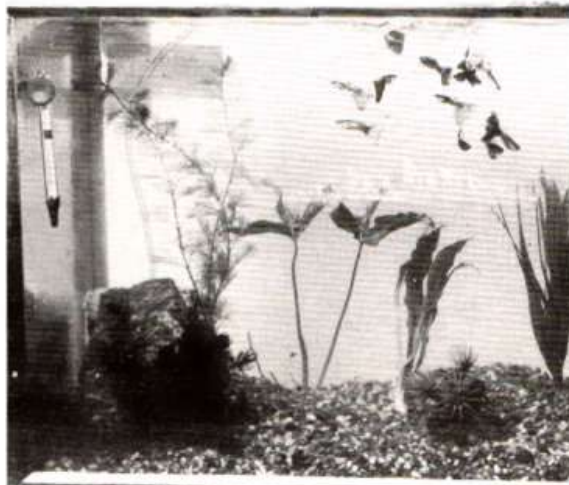
More on this branch of the aquatic hobby.

Colour Poster

Another superb **PRACTICAL FISHKEEPING** colour poster.



Filtration—Dr. Christopher Andrews looks at the different types.



Introducing fish to the aquarium—essential information in our new series.

Commonsense Fishkeeping.

More expert advice from Dr. David Ford on how to avoid problems in your aquarium.

Problems solved.

Practical help for fishkeepers on six pages of Aquatic Queries.

Beautiful tanks.

Picking the right plants and decorations for various species with David Shields.

Spotlight on breeding.

Practical tips on how to spawn a popular species.

ONE of the highlights of the aquatic year is usually the Yorkshire Aquarist Festival at Doncaster Racecourse.

And 1979 is no exception. The Yorkshire Association of Aquarists' Societies have announced the date of this year's event as August 18 and 19.

Last year more than 18,000 people visited the racecourse show to see some superb fish and tableaux and lots of trade exhibits.

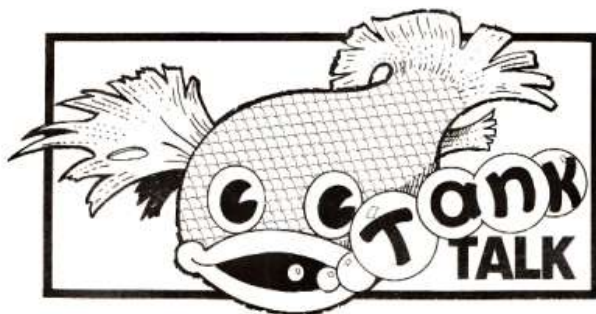
This year promises to be even better, judging by some of the plans the organising committee told me about when I visited Yorkshire a few weeks back.

They are encouraging a bigger tableaux entry and bigger entries in the show classes.

And as well as the attractions of the goods on sale at the trade exhibits, the committee are planning a film show to entertain children.

PRACTICAL FISHKEEPING will be at the show, of course. We will have a stand and we will be putting on some additional attractions for aquarists—more about that in a later issue.

PRACTICAL FISHKEEPING



Editor Norman Wright's look at the fishkeeping world

I look forward to meeting as many fishkeepers as possible at the event.

Meanwhile for exhibitors, further details and schedules are available from **Bob Singleton**, 13 Schofield Drive, Darfield, Barnsley, Yorks.

NEW binders to keep your issues of **PRACTICAL FISHKEEPING** are now available.

At £4 for a binder which will accept 12 issues, they will enable you to keep your magazines tidy and build them up into an excellent reference volume which you can use for years.

Full details on how to get your binder appear on Page 48.

WILL the filtration method of the future be a revolutionary ultra violet light system?

That's the potential of a new development just arriving in this country for filtering pools.

Pond water is filtered by passing under an ultra violet tube which kills off all life in the water.

Now scientists are investigating the possibilities of its use in aquaria.

One of the snags could be the price. But **PRACTICAL FISHKEEPING** will be keeping you in touch with this development as soon as more information is available.

STILL on the subject of shows. **PRACTICAL FISHKEEPING** has joined forces with Aquarian Fish Foods to sponsor a special Top Tank award for societies to use at their shows.

This will give the entrant of the best fish in each show a cash award and a chance of a superb holiday. The society who runs the show also stands a chance of picking up £50.

Full details are on Page 27.

I HAVE had many letters from fishkeepers who enjoyed our series on setting up the **PRACTICAL FISHKEEPING** marine aquarium.

And a lot of newcomers to the hobby have asked for a similar feature on starting a tropical tank.

Our office does need an aquarium, so we shall be setting one up in time for the June issue.

I hope it will be of interest to all aquarists, as well as the beginner, as we hope to cover all the aspects of converting it into a good community tank.

NICK Fletcher is a keen tropical aquarist with an excellent record of breeding many species.

He is a feature writer with *Angling Times* in Peterborough.

Nick's other fishkeeping interest is his garden pond. He has managed to keep several native freshwater species as well as the more common pond fish.

THE term 'mouthbrooders' does not refer to a single fish, but to a group of African cichlid species which has developed parental care to a fine art.

All cichlids are great defenders of territory and guardians of their young, but the mouthbrooders have taken one further step along the evolutionary path. The generic name describes perfectly its nature: one parent—it may be the male or the female, according to the fish in question—carries the eggs in the mouth for a period of up to a fortnight, until the fry have absorbed their yolk sacs and are free-swimming.

During this time, the adult fish upon which this task has fallen goes entirely without food, and it is one of Nature's miracles that it never succumbs to temptation and eats its own young.

Several species of mouthbrooders are available, but some, due to their size, are unsuitable for all but the largest tank. This applies to perhaps the commonest of the lot, the Mozambique cichlid (*Tilapia Mossambica*). This a giant, easily reaching 14 inches in the wild, though rather less in captivity. So rapid is its growth rate that it is reared for food in its native East Africa.

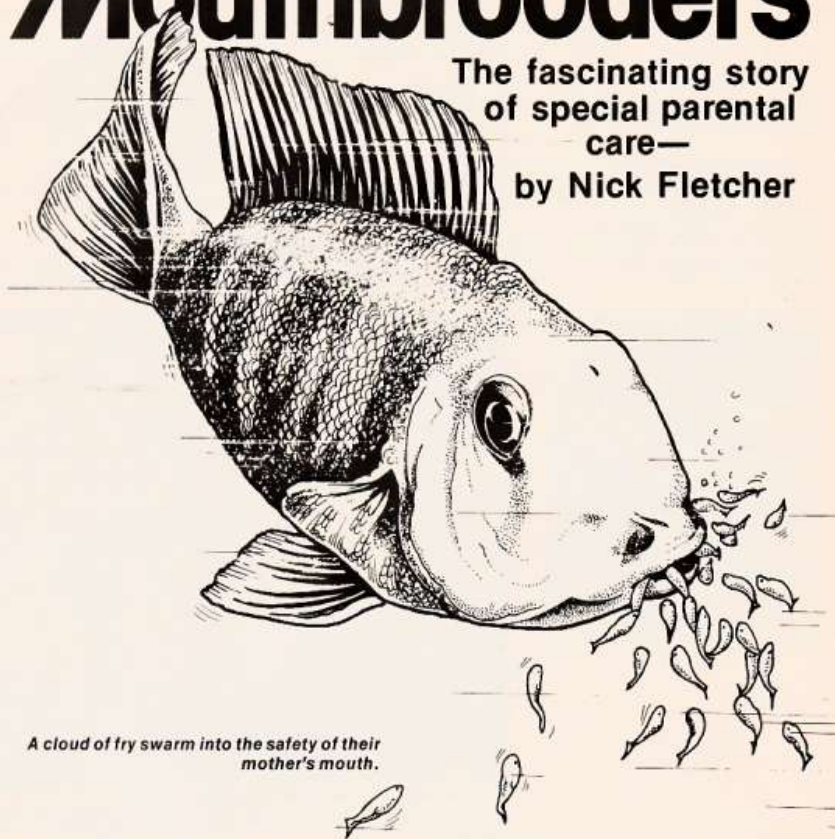
An unscrupulous dealer will sometimes try to pass off 'Mozzies' as other, more exotic fish, or give them a misleading name like 'Hawaiian Mouthbrooder'. And the fish itself can aid the deception, because there are many colour varieties, ranging from bluish silver to almost black. At breeding time, all colours intensify.

Several other *Tilapia*s are also mouthbrooders. They include *T. Natalensis*, which grows to only about four inches, is a native of East Africa and is relatively peaceful; *Tilapia*

Mouthbrooders

The fascinating story of special parental care—

by Nick Fletcher



A cloud of fry swarm into the safety of their mother's mouth.



Egyptian Mouthbrooders—the male (right) has just fertilised the eggs laid in a small hollow.

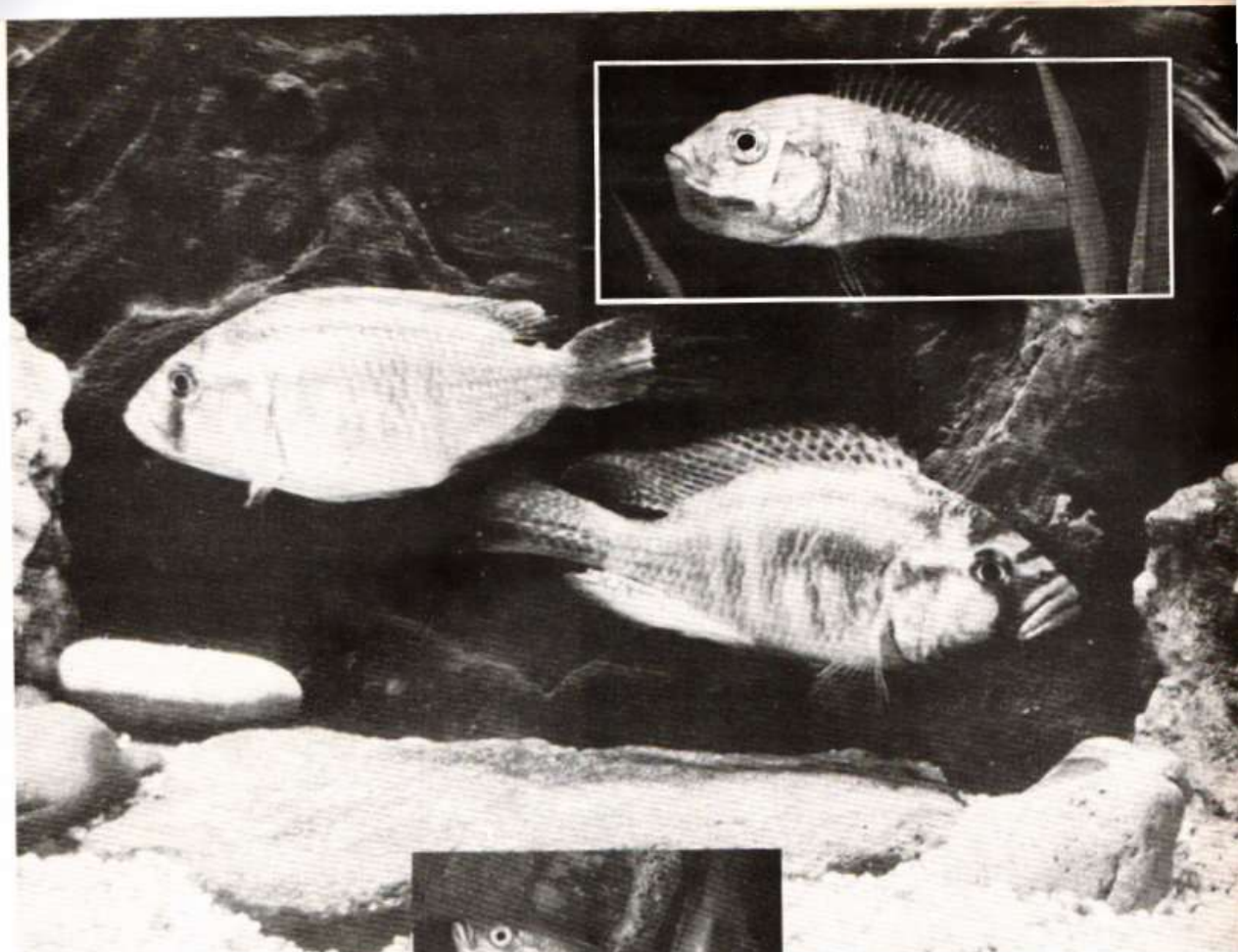
macrocephala, or Large Mouthbrooder, which is interesting because the male is the one to assume the voluntary hunger strike while the eggs are being carried; and *T. Zillii*, which I am tempted to re-christen the St. Helens cichlid.

As anyone who has ever fished the St. Helens Canal can testify, this fish has undergone a minor population explosion since a few individuals were introduced into the hot-water stretch of canal near the Pilkington glassworks. Undoubtedly their mouth-brooding habits gave the fry a flying start in the face of native predatory fish, and now the cichlids are king of the castle.

A popular community fish is the Krib (*Pelmatochromis kribensis*). This does not have the mouthbrooding habit, but a relative, *P. Guentheri*, has developed it well. This fish is only four inches long, and very similar in disposition to the Krib—territorial, but particularly aggressive.

Like *Tilapia Macrocephala*, it is the father who takes charge, and the young continue to use his mouth as a bolt-hole, even when they have got quite large. At any sign of danger, underwater version of musical chairs takes place, with the stragglers left jostling for position outside their haven.

Perhaps the most popular mouth-brooding cichlid, however, is the Egyptian (*Haplochromis multicolor*). It spawns in the same manner as other *Haplochromis* species, presenting not so much a challenge as an



unusual spectacle to the aquarist.

The male fish, particularly, is a beauty and its Latin name most apt. The general body colour is green, but on close examination every scale can be seen to have an almost orange centre. The anal dorsal fins are striped blue and metallic orange, and there is a bright orange spot at the root of the tail. The eye, always a fine point in cichlids, is red and gold with a black bar passing top to bottom.

At breeding time, the male adopts an almost black hue, while the colours of the dorsal and anal fins of the female are intensified. Another way of telling the sexes apart is to look at the head and jaws of the female, which are larger and more heavily proportioned in readiness for the egg-carrying duties.

The Egyptian-brooder grows to only three inches, and can be bred in quite a small tank. One holding five gallons is adequate.

The fish are not fussy about the pH of the water and will stand temperatures from 64 to 84 F. But for breeding, aim for the high seventies to low eighties. The smaller tank, the more heavily it should be planted, to give the highly territorial parents a sense of security.

Like most cichlids, Egyptian Mouth brooders will pair off if left to themselves. But for best results, it is advisable to separate the sexes at maturity, when they have reached two inches long. The females, in particular, should be fed as much



The female Egyptian Mouthbrooder (left) picks up the fertilised eggs. They will stay in her mouth until they are hatched.

protein-packed white worm, tubifex and shredded meat as they can consume . . . and being by nature greedy, this will be a surprising amount.

This stepping up of the food intake will soon have both males and females in breeding trim, marked by the heightened colours, and the fish can be placed together in the breeding tank.

The first part of the courtship follows the typical cichlid pattern—the male fans a shallow pit in the sand, or digs small holes in the gravel and persuades his mate to circle with him over the site. While this circular dance is going on, a few eggs are dropped into each pit and immediately fertilised by the male. At each stop, the female takes the eggs quickly into her mouth until she has anything from a couple of dozen to 100 stowed within her jaws. She will then make for cover, and the male takes no further interest in rearing the young.

Burton's Mouthbrooders—another attractive species of this branch of the Cichlid family. Inset: The female Egyptian Mouthbrooder broods her eggs. She is very thin after days of not feeding.

In fact, because he may pester his mate while she is carrying her brood, it is best to remove him to another tank.

Now comes the female's period of self-denial. For two weeks or more she starves while eggs grow into fry. Her body shrinks and that, combined with her distended jaw, gives her a markedly wasted appearance. It is no good trying to tempt her with food, for she will keep her mouth steadfastly shut, even if netted from the tank. The nearest she comes to eating is a rhythmic chewing motion. But this solely to circulate water over the young, to keep them clean and free from disease.

At last the young are ready to make their first sorties into the outside world. At first they only venture out briefly, crowding back at the first hint of trouble. But as the days pass they gain confidence.

By the time the fry are free swimming, they are quite large. At this stage they will take newly-hatched brine shrimp, and can quickly be weaned on to larger food. The mother fish will also feed now, as she gradually relinquishes her responsibilities. She will still take her growing brood into her mouth at night or in the face of danger, but ten days after the fry have first emerged, she can safely be removed.

Old Whiskers

Spotlight on Catfish and Loaches - Scavengers of your tank

CATFISH and Loaches are saddled with the reputation of being useful only as scavengers. But that's just not true.

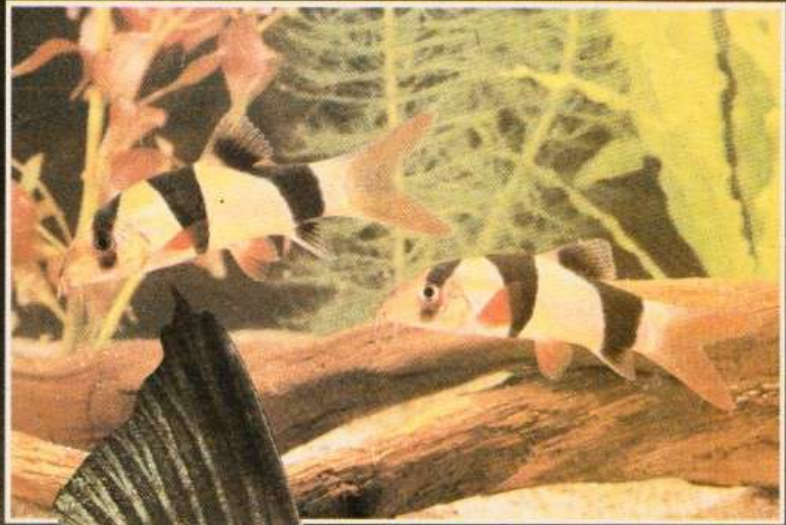
Many aquarists who specialise in these species will assure you that these whiskery fish can make a superb display to rival any tank of tropicals. Many are good community members who can brighten up your tank and add interest. Here we take a look at four you might like to keep.

RIGHT: NONE of the Catfish are more attractive than the Corydoras family. The distinctive shape of this pair mark them as Corydoras instantly. But there are scores of individual species all with their own colourings, markings and habits. The Corydoras family come mainly from the Amazon Basin in South America.



LEFT: THIS Black Catfish is a sinister looking customer with his huge eyes and black/blue body. He is a resident of South America and is another excellent example of the huge range of Catfish the aquarist can collect.

RIGHT: THERE'S no mistaking the Clown Loach with its distinctive black bands and bright red fins. Originating from Borneo and Sumatra the fish are shy and should be given a few hiding places in the tank.



LEFT: ANOTHER South American catfish is the Hoplo Cat. This looks very much like the Armoured Catfish with its bony scales. The fish vary locally in colouring and markings. They spawn in a bubble nest built under a rock or leaf.

Practical
fishkeeping

THE KOI SPECIALISTS

All our fish stocks are
fully quarantined.

Most sizes and varieties
available throughout
the year.

Show fish for the
connoisseur,

COMPETITIVE PRICES



Full range of Goldfish
and Fancy Coldwater Fish.

