

JUNE 1970

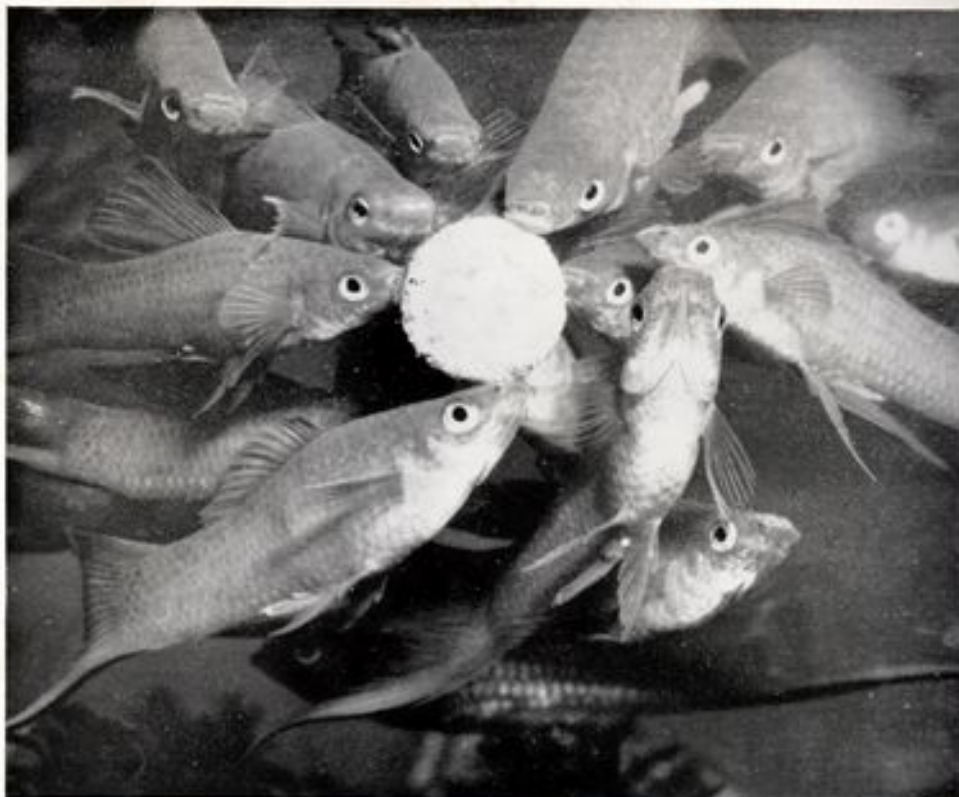
3s

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE





Freeze-dried Tetratips mean no wastage - and happy fish !

Tetratips contain no less than 15 nourishing ingredients - freeze-dried in compact tablet form. So all you have to do is stick a Tetratips tablet to the side of the tank - and watch your fish attack it with relish ! Nothing wasted - and less cleaning !

Send for a **FREE** sample

For a free sample and more information on fish-feeding the Tetratips way, send this coupon to



HERB-ROYAL LIMITED

(Tetra Division)
Colley Lane Estate, Bridgwater, Somerset.

Please send me a free sample and more information on new Tetratips.

NAME _____

ADDRESS _____



Please mention PFM when writing to advertisers



PetFish

Monthly 3s

Vol. 5 No. 2

June 1970

Subscription rates: £2.21 for 12 issues; £1.11 for 6 issues (U.S.A. and Canada \$5.50)

Editor: Anthony Evans

In This Issue

	Page
Comments and Quotes	53
Letters	54
Transatlantic Topics	62
Breeding Wild-caught Kribiafish from Ghana	63
A Garden Pool in a Couple of Hours	64
Aqua-tip	66
Personal Comment	67
Guppy World	69
Guppy Types	70
Historic House of Fishes	71
Book Review	72
Readers' Queries	
Answered	73
How?	74
Going Brackish	75
Breeding the Mottled 'Cat'	77
Quick Tips	80
What's New?	81
Meetings and Changes of Officers	82
Club News	83
In Brief	85
Dates for Your Diary	87