Growers of Water Lilies
and Aquatic Plants.

Water Garden
Equipment.

Tropical fish section
now open.

Retailers and Wholesalers of Coldwater Fish

Earlswood Water Gardens

Wood Lane, Earlswood, Solihull. West Midlands B94 5JL. Tele: Local 728 2586. STD. 05646 2586.

LABOUR IS CHEAP HERE!

So I will give you the lowest price with import permit applications, clearance through H.M. Customs and documentations and delivery to your shop arranged for you.

My specially hand-picked air freight and custom agent will provide her services from the airports of Manchester, London, Glasgow, Edinburgh, Aberdeen, East Midlands, Birmingham, Norwich, Hull, Southampton, Bristol, Belfast, and through her affiliates for the other small airports like Liverpool, Tees-side, Blackpool, etc.

Deliver 98% (minimum) alive guaranteed. Over 500 species of aquarium fishes, plus over 30 new species like the Red Martians, Pink Angel, Red Tiger. Over 30 new species of aquarium plants.

A whole new world awaits you if you write to us:

HAWKINSON PETS

26 Recreation Road, Singapore 19. Singapore

We supply a full range of AQUATIC EQUIPMENT AND FISH FOOD AT BIG DISCOUNT PRICES

For a copy of our price list, write to:
RENTAQUARIA (MAIL ORDER) P.F.3,
3 Ash View, Burncross, Sheffield S30 4ZD
Telephone: Ecclesfield (07415) 5472

Exotic Aquatica Ltd.

Good quality healthy **Tropical Marines** and **Freshwater** fish. All kept under first class conditions. Also a good comprehensive range of **tanks, equipment, corals, sands, gravels, foods, dried, frozen and live** (when available), aquarium and pond **plants** (including Lilies, Marginals, etc.). Also **Pond liners, small ponds, pumps, remedies, books**—in fact everything for the aquarist and pondkeeper.

Open: Tues, Wed, Thurs—9 a.m.—6 p.m. Fri, Sat, 9 a.m.—6.30 p.m. Sun 10 a.m.—1 p.m. Closed all day Monday

YOU SEEK THE BEST—

WE SELL IT!



773a Harrow Road, Wembley, Middlesex
Tel: 01 904 1313 (Nr Swan Inn)

DON'T think anyone could argue that we haven't just gone through the hardest winter for many years.

And "up North", in Yorkshire, we have had it worse than most. Plenty of mornings I have had to dig my way to the fish house through several feet of snow drifts in the garden.

But apart from those sort of problems, which everyone had to share, I had a few more personal disasters. The worst of those was the complete loss of my koi carp stock.

That happened through a foot of ice forming on the larger pond. The less delicate rudd and goldfish overwintered perfectly in the conditions, though I did lose some of each in the smaller pool.

I was heartbroken about the Koi, some of which will not be easy to replace, but with Spring round the corner, I will have plenty of other things to keep me occupied.

My trays of plants left to overwinter in the fish house and greenhouse have survived the freezing conditions remarkably well. And with the first decent sunshine just arriving, fresh green shoots are starting to pop up all over the place.

I was lucky in one instance, though. Through an oversight I allowed trays of hairgrass to dry up completely and the plants were a sorry looking sight when I eventually noticed the problem.

But a quick watering and some mild weather has seen those trays recover completely.



WHEN it comes to aquatic plants David Shields has certainly got green fingers. He seems to be able to coax any plant into living and thriving.

And his long list of wins in furnished aquaria sections of big shows goes to prove that.

His 10 ft lounge tank full of the notoriously difficult *Cryptocoryne* varieties also testifies to his skill and knowledge. It also proves you need patience for successful plant cultivation—that tank has taken David five years of work!

David is a leading member of Halifax AS, W. Yorks.

A fish house, greenhouse and pond at his home show that David is an all round fishkeeper.

David is a sales manager in the town. At 39-years-old he has been fishkeeping for more than 20 years.

One of his proudest achievements at the moment is a fabulous growth of Java Moss in his home community tank.

PRACTICAL FISHKEEPING

Here comes the sun

David Shields prepares his Aquatic plants for Summer



David Shields with his pond that was ravaged by the hard winter.

As I have often stressed in the past, there is nothing difficult about aquarium plant cultivation. There are no tricks or secrets, it really is easy—as my experience with the hairgrass shows only too well.

I have already told you about the methods of cultivating plants in trays, but I am going one step further myself this Spring.

Having travelled around many commercial plant outlets, I have always been impressed by the sort of growth they achieve in large open troughs.

So this year I have decided to give it a try myself. It should give me far more room and scope than the trays, while still keeping everything simple.

In my greenhouse, I replaced the standard shelving with a home-made construction capable of supporting far more weight. I built up a framework out of 3x2 timber and fitted a shelf 18 inches wide all the way around the side of the greenhouse.

This has proved very strong, holding several tanks as big as five feet—used to overwinter some of my coldwater fish—without any strain at all.

This will make the perfect base for my plant troughs. I intend to build up the sides with more 3x2 timber to form shallow troughs which will then be lined with heavy duty industrial polythene sheeting. It's very cheap but does the job perfectly.

Just add the normal inch or so peat base, cover with sand or gravel, and you are away.

A great advantage of using shallow containers like this is that it is much easier to separate plants whose roots have become thickly entwined.

Just remove the clump you want, tease out the individual specimens and wash the roots thoroughly and you are ready to transplant to your aquarium.

I will still be concentrating largely on my hairgrass, which seems to be the most popular plant at the moment. I have passed on my clumps to friends locally and even had a sackful of postal enquiries from all over the country.

But if you haven't got a greenhouse, don't worry. The tray system in a cold frame is perfectly adequate—and a very cheap alternative.

If you don't want to buy a commercial cold frame, nothing could be simpler than knocking one together yourself out of scrap wood and then covering with either glass or polythene sheet.

The list of other usable containers is virtually

endless. You could grow plants in old tanks in the garden—and a great standby is an old kitchen sink. In fact, many aquarists probably started on their hobby with goldfish or even tadpoles and newts kept in an old sink at the bottom of the garden.

Whatever container you use, cover it with glass or polythene to keep in the humidity. Maintenance is virtually non-existent, though it is vital to keep on top of watering regularly.

A couple of really hot summer's days with no water and you could find your plants dying off quickly.

A friend of mine picked up a real bargain recently for his plant growing. A friend in the garage business turned up one day with a lorry-load of old glass battery accumulator jars—all ready for dumping.

A quick pint and a few pounds changed hands and now my friend has enough plant and fish containers to last him a lifetime.

In the last house I lived in, I had a new bathroom suite installed. The workmen left the old bath out in the garden ready for disposal, but I soon put them off that idea.

I dug a hole in the garden big enough to put the bath into, levelled up all the ground around and laid some crazy paving as a surround—instant fish pond at a fraction of the cost of any commercial rival.

That old bath gave me a perfect container for growing my plants and soon abounded with live food of all sorts, including daphnia, mosquito larvae and bloodworms.

If you haven't got enough room in the garden to sink a bath, or if you only have a concrete backyard, just stand the bath in a quiet corner. It might not look quite as nice, but it does the job just as well.

The only thing to make sure of is that you don't site it under trees, which could soon choke the water with fallen leaves and bird droppings.

And if you don't want to cultivate live food in the bath, it's the perfect place to keep a shoal of temperate fish like White Cloud Mountain Minnows.

They will even overwinter safely in most parts of the country, and breed quite happily without molesting young or eggs—and young White Clouds in these conditions can rival even Neon Tetras for colour impact.



Dr David Ford is one of the country's foremost experts on fishkeeping and he writes every month in PRACTICAL FISHKEEPING as well as answering readers' problems in our popular Aquatic Queries section.

He has a wide knowledge of the hobby having spent 35 years studying tropical and coldwater fish.

But feeding fish is his speciality. Dr Ford (44) is head of the modern Aqualab at Pedigree Petfoods, Melton Mowbray.

Since 1973 he has spent his time researching and developing the range of Aquarian fish foods.

THERE are five basic ingredients of food-stuffs that are necessary for fish nutrition. These are proteins, fats, carbohydrates, vitamins and minerals. For land animals, such as humans, the list is six ingredients because water is a very necessary addition to our diets, but obviously this is not required by fish since they live in the stuff!

The protein content is necessary for growth and repair of body tissue. Protein can also be used as a source of energy. The fats—chemically known as lipids to include the oils—are essential for growth and many biochemical processes; they are also used to store food supplies for periods of starvation, for example during breeding activity.

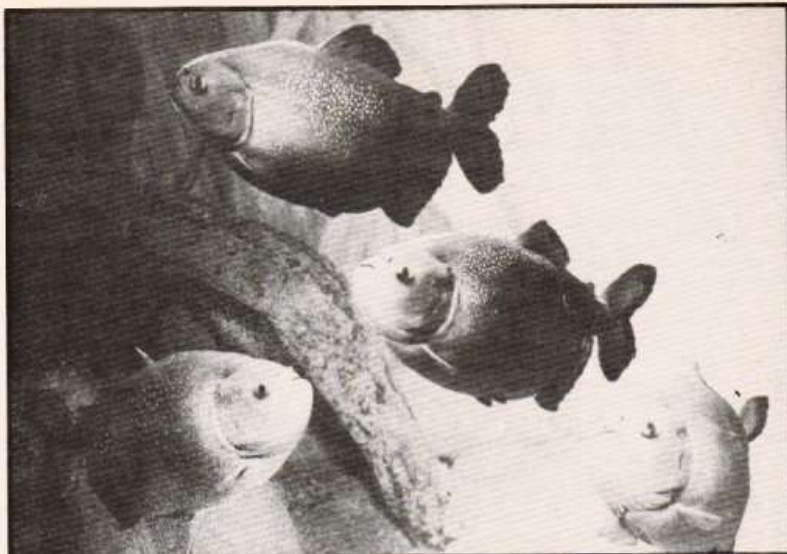
The carbohydrates are a source of energy and also play a part in those biochemical processes.

Vitamins are the catalysts of the processes and minerals include both the minor but essential ingredients such as trace elements and the major minerals such as calcium.

Protein

Protein itself is a complex mixture of huge organic molecules that contain nitrogen and are called amino-acids. Proteins are broken down during the process of digestion and absorption to their component amino-acids. They are transported via the bloodstream to tissue sites where the amino-acids are recombined into protein. Fish contain over 20 amino-acids combined in different ways and different proportions to give one specific "body", be it a shark or a guppy.

With 20-plus variables the variety is



Pirhana—a good example of the carnivore.

Nutrition

The correct feeding keeps your fish in perfect condition—by Dr. David Ford

practically infinite—hence the same process produces a flea or an elephant.

The fish does not need all 20 amino-acids because it can further metabolise the protein fragments and convert one type of amino-acid into another. But not all. There are some that must be present and in the correct minimum proportions—these are called essential amino-acids.

The number and type vary slightly among species, but on average there are 9 or 10 essential amino-acids. If even one of these is missing, or is below a critical level in the diet, the fish cannot use the protein supplied, no matter how high the level present.

It is like building a wall, with component bricks being amino-acids. If a layer of bricks is missing, the wall falls no matter how many bricks are available.

If all the essential amino-acids present are in the right proportions, the protein is said to be of good quality. A good quality protein is found in eggs because nature has 'designed' this as food for a rapidly growing embryo.

Where the essential amino-acids are low the protein is said to be of poor quality. An example is vegetable proteins because the vegetable kingdom uses different essential amino-acids to the animal kingdom. This is why soya protein has to be supplemented with an amino-acid called methionine to make it suitable as animal feed.

If a poor quality protein is used in a fish food, the level of that protein has to be high to bring the essential amino-acids up to the required minimum levels. Examples are fish farm pellets which, for commercial reasons,

have to be made as cheaply as possible. High levels of poor quality protein are often a cheaper method of getting the correct amounts of essential amino-acids than lower levels of high quality protein. Supplementation with pure amino-acids has to be kept to a minimum because they are so very expensive.

One of the drawbacks of using such high levels of protein is that the food may become nutritionally unbalanced. Surplus protein is used in the production of energy and the by-products are excreted. Such residues contain the nitrogen of the proteins and are excreted as ammonia and urea. In the ponds and rivers of the commercial fish farm, this is less of a problem than it is for the aquarium keeper. Excess protein definitely pollutes the small volume of water in aquaria.

Most commercial fish foods quote a protein level on the pack, often a very high value too, but this figure can be misleading. The traditional, and legally approved in the UK, method of quoting protein content is to simply measure the total nitrogen content of the food and multiply by a standard factor to give the estimated protein. If some of the ingredients are rich in nitrogen, and many of the gelling agents used in fish foods fall into this category, then the calculation gives a high protein figure with no indication of its quality.

Oils and Fats

Animals have fats and fish have oils. The reason for this difference is obvious if you think about the temperature differences



Dr. Ford conducts extensive feeding trials in the Aquarian laboratories.

involved. Edible animals, beef, sheep, pigs, etc., are warm-blooded animals who use biochemical processes to maintain a body temperature of about 38°C.

Fish are cold-blooded animals whose body temperatures simply reflect the temperature of their surrounding water. Cold water fish are below room temperatures all the way down to freezing in outdoor tanks and ponds.

Even tropical aquarium fish with tanks elevated to breeding temperatures of 80°F (27°C) are 10°C below the body temperatures of their owners. If the fish had the hard fats of the mammals, fish such as the Icelandic Cod would be as stiff as a candle!

The difference between fats and oils is due to the chemical structure of the molecules. Oils are called "unsaturated" and fats are "saturated" according to this structure. The more saturated the fat, the higher its melting point.

Mammals layer their saturated fats under the skin for warmth and as a food store when times are lean. Fish also use fats as a food store, but since warmth is not required the oil can be stored in internal organs.

Cod Liver Oil is a well known example. Fish cannot handle hard fats and if fed on a diet of animal fats with no oils, the fish packs the hard fat into organs in its body with serious consequences to its health. This is why you must trim-off any fat adhering to scrap food diets such as beef heart and liver.

Carbohydrates

Energy is required for all the body processes of fish, such as swimming, growing, digestion and so on. The source of this energy is the food they eat. As mentioned above, it is possible to utilise protein as an energy source but the breakdown products pollute the aquarium since the nitrogen is excreted as urea and ammonia giving nitrites, the well-know toxin in marine tanks, and nitrates.

Carbohydrates, however, are equally as good a source of energy but their breakdown products are not toxic being simply carbon dioxide and water itself.

Some fish are herbivores, that is plant eaters, and can digest very complex carbohydrates. To do this, the alimentary canal is very long and convoluted. Goldfish are like the ruminants, utilising gut bacteria to help breakdown complex carbohydrates.

Excess carbohydrates, however, are not suitable for fish because fat can be synthesised from the products of carbohydrate digestion and laid down in the organs with the same unhealthy consequences seen in fatty diets.

Vitamins and Minerals

If you watched the weekly *Life on Earth* programmes introduced by David

Attenborough on BBC2, you will know that human beings developed from the fishes. This link is shown by the similarity of nutrient requirements of man and fish, especially the vitamins. That is why fish is such a good food for us to eat.

But there are differences too, the major one being that fish need much higher levels of the vitamins per body weight. Human's biochemical processes are much more sophisticated than the fish's and so trace levels of the vitamins are used very efficiently.

If only human-grade foods are used to feed fish, they will soon show vitamin deficiency problems, such as Scoliosis (bent spine). This is why kitchen scraps are not an adequate diet for pet fish.

The mineral requirements of fish are just as important as vitamins. It is surprising what minerals are necessary, not only well-known elements such as iron, but also elements that are poisonous if present in excess such as copper and manganese. Recent researches have shown that the rare element selenium is essential in fish breeding.

Two important minerals in the formation of fish bones are calcium and phosphorus and they also need to be present in a special ratio, about three parts calcium to two parts phosphorus.

Feeding types

Fish are part of a feeding pyramid in the wild, with herbivorous fish feeding off plant life and omnivorous fish feeding off plankton, small fish and insects, and the carnivorous fish feeding on the herbivorous and omnivorous fish.

There are also special feeders such as the algae eaters and the coral eaters, often with specially adapted mouths to exploit their

particular food source.

All this complexity shows that there is no such thing as A fish food, that is just one food suitable for all types of pet fish. This is why manufacturers now sell what looks like a gourmet range of commercial foods, specially designed for the nutritional needs of each feeding type.

Ideal Nutrition

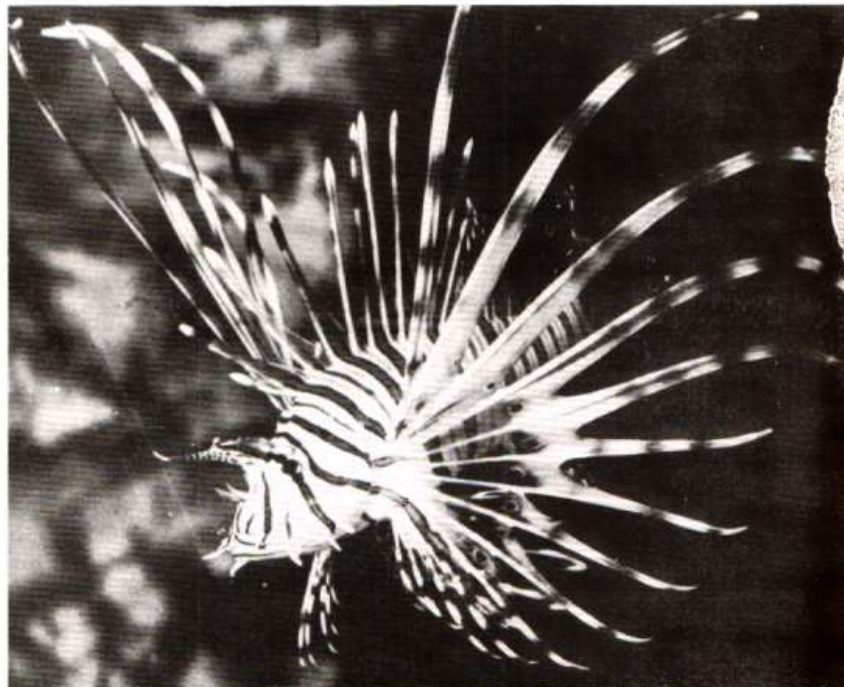
But what, on average, is the ideal nutritional value of a complete fish food? At the Animal Studies Centre, Waltham-on-the-Wolds, Leicestershire, which is the foremost authority in Europe on pet care and nutrition, feeding trials have been carried out on ornamental fish.

These show that growing fish require 35% best quality protein, 10% lipids, 2% vitamins and minerals, 3% roughage and the remainder carbohydrates as an energy source (these figures are on a dry basis, that is calculated for the food with no water present).

Adult fish need less protein—about 30%. These nutrients need to be presented in a form suitable for the feeding type of course. For example, meat- and fish-based for the carnivores, vegetable-based for the herbivores and blended foods for the omnivores.

Scientists now know a great deal about fish nutrition because the development of fish farming has necessitated that research is carried out to get the maximum yields of fish for food.

This research is useful for ornamental fish-keeping because each new discovery is taken up by the commercial fish food manufacturers. In a few laboratories around the world research is carried out on coldwater, tropical and marine pet fish to improve the foods available to the aquarist. This work is to help you, the hobbyist, and your fish.