© 1970

PetFish Publications

Editorial and Advertising Offices

554 Garratt Lane

London, S.W.17

Telephone 01-947 2805

Comments and Quotes

● Toads on the road ● Water plants non grata

● Show bench morals ● 'Fish tank finger'

Garden Ponds as Havens

ANYONE who has lived near a roadside pond used by frogs or toads will know of the springtime carnage that can occur as the breeding-bent amphibians hop across the highway in front of cars at night. This can mean serious losses of these creatures just at a time when they are all set to found the next generation. Serious because there are grounds for believing that our national population of frogs and toads is already declining as a consequence of decreasing numbers of spawning sites available to them.

There was therefore a fauna-conserving motive behind the recent operation at Stevenage, Hertfordshire, referred to by the DAILY MIRROR as a 'See a toad across the road week'. Members of the local Wild Life Preservation Society patrolled the section of main road crossed by toads going to their pond and it was reported that on one evening no less than 654 toads were carried safely to the pond.

Garden pond owners are in fact probably helping to preserve our frogs and toads, for undoubtedly many of them now breed in these situations although no natural sites exist in the locality. Their spawn and tadpoles do no harm in a fish pond and because of the desirability of conserving these interesting species we would urge aquarists not to discourage the use by them of their water gardens.

This year a Breeding Sites Survey is being made by the Biological Research Centre with the main aim of determining fluctuations in the population of *Rana temporaria* and *Bufo bufo* both regionally and

nationally during the last 20 years. Information on the colonisation of new ponds and the importance of the garden pond referred to above is being sought. Printed sheets for recording data on sites that have contained breeding frogs and toads at some time in the past 20 years have been made available by the Centre and anyone interested in helping with such information should write to the Amphibian and Reptile Scheme, Biological Research Centre, Marks Wood Experimental Station, Abbots Ripton, Huntingdon.

Water Lettuce Crop

THIS report of the way in which scientists in Nigeria are controlling excessive growths of the floating plant known to us as water lettuce might well provoke wrath in those readers whose spare time is spent trying to promote healthy water plant growth. *Pistia stratiotes* has been giving trouble by clogging the new Kainji Dam on the Niger with its excessive growth. Elsewhere in Nigeria it has been observed that in the wet season (May-July) yellowing and brittleness of the leaves of the water lettuce occurs from a virus infection believed to be spread by aphids. Although the virus does not completely wipe out the water lettuce it stops it becoming a nuisance, and the scientists, it has been reported by NATURE-TIMES News Service, are suggesting the introduction of diseased plants to the Kainji Dam to see if it will help the situation there. (Market price of the water lettuce for aquarists is currently 1s-1s 6d per plant; they've got a valuable crop on that Dam if they could only gather it!)

Show Bench Morals

WE recently received the following sad little note from a young show contestant aged 12 living in the north of England. "I belong to the ----- Fish Society and when we had our open show, like other members who belong to other societies, I took along an entry in the breeders class—six fish which I had bred myself. But when the show came to the end no fish, no jar. Somebody had taken them. For the rest of the season I will come along with my Mum and Dad to shows and just look at the fish as I have not got any fish to show." We have left out the name of the Society to which the young lady belongs as we feel it would be invidious to mention just one club in connection with this sort of regrettable happening. Unfortunately such occurrences are not exactly rare with even the best-run shows. Sometimes a genuine mistake has been made, for this can happen easily enough in the hubbub of a show breakdown and

ownership will then be sorted out subsequently. But there are some incidents that can hardly be 'mistakes'. Someone must have known in the instance above that they had six more fish than they started with. In this fish-showing season now in full swing, let us hope there will be very few reprehensible and contemptible actions of this kind.

'Fish Tank Finger'

SINCE the publication of our Comment last month headed 'Fish

RE-ARRANGEMENT of the Carnegie Aquarium of the Royal Zoological Society of Scotland at Edinburgh to form an attractive exhibit for educational and public interest is being planned. A curator is being appointed to take charge of the new Aquarium's management and to participate in its design.

Disease and Man' we have seen an article by Albert J. Klee on the same topic and with the above title that was printed in ANCHOR, U.S.A. (February issue). The case of a pet shop proprietress who developed nodules on her hand after cutting a finger on the frame of an aquarium is described, with a positive identification of the infective organisms as *Mycobacterium halaei*, a bacillus known to cause the human skin condition called 'swimming pool granuloma' in the U.S.A. This organism was also found to be present in the aquarium that was the source of the lady's injury. Although there appears to be no reason to change our opinion that, since the frequency of occurrence of these infections is apparently very low, aquarists are not seriously at risk, we agree with the suggestion of Mr Klee that '... it would be a sensible course of action to treat cuts with care when one is about tending to one's tanks of fishes. It would also be well for aquarists, professionals and amateurs alike, to familiarise themselves with the facts ...'.



LETTERS



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London S.W.17

Orfe Wins Through

MAY I tell you about an experience of mine? I've been keeping fish since '64, tropical and coldwater. I've got some tropicals that are at least 8 years old and a goldfish that's about 10 years old, purchased before 1964. The other morning, about the first week in April, I noticed a golden orfe lying on its side, apparently dead. I went to take it out of the pond, when it managed to swim to the bottom. As I was on my way to work I had to leave it till midday, when once again the fish was laying among the plants looking very dead. Again it evaded me and when I came home at night the fish was on the surface again.

I caught it this time and put it in an emergency tank—a cardboard box lined with plastic 19 in. by 13 in. by 13 in. I filled it to a depth of 3½ in. with half pond and half tapwater; temperature was 52°F. I started aeration and added one teaspoon of Epsom Salts. The aeration was on about 14 hours and a second teaspoon of the Salts was added on the second day and a third teaspoonful added on the third day. Well, we kept our fingers crossed and hoped for the best. About 2 weeks later, this poor fish was still lying on its side and only swimming (and even then upside down) when it was touched to see if it was still

alive. I nearly put it out of its misery more than once but kept hoping, as it's a lovely specimen with not a blemish on it. A well-known Nottingham aquarist, Bill Christian, said 'Give it a drop of brandy or whisky'—so, nothing ventured, nothing gained, I added a drop of whisky, which did make the fish swim more, but still upside down. A drop more whisky was added.

The next day being Saturday, I put a pair of rosy barbs to breed in the morning and got up about 8.0 a.m. on Sunday to see how they were going on. I noticed also that the poor orfe was still on its side and decided it must go, having been in the 3½ in. of watered Epsom Salt for over 2 weeks, just prolonging the agony. Anyway, about an hour later my 14-year-old son came to see how 'Charlie' and 'Rosie' were doing and said 'Any eggs yet?' and then, in the same breath, 'Look, the orfe is right way up'. And so it was, and still is 3 days later. It is not feeding but is swimming round and round the right way up, so I'm glad I decided to give it a chance to save itself.

I felt I should write and tell you about my favourite

Continued on page 61



You'll have the big fish eating out of your hand.

We thought you might like to see more of those big fish of yours. So we've made Phillips Maxiflakes.

These large size flakes attract all large tropical and cold water fish to the surface. They'll even eat out of your hand.

You could say they know

when they're on to something good.

And you'd be right.

Maxiflakes have a high protein content that comes from four natural sources. Animal, fish, vegetable and microbiological.

Which makes it as nourishing as natural food.

Now you can see why Phillips Maxiflakes will do such a lot to promote healthy growth, colour brilliance, longer life and resistance to disease.

Get your hands on some, as soon as you can.

from your local aquatic dealer. One size only 7/2d.

Phillips Flaked Fish Foods

Phillips Yeast Products Ltd., Park Royal Rd., London, N.W.10.



NEW! FROM KING BRITISH

A Range of Superb Quality

STAINLESS STEEL

AQUARIUMS

Neat, stylish, with an appearance of costliness that belies their very reasonable price, the new "KING BRITISH" aquariums made in England are available in

**AT REALLY
COMPETITIVE
PRICES**

For example:

36½" × 15" × 12"

ONLY £11. 19. 6

(recommended retail price)

4 POPULAR SIZES

Capacity

12 galls.	24" × 12" × 12"	£6. 14. 0
18 ..	30" × 15" × 12"	£10. 12. 0
22 ..	36½" × 15" × 12"	£11. 19. 6
30 ..	48" × 15" × 12"	£16. 10. 0



AND ALL THESE "PLUS-VALUE" POINTS...