The Lionfish—a marine version of the true carnivore. He has inward facing teeth which trap whole fish swallowed by this predator.



You can now remove the protective netting from your pond.



AS well as being head of the Tetra Information Centre Dr. Christopher Andrews is a keen aquarist.

He began keeping fish, amphibians and reptiles as a boy and also worked in a pet shop at weekends.

Later he obtained a Honours Degree in Zoology and has recently been awarded a Ph.D for his research on the parasites and diseases of fish.

He joined aquatic food and product manufacturers Tetra three years ago and has been with their Information Centre since it began in 1977.

The Centre answers between 50 and 100 aquatic problems a week.

The pond in May

Seasonal tips for the coldwater keeper—
from Dr. Christopher Andrews

AS the days begin to lengthen and temperatures start to rise, Spring will lead to the seasonal awakening of interest in water gardening. A few hints are provided here that should help the pond enthusiast get this season off to a good start.

More and more people are now turning to polythene liners for the construction of their garden pools, and they have many advantages over moulded and concrete pools.

If your pool is of concrete construction, damage as a result of ice formation during the Winter may become apparent during the Spring.

In the absence of rain, there may be a suspicious fall in the water level, resulting from cracks produced during the Winter freeze.

When this happens it is necessary to remove the entire cracked section, and relay with fresh concrete.

The new concrete must be waterproofed and treated to remove harmful lime. Your water garden stockist should be able to advise you of these procedures.

Whilst a thin covering of cement will not be sufficient to seal leaking ponds, the use of sealer may be an alternative for some hobbyists.

If repair is necessary, the pond will have to be emptied and the fish and plants stored in the

meantime. Pond plants are generally very hardy, and can be stored for a week or two in buckets or whatever receptacle is handy.

However, the fish will require rather more careful treatment. Removed from their pond home after a long Winter, when their resistance to disease is perhaps at its lowest, they may fall foul of one or more infections of skin parasites when kept in abnormal, confined conditions.

Similarly, overcrowding may lead to oxygen deficiency, possibly resulting in the loss of large, expensive fish. Therefore, the fish should be transferred to several polythene buckets or bins, or a temporary pond constructed from polythene sheeting.

Never place fish in galvanised containers, as these may prove toxic. Similarly, new polythene buckets etc., should be washed in warm soapy water before any fish are introduced.

The temporary holding facilities should be filled with pond water, the fish netted, and carefully transferred. The stocking density should be kept as low as possible, and a watch kept for tell tale signs of oxygen deficiency—gaping at the surface.

A submersible pump and fountain may be very useful. To minimise the trauma of the process, the



Orontium Aquaticum—an attractive North American pond plant.

fish should be stored in a cool, shady place—which may mean almost anywhere during a British Spring!

It is a good idea to administer a preventative course of treatment of some broad spectrum remedy.

Any buckets, bins or temporary pools may need to be covered with nylon mesh. This will not only keep birds and cats out, but also keep the more active of the fish in!

Without the problems of a leaking pool, about 20-40 per cent of the pond water should be removed each Spring and replaced with fresh. Tap water may be used to top up the pond, so long as it does not contain too much chlorine, or toxic metal (eg. copper) ions from pipework.

Chlorine may be removed by passing the water through an activated charcoal filter, and Tetra Aquasafe will effectively condition new water by removing chlorine and toxic metal ions.

Once every few years the pond should be completely emptied, stripped down and cleaned. The Spring or Autumn is a good time to do this. I personally recommend that this should be done during the early Autumn—September.

As indicated above, many ponds fish are not in their best "condition" after the winter: their food



Is any pond complete without a water Lily?

reserves are depleted and they are not yet feeding properly, and their resistance to disease is often low.

All these factors, along with the onset of spawning in some fish may lead to the onset of one of a range of parasites or disease infestations if they are unduly stressed.

In contrast, during the early Autumn pond fish may be regarded as in peak condition. Spawning is well over with, and the fish have a full seasons feeding behind them, and should be vigorously healthy.

They are, at this time, better equipped to cope with the upsets of netting and close confinement, before release into their newly cleaned home.

So long as this operation is not left too late in the season, the fish will still have time to settle down before the Winter.

Returning to the Spring-time in the water gardener's calendar the nylon mesh net, stretched over the pool to retain dead Autumn leaves, may now be removed and put away until next Autumn.

Once any possibility of a late freeze has disappeared the pool heater may be disconnected and packed away. As temperatures begin to rise, the appetite of the fish will increase.

Goldfish do not feed to any great extent below

10C. As the temperature rises to 12-13C, they will come onto feed, and a good quality flaked or pellet food along with some live earthworms—should tempt even their flagging appetite.

It is important to remember that the appetite of the fish is still controlled by temperature—so DO NOT overfeed. The ration should be gradually increased, taking note of any sudden changes in appetite or weather.

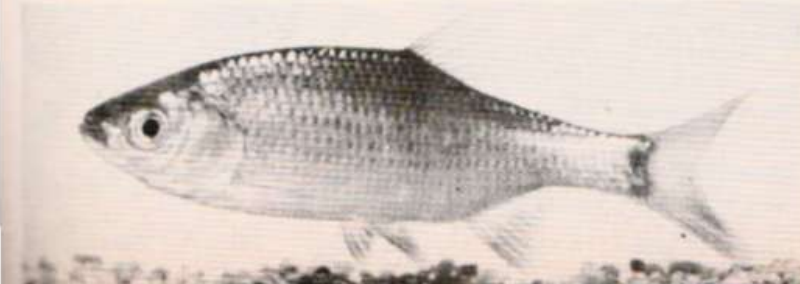
As the Spring progresses the planting season arrives—May and June are ideal for planting most pools. Marginal plants (eg. *Butomus* and *Acorus*) add character to every pond, and pond weed (eg. *Elodea Callitriche*, *Ceratophyllum*) is important in adding oxygen to the water and providing spawning beds for the fish. In addition, is any pond really complete without a lily (eg. *Nuphar*)?

Another benefit of plants in the garden pool is that they are important in controlling algal blooms. In new, and in some established ponds, there may be an algal problem.

Very often, this occurs during the Spring-early Summer. The bloom may appear, and then fade and die as the available nutrients are exhausted. Nonetheless, if algae is a problem in your pool, you may find that the addition of more pond plants may help to control the situation.

There are also several proprietary brands of remedies that can be used to combat troublesome algae. However, before turning to these it is often a good idea to check several other factors: are there sufficient plants in the pool, are you over-feeding the fish. Have large numbers of the plants been recently repotted in fresh, perhaps fertilised soil? All these may have more than a small influence in producing algal blooms.

The Rudd—a good species for the pond.



aquarian

advisory service bulletin No 14 – Tablets

We are pleased to announce the launch of the new Aquarian Tablet Food.

A tabletted food has many advantages for the aquarist. It can be used to feed bottom feeders such as the Catfish and for very large fish who will not take flake foods. Anemones can be fed a tablet now and then too. It can also be used as a holiday food supply for neighbours to feed to the fish in your absence, with specific instructions of how many tablets and how often to use them, so there is no danger of an inexperienced helper polluting the tank by over-feeding.

FOR VIEWING

The tablets are designed to stick to the aquarium front glass, which brings the fish forward for viewing when they gather round and peck at the food. This is useful to display the fish to visitors.

The Aquarian range of fish foods contain fifty food ingredients including fresh fish, meats and vegetables. There are ten different formulae to cater for all aquarium species.

THE AQUARIAN FORMULA

It is well known that Aquarian flake has a superior acceptance and nutritive value because of the fresh food ingredients. These advantages have been included in the new Aquarian Tablet Food by compounding the ten Aquarian flake formulae into a tablet form. This has been done in a special way that allows the tablet to be stuck firmly on the front glass.

FEEDING TRIALS

The tablets have been successfully fed to Coldwater, Tropical and Marine fish, and to some invertebrates, and Axolotels, Terrapins and Tree Crabs. The acceptance is equal to the original flake food and the freshness is maintained by packaging the tablets in air tight, sealed pots.

They are available now from your local stockist at around 70p per sealed container of at least 100 tablets.



For more information on Aquarian and free advice on all fish keeping questions, please write to: Dr. D. M. Ford, Animal Studies Centre, Freaby Lane, Waltham-on-the-Wold, Melton Mowbray, Leicester LE14 4RT.

Aquarian. Because you can't beat fresh food for healthy fish.

Aquarian is manufactured and distributed by Thomas's, Pellon Lane, Halifax HX1 5QWP

Alarm!

Cliff Harrison has been an active fishkeeper for more than 20 years.

Most of that time he has been a member of the Kingston and District AS, London.

Cliff (35) has several special aquatic interests including native coldwater marines, Botias, Catfish, Eels and other oddities.

He is also keenly interested in the technical aspect of the hobby and has advised many firms on new developments to help the aquarist.

JUST what value do you place on the lives of your fish? If you bought them young, and have watched them develop into mature and healthy adults, the chances are that you regard them as being irreplaceable, particularly if they are show winners.

Even in straight replacement terms the cost could be approaching £50 for the inhabitants of a typical display aquarium: if it is a marine tank, it would probably run to well over £100.

That explains why a new British invention has created so much interest in fishkeeping circles, and it could eventually become as indispensable an item of equipment as the air pump.

The "Aqualarm" as its name suggests, a unit that continually monitors the temperature of the aquarium water and sounds a warning should it go beyond the normal range for tropicals.

The unit incorporates reliable solid-state circuitry, and operates from the normal mains supply: since the vast majority of "accidents", where the temperature either rises or falls to a level that the fish cannot tolerate, are due to failure of the heating equipment rather than a mains supply failure, this is likely to be of no great consequence.

The root of the problem is that no matter how reliable or long-lived our aquarium heating equipment might be, when it does



The Aqualarm—in addition to this "black box" there is a tiny sensor to hide in the tank.

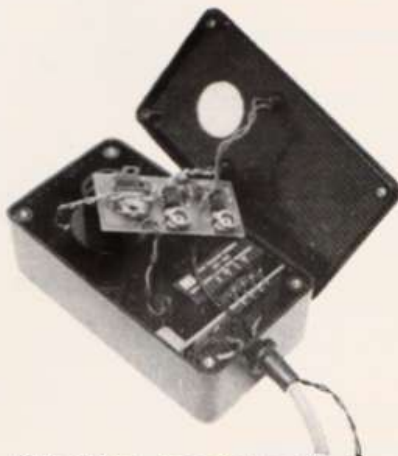
PRACTICAL FISHKEEPING



On File

eventually fail there is likely to be no advance warning of the fact. The "Aqualarm" gives a clear audible and visual warning of failure, enabling the hobbyist to rectify the situation before any harm is done. The siren might not waken a heavy sleeper but its sound is sufficiently penetrating to be noticed throughout the whole house provided the doors are not kept shut.

There are two components: the main unit, housed in a neat black plastic box measuring



Stripped down—the control box of the alarm with its complicated internal workings.

some 12cms long, 7cms wide, and 5cms deep overall; and the miniscule, glass-tube encased temperature sensor unit, just 4cms in length.

The two are connected by a very fine twin flex (carrying a low voltage only) about 85cms (33 inches) long. The sensor unit is really so small that it can be easily hidden within the aquarium, whilst the "black box" should be mounted well away from splashes and facing into the room for maximum sound penetration.

The "Aqualarm" is available direct from Solent Marine Systems, 97 Station Road, New Milton, Hants, (Tel: 0425 616376), and cost £15 inclusive of VAT and postage. It is normally set with limits of 70°F low, 82°F high, but can be supplied to other settings for an extra £1. The designers are currently working on models with multiple sensors,—ideal for enthusiasts with many tanks, and would welcome enquiries on these and other developments.

Books

Making Your Own Aquarium by Jorgen Hansen (Bell and Hyman), £5.50.

Danish science teacher, chess master and aquarist, Jorgen Hansen, covers just about every aspect of setting up a tropical tank in his first book published in Britain.

He uses diagrams and pictures to illustrate his methods of starting an aquarium, from building the tank, putting it in the right setting, and planting right through to choosing a tank for specialist species.

Mr Hansen also covers filtration and setting up spawning tanks for the various breeding types of tropical freshwater fish.

Most fishkeepers, novice or experienced, would find something of interest in these Danish methods of keeping fish.

The section on decorating the tank is particularly interesting.

Although it is full of information, the book is only 150 pages. And at £5.50 hardback that makes it fairly expensive.

Stapeley Water Gardens '79



Stapeley Water Gardens Catalogue '79

FISH, plants, ponds, fountains, waterfalls ... in fact anything to do with pondkeeping can be found in the 1979 catalogue produced by the Stapeley Water Garden Centre near Nantwich, Cheshire.

This is one of the biggest centres in Britain and they boast a huge range of products.

In addition to their pond construction equipment and accessories you will find a big plant section in this catalogue.

The centre also has a big Koi collection as well as the usual pond fish.

As well as listing their products the catalogue is quite an instruction manual. It is well illustrated with pictures and drawings plus some colour sections which show you how to use the products and how to choose them.

One thing I particularly liked about it was that each item is priced. And the Centre keeps to that price throughout the year unless the VAT rate is increased.

It is an extremely useful and interesting handbook.

PRACTICAL FISHKEEPING readers can obtain a free copy by sending a 12p stamp for postage to Stapeley Water Gardens, London Road, Stapeley, Nantwich, Cheshire, CW5 7JL.

Write to:

Letters

Practical Fishkeeping, Bretton Court, Bretton, Peterborough, PE3 8DZ

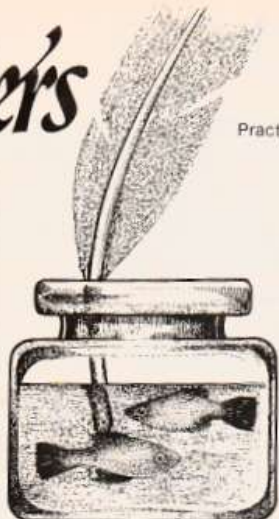
Oscars

FIRST congratulations on a first class, worthwhile magazine in PRACTICAL FISHKEEPING. I was interested in the Aquatic Query asked by G. Donnelly in the March issue. My interest is because I also keep Oscars. I have two Tiger Oscars in a 48 inch aquarium.

And I too had the same problem as Mr Donnelly — that is little white worms crawling all over the glass. And always the advice I received was — you are overfeeding them, cut down the feed and your problems will go away. Well I cut down to one feed a day and changed to feeding just beef heart. All uneaten food was removed before lights out. But in spite of changing 25 per cent of the water three times weekly and siphoning the worms off the glass, they still appeared. Like Mr Donnelly I was in despair.

I called in at Matlock Waterlife Centre one afternoon during a drive in the Derbyshire countryside and outlined my sorry problem. They advised me to buy a Diatomic power filter costing £50. This I did and rushed home to try it out.

Within two days the worms had gone and the water was crystal clear. I now have only to change a quarter of the water weekly. It has taken the hard work out of keeping my Oscars and given me more time to enjoy the fish. — **D. Johnson, Heanor, Derbyshire.**



No good publication is the same without a lively letters page. We want you, the readers to have your say — to tell us of your views and experiences. So come on! Put pen to paper.

Stream feed

I READ with interest the article on feeding Marine fish in your February issue. I found that Seahorses I kept would not eat brine shrimps, because they were too small. But they would eat freshwater shrimps and Mayfly larvae caught in local streams and ponds. These same freshwater crustaceans were taken with relish by coral Banded Shrimps and larger fish. — **J. Wood, Ings, Cumbria.**

More about Terrapins

WITH reference to your item "Tank Terrors" in the February PRACTICAL FISHKEEPING. Young terrapins need heated air as well as water. Tungsten light should be used as well as fluorescent tubes, Gro-lux are beneficial to reptiles. The basking rock, securely placed under the light, should be large enough for inmates to leave the water completely and dry out. All heater/thermostats and cables should be protected and inaccessible.

Do not feed kitchen scraps.

Try chopped beef heart, fish, earthworms, daphnia, water snails, cuttlefish and scraped oven food. With this regime young terrapins should grow into healthy adults.

Another hint on mixing species. Do not be tempted to keep clawed toads with fish. Although totally aquatic these toads are also totally carnivorous and will take fish as large as themselves. — **Michael Sutton, Association of British Wild Animal Keepers, Chard, Somerset.**



Aquatic Toad — he will eat any fish so keep him alone.

Don't forget frozen food

I FEEL that some comment is required on the article by Dr David Ford on feeding marine fish in the February issue.

These days one of the most convenient ways for the hobbyist to feed their fish, and give them variety, is to use one of the commercial frozen foods on the market. Dr Ford rather dismissed this form of feeding by writing just 15 lines on the subject.

In our own Gamma Foods product line we have carefully chosen more than 20 different foodstuffs primarily orientated towards feeding marine fish. Dr Ford suggests that the hobbyist should prepare their own frozen foods. However, many of these foods are planktonic and would be totally impracticable for the aquarist to collect and prepare himself. Gamma foods have been carefully chosen so they stimulate and in some cases duplicate the natural diet that many fish would be eating in their coral reef environment.

Dr Ford infers that foods such as our own should be used to tempt the timid or

delicate fish. Well, surely, if these foods will tempt such fish, then it should be ideal for all fish!

I feel, also, that Dr Ford passed over the subject of Gamma Ray irradiation, without enlarging on the enormous advantages of such a treatment in the elimination of aquatic parasites. This means that for the first time the marine fishkeeper can safely feed his fish many natural ocean foods that in the past they would have avoided due to the potential parasitic infection. — **R. Todd, Product Sales Manager, Gamma Foods, Borehamwood, Herts.**

Dr Ford replies: The article was written to show marine aquarists that a wider range of food is available for their fish than beginners realise, because there is no major difference in the nutritional requirements of saltwater and freshwater fishes. If you wish (or need) to feed planktonic foods then sterilisation is essential, as Mr Todd states.

Inside the mind of an Angel



Angels — what goes on inside?

I AM a beginner in the field of Angel Fish psychology. These fish have always fascinated me since I was at primary school ten years ago.

I have decided to start to find out how they learn and what they learn, and as such I need to acquire as much knowledge as possible about behaviour or anything regarding the right

direction in which to perform my experiments.

Obviously all sorts of questions can be asked, and the more the merrier. I would be only too pleased to accept absolutely anything about these fish, especially personal accounts and what other people have seen in their aquariums. — **Mike Griffiths, 15 Elm Road, Willaston, Wirral, Cheshire.**

NEWS

Scottish Champs

A ROUND trip of over 1000 miles paid off for Basingstoke AS when they won the two major awards at the Scottish Aquarist Festival.

The Hampshire society's first success came in the tableaux section where their magnificent display based on a model paddle steamer took first prize.

Their second was for best fish in Basingstoke until we settle down here and can install our tanks," explained management consultant, Tony.

"When Wendy bought the shark at about two inches a lot of people said it would never win anything. But it has developed the depth of body which is so sought after in sharks, and we are both delighted to win this award," he added.

Tony and Wendy intend to remain Basingstoke members as well as joining the **Inverness AS**.

Accompanying the Basingstoke tableaux were **Philip Martyn, Mervyn Strange** and **Richard Blight** who had a nightmare 17 hour journey to the show at Motherwell Civic Centre, near Glasgow.