*Glazed throughout and sealed with King British Silicone Sealer *Stainless Steel frame covered with protective coating to make sure it is in first-class condition when you receive it *GUARANTEED LEAK-PROOF *All the aquariums will accept the King British aluminium hood OR the King British Stainless Steel hood.

Ask to see these aquariums at your local pet or aquarists' shop, or in case of difficulty write direct to:

KING BRITISH
AQUARIUM ACCESSORIES CO

Cannon Mills, Union Road,
Bradford 7, Yorkshire

See the King British range at The Aquarist and Pondkeeper Fishkeeping Exhibition, Alexandra Palace, Wood Green, London, N22, on 10-12 July.

GREAT "TETRAMAID" COMPETITION



Up to £350 worth of prizes of
equipment or tropical fish . . .

HURRY—get your entry form NOW
at your local pet or aquarist store

 Tetramaid

"I saw your advertisement in PFM"

NOW! is the time —
to breed your fishes

with **LIQUIFRY**

the MODERN replacement for Infusoria

LIQUIFRY does away with trouble

- It contains particles to provide immediate nourishment

No smelly tanks
with **LIQUIFRY**



- *Liquifry is the finest food for fishes in liquid form*

With **LIQUIFRY**
there is no waste

- As they are in liquid suspension the particles in *Liquifry* cannot swell and choke delicate fry



LIQUIFRY Nos. 1 & 2 Standard size 3/- per tube Large size 5/6 per bottle

Liquifry No. 1 for Egglayers, Contains also particles to promote the growth of natural Infusoria in the tank

Liquifry No. 2 Ideal for baby Livebearers, also as a follow on food for many Egglayers

INTER-PET, Division of **LIQUIFRY Co. LTD.**
Church Street, Dorking, Surrey. Tel: 3202/3



Please mention PFM when writing to advertisers

JOHNSON'S AQUARIUM

223 LONGLEY ROAD, TOOTING, LONDON S.W.17 (01-672 6742)

INTRODUCE The "AQUADOME"



A UNIQUE CONCEPT OF AQUARIUM OR WATER GARDEN

This may be viewed from any level—from the ground, or coffee table or other suitable piece of furniture, or from the specially manufactured Wrought Iron Stand. The fish may swim in or out of the dome at will or may be confined within the Base tray, or within the Dome. It may be used as a coldwater or tropical aquarium or as a combination of indoor water garden and aquarium. There are endless possibilities for this to blend with modern decor. The fish may be seen from all angles.



ROTARY AIR PUMP for Shop or Fish House

Completely
oil-free
Driven by $\frac{1}{2}$ h.p.
electric motor

This pump is made with two speeds of motor: the slow running motor gives approx. 50 cu. ft. air per hour (sufficient for 48 diffuser stones). The fast model gives approx. 100 cu. ft. air per hour (enough for up to 100 tanks). (This is the pump we used on our 54 tanks at Alexandra Palace last year and we had to allow over half the air to run to waste as it kept blowing the air line apart!) We have had the same type pumps running for over 2 years without any maintenance at all in the fish house.

Retail price of either pump £40.0.0 each

Trade enquiries for the above, and a full range of

QUIP AQUARIUM PRODUCTS—Filter Media, Foods, Remedies

Coloured Gravel, etc. should be sent to

FISH-E-QUIP LTD, 2 SHREWTON ROAD, TOOTING, S.W.17

who will be pleased to give you every assistance

Base size 21" x 29"
Dome 16" diameter
—a better surface
area than a 48" x 12"
tank!

The cost of the unit, Base tray, Aquadome, Dome pedestals, polythene pipe for filling and emptying the Dome and instructions is £12.12.0

The Deluxe Kit includes pump, filter, Quip Terylene Mat and Charcoal, gravel, plastic decoration, step-by-step instructions and, of course, the basic unit as above. Complete price £19.19.0

With the pump and airlift included in the Deluxe Kit it is easy to make a waterfall etc. S.a.e. for leaflet.