"Explained Philip: "Our van's rear axle played up and with looking after the fish we didn't arrive until 3 am.

"But we only lost one fish—a barb. And we thought we might lose more. Basingstoke water is very hard and Scottish water is equally soft. We did bring a certain amount of water but the fish have adapted well."

It was the society's first tableaux win at the festival.

But the show wasn't dominated by aquarists from South of the border. The locals took most of the main awards.

Several thousand visitors attended the show making it one of the most successful to date.

Trade stands and exhibitions swelled a good entry of fish and tableaux into an excellent festival.

Results:
Tropical furnished aquarium: 1 Basingstoke AS; 2 Aberdeen AS; 3 Clyde AS. Coldwater



Top Lionheads

AT the meeting of the Northern Goldfish and Pondkeepers Society **Pauline Hodgkinson** gave a talk on how she spawned and reared her Lionhead Goldfish in 1978.

The speaker gave a step-by-step account of the proceedings of two spawnings and several important factors noted by her during the rearing of her fish.

On display were two tanks of young Lionheads retained from Mrs Hodgkinson's spawnings, all of which were fully coloured and three of which had earlier been in a winning team of fish in 1978.

Tonbridge; M, Salisbury; Ma, South Shields; O, Port Talbot; Q, Stockton; R, Riverside; S, Petersfield; T, Brighton & Southern; U, North Wilts; V, Kettering; W, Bethnal Green; X (B-M), Newbury.

Perpetual Trophies are available at Caer Urfa, Class Ea: Kings Lynn, Class E; Plymouth—Breeders.

Details of FBAS Trophies may be obtained from **K. Saxby**, 5 Rowan Close, Meopham, nr Gravesend, Kent.

Also, just in time for the 1979 season, the new, metricated, revised **FBAS No 6 Booklet** (National Show Fish Sizes) may be obtained from the FBAS Publications Officer, **Mrs S. Hedges**, 150 Ashburton Avenue, Seven Kings, Ilford, Essex.

FBAS Awards

THE Federation of British Aquatic Societies have approved the list of society shows which will qualify for their brooch scheme in 1979.

The scheme is open to all aquarists exhibiting at an FBAS sponsored show.

You can win a bronze award with 20 first place cards; a silver with a further 25 firsts plus your bronze brooch; and a gold with 30 more firsts plus your silver award.

Here are the shows for 1979:—

Riverside, Reading, Southampton, Catfish Ass'n, Kettering, Taunton, Reigate & Redhill, Yeovil, Havant, Port Talbot, Bourmouthe, Southend, Redcar, Sudbury, South Shields, Salisbury, Dunmow, Killingworth, Brighton, Chard, Romford, S.E. London, Basingstoke, Gosport, Tonbridge, Long Eaton, Petersfield, C.N.A.A., Bethnal Green, Wellingborough, Hounslow, Kingston, Marlow, Merthyr, Plymouth, Hastings, North Wilts., East London, Newbury, Dublin & Drogheda, Walthamstow.

Other show 'targets' to aim for are the FBAS Championships Trophies, the majority of which are for single fish which qualify their winners for the FBAS Supreme Championship. To date, Championship Trophies for the following classes have been allocated:—

Class B, Hastings & St. Leonards; Ba, Croydon; C, Southampton; Ca, Midlands Study Group; Cb, Dunmow; D, Southend, Leigh; Da, Bristol TFC; Dc, Gosport; E, Bourmouthe; Ea, Wellingborough; F, Taunton; G, Havant; H, Hounslow; J, Gloucester; K, Sudbury; L,

Killie show

ON Saturday March 10 over 120 fishkeepers and Killie enthusiasts assembled in the Meeting Rooms of the Zoological Society of London for the first Spring Meeting of the British Aquarists' Study Society.

The afternoon was devoted to the Egglaying Toothcarps and members of the British Killifish Association were much in evidence.

The first paper presented by Ian Sainthouse was a review of the genus *Aphyosemon* and he explained the associations and distribution of the various sub-groups in this genus.

After a tea break, during which visitors were able to examine a display of fish arranged by members of the Hertfordshire group of the B.K.A., **Rod Roberts** gave an interesting and colourful account of his trips to West Africa collecting and photographing Killies.

Later **Dick Aylott** talked about breeding the bottom spawners and by distributing batches of Killie eggs he was able to launch another B.A.S.S. experiment; this time into the various hatching rates of eggs laid at the same time in similar conditions.

Present were then treated to a look behind the scenes.

The second Spring Meeting will be held on Saturday May 26. The speakers will be **Dr Keith Banister** of the British Museum and **Adrian Blake** of Basingstoke. The subject will be 'The Barbs', and tickets (£1.50p) and further information is available from **W. E. Goodwin**, 14 Dawlish Drive, Devon Park, Bedford.


furnished aquarium: 1 Edinburgh Pondkeepers; 2 Scottish AS. Marine furnished aquarium: 1 Renfrewshire AS. Tropical furnished aquarium (individual): 1 J. Bennett; 2 D. Angus; 3 Livingstone AS. Coldwater furnished aquarium (individual): 1 Tinto AS. Marine furnished aquarium (individual): 1 D. Hart. Furnished Aquarium—schools: 1 Our Ladies High School. Schools' aquatic art: 1 St Serfs; 2 Fort Primary; 3 Berryl Hill Nursery. Aquascape: 1 J. Milne; 2 C. Broom; 3 Edinburgh Pondkeepers. Common Goldfish and Comets: 1 B. Forrest; 2 J. Carney. Shubunkins: 1 I. Carney. Any other coldwater: 1 T. Taylor; 2 Mary Gillan; 3 J. Milligan. Single Guppies: 1 J. Nimmo; 2 G. Park. Single Mollies: 1 D. Strachan; 2 A. Wicksted; 3 D. Strachan. Single Platies: 1 B. Fleming; 2 P. Henry; 3 H. Spence. Single Swordtails: 1 I. Henry; 2 I. McMillan; 3 M. Strange. Any other livebearers: 1 A. Wicksted; 2 and 3 J. Irish. Any species livebearer pairs: 1 J. Kimm; 2 J. Hutchins. Guppies pairs: 1 J. Milne; 2 and 3 J. Hutchins. Barbs A: 1 D. Angus; 2 D. Dobbie; 3 I. MacMillan. Barbs B: 1 T. Robertson; 2 D. Wallace; 3 A. Wicksted. Any variety Barbs: 1 K. McDonald; 2 P. West and H. Hoey; 3 W. Hamilton. Characins A: 1 J. Wilson; 2 R and S. MacIntosh; 3 H. Hoey. Characins B: 1 G. Stevenson; 2 A. Clegg; 3 T. Robertson. Characins C: 1 J. Moyes; 2 J. Irish; 3 J. Kimm. Any variety Characins: 1 A. Wicksted; 2 F. Leanne; 3 R and S. MacIntosh. Single Rasboras: 1 P. Mackay; 2 E. and L. McCabe; 3 I. Henry. Danios and Minnows: 1 B. Fleming; 2 G. Robertson; 3 I. Henry. Egglaying Toothcarps: 1 J. Nimmo; 2 and 3 J. and M. Moyes. Pairs: 1 I. Henry; 2 A. and W. Frew; 3 J. and M. Moyes. Single Fighters: 1 R. Delaney; 2 A. Wicksted; 3 D. Wallace. Single Gouramis: 1 D. Dobbie; 2 I. Henry; 3 T. Cowan. Gourami Pairs: 1 W. Hamilton; 2 A. Ritchie; 3 D. Dobbie. Rift Valley Cichlids: 1 A. Wicksted; 2 J. Kimm; 3 A. Ritchie. Dwarf Cichlids: 1 A. Boyd; 2 R and S. MacIntosh; 3 E. Romer. Large Cichlids: 1 D. McCann; 2 A. Wicksted; 3 T. Cranford. Cichlid Pairs: 1 R. Delaney; 2 D. Angus; 3 W. Hamilton. Catfish A: 1 T. Cruikshank; 2 W. Murray; 3 T. Cruikshank. Catfish B: 1 W. Wicksted; 2 Pat Lambourne; 3 T. Cruikshank. Catfish pairs: 1 D. Dobbie; 2 P. Lambourne; 3 J. Nimmo. Single Sharks: 1 Wendy Harmsworth; 2 R. Bell; 3 D. Wilson. Single Loaches: 1 G. Mars; 2 J. Ross; 3 D. Barr. Single Egglayers: 1 M. Strange; 2 G. Stevenson; 3 J. Irish. Egglayers pairs: 1 P. Henry. Aquarium plants: 1 A. Scott and J. Thompson; 2 S. Nasmith. Breeders Guppies: 1 J. Nimmo; 2 A. McClachlan; 3 I. Baird. Breeders Mollies: 1 A. McClachlan. Breeders Swordtails: 1 P. Burnett; 2 P. Hill; 3 R. Thomson. Breeders Livebearers: 1 P. Martyn; 2 D. Strachan; 3 M. Strange. Egglayers A: 1 Gira Sandford. Egglayers B: 1 K. Law; 2 W. O'Brien; 3 D. Angus. Egglayers C: 1 D. Cooke; 2 and 3 J. and M. Moyes. Egglayers D: 1 A. Bean; 2 S. Merriden; 3 A. and W. Frew. Breeders coldwater: 1 and 2 A. Scott and J. Thompson. Tableaux: 1 Basingstoke AS; 2 Aberdeen AS; 3 Livingstone AS; 4 Lanarkshire AS.

NORWOOD AQUARIUM LTD.

London's Leading Wholesale Suppliers of Aquatic Equipment
Prompt and Reliable Service to Retailers
WELDON HOUSE, JUNCTION RD., SOUTH CROYDON, SURREY
Phone : 01-680 3435
Members of Pet Trade Association

DIARY DATES

S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
T	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	



Fifi-la Cod

MAKE sure your society's meeting or show is in the PRACTICAL FISHKEEPING Diary Dates.

All you have to do is write and tell us about your events... and cash in on the publicity we will give to them.

Simply write to Diary Dates, Practical Fishkeeping, Bretton Court, Bretton, Peterborough. We will do the rest.

Make sure you give the date, the details of the event and the full name of your society.

Include addresses or telephone numbers where necessary.

May

Saturday, May 5: Brighton & Southern Aquarists' Society Open Show.

Sunday, May 6: Oram AS Open Show at Oram Social Club, Refuge Street, Shaw, Oldham, Lancs. F.N.A.S. rules. Benching 12 to 2 p.m. Judging 2.15 p.m. Fifty tropical classes, 14 coldwater classes. Prizes for 1, 2 and 3 places plus trophies for all section winners. Schedules from P. Hewitt, 5 Staveley Close, Shaw, Oldham, Lancs. (Tel: Shaw 844906.)

Sunday, May 6: Midland Aquatic Study Group Open Show, Coniston Hall, Chaddesmoor, Camock, Staffs. Benching 11 a.m.-1 p.m. 37 competitive classes with over 100 trophies to be won. Show schedules available (s.a.e. please) from R. White, 21 Johnson Close, Rugeley, Staffs.

Sunday, May 6: Bournemouth Aquarists Society Open Show at Kinson Community Centre, Bethams Park, Kinson, Bournemouth. Show secretary J. V. Jeffery, 30 Braemar Avenue, Southbourne, Bournemouth, Dorset BH6 4JF.

Sunday, May 6: Yeovil & District Aquarist Society Open Show at Marlock Village Hall, Yeovil. Details: Phil Johnson, Brook Cottage, Yeovil Marsh, Yeovil, Somerset.

Saturday, May 12: Tonbridge and District AS fish exhibition, Lambeth Walk, High Street, Tonbridge. Further details from the Secretary, Mrs. B. M. Purchard, 6 Albert Road, Tonbridge, Kent TN9 2SR. (Tel: Tonbridge 358225.)

Saturday, May 12: Port Talbot AS Open Show at the Tabach County Youth Centre, Margam Road, Port Talbot, West Glamorgan. Schedules available from early March, from show secretary, A. E. B. Fouracre, 3 Cross Street, Velindre, Port Talbot, West Glamorgan. (Tel: 3752.)

Sunday, May 13: British Koi-Keepers' Society National AGM to be held at the Botanical Gardens, Edgbaston, Birmingham at 1 p.m. For membership details apply to: Mr. M. Wainman, 165 Woodside Road, Amersham, Bucks HP6 6NR.

Saturday, May 19: Trowbridge & District Aquarists' Society Open Show to be held at St. Thomas's Church, Timbrell Street, Trowbridge, Wilts. Schedules available from Mrs. M. Burnett, 30 Lewis Crescent, Frome, Somerset.

Sunday, May 20: Caer Urfis AS First Open Show at Chuter Ede Community Centre, Denton Road, South Shields, Tyne and Wear.

Sunday, May 20: Caer Urfis AS Open Show at the Chuter Ede Community Centre, Denton Road, Whiteless Estate, South Shields. Schedules from G. Wright, 19 Sydney Street, Bolton Colliery, Tyne and Wear.

Sunday, May 20: Macclesfield Aquarium Society Open Show. Details from P. Tomlinson, 14 Minor Avenue, Lyme Green, Sutton Macclesfield.

Sunday, May 20: Gloucester Aquarist Society Open Show at Chequers Bridge Centre, Painswick Road, Gloucester. 31 classes to F.B.A.S. ruling. Trophies for 1st and 2nd plus award cards. Dr. D. M. Ford will give a slide talk on Aquaria around the World during judging. Schedules, from March, from S. Granger, 2/10 Bazeley Road, Matson, Gloucester.

Saturday, May 26: British Aquarists' Study Society, second spring meeting at the Meeting Rooms of the Zoological Society of London, Regents Park, NW1, at 2 p.m. The Barbs, Dr. Keith Banister of the British Museum, Natural History and other speakers. Tickets £1.25 members, £1.50 non-members from W. E. Goodwin, 14 Dawlish Drive, Devon Park, Bedford.

Sunday, May 27: Portsmouth Aquarist Society's Inter Club Show, Portsmouth Community Centre, Malins Road, Portsmouth.

Sunday, May 27: Merseyside Aquarist Society Annual Open Table Show, Rainhill Village Hall, Rainhill, Lancs. Further details J. Bailey, 11 Auburn Road, Liverpool. (Tel: 051-228 8199.)

Sunday, May 27: Bridlington & District AS 6th Annual Open Show, Hilderthorpe Junior School, Shaftesbury Road, Bridlington. Details from M. Jordan, secretary, 12 Greenfield Road, Bridlington, N. Humberside.

Sunday, May 27: Yorkshire Koi Society hold their 4th Spring Koi Show at Fishlake Water Gardens, Fishlake, Nr. Doncaster, at 2 p.m. Show schedules from Stuart Bent, 20 Oakwood Road East, Rotherham.

Sunday, May 27: British Open Guppy Show, The Glebe Farm Community Centre, Glebe Farm Road, Stechford, Birmingham 33. Details: D. R. Beacham, 61 Uppertield Close, Church Hill, Redditch, Worcs.

June

Sunday, June 3: Arbroath Aquarist Society Open Show, Community Centre, Marketgate, Arbroath. Details and schedules from John Steven, 95 Brechin Road, Arbroath.

Sunday, June 3: Loughborough & District Aquarist Society Open Show, Burleigh Community College, Thorpe Hill, Loughborough. Schedules from I. S. Purdy, 10 Cleveland Road, Loughborough, Leics. LE11 2SP.

Sunday, June 3: Sudbury AS Open Show at The Wasps Rugby Ground, Repton Avenue, Westley, Middlesex. Schedules from L. Braser, 66 Climesley Way, Kenton, Middlesex. (Tel: 01-204 5374.)

Sunday, June 3: Mid-Sussex AS Invitation Inter-club Show at Sidney West Sports Centre, Leylands Road, Burgess Hill, W. Sussex. Information from T. Tester, 19 Cyprus Road, Burgess Hill.

Sunday, June 10: Northwich and District AS Open Show at Hartford High School, Greenbank Lane, Chester Road, Northwich, Cheshire. F.N.A.S. judging standards. Details from D. Valentine, 43 Hartford Road, Davenham, Northwich, Cheshire. (Tel: Northwich 6624.)

Sunday, June 10: South Shields Aquarist Society Open Show.

Saturday, June 16: London's South Park Aquatic Study Society Open Show at the Community Centre, St. George's Road, Wimbledon, London SW19. Show secretary L. Clapp asks anyone still holding cups from the last show to return them by Tuesday, May 15, to him at 16 Overhill Way, Beckenham, Kent. (Tel: 01-657 4404.)

Sunday, June 17: Salisbury and District AS Open Show at the Activity Centre, Wootton Road, Salisbury. Fifty classes including 6 Cichlid and 10 coldwater. Judging to F.B.A.S. standards. Schedules from R. Adams, 26 Empire Road, Salisbury, Wilts. (S.A.E. please.)

Sunday, June 24: Alfreton and District AS Open Show at Alfreton Hall. Details from Mrs. P. Bonser, 10 George Street, Ridding, Derbys.

Sunday, June 24: British Koi-Keepers' Society will be holding their 1st National Koi Auction at the Botanical Gardens, Edgbaston, Birmingham. Further details from Mr. R. Hodgson, 5 Westbourne Road, Edgbaston, Birmingham. (Tel: 021-454 8283.)

July

Sunday, July 1: King's Lynn AS First Open Show at the Corn Exchange, Tuesday market Place, King's Lynn, Norfolk. Schedules from B. Towler, 35 Russell Close, King's Lynn.

Sunday, July 8: Lytham Aquarist Society Annual Open Show at Lytham Baths, Diconson Terrace, Lytham, Lancs. Schedules from show secretary, Peter Ham, 1 Wyndene Grove, Freckleton, Preston, Lancs. (Tel: Freckleton 633182.)

Sunday, July 8: Novis Tropical Fish Club's Annual Open Show, Heaton School, Newton Road, Byke, Gateshead. Further details from Mr. P. Caddie, 47 South Street, Deckham, Gateshead.

Saturday and Sunday, July 14/15: Romford & Becontree AS Open Show (Dagenham Town Show), Central Park, Dagenham, Essex. Schedules, Garry Slepstone, 35 Coniston Way, Elma Park, Hornchurch, Essex.

Sunday, July 15: Scarborough AS Open Show, Gladstone Road Junior School, Wooler Street, Scarborough. Schedules (March) from J. F. Richardson, 6 Keel Garth, Pickering, N. Yorks. YO18 8DG. (Tel: Pickering 73964.)

Saturday, July 21: The Goldfish Society of Great Britain, general meeting, at Conway Hall, Red Lion Square, Holborn, London.

August

Saturday, August 4: Northern Goldfish & Pondkeepers' Society hold their 3rd Coldwater Fish Show at the Sports Centre, Silverwell Street, Bolton, Lancashire. Schedules from Brian Rothwell, 4 Whalley Road, Hale, Cheshire. (Tel: 061-980 8801.)

Sunday, August 19: South East London AS Open Show at 141 Greenwich High Road, SE10. Details: Mr. S. Jeffery, 207 Sidthorpe Road, SE12.

Saturday, August 25, 26 and 27: Leamington and District AS Exhibition and Show at the Royal Pump Rooms, Leamington Spa. Details from M. Burridge, Flat 1, 36 Warwick New Road, Leamington Spa, Warks.

Sunday, August 26: Long Eaton Aquarist Society Open Show at Gregory's Rise Garden, Toton. Details: R. West, 137 Longhorn Road, Long Eaton, Notts.

Monday, August 27: Peterfield and District AS Second Open Show, at the Town Hall, Health Road, Peterfield, Hants. Schedules from G. Stacey, 5 Highfield Road, Peterfield.

Monday, August 27: Yorkshire Koi Festival, at Harewood House, near Leeds. Commencing 2 p.m. Show schedules, Trade Stand information, etc., from Stuart Bent, 20 Oakwood Road East, Rotherham.

September

Saturday, September 8: Bethnal Green Aquatic Society Open Show. Contact: Peter Rley, 1 Hartford Street, London E1. (Tel: 01-520 8911 Ext. 1633 for details.)

Saturday, September 8: Bristol AS Jubilee Open Coldwater Show, St. Ambrose Church Hall, Stratford Road, Whitehall, Bristol 5. Schedules from Mr. W. G. Ham, 28 Imperial Road, Bristol, BS14 9ED. (Tel: 0272-776924.)

Sunday, September 8: Longridge and District AS Open Show at the Civic Hall, Willox Park Lane, Longridge, Nr. Preston, Lancs. (15 minutes from M6 and M55.)

Sunday, September 8: Middlesbrough AS Open Show at James Finigan Hall, Easton, Trade stands, grand auction competitions. Details from S. Cook, 19 Bernier Street, Middlesbrough.

Sunday, September 8: Bridgewater AS Open Show at St. George's Community Centre, Kenyon Way, Little Hulton, Manchester. Details from M. Burgoyne, 15 Pansy Road, Farnworth, Bolton, Lancs.

Saturday, September 15: Hounslow & District Aquarists Society Open Show to be held at Hounslow Youth Centre, Cecil Road, Hounslow. Schedules from Show Secretary Mr. T. Bolingbroke, 2 Homewood Close, Addlestone, Surrey. (Tel: Weybridge 54976.)

Sunday, September 16: Leamington and District AS Open Show at Trinity Hall, Trinity Street, Leamington Spa. Details from M. Burridge, Flat 1, Warwick New Road, Leamington Spa, Warks.

Thursday, September 20: Kent Area Group C.A.G.B. 1st Annual General Meeting, at Collis Hall, St. Philips Church, Waterloo Street, Maidstone. Details from J. Gilbert, 1 Highfield Cottages, Lower Hardres, Canterbury. (S.A.E. please.)

Sunday, September 23: Tonbridge and District AS Open Show at Hadlow Village Hall, Willamsfield, Hadlow, Tonbridge, Kent. Details from Mrs. B. Purchard, 6 Albert Road, Tonbridge.

Sunday, September 30: Bexleyheath & District Aquarist Society 1st Open Show at T.A.V.P. Centre, Watling Street, Bexleyheath, Kent. Details and schedule Norman Raven, 39 Mount Pleasant Road, Lewisham, London, SE13 6RD. (Tel: 01-690 2954.)

October

Saturday, October 13: East London Aquarists & Pondkeepers Association Open Show. Details: D. Flack, 24 Wolsley Road, Rush Green, Romford, Essex.

A SIGNIFICANT ADVANCE IN THE DESIGN OF MOTOR FILTERS

The new Heatsaver System saves you money!

Ideal for the freshwater and marine aquarium

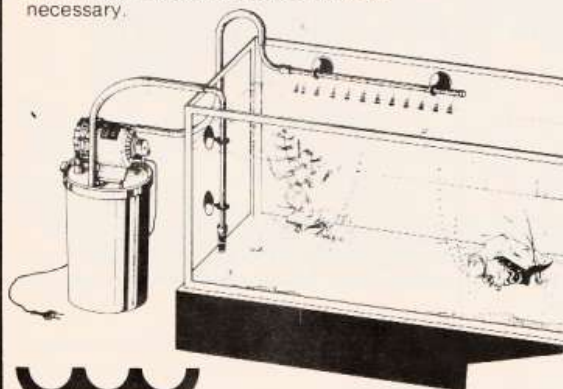
The Heatsaver System. Some heat is produced by the electric motor which operates the pump. Normally this heat is wasted, but in the Heatsaver system, the filtered water circulates in a jacket around the motor with these advantages:

1. The heat thus saved cuts down on heating bill for the aquarium.
2. The extra water jacket makes the unit extremely quiet.
3. The motor has an exceptionally long life since it runs cool.

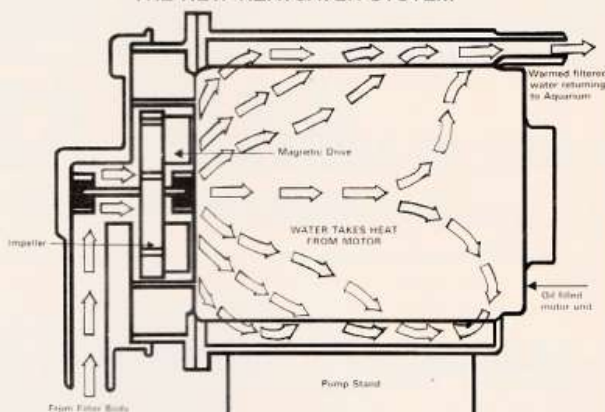
Generous size easy-clean external box. The filter box is 7 inches diameter (at the top) and 10 inches tall. It is designed to take conventional wool and carbon as filtration media, or other media such as resins or peat fibre can be used. To dismantle for cleaning simply involves removal of 4 springs clips.

Submersible Pumps available separately. The pumps which are attached to the filters are fully waterproof and have been designed to comply with the Electrical Safety Regulations.

Comprehensive Spares Service. We have invested in good stocks of spares ready for you in the unlikely event that these should be necessary.



THE NEW HEATSAVER SYSTEM



Two models of Heatsaver Filters.

Code: 1001
Heatsaver 100 motor filter. For tanks of about 100-200 litres. Price £42.06

Code: 1002
Heatsaver 200 motor filter. For aquariums from about 200 litres. Price £46.92

Complete and ready for use except for filtration media.

Two models of Heatsaver Submersible Pumps.

Code: 1011
Output 240 litres/hour. Price £26.46

Code: 1012
Output 360 litres/hour. Price £29.97

Both pumps supplied with 1 metre lead.

These fine filters are available through your dealer or in case of difficulty please contact:

Interpet - Dorking - Tel: 883202

Interpet

For Trouble-Free Fishkeeping

THE CORAL BAZAAR

MUST BE SEEN TO BE BELIEVED

1979 POND SEASON

Fibre glass ponds in STOCK
Pool liners IN STOCK
Fountain kits IN STOCK
Waterfall kits IN STOCK

Marginal plants, lilies, coldwater fish arrive in time for EASTER.

Send large (10in x 9in) stamped s.a.e. with 10p stamp for pond catalogue.

LARGE SELECTION OF AQUARIUMS AND AQUATIC ACCESSORIES

OPEN TUESDAY TO SATURDAY
10 a.m. to 5 p.m.
SUNDAY 10 a.m. to 4 p.m.
MONDAY CLOSED

IMPORTANT NOTICE

If you require dry goods of any description i.e. food, tanks, filters, etc., please call Tuesday-Saturday, as we are unable to sell anything other than fish and plants on a Sunday.



TRADE ENQUIRIES WELCOME — TUESDAY TO FRIDAY

Late night opening Fridays till 8 pm until further notice.

1/4 MILE OF AQUARIUMS — HOUSING FRESHWATER AND MARINE FISH

WALTON-ON-THE-HILL, TADWORTH, SURREY Tel TADWORTH 2475

Relax with...

Do it the easy way — have your copy sent to you each month by post. Simply take out an annual subscription at £7.00 per year by completing the form below.

Each issue of PRACTICAL FISHKEEPING is packed with new names, feature articles and pictures, covering all aspects of the hobby for beginners and experienced enthusiasts alike. Make sure of your regular copy!

And don't forget — PRACTICAL FISHKEEPING BINDERS are now available at only £4.00 each. Keep your copies altogether for easy reference. Order now!



To: Practical Fishkeeping, Subscription Department,
117, Park Road, Peterborough PE1 2TS.

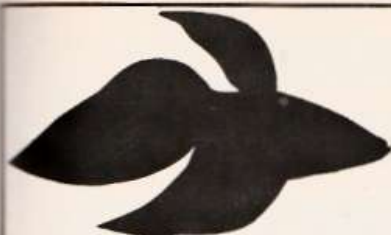
Please send me Practical Fishkeeping every month
at £7.00 p.a. (12 issues).

Please send me _____ Binders at £4.00 each.

I enclose cheque/postal order for £ _____ made
payable to Practical Fishkeeping.

Name _____

Address _____



A BETTA WORLD OF TROPICAL FISH

We stock one of the largest, healthiest range of tropical fish in the area plus decorative rock, petrified wood, natural and plastic plants and a large range of accessories. A wide range of all-glass aquariums always available.

Special offer for May 15% discount on all fish sales to customers who produce this advertisement.

Plus

A further chance of a free gift, and a chance that your entire purchase may be paid for by us.

BETTA FISH

92 HIGH ROAD, SOUTH TOTTENHAM, LONDON N.15

Tel: 802 1717

BOSCOMBE AQUATICS

BOURNEMOUTH

802 Christchurch Road, Boscombe
Telephone: Bournemouth 301448

SOUTHAMPTON

27/29 Queensway
Telephone: Southampton 37351

COLDWATER

- ★ Koi, Goldfish, Orfe, Fantails, Pearlscales and many more.

TROPICALS

- ★ One of the largest selections in the South. Everything from Neons to Discus.

MARINES

- ★ More than 100 different species of fish, live rock, invertebrates and crustaceans, always in stock.

Ponds at reduced prices and Tanks 24 inch £7, 36 inch £12, 48 inch £16.

**THE SOUTH'S LEADING
FISH SPECIALISTS**

D & M TROPICALS

Request the pleasure of your company to inspect their range of tropical and marine fish. We have over 30,000 fish in excess of 200 different varieties in 400 tanks.

Also a full range of coldwater fish for your selection.

- ★ Aquatic plants.
- ★ Complete range of accessories.
- ★ 78 different varieties of fish feeds (not just 57!).

Open: Mon, Wed, Thurs, Fri—1 to 8 pm
Sat—10 am to 6 pm
(Closed Tuesday)

**COME PREPARED TO BUY
YOU'LL NOT BE
DISAPPOINTED!**

54 BROOK STREET, ASTON CLINTON
NR. AYLESBURY, BUCKS.
(On A41, 2 miles south of Aylesbury)
Tel: Aylesbury (0296) 630649

NEW

**IMPROVED
KING BRITISH**

VITAMIN

**EVERYDAY FLAKE FOOD
FOR ALL AQUARIUM FISH**



KING BRITISH
AQUARIUM ACCESSORIES CO. LTD.

(Manufacturers of aquarium fish food)

Hayfield Mills, Haycliffe Lane, Bradford BD5 9ET, West
Yorkshire.

Telephone: Bradford 76241 (3 lines) STD 0274

**WE WILL PACKAGE UNDER YOUR OWN LABEL
OR SUPPLY IN BULK. EXPORT ENQUIRIES INVITED.**

**Contains
everything
your fish
would eat
in their
natural
habitat.**



**THE MOST COMPLETE LINE OF FISH FOODS
EVER DEVELOPED.....FOR ALL
AQUARIUM FISHES**



- ★ The most modern and nutritious way to feed your fish
- ★ Guaranteed gamma ray irradiated eliminates introduction of diseases to the aquarium
- ★ **gamma's** variety duplicates your fishes natural diet
- ★ Manufactured only from the highest quality fresh products
- ★ Easily and hygienically stored in the home freezer or ice box

ACCEPT NO SUBSTITUTES—GO gamma

The **gamma** varieties:
Bloodworms, Daphnia, Mysis, Whole Cackle, Adult Krill, Fine Mussell, Lance Fish, Squid, Sepia, Tang Diet, Whole Mussell, Prawn, Marine Algae, Razor Clam, Plankton, Beef Diet, Whole Shrimp, Lobster Eggs, Brine Shrimp, Freshwater Diet and Invertebrate Diet.

All distributive enquiries to:

gamma foods Ltd. Imperial Studios, Maxwell Road,
Borehamwood, Herts. Telephone: 01 207 1234

Practical fishkeeping Reader Enquiry Service

FREE

If you want further information on any of the products advertised in this issue, you can make use of our special **READER ENQUIRY SERVICE**

Just fill in the slips below — one for each separate enquiry — making sure that you include your own name and address each time. Cut them out and post them to us. NB: Please include stamp if requested by advertiser. Also take advantage of our **FREEPOST** offer. Send your coupons to: **READER ENQUIRY SERVICE**, (Dept. PF), **FREEPOST**, EMAP National Publications Ltd., Bretton Court, Bretton, Peterborough PE3 8DZ. We will then pass on the enquiries to the appropriate advertiser.

Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79	Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79
Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79	Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79
Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79	Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79
Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79	Name.....Page No. Name of Advertiser Address..... Telephone..... PF5/79

QUEENSBOROUGH OF SHEPHERDS BUSH

FOR QUALITY FRESHWATER, MARINE FISH AND PLANTS

LISTED BELOW, SOME OF THE CURRENT STOCK AVAILABLE

FRESHWATER FISH

Long Nose Elephants
Aequidens Itanyi
Haplochromis Wingati
Botia Sidhimunki
Rummy Nose Tetra
Herotilapia Multispinosa
Mosquito
Pencil Fish
Otocinclus
Apistogramma Borelli
Apistogramma Ramerizi
Cardinal Tetra
Hatchets
Emperor Tetra
Honey Gourami
Roberti Tetra
Butterflies
Pelmatochromis Thomasi
Nannacara Anomala
Celebes Rainbow
Emerald Eye Rasbora
Rasbora Maculata
Flying Fox
Bleeding Heart Tetra
Discus
Piranha
Clown Loach
Oscars
Botia Horae
Checker Barb
Congo Salmon Tetra
Silver Sharks
Tropheus Duboisi
Pimlodella Pictus
Jack Dempsey
Texas Cichlid
Blue Acara
Pelmatochromis Kribensis
Arrowana
Stone Fish
Combtails
Tropheus Moori

Aulonocara Nyassae
Aulonocara Regal
Trematocranus
Jacobfreibergeri
Haplochromis Subocularis
Haplochromis Polystigma
Haplochromis Moori
Haplochromis Janni
Haplochromis Ovatus
Haplochromis Allii
Haplochromis Rostratus
Haplochromis Venustus
Lobochilotes Labiatus
Telmatochromis Temporalis
Nannochromis Nudiceps
Melanochromis Johanni
Melanochromis Auratus
Julidochromis Regani
Julidochromis Ornatus
Julidochromis Marlieri
Lamprologus Brichardi
Pseudotropheus Aurora
Pseudotropheus Lanisticola
Pseudotropheus Livingstoni
Pseudotropheus Liliacinnis
Pseudotropheus Tropheops
Pseudotropheus Zebra
Labeotropheus Fuelleborni
Labeotropheus Trewavasae
Corydoras Hastatus
Corydoras Punctatus
Corydoras Schwartzi
Corydoras Paleatus
Corydoras Aeneus
Corydoras Julii
Corydoras Elegans
Acanthodoras
Agamyxis Pectinifrons
Bunocephalus Coracoideus
Plecostomus
Pangassius

LARGE SELECTION OF AQUARIA FOR SALE
GEM, JEWEL, SEE-ALL, KRYSTAL, CORAL
PLUS PLASTIC TANKS.

TANKS MADE TO ORDER

EVERYTHING FOR THE AQUARIST

Power Filters
Air Pumps
Gravel
Heaters & Stats.

Lighting
Books
Medicines
Foods

MARINE FISH

Clowns
Damsels
Puffers
Angels
Butterflies
Wrasses
Tangs
Triggers
Sea Horses
Box Fish
Hawk Fish
Gobies
Groupers
Scorpions
Bat Fish

Plus invertebrae

COLDWATER FISH

Goldfish
Koi Carp
Shubunkins
Calico Fantails
Orandas
Moors
Orfe
Rudd
Tench
Mirror Carp
+ Pond & Marginal
Plants

PLANT LIST

Acorus
Aponogeton
Amazon Swords
Ambulia
Bacopa
Cabomba
Crytocoryne (Assorted)
Elodea
Hygrophylla
Hair Grass
Indian Fern
Ludwigia
Radicans
Somulus Floribundus
Vallisneria
Wisteria

Plus many others

PLANT COLLECTIONS

BY MAIL ORDER ONLY
CASH WITH ORDER

1. 50 assorted plants £2.25
2. 40 assorted plants £2.00
3. 30 assorted plants £1.75
4. 20 assorted plants £1.50
5. 15 assorted plants £1.35
6. 10 assorted plants £1.00

Post and Packing 30p
Equipment, Foods & Books by
post. Ring for details.

GARDEN and POND EQUIPMENT

Ponds, Waterfalls & Liners, Garden Ornaments,
Lotus Fountain & Waterfall Pumps, Garden &
Underwater Lighting & Pondseal

ALL THE EQUIPMENT IS AVAILABLE FOR
SETTING UP A MARINE AQUARIA

Coral Sand
Ozonizers
Marine Salts

Hydrometers
Test Kits
Cures

Hours of Business

Mon.-Sat. 9.30-5.30

Friday 9.30-6.00

Closed All Day Thursday

SUNDAY 10 a.m.-4 p.m.

QUEENSBOROUGH

111 Goldhawk Road,
Shepherds Bush,
London W12

Phone: 743-2730

For Free Advice

Access & Barclaycard
Holders Welcome

With POND PRIDE your fish will rise whatever their size

Small ones will nibble enthusiastically from pellets as they float and soften at the water's surface. Large ones snap up whole pellets.



- POND PRIDE SINGLE SIZE PELLETS SUIT THEM ALL!
- POND PRIDE FLOATS MORE RELIABLY
- IN LARGE PELLET FORM

enabling you to watch your fish as they feed at the surface on this high protein, vitamin enriched, nutritionally balanced diet.

Obtainable in container sizes of 200 (standard) 450 (maxi) 3,000 (Breeder) gms containers.
from pet shops and garden suppliers everywhere

In case of difficulty write to:

BP NUTRITION (UK) LIMITED,
Stepfield, Witham, Essex CM8 3AB.
Tel: Witham 513651.

BP nutrition 



ANOTHER FIRST FROM FILTAPAC KOI-POOL MAIN DRAIN



SPECIALLY DESIGNED FOR KOI POOLS

AN ESSENTIAL PART OF ANY FILTRATION
OR WATER EXCHANGE SYSTEM.

LARGE SURFACE AREA RESISTS
CLOGGING.

MODELS FOR BOTH CONCRETE AND LINER
POOLS.

TRADE ENQUIRIES INVITED

**FILTAPAC CO. LTD., Fryers Works,
Abercromby Avenue, High Wycombe,
Bucks**

Tel: High Wycombe 40483

TRUE-LITE POWER TWIST TUBES

not only provide the correct FULL SPECTRUM LIGHTING for your aquarium they also emit virtually the same amount of light intensity as the combined outputs of a Northlight/Gro-Lux mixture.

By using TRUE-LITE you can benefit from the best lighting available and save money on installation and running costs.

TRUE-LITE is the only fluorescent lamp specifically made to simulate daylight AND it has a 2½ year guarantee.

Ask for TRUE-LITE by name — do not be sold inferior light sources.

TRUE-LITE is available from all good aquarist shops or direct from:

**SALE TILNEY
INTERNATIONAL LTD,
WEYBRIDGE, SURREY.**

Matlock
Waterlife
Centre



The UK's leading aquatic specialists

Send now for your FREE 28 page colour catalogue on water gardening, pools, fountains, plants and fish etc. Guaranteed products including live arrival on fish and plants.

Matlock Waterlife Centre

Nottingham Road, Tansley, Matlock, Derbys
Telephone (0629) 4699 and 4221

Personal callers welcome

Wholesale & Retail



The
Aquaculture Centre
Hadlow

Calling all Fish Keepers

How many tropical and cold water fish shops do you know that have even one qualified fish scientist on the staff?

The Aquaculture Centre has four. It also has its own fully equipped fish laboratories capable of making comprehensive diagnosis of water quality, fish disease, and any other relevant investigation.

The Aquaculture team is currently advising on fish farm installations in the Middle East, Greece, UK and West Africa.

WHY NOT BUY YOUR TROPICAL OR COLD WATER FISH FROM THE PROFESSIONALS?

OUR SHOWROOMS HAVE OVER 150 TANKS OF TROPICALS, MARINES AND COLD WATER FISH,

A message to all marine enthusiasts. Marine fish freighted to any red star station. (Minimum order £20). All fish quarantined & feeding before despatch. The following unparalleled collection is currently in stock and most of these species are arriving weekly:

We have at least 100 species of Marine Fish plus 25 Invertebrates at any time, including all the popular species, and many, many rarities. Phone us for up-to-date details.

Special Summer Attraction: The following superb varieties of Japanese Koi are available—all are 18 inches or longer, and beautifully marked.

Varieties are: Hi Utsien, Sanke, Hi Shawa, Shusui, Aka Matsuba, Yotsujaro.

Many other varieties also in stock. Any variety not in stock can be obtained by special order.

IMPORTANT NOTICE

Please note the facilities of our laboratory and scientists are available to our customers on a non-fee basis.

We regret that owing to the increasing amount of work from outside, all diagnosis, water chemistry analysis and professional advice will have to be charged on a normal commercial basis for aquarists who are not customers.

**THE AQUACULTURE CENTRE THE SQUARE HADLOW
NEAR TONBRIDGE KENT Tel. Hadlow 262**

Hours: 9-6 Tues, Wed, Sat, Sun. 10-8 Thurs, Fri.

Leasing & Maintenance



LARGEST VARIETY IN THE SOUTH

- ★ OVER 20,000 FISH IN STOCK
- ★ DIFFERENT VARIETIES EACH WEEK
- ★ BEST QUALITY PLANTS
- ★ EXTENSIVE RANGE OF EQUIPMENT
- ★ CUSTOM MADE ALL-GLASS TANKS
- ★ A FULL SELECTION OF COLDWATER FISH AND POND EQUIPMENT

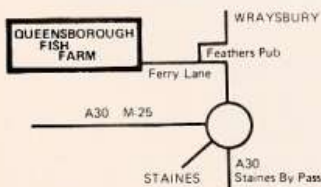
PLANT COLLECTIONS *Post only Cash with order*

TROPICAL COLLECTIONS

- | | | | | | |
|--|-------|---|-------|--|----------------------|
| 1. 50 plants, including Wistaria, cryptocoryne | £2.00 | 3 Giant sagittaria | £1.50 | 10 Vallisneria
10 Ludwigia
5 Moneywort | £1.25 |
| 2. 10 Vallisneria
6 Cabomba
6 Hygrophila
6 Ludwigia
6 Bacopa | £1.75 | 4. 6 Vallisneria
6 Cabomba
6 Ludwigia
6 Hygrophila
6 Bacopa | £1.25 | 9. 10 Cabomba
10 Ludwigia
10 Hygrophila
2 Cryptocoryne | £1.25 |
| 3. 6 Ludwigia
3 Giant Hygrophila
3 Water wistaria | | 5. 8 Cryptocoryne | £2.00 | 10. 3 Aponogeton
3 Water Wistaria
3 Cryptocoryne
1 A. Sword | £1.25 |
| | | 6. Amazon Sword 6-8in | 25p | | |
| | | 8. 10 Elodea | | | Post and Packing 30p |

NOTE:—It may be necessary to substitute certain plants depending on the time of year.

Hours of Business: Mon-Fri 10 am-5 pm. Sat, Sun 10 am-7 pm. Closed Wednesday.



**Ferry Lane, Hythe End,
Wraysbury, Nr. Staines.
Tel: Wraysbury 2885**



St. Clare Nurseries Ltd

NEW AQUATIC CENTRE NOW OPEN!!

Ample car parking facilities

*All sizes of:
goldfish and
fancy fish
available now
from 60 large
stock ponds.*

**JAPANESE
KOI CARP —
unbeatable
selection**

Tropical Fish

★ ★ ★

Marine Fish

★ ★ ★

Aquarium plants

★ ★ ★

**RARITIES OUR
SPECIALITY**

★ ★ ★

**60 4ft tanks
fully stocked!!**

Water lilies

★ ★ ★

Marginal plants

★ ★ ★

Oxygenating
plants

★ ★ ★

Floating
plants

*Full range of:
Aquarium
accessories,
pumps, tanks,
filters, etc. etc.*

*Water garden equipment including:—
Fibre glass pools, liners, water pumps,
lighting sets, etc. etc.*

Open EVERY day from 9.00 a.m.- 5.30 p.m.

**ST. CLARE NURSERIES LTD.
UXBRIDGE ROAD, HAMPTON HILL, MIDDX.
TEL: 01-979 9948**

Call in and see South London's friendly aquarists

ASCOT AQUARIA

2 Ascot Parade, Clapham Park Road, London SW4
Telephone: 622 5368

(Some say we are the best, we only claim to be good)

Good selections always in stock:
**TROPICALS, COLDWATER, MARINES
and PLANTS**

**Piston pumps, Power filters, Glass aquariums
and Accessories.**

OPEN SEVEN DAYS A WEEK.

Fish Magic

Ornamental Fish and Plant Specialist,

26, Blackwood Avenue, Rugby.
Tel: Rugby (0788) 816720 & 812917



Visit the fastest growing aquatic suppliers in the Midlands . . .

See a fine selection of tropical, tropical marine and coldwater fancy and pondfish, with all plants, tanks and accessories you may require at very competitive prices.

Hours Mon-Sat 10am-6pm
Sunday 10am-7pm
Closed all day Tuesdays

Tropical fish for collection only—coldwater fish and plant collections by rail.
SAE for lists.

Also see our reptile section, containing snakes, lizards, frogs, spiders, stick insects, etc. Good selection usually in stock. SAE for lists.



Everglades Aquatic Nurseries

Dept. P.F., Baunton, Nr. Cirencester, Glos.

Tel: Cirencester 4656

WHAT MAKES US THINK WE ARE SPECIAL?

In our 2 acre site set in glorious Cotswold countryside on the banks of the River Churn we have:—

1. Our 1,600 square feet Tropical House containing some 200 aquaria and 30 pools, houses some 150 species of Tropical and Marine Fish and 120 species of Tropical aquarium plants.
2. Our Temperate House has some 12 concrete pools and 1,200 square feet of growing pools for sub-tropical and coldwater fish and plants.
3. Our dry-goods showroom is 800 square feet in area and contains a complete range of aquaria and accessories, including Simlawood and natural Malayan Bogwood.
4. The rest of the site contains 1/2 an acre of natural pools and display area holding nearly 100 varieties of coldwater plants for garden pools.
5. Finally, if figures don't impress you perhaps our knowledge, service and quality will.

Collections of Plants for the following sized aquariums

18in. Aquarium	£1.68
24in. Aquarium	£2.61
36in. Aquarium	£3.54
48in. Aquarium	£5.52
Fish House collection	£8.00

Bunch Plants

Alternanthera sessilis	Per 5
Ambulia heterophylla	15p each
Ambulia — Giant	30p
Bacopa moniera	25p each
Bacopa caroliniana	25p
Cabomba caroliniana	30p
Cabomba pulquerima	30p
Cardamine lyrata	30p
Ceratophyllum submersum	40p
Elodea densa	25p
Gymnocoronis spilanthoides	20p each
Hygrophila polysperma	30p
Hygrophila salicifolia	20p each
Heteranthera zosterifolia	40p
Heteranthera-Green	15p each
Heteranthera-Red	15p each
Ludwigia mullerti	25p
Ludwigia arcuata	40p
Myriophyllum proserpinacoides	30p
Myriophyllum scabratum	10p each
Myriophyllum hippuroides	10p each
Nomophila siamensis (blue)	20p each
Nomophila stricta	20p each
Rotala rotundifolia	30p
Rotala indica	15p each
Sagittaria natans	30p
Sagittaria latifolia	25p each
Syneca triflorum	20p each
Telanthera violaceum	20p each
Vallisneria spiralis	30p
Vallisneria torta	30p
Vallisneria torta giant	15p each

50p P&P for plants.
Everglades illustrated Catalogue 50p.

Vallisneria "contortionist"	10p each
Vallisneria gigantea	25p each
Vallisneria gigantea rubra	35p each

Dwarf Plants

Acorus pusilus	Per Each
Amoracia aquatica	20p
Cyrtocoryne wendtii	30p
Cyrtocoryne nevilli	20p
Cyrtocoryne beckettii	20p
Cyrtocoryne lingua	20p
Cyrtocoryne affinis	25p
Eleocharis vivipara	20p
Eleocharis acicularis	20p
Fleocharis xingua-Gian.	20p
Hydrocotyle verticellatum	25p
Hydrocotyle leucocephala	25p
Hydrocotyle vulgaris	25p
Houttuynia cordata	50p
Marsilea quadrifolia	25p
Echinodorus tenellus	20p
Echinodorus pusilus	20p

Floating Plants

Azolla caroliniana	Per Each
Limnobium stoloniferum	20p
	20p

COLD WATER PLANTS COLLECTIONS FOR GARDEN POOLS

Many people experience difficulty in selecting a suitable collection of aquatic plants to produce a balanced effect. We offer the following collections each complete in itself and containing all the elements necessary for a successful and attractive pool.

The code letters 'X' and 'Y' indicate the degree of choiceness of the plants included. For further details of these collections plus our complete catalogue of pools, pumps and other items for the water garden please send 50p to include post and packing.

'A' Range For pools approximately 15 square feet in surface area.....	AX £8.06, AY £10.98
'B' Range For pools of approximately 25 square feet in surface area.....	BX £12.00, BY £13.17
'C' Range For pools of approximately 40 square feet in surface area.....	CX £16.31, CY £20.93
'EX' Range For pools of approximately 60 square feet in surface area.....	EX £26.50, EY £33.84
'G' Range For pools of approximately 90 square feet in surface area.....	GX £42.02, GY £52.63
'R' Range For pools approximately 120 square feet in surface area.....	RX £50.18, RY £60.68
'M' Range A special collection for miniature pools around 12" deep and 6" — 9" in area.....	M £13.36

Note: All the above collections are carriage paid to your nearest railway station on a To be called for basis. Please indicate the nearest station having calling facilities and please give your telephone number.

Callers may deduct 10% off these prices for Coldwater Collections.

WHOLESALE TERMS AVAILABLE FOR FISH AND PLANTS. BONA-FIDE TRADERS PLEASE WRITE FOR PRICE LIST

Maydencroft Aquatic Nurseries



—THE COMPLETE WATER GARDEN CENTRE—

- ★ Specialists in aquatic plants by mail order (Catalogue 20p).
- ★ Large selection of pools, liners, fountain ornaments and pumps with
CASH AND CARRY DISCOUNTS
- ★ Thousands of fish in stock—many reared on the nursery.

SAVE £££'s CONTACT US NOW.

Maydencroft Aquatic Nurseries
GOSMORE HITCHIN HERTS TEL. HITCHIN 56020

Keep a doctor on your shelf

Keep KING BRITISH FORMULA W.S.3

handy always and at
the first sign of White
Spot, use it
IMMEDIATELY.



*
A 24 hour cure for
White Spot and other
parasitic diseases.

*
Attacks White Spot
Spores while still
attached to the fish.

Send 10p stamp and your name and address
for full colour leaflet of the complete King British
range.

KING BRITISH

AQUARIUM ACCESSORIES CO LTD HAYFIELD MILLS,
HAYCLIFFE LANE, BRADFORD BD5 9ET
W Yorkshire. Tel. Bfd 76241 (3 lines) STD 0274.



SUPPLIES

- ★ EXPORTERS OF HAND-FED MARINES ★
- ★ EXOTIC INVERTEBRATES ★
- ★ QUALITY FRESHWATER TROPICALS &
AQUATIC PLANTS ★

Good Trade Discounts
Please write for list

32 MACKERROW ROAD
SINGAPORE 13
TEL: 884886
CABLE ADD:
"SEQUARIUM" SINGAPORE

COLDWATER FISH

(All types available)



POOLS and PUMPS

Pond Plants

WATER LILIES

MARGINALS

LOCKSACRE AQUATIC NURSERY

WOPHAMS LANE (Opp. Chichester Yacht Basin entrance off
Birdham Road A286)

BIRDHAM, CHICHESTER, W. SUSSEX Tel. Birdham 512472

OPEN 9.30 a.m.-5.30 p.m. Closed Mondays.

DOW CORNING

SEALANTS

Available from your local Aquarist or Pet Shop
WHOLESALE ENQUIRIES INVITED
Joint U.K. Distributors

keith barraclough
AQUARIST LTD.

Hayfield Mills Haycliffe Lane Bradford, W Yorkshire.
BD5 9ET Tel Bradford 76241(3 lines) STD 0274

TROPICAL FISH CENTRE

10 High Road, Willesden, London NW10

Tel: 01-459 8684

**COME AND SEE OUR MARINES — ALWAYS A
GOOD SELECTION**

*Tropical, Marine, Coldwater & Pond Fish. Tanks, Aquariums,
Garden Pond Accessories, Equipment, Publications.*

Stockists of all popular fish foods.

FREE INSTALLATION of your new aquarium in home or office.

Contracts and Servicing for public and exhibition reception areas.

Open: Mon-Fri 10am-6.30pm Sat 10am-6pm

Sun 10am-4pm

We take BARCLAYCARD, ACCESS, AMERICAN EXPRESS, DINERS CLUB

AN ENTIRELY
 NEW CONCEPT
 IN UNDER-GRAVEL
 FILTRATION



KING BRITISH

UNDER GRAVEL

FILTER WITH CENTRAL EXHAUST



- * Comes complete with interchangeable diffuser stone.
- * Needs only small air pump for efficient operation.
- * Short exhaust tube requires only a minimum of air to develop high turnover of water.
- * Central diffused air flow adds a moving focal point to any aquarium.
- * Gives best of both worlds, filtration and aeration, in a most pleasing way.
- * Made in durable, clear PVC.
- * Central exhaust ensures balanced filtration through the whole aquarium.
- * Encourages healthy culture of nitrifying bacteria, breaking down organic substances the way nature intended.
- * Suitable for tropical, marine or coldwater aquariums.

MR. DEALER. Makes it much easier to catch the fish in your own tanks.

Send 10p stamp and your name and address for full-colour leaflet of the complete King British range.

* FOUR SIZES AVAILABLE TO SUIT MOST AQUARIUMS



18" x 12"
24" x 12"
30" x 12"
36" x 12"



KING BRITISH
 AQUARIUM ACCESSORIES CO LTD
 HAYFIELD MILLS, HAYCLIFFE LANE,
 BRADFORD, WEST YORKS, BD5 9ET
 Tel: Bradford 76241 (3 lines). STD: 0274

FISHWORLD

AND POND SUPPLIES

166 LUTTERWORTH ROAD, NORTHAMPTON.
 TEL: 0604 37271
 (Nearest 'M1' Turn-off Junction 15)

WORLD WIDE IMPORTERS. WHOLESALE AND RETAIL
 MANUFACTURERS OF AQUATANKS All glass tanks and
 AQUAFOODS. Frozen Bulk Foods for Freshwater and
 Marine Fish

An extensive range of tropical and marine fish. Thousands to choose from. Also a good selection of marine invertebrates. A large choice of ornamental pond fish, including Japanese Koi Carp (a speciality) are available throughout the cold water season (April to September).

We boast a large selection of dry goods and also aquatic plants. Everything for the fishkeeper at home and in the water garden.

IT'S WELL WORTH A VISIT.

Large shipments of fish arrive regularly.
 For wholesale customers we provide a delivery service.


POND SEASON NOW OPEN.

We offer a large selection of Japanese Koi Carp at unbeatable prices throughout the summer season.

Any size can be made if you require a special tank.

We Can't Do Everything — But We Try Very Hard

OPENING HOURS: Mon to Sat 9am to 6pm Sundays 10am to 4pm. Late Night Friday 7.30pm



FISHKEEPING BOOKS

FANCY GOLDFISH CULTURE

By Frank W. Orme—£7.50

A modern book on goldfish breeding and management. Covers construction of ponds and houses feeding, tanks and the exhibiting of goldfish. Frank W. Orme is an acknowledged expert on fancy goldfish.

Illustrated throughout with 8 pages in full colour. Size 234 x 156mm. Approx. 296 pages. Available July 1979.

PROFITABLE FISHKEEPING

By Guy N. Smith—£5.00

Fish farming for the amateur. Trout, salmon, carp, golden orf'e, perch, grayling, bleak, tench and rudd. Ponds, feeding equipment and other matters are covered. Coloured plates of fish by Jim Dunford, the Oxford artist.

Size 216 x 138mm. Approx. 160 pages. Available August 1979.

Order from Bookshops
 Or in case of difficulty, write to:

SAIGA PUBLISHING CO. LTD.,

1 Royal Parade, Hindhead, Surrey GU26 6TD.
 Tel: Hindhead 6141 or 6854/5.

D. & V. AQUARIUM

LOOKING FOR SOMETHING DIFFERENT?
THEN D & V's THE "PLAICE"!

Fish arriving weekly from South America, Africa, Lake Malawi and Tanganyika.

MICROWORM STARTER KITS 60p + postage

LIVE FOODS IN STOCK
FULL RANGE OF ACCESSORIES, TANKS, etc.

Hours:— Monday-Thursday 10.00-6.00 p.m.
Friday 10.00-8.00 p.m.
Saturday 10.00-6.00 p.m.
Sunday 10.30-1.30 p.m.

52 Topsfield Parade, Tottenham Lane,
Hornsey, London N8. Telephone: 01-348 3011.



MARINE AND TROPICAL FISH

WE HAVE A LARGE SELECTION OF MARINE AND TROPICAL FISH AND A FULL SELECTION OF EQUIPMENT, BOOKS AND FROZEN FOODS.

ALL-GLASS TANKS. For example:
24 x 12 x 15 £5.00 36 x 12 x 15 £8.50
48 x 12 x 15 £12.00

BARCLAYCARD AND ACCESS CARD

WELCOME

Weekdays: 12.00 noon-7.00 p.m.
Saturday: 9.00 a.m.-6.00 p.m.
Sunday: 10.00 a.m.-4.00 p.m.
Closed Tuesday

371 DUNSTABLE ROAD, LUTON, BEDS.
Phone Luton 507745

Visit East Anglia's leading water garden and aquarium centre.

- ★ Breeders and importers of quality Nishiki Koi and Goldfish, tropical and marine fish.
- ★ Growers of quality lilies and aquatic plants.
- ★ Suppliers of butyl rubber and PVC pool liners, pumps, lighting and all pool and aquarium accessories.

Water gardens open daily (Easter to September).

Aquarium open daily.

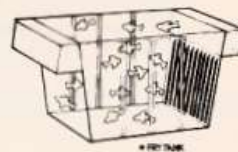
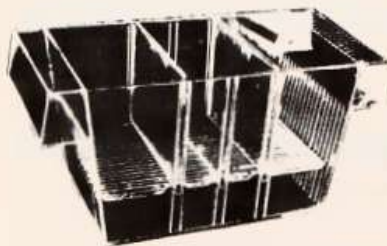


Waveney Fish Farm
Water Garden Centre,
Park Road, Diss, Norfolk.
(Tel: Diss 2697)

NEW FROM
GEMINI

Multi Purpose Breeding Trap

At least five combinations of assembly



Top quality. Superb eye-catching packaging. All British design and manufacture. Competitive priced — retails at under £1.

Available from your retailer now or contact:—

Gemini Products Limited
NEW YORK, ENGLAND.
NE29 8DX

Telephone: 08945-84211
Telex: 537405

for your nearest supplier.

All prices quoted exclude V.A.T. at current rate



Aquaria & Pond Supplies

A PRACTICAL FISHKEEPING GUIDE
TO YOUR AREA SPECIALIST

BEDFORDSHIRE

AQUALIFE
371 Dunstable Road, Luton. Tel: 507745
Mon, Wed, Thur, Fri: 12-7 Sat 9-6
Sun 10-4. Closed Tue
TROPICAL AND MARINE FISH EQUIP. FROZEN FOODS, BOOKS,
PLANTS, ALL GLASS TANKS
FADERS IN OUR FIELD

BEDFORDSHIRE

THE AQUARIUM CENTRE
87 Harpur St, Bedford. Tel: 64163
Mon, Tue, Wed, 10.30-6.0. Fri 10.30-7.0. Sat 9.30-6.0. Sun
10.30-1.30. Closed Thursday
TROPICAL, COLDWATER AND MARINE FISH LIVE AND FROZEN
FOODS. ACCESSORIES, POND EQUIPMENT, GOOD SELECTION OF
TANKS

BERKSHIRE

WOKINGHAM AQUARIUM LTD.
Bean Oak Road, Wokingham. Tel (0734) 788885.
Tue, Thur, Fri, 10-8. Wed 2-6, Sat, Sun 10-5.30
Lunch 1-2. You name it we have it or will get it.

BUCKINGHAMSHIRE

DESBOROUGH AQUARIA
32/33 Oxford Rd, High Wycombe
Tel: High Wycombe 35881
Retail aquatic only - coldwater, tropical, marine fish, plants,
appliances & accessories, books, reptiles, & amphibia
Car park at rear of shop.
Early closing Wednesday afternoon

CAMBRIDGESHIRE

"CORAL WORLD" TROPICAL WATERLIFE CENTRE.
89 Eastfield Rd, Peterborough. Tel: (0733) 51161.
Mon 2-5.30, Tues, Wed 10-12.30 & 2-6, Thur, Fri
10-12 & 2-8, Sat 9-6, closed Sunday. Limited
parking across the road
Marine, freshwater and pond fish. All accessories,
tanks books.

CAMBRIDGESHIRE

FENLAND AQUATICS
29 Norwich Rd, Wisbech. Tel: 2075
COLDWATER FISH & PLANTS, FULL RANGE OF AQUATIC FOOD & ACCESSORIES.
Sole distributors in East Anglia for ocean aquariums.
WHOLESALE AND RETAIL 100 TANKS OF QUARANTINED TROPICAL FISH
Also visit our new shop at
16 High Street, Lincoln. Tel - 36404. Retail only

CLWYD

RHYL AQUARIA
2 ABBEY ST., RHYL. Tel: (0745) 55595
COLDWATER, TROPICAL AND MARINE FISH, BOOKS, ACCESSORIES
AND ALL APPLIANCES. WHOLESALE & RETAIL
MON, SAT, 10-1 & 2-6. SUN, 12-4
CLOSED ALL DAY THURSDAY

DERBYSHIRE

MATLOCK WATERLIFE CENTRE
(Asst. Matlock Garden Centre)
Nottingham Rd, Tansley, Matlock. Tel. 4221 4699
Mon, Wed, Thurs, Fri, Sat 10-1, 2-8. Closed Tue. Open Sun.
Nov-Dec-Jan Feb. Close at 5.
MARINES (WHOLE & RET) TROP & COLDWATER FISH EQUIP, BOOKS
RAIL 'A' MARINE NATIONWIDE SERVICE
MAIL ORDER WATERGARDEN EQUIP AND POND SUPPLIES

EDINBURGH

G A F S TROPICAL HOUSE
4-9 Kirkwood Place, Edinburgh.
Tel: (031) 861-3520.
Open Mon., Tue., Thur., and Sat. 10am-6pm. Fri. 10am-5pm
Sun. 1pm-4pm
TROPICAL AND COLDWATER FISH AND PLANTS, TANKS, STANDS,
CANDLES, FOODS AND ALL EQUIPMENT
SCOTLAND'S OLDEST AQUARIUM. ADEQUATE PARKING

ESSEX

BROOKLANE TROPICALS
Tel: EPPING 72214
Thornwood Common, Epping, Essex.
160 tanks, tropical and coldwater fish, plants. All equipment
available.
Open Mon, Thurs, Fri: 4-9, Sat 11-7, Sun 11-9. Closed
Tues Wed.
Killed, Discus, Syndodontis, unusual Livebearers

ESSEX

PIC-A-PET
38 Hord Lane, Hord.
Tel: 91-478 2519
Monday Saturday 9-6
TROPICAL, FRESH WATERFISH AND MARINES, COLDWATER FISH,
PLANTS, EQUIPMENT, BOOKS.

HAMPSHIRE

KIMBER
Tilmore Rd, Petersfield. Tel: 2321.
Tropical and coldwater fish, foods, plants, tanks
and equipment.
MON-WED. 8pm-9pm; SAT. 9am-5.30pm;
SUN. 9.30am-1pm. Good selection in stock.

LANCASHIRE

HYNSBURN TROPICALS
426 Blackburn Rd, Accrington. Tel. Accrington 34956
Mon, Tue 9.30-8. Wed closed. Thur, Fri 9.30-6. Sat 9.30-5.30
TROPICAL, MARINES, COLDWATER FISH, POND EQUIPMENT, BOOKS,
CABINET AQUARIUMS OUR SPECIALITY

LEICESTERSHIRE

THE BOOT AQUARIA
336 Harrison Road, Leicester. Tel: 666747
Tue, Wed, Thur, Sat 9.30-8. Fri 9.30-7. Closed Monday
POND, COLDWATER, TROPICAL AND MARINE FISH, PLANTS &
EQUIPMENT. OVER 100 STOCK TANKS.

LONDON SE1

W LAURENCE (AQUARIUM)
44 Lower Marsh, Lambeth SE1. Tel: 01-828 5569
Mon, Tue, Wed, Sat 9.30-5.0, Thur 9.30-1.30, Fri 9.30-5.30
TROPICAL, COLDWATER, MARINE FISH, BOOKS, PLANTS, LIVE FOODS.
TANKS INSTALLED HOME AND OFFICE.

LONDON SW11

ST JOHN'S AQUARIA
140 St John's Hill, Battersea,
Tel: 01-874 5082
Mon, Tue, Thur, Fri 10.00-6.30. Wed 10-1. Sat 9-6
TROPICAL, POND AND MARINE FISH, EQUIPMENT, BOOKS, PONDS

LONDON W12

QUEENSBOROUGH
111 Goldhawk Road, Shepherds Bush.
Tel: 01-743 2730.
Mon, Tues, Wed, Sat 9.30-6.30, Fri 9.30-6, Sun 10-4.
Closed all day Thursday.
TROPICAL FRESHWATER & MARINE FISH, PONDS, POND FISH,
EQUIPMENT & BOOKS.

LONDON SW 17

MAYFAIR PETS
122 Upper Tooting Road, London SW17
Early Closing Wednesday
Tel: 01-672 7877
Tropical and Coldwater Fish
A Good Selection of Aquarium Plants.

LONDON W1

FISH TANKS LTD.
49 Blenheim Street, W1
(off Baker St.)
Mon-Wed 9.30-5.30, Thur 9.30-6.0, Sat 9.30-2.0
FISH TANKS, COLDWATER TROPICAL PLANTS
APPLIANCES, ACCESSORIES, BOOKS (WHOLE & RETAIL)

MIDDLESEX

HOME MARINE AQUARIUMS
1 Aylands Road, Enfield. Tel - Lea Valley 710824
If you want them we've got 'em!
Marines, Angels, Tangs, Morays, Stingrays, Sharks.
Plus many more. Shipments weekly
All glass tanks, accessories, books, live food.
Closed all day Monday

MILTON KEYNES

HOBBY FISH FARM
Towcester Road (A5)
Old Stratford, Milton Keynes
Tel: (0908) 542801
Located 1/2 mile north of Old Stratford on A5 trunk road.
COLDWATER, MARINE AND TROPICAL FISH, AQUARIUM PLANTS, FROZEN
FOODS, INVERTEBRATES, AQUARIA & ACCESSORIES, POND SUPPLIES
Open 10-5.30. Closed Mondays

NORFOLK

OLD FORGE TROPICALS
Hall Lane, Costwick,
Norwich
Tel: 738862
MARINE, COLD WATER, TROPICALS, REPTILES, TERRARIANS,
AMPHIBIANS, AND ALL ACCESSORIES

NORTHAMPTONSHIRE

HOBBY FISH AT NORTHAMPTON VALE GARDEN CENTRE.
Newport Pagodel Rd (B526)
Northampton. Tel: (0604) 61575.
Open 10-5.30pm. Closed all day Wednesday
TROPICAL, COLDWATER AND MARINE FISH, BOOKS, PLANTS
INVERTEBRATES, POND SUPPLIES, AQUARIA & ACCESSORIES

SHROPSHIRE

PHILLIPS & HEATHBROOKE COTTAGE AVIARIES
Broughall (1 mile from Whitchurch)
Whitchurch. Tel: (0948) 2651
Tropical, Marine and Coldwater Fish, Tanks,
Food, all Accessories, Reptiles and Amphibia
Also large selection of British and Foreign Birds
Open Weekdays 9 to 7 pm. Sat. Sun. 10.30 to 7 pm.

STAFFORDSHIRE

TAMWORTH AQUATICS
(Prop. A. JENNOL)
EVERYTHING FOR INDOOR AND OUTDOOR FISHKEEPING
FISHES AND PLANTS BOUGHT-IN
Tue-Fri 12 noon to 6 pm, Sat 9 am-6 pm. Closed all day
Monday
Bonehill Mill (on A5), Fazeley, Staffs. Tel. Tamworth (0827)
63390

YORKSHIRE

SOUTH ELSMALL AQUATICS
246 Barnsley Rd, South Elmsall, Nr Pontefract
Tel South Elmsall 44040
Open: Mon 1-8, Tue 10.30-8.30, Wed 2.30-5.30, Thur, Fri
10.30-8.30, Sat 10.30-6.0, Sun 1.0-5.30
RETAIL TROPICAL, COLDWATER FISH, PLANTS, APPLIANCES &
ACCESSORIES, BOOKS, REPTILES & AMPHIBIA

YORKSHIRE

AQUA INN
11, Broad St, Wakefield Tel - (0924) 78976
COLDWATER, TROPICAL, MARINE FISH, KID, CARP, INVERTEBRATES
ALL ACCESSORIES, LIVE FOODS, BOOKS, STANDS, TANKS.
Mon Tues Fri Sat 10-5.45 Closed Wed Late Night Thurs 10-7
OVER 200 TANKS.

YORKSHIRE

OAKWORTH AQUATICS.
48 Lidget Hill, Oakworth, Nr Keighley.
Tel: Havorth 42423 or 44800.
Mon, Tues, Wed, Thurs, Fri, 5.30-9, Sun 10-5
Tropical, freshwater, marine, coldwater fish. Tanks,
accessories, live and frozen foods.

WILTSHIRE

THE WATER GARDEN NURSERIES,
Hinton Parva, Swindon.
Tel: 079-379-958.
Open 7 days a week, 10-5.
TROPICAL FISH, PLANTS & LARGE STOCK OF TANKS & EQUIPMENT
ALSO SPECIALISTS IN GARDEN PONDS, FISH, PLANTS, FOUNTAINS, ETC.

WEST SUSSEX

LOCKSACRE AQUATIC NURSERY
Wopians Lane, Birdham
Chichester. Tel: (0243) 512472
WATER LILIES, MARGINAL PLANTS, ALL COLD WATER AND
ORNAMENTAL FISH, PONDS AND PUMPS
Open 9.30 to 5.30. Closed Monday.

For further details and advertisement rates for this monthly guide, contact Beryl Smith at Peterborough (0733) 51456.

CLASSIFIEDS

PRACTICAL FISHKEEPING CLASSIFIEDS are the fast, effective and inexpensive way to sell. Lineage advertisements cost only 10p per word (minimum 15 words or £1.50) reducing to 8p per word for 3 and 8p per word for 6 or more issues. Classified display space costs from £3.00 per single column centimetre (min. 2.5cm) for 1 issue, £2.85 for 3 and £2.70 for 6 or more issues.

Phone your classified advertisement to me, **BERYL SMITH** or write to me at **PRACTICAL FISHKEEPING CLASSIFIEDS, 41 BROADWAY, PETERBOROUGH PE1 1RY.** Telephone (0733) 51458



AQUATIC SUPPLIES

ALVENOR AQUATICS

Murrow, Nr Wisbech, Phone Parson Drive 449

TROPICAL FISH

All our fish are fully acclimatised, rested and well fed in our own quarantine section before being offered for sale displayed in clean, healthy tanks.

We usually have at least 125 varieties of quality fish and our prices are sensible. Top quality British-grown aquarium plants always available.

Our range of equipment is extensive, we have over 50 varieties of foods and carry all leading manufacturers' products. All glass aquariums at very competitive prices.

Be sure to pay us a visit, you won't be disappointed, that's a promise!!

No parking problems, just drive in to ALVENOR. Open until 7 pm every day, closed all day Monday.



SHIPDHAM TROPICALS. Coldwater Tropical and Marine fish, plants, tanks hoods and all equipment. Open all weekend. Closed all day Monday. Telephone Dereham 820320. 23-P8-79

CHESHIRE'S main marine fish specialists with large marine room, freshwater room and water-garden section. Large display (1,000sq ft) of aquariums and accessories. Limestar Tropicals, High Street, Tarvin, Chester. Tarvin 40333 for opening hours. 33-c-9

AQUARIA FRAMES, all sizes, also plain and ornamental stands to accommodate your own all glass tanks. S.A.E. for lists. J. E. Heeney, 52 Charter Street, Accrington BB5 0SG. Tel: Accrington 34535. 28-c-6

MORECAMBE. Tropical, marine, coldwater fish and all accessories. Reef and River 95 Lancaster Road, York Bridge, Morecambe, Lancs. Tel: (0524) 419371. Closed Mondays. 21-c-9

ALUMINIUM HOODS for "all glass" Aquariums up to 6ft x 2ft. Hinged or plain. S.A.E. for list. A. Harrington, 62 R. L. Stevenson Avenue, Bournemouth. Tel: (0202) 763245. 21-p-6

FOR LIST of mail order equipment and garden pool pumps, up to 25% discount, send s.a.e. to Bayley, 345 Birmingham Road, Great Barr, Birmingham B43 7AR. 25-c-9

MARINE TRADERS. You need to stock Calypso Publications. Send S.A.E. for details to Calypso Publications, Box No. PF003, Practical Fishkeeping, 41 Broadway, Peterborough PE1 1RY. 25-c5-79

THINGSTONE Aquatics, known throughout Europe as Britain's largest supplier of African cichlids, can now confirm that they are the only supplier consistently maintaining stocks from Lakes Malawi, Tanganyika, Victoria and Rudolph. In addition to our superb range of beautifully coloured cichlids we have the full range of African and American catfish. Don't take our word for it, call at Thingstone Aquatics, 14 Main Street, Thingstone, Leicestershire (six miles west of M1 junction 23), or phone Coalville 222533. Britain's only specialist fish centre is open every day except Wednesday and Saturday. Late opening 7 p.m. to 9 p.m. on Tuesday and Thursday. 97/p5

WHOLESALE & RETAIL

FENLAND AQUATICS



East Anglia's Tropical Fish Specialist

150 planted showtanks holding thousands of tropical and coldwater fish, directly imported by us from the best fishfarms in Singapore, Bangkok, South America and Japan.

AQUATIC PLANTS A SPECIALITY

Select from 30 varieties **GROWING** in our tanks.

The quality of our coldwater fish for the pond season is well known. Selected goldfish and Koi from America and Japan only.

A WIDE RANGE OF FOODS & ACCESSORIES

Sole distributor in East Anglia of "Ocean" aquariums. (Phone us for the address of your nearest stockists.)

29 Norwich Rd, Wisbech (2075) and 16 High Street, Lincoln (36404)

AQUASCOPE TROPICAL & MARINE FISH and all equipment. Garden pools, fish and fountains. Cabinet aquariums our speciality. 76-80 Whalley Range, Blackburn. Phone: Blackburn 55049. Closed all day Wednesday. 27-c-5

BARRIER REEF has now opened large premises in Cheltenham, selling at low prices a comprehensive range of Tropicals, Marines and cold water fish. Plus a large selection of wild caught Malawi, at 38 High Street, Cheltenham, tel 38636. Also at 94 Westgate Street, Gloucester, tel Gloucester 50396. Pay us a visit, you won't be disappointed. 50-c-7

AT LEAST 250 varieties tropical, marine and pond fish. For personal shoppers only. Kingfisheries, 308 Croydon Road, Beckenham, Kent. Tel: 01-650 3716. Closed Wednesdays. 23-c-5

WEST GLAMORGAN

THE FISH BOWL
36 BRITON FERRY RD. NEATH
(NR. STOCKHAMS CORNER)
Tropical and cold water fish, foods, plants, tanks, and equipment
Mon. to Sat. 9.30-5.00 pm. Late Fishing: Mon, Thurs, Fri. 6.30-8.30 pm. Sunday 10.00 am-1 pm.
Tel: 0639 2227

LANCASHIRE

LLANBERIS AQUATICS
196 Blackburn Road, Accrington. Tel: Accrington 35435
Tropicals, Marines, Quarantined & English Bred Pond & Fancy Goldfish, Plants, Foods, Fountains, Tanks, Aquarium Cabinets, Equipment. **DISCOUNT PRICES.**
Closed Wednesdays & Sundays. Open until 8 pm. P

ANGLIAN AQUATICS



18-19 HIGH STREET, HUNTINGDON
TEL: (0480) 53328

Tropical fish and pond suppliers. Hundreds of tanks full of rare fish and plants imported by us. Marines, corals, etc.

Ponds, fountains, liners, sealers, cement additives, pond fish, lilies and marginals, etc.

IS WORTH A VISIT NOW

Wholesale list supplied. Fish and plants only

AQUARRAMA

KENNEL HIDE
NORTH BERKS.

For all Japanese Koi Carp, sizes from 2 ins at 45p to 12 ins from £15. And good quality gold fish, orfe, tench, pond plants, equipments and fibre glass pools. We also stock a wide range of marine fish, invertebrates and rocks, tropical fish, plants and accessories.
All glass tanks made to order, stock sizes as follows:
45 x 15 x 12 in 1/4 plate at £9.50. 48 x 18 x 15 in 3/8 plate at £35.00
Trade Enquiries Welcome

PHONE WINKFIELD ROW 5755

WATER GARDENING

WATER GARDENING

AQUATIC PLANTS

Full range and collections direct from our growing bed to you. Plant list 20p. Colour brochure, pools pumps, etc. 35p

AQUA SUPPLIES

5 The Crescent, Shirley, Solihull, W. Midlands.
Tel: (021-745) 3724.

BUTYL liners. Competitive prices, fast delivery. SAE please for price list to Lumanda, 18B Midland Rd., Thrapston, Kettering, Northants. 19-c-6

POND liners in butyl rubber, long lasting, guaranteed waterproof, easily installed, flat rectangular sheets of any size with hot vulcanised seams direct from factory at 26p per square foot, inclusive of CP and VAT. CWO to Gordon Low Prefabricators Ltd, Dept PF, Place Road, Cowes, Isle of Wight, Cowes (0983) 292151 or send SAE for samples. 53-c-9-79

ECONOLINER FOR the big pond man at less than 7p per sq. ft. — black 15 thou extra tough seamless polythene opening to 24ft wide. Send stamp for sample and details. County Polythene Services, Dept. PF, 28 Riverside Gardens, Langford, Biggleswade, Beds. SG18 9RZ. 37-c-6

LONG Life Liners. A new synthetic waterproof liner a third thicker than the well-known Butyl with equal weathering and lasting properties. Send stamp for sample and explanatory leaflet to: Butylmade Ltd., Lloyds Bank Chambers, High Street, Lingfield, Surrey. 39-c-6

PETERBOROUGH'S for SUNSET AQUARISTS Quality



Tropical ● Marine ● Cold Water Fish ● Plants
● Foods ● Cures ● Pet Foods and Accessories

INCREASED STOCK OF MARINE FISH, OVER 200 AQUARIUMS

(Access & Barclaycard welcome)

118 SOUTH STREET, STANGROUND, PETERBOROUGH 43471.

(Deliveries)

CALLING ALL AQUARIA & POND SUPPLY SPECIALISTS

Let the people know who you are—where you are. Put your name on the map with a stamp in this guide, from as little as 14.50 a month!
Full details from Kitty Henby, Practical Fishkeeping Classifieds, 41 Broadway, Peterborough. Telephone (0733) 64023.

POND SUPPLIES

FILTER WOOL £1.40 per lb. inc. V.A.T., plus 42p postage and packing. S.A.E. for sample, Aqualand, 116 St. Mildred's Road, Lee, London SE12. 20-C-9

REPTILES

REPTILES

AND AMPHIBIA
and Full Range of Aquatic & Pond Equipment
Send S.A.E. for Catalogue

FROM REPTILE CENTRE
7 Christchurch St. East. Tel: Frome 2068

PLANTS

FOR THOSE UNABLE TO PAY US A VISIT

Our Well-known Top Quality

TROPICAL AQUARIUM PLANTS

NAMED COLLECTION £2, £3, £4, £5.

Plus postage package 40p. Immediate despatch

ALVENOR AQUATICS

MURROW, Nr WISBECH. Phone Parson Drove 449.
S.A.E. FOR FULL LIST OF AQUARIUM PLANTS AVAILABLE.

TROPICAL AQUARIUM PLANTS

NAMED COLLECTIONS £1, £2, £3, £5, P&P 40p.

SPECIAL AQUARIAN FISH FOOD OFFER

2oz for 90p, 4oz for £1.50, 8oz for £2.60, P&P PAID

OR SAE FOR AQUARIUM ACCESSORIES AND PLANT LISTS

HONEYSOME NURSERY, Dept P.,

THE ROW, SUTTON, Nr. ELY, CAMBS

WATER LILIES AND POND PLANTS. Send 20p for coloured catalogue of best named varieties. Visitors welcome to our natural eight acre site. Bennetts Waterlily Farm, Chickensell, Weymouth, Dorset. 29-C-9

FISH

KOI 2' to 2'. Avenue Fisheries, Sandy, Beds. Open 7 days a week. For comprehensive details telephone (9am to 9pm) Sandy (07671) 80728 or 80716. 22-c-5

BROOKRIDGE TROPICAL FISH are now specialising in African Rift Valley Cichlids. Good variety in stock. 158-160 Fosse Road, South Leicester. Tel. Leicester (0533) 547181. 22-C-6

MAKE MONEY, breeding tropical fish. Also Money breeding beautiful Koi, stamp for details:— Aquatic Research, Dept 2, 54 Derby Road, Eastleigh, Hampshire. 21-P-9

LIONHEADS AND ORANDAS. Top quality medium and large fish. Tel: 01-5731770. 15-c-7-79

OÁTE CICHLID CENTRE situated in North Eastern England. Why travel south for Tanganyikan, Malawi & American Cichlids? Large selection of tank bred and wild caught in stock at realistic prices. Phone Dennis 06706 67713 or Colin 0783 842782. 37 p 5

CATALOGUES

POND PLANT CATALOGUE. Full range of plants, with comprehensive growing instructions, price 15p. Honeysome Aquatic Nursery, Dept. B, The Row, Sutton, Cambs. 21-c-7-79

SHELLS

CORAL SEASHELLS, sea-fans, curios. S.a.e. Shanty Shell (PF), 40 Peel Street, Morley, Yorkshire. Tel: (0532) 520193. 15-c-1

CORAL IMPORTERS, 5 Premier Works, Adelaide Street, Heywood, Lancs. Large variety of cleaned corals. Heywood 67703. Trade only. 17-C-3-80

CLUBS & ASSOCIATIONS

BRITISH KILLFISH ASSOCIATION — enquiries with S.A.E. to B. P. Brown, 173 Parr Lane, Bury BL9 8JN. 15 P/6

BOOKS

'SYNTHETIC SEAWATERS FOR AQUARIA AND LABORATORIES'; a Calypso Research Report. First English Edition. AS. 43 pages. A necessary addition to the libraries of technically minded marine aquarists and researchers. A simply presented, non-technical, explanation of the subject. Price £1.95 plus 5p postage direct from CALYPSO PUBLICATIONS, Box No. PF003, Practical Fishkeeping, 41 Broadway, Peterborough PE1 1RY. 45-p-5

'MEDITERRANEAN FISHES'. The complete, fully illustrated Calypso pocket-field guide to over 300 species £1.95 + 5p postage from Calypso Publications, Box No. PF 003, 41 Broadway, Peterborough PE1 1RY. 20-P-5

NEW series of comprehensive, well-illustrated books from America: 5 titles — "Exotic Marine Fish Diseases"; "Success with Killfish"; "Breeding Angelfish"; "Corydoras Catfish"; "Fun with Land Hermit Crabs". £1.45 each including p&p. Blakebooks, 46 Southborough Road, Bickley, Kent. 35-c-9

FOOD

BULK FLAKE FISH FOOD FROM THE MANUFACTURER

Blended material available in four grades:

Grade 1 Superior screened	£2.50 lb.
Grade 2 Standard	£2.00 lb.
Grade 3 Intensive hatchery	£2.00 lb.
Grade 4 Fry food	£2.50 lb.

(All above prices include VAT and carriage.)

Minimum order 7 lb. packed in Polythene bag in cardboard outer.

* C.W.O. please. Send P.O. or 'phone BARCLAYCARD NO.

EXPORT ENQUIRIES INVITED.

**KING BRITISH AQUARIUM
ACCESSORIES CO. LTD.**

Hayfield Mills, Haycliffe Lane,
Bradford, W. Yorkshire BD5 9ET.

Tel. Bradford 76241 (3 lines). STD 0274.

GROUND DRIED SHRIMPS. Small whole shrimps, daphnia and cuttle fish. Samples and prices at your disposal. Wholesale only. H. E. Daniel, Longfield Rd, Tunbridge Wells, Kent. 29-c-5

GRINDAL WORMS £1. Micro worms and eels, 50p including postage. E. Smith, 54 Daleview Road, South Tottenham, London N15 6PJ.

MICRO EELS AND WORMS cultures 50p each incl. postage. Mrs Couch, 12 Victoria Terrace, Cwmavon, Port Talbot, Glam. 18-C-3-80

TETRAMIN Staple diet, 8oz, £2.25; 16 oz, £4.30; 32oz, £8.50. Aquarian Tropical, 8oz, £1.80, 16oz, £3.33; 32oz, £6.55. Aquafayres Special Tropical Flake, 48% protein, 8oz, £2.50; 16oz, £4.00; 32oz, £7.00. Tetra tablets, 500, £1.96. F.D. Tubiflex, 110gm, £3.60. S.F. Brine Shrimp Eggs, 100cc, £4.95. Pond Pellets for Koi etc, 5lb, £3.20; 10lb, £5.50. Please add postage, up to £2.50, 22p; up to £5.00, 54p; over £5.00, 86p. Send stamp for lists. Aquafayre, 61 Hacton Lane, Hornchurch, Essex. 76-C-6

GIVE AWAY! 8 oz Tetramin Staple food £3.60; 32 oz £12.50; 4 oz Tubiflex Cubes £4.25. Thompson's (P.F.), Woburn, Uppermill, Oldham, Lancs. 16-p-10-79

BADGES & TROPHIES

BADGES. Every Society needs bright enamel badges. For best service and quality contact R. E. V. Gomm (PF) Ltd, 16 Frederick Street, Birmingham B1 3HE. 21-c-1-80

TROPHIES, CUPS, PRIZES. Send for list to Vernon & Wilson (PF) Ltd, 56 Spencer St., Birmingham 18. 15-C-3-80

FOR HIRE

SLIDE SHOWS FOR HIRE — British Killifish Association — S.A.E. for list to M. P. Addicot, 70 Bryn Glas, Penyrheol, Caerphilly, Mid Glamorgan. 20 P-5-79

CALYPSO MARINE slide lectures. A complete range for aquarium societies. Short notice bookings. S.A.E. for details. Calypso Publications, 2 Gatcombe Road, London N19 4PT. 24-c-5-79

SALE

MARINE FISHKEEPERS you need our informative book range. Send S.A.E. for details to Calypso Publications, Box No. PF003, Practical Fishkeeping, 41 Broadway, Peterborough PE1 1RY. 23-c-5-79

READERS' ADVERTISEMENTS

EXTENSIVE FISH LIBRARY for sale. Most titles. Many Marine Books. Hundreds of old fish magazines. S.A.E. for full list. G. H. Jennings, 2 Gatcombe Road, London N19 4PT.

HOME GROWN aquarium plants for sale. Mixed plants, for £1 per packet plus p/p 20p. Hobbyist not dealer. 64 Mitchell Ave., Northfleet, Kent DA11 8AX.

NOW OPEN IN PRINCES RISBOROUGH

RISBOROUGH AQUARIA

9 Duke St. Tel: (084-44) 4269-4279

Marine only 1,000 gallons of marine tanks. All our fish are quarantined for 4 weeks. Good stock of invertebrates.

WHY NOT PAY US A VISIT NOW

PAY-US-A-VISIT

FOR A FRIENDLY SERVICE or Expert advice come to Aquarama. We have all you need for Tropical or Coldwater fishkeeping, including special offers on Fish Plants and Tanks. Like Breeding Angels £9.50 pair. Tanks are also our speciality. Any shape, any size made to measure at lowest prices. We also stock many varieties of goldfish and Koi Carp. Phone Winkfield Row 5755 or call in to Aquarama, Kennel Ride, North Ascot. We are near the Racecourse. Trade enquiries welcome. 79-c-3-80

VISIT MARGATE'S public aquarium on your day out, taking in our aquatic sales departments. Also cafeteria facilities for over 100 persons. Write or phone (0843) 21951. 26-c-5-79

SELL, BUY, EXCHANGE for ONLY £1

through Practical Fishkeeping
READER ADS.

A special service for private advertisers only — Submit your advertisement (30 word maximum) together with £1.00 cheque or P.O. to:—

Practical Fishkeeping Reader Ads
41 Broadway, Peterborough PE1 1RY.

**Attention Aquatic
Traders and Hobbyists!**

★
KEITH BARRACLOUGH AQUARIST LTD.
FOR

**COMPLETE
AQUARISTS' NEEDS**

★
Distributors of

- ★ **KING BRITISH
AQUARIUM PRODUCTS**
- ★ **DOW CORNING
SEALANTS**
- ★ **Wide range of
EQUIPMENT,
ACCESSORIES,
AQUARIUMS.**
Special deals for bulk cash buyers
- ★ **Regular imports of
TROPICAL FISH**
at very competitive prices
- ★ **PLANTS,
COLDWATER FISH,
LIVE FOODS, etc.**
- ★ **PAY US A VISIT**
and walk round our fish
houses and equipment
warehouse (Open 6 days a
week) or write for stock
List. Traders please bring
letterhead or Pet Trade
License
- ★ **TRADE SUPPLIED**

keith barraclough aquarist ltd

Hayfield Mills, Haycliffe Lane,
Bradford, W. Yorkshire.
BD5 9ET

Tel. BRADFORD 76241 (3 lines) STD. 0274.

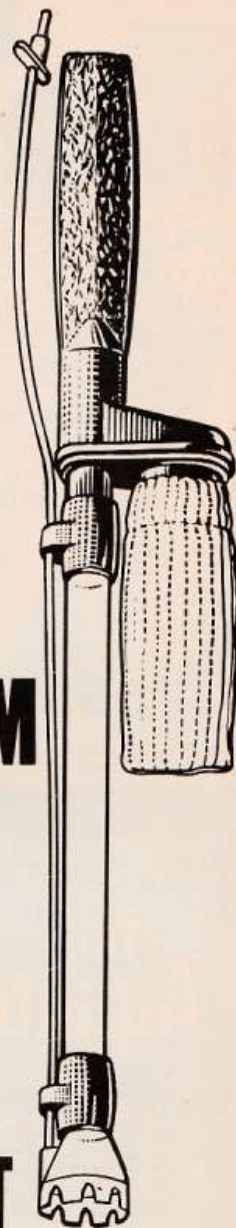
**IF YOU
WANT
A TOUGH
EASY-
TO-USE
AQUARIUM
POWER
CLEANER**

**-YOU
WANT**

ALGARDE

From Pet Stores everywhere.

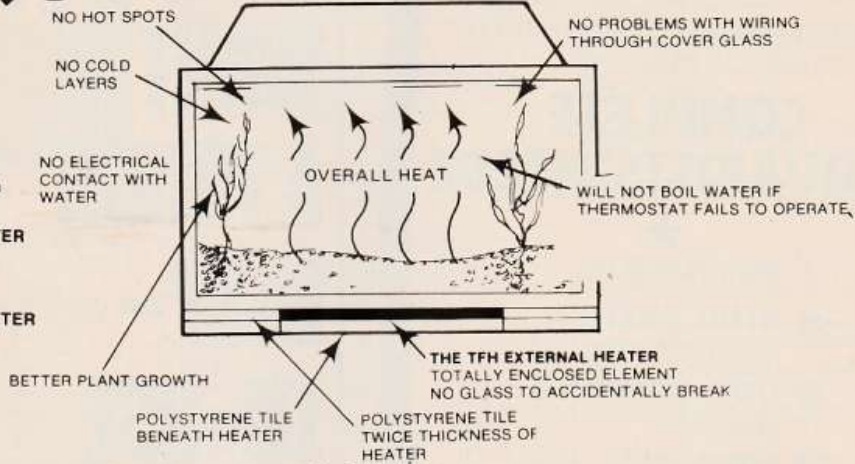
R.R.P. £1.57 incl. VAT



T.F.H. EXTERNAL AQUARIUM HEATERS



**1 YEAR
GUARANTEE —**
24in x 12in x 15in
TANK,
50 WATTS HEATER
— 30in x 12in
x 15in TANK,
100 WATTS HEATER



For Details Apply to:

T.F.H. (GREAT BRITAIN) LTD. 13 Nutley Lane, Reigate, Surrey
Or Your Local Stockist

IMPORTER AND RETAILER

The Aquatic Centre

For the discriminating aquarist we offer the largest display and selection of tropical, marine, freshwater, coldwater fish and exotic plants. Aquatic accessories always in stock.

ALWAYS COPIED — NEVER EQUALLED

23 Broughton Street
Edinburgh EH1 3JU

Tel: 031-557 1473 Cables: Aqua

Hours:
Weekdays 10am-1pm 2pm-6pm
Saturday 10am-6pm
Sunday 1pm-5pm

Closed Tuesdays

ELLANBEE TROPICALS

73 UPPINGHAM ROAD, LEICESTER

TELEPHONE: 760210

**MARINES
TROPICALS
COLDWATER**

I come from the greatest tropical fish shop in the Leicester area.

ANY SIZE
AQUARIUM
MADE TO ORDER

**"SCAMPI"
AQUARIUMS**

AT LOWEST PRICES

3ft £9.95

4ft £12.50



SIMLAWOOD

ALWAYS IN STOCK

PRICES FROM
£1.65-£7.47



RB 1201



RB 1361



RB 161



NEW GOLDEN BELL

A complete range of tried and tested pumps, including three (above) for the professional user



KIHO GA 8500

Norwood Aquarium Limited

The home of the finest aquarium accessories (STRICTLY WHOLESALE ONLY)



Silver Stream fluorescent unit, now made with sealed leads to comply with latest regulations

Just remember we stock . . .

- Decorative wood
- Coral
- Aquarium gravel
- Pre-formed pools
- Liners
- Pond pumps
- All-glass Aquariums
- Frozen foods
- Coral sand
- Hyflo piston pumps

As specialist aquatic trade wholesalers it is our pride that we can meet every conceivable requirement 'off the shelf', from foods, remedies and aquarium tanks right through to spares for pumps.

We could opt for an easier life by sticking to the more popular ranges, but then we wouldn't be able to give the kind of service our customers have come to know and appreciate.

We also pride ourselves on knowing our suppliers and their products perhaps better than they know themselves. We evaluate everything we carry, and can tell you without fear or favour what any product will do, how good we think it is, and how it should be used.

What's more, we have a weekly van service covering most of Southern England, which means that most items you need can be in your shop in a matter of days from your order.

That's service! If you aren't getting it from your present suppliers just give us a ring . . .



KIHO RI



KIHO RII



KIHO RIII



ORION DELUXE

NORWOOD AQUARIUM LIMITED

Weldon House, Junction Road,
South Croydon, Surrey.
Tel: 01-680 3435/3747

TRADE ENQUIRIES INVITED

Give your fish a taste for the good life



Phillips Fish Foods

Phillips Yeast Products Ltd, Park Royal Road, London NW10 7JX.