**A FULL RANGE OF
RELIABLE AQUARIUM
EQUIPMENT ALWAYS
IN STOCK**

"I saw your advertisement in PFM"



Can you
remember
your
first fish?

The odds are you fed it on Gussie, the biscuit-type fish food made by Armitage Bros. Ltd., famous for many, many years. You've come a long way since then. So have we. And we're still very proud of our good name. That's why we were a little longer than others in producing fish food flakes. They had to be perfect, with a guaranteed analysis to provide exactly the right balance. Not easy. They had to float a long time and then sink so slowly that every flake is eaten, not clouding the water or blackening the bottom gravel. Even more difficult. But we did it—and Gussie stays on top.

For an extra bonus compare our prices. For Tropical Fish—Standard size 2/2, Large 3/1 & Breeder size 6/2. For Coldwater Fish—Standard size 1/6, Large 2/3 (Recommended Retail Prices)

Fish that flourish get

GUSSIE FISH FOOD FLAKES

ARMITAGE BROS. LTD · CASTLE GATE · NOTTINGHAM
THE FIRM THAT CARES FOR YOUR FISH



Please mention PFM when writing to advertisers

LETTERS

Continued from page 54

orfe, which will go back in the pond when it gets a bit warmer, and I'm sure it will win a first if I show it. If you decide to print this in PFM I'm sure some people will learn something, as I did. In fact, 'give them a chance'; because I consider it quite something that the fish recovered after so long on its side.

With regard to the question about how long fish can live in tanks (Comments and Quotes; PFM, April), my oldest fish, which were given to my son in 1964 (lock, stock and barrel) by his teacher are: spotted catfish (*C. melanostictus*) 9 years; kuhli loach, 9 years; scissortail, 9 years; pair of cherry barbs, 10 years. These fish had been purchased for the school tank and they had had them for at least 2½ years.

Nottingham

FRANK POIZER

A Gift to be Maintained

READING through Arpee's list of 'Ten Hopes' for the 1970s (PFM, March), I see that one of them is the hope that every hospital and Children's Home etc. that would like one will get a furnished aquarium, but may I ask that clubs who make such presentations should urge their members to guarantee their upkeep. This may sound a bit grudging when the club has been kind enough to present the aquarium, fish and plants in the first place, but as the mother of a daughter who has been nursing in one or two hospitals where this has happened I do know that presentation tanks do become 'presentation worries' if they are not looked after properly and just become an added chore to some already overworked member of the hospital staff.

Weymouth, Dorset

MRS L. SUTHERLAND

Surplus Stock

MR R. SLEET is an optimist in thinking that auctions of club members' surplus stocks of fishes and plants will ensure that breeders and growers will get more for their products than they will from dealers (PFM, April). At some auctions I have seen the bids accepted for stock were far from being inspired by generosity and the parsimony of the bidders easily matched that of the worst possible dealers.

London, N.10

B. CHAPMAN

Bare v. Furnished

I CANNOT agree with the comments in the article by Mr Peter Ginger on the 'relaxed' and 'happy' state of fish kept in bare tanks (PFM, April). He does at least admit that the bottom of the tank should be darkened, but what is more disturbing to a fish than the colour of the base below it is the reflective capacity of that surface. Gravels used may be light in colour whereas stream bottoms in tropical areas are dark, but neither light-coloured gravel nor the natural bottom reflects light as

does the flat glass base of a tank whether or not it is painted outside. If you want a dark base use ground-up dark stone, or peat if you are worried about the wearing effect of gravel on the whiskers of catfish etc., but don't imagine that an uncovered glass tank bottom makes a fish feel at home.

Old-fashioned aquaria had rough slate bottoms and these were, I'm sure, much more acceptable for fish when used unfurnished. Black glass is not the answer! Even human beings in offices with overhead lighting and floors of highly reflective material have been known to experience ill-effects from the glare.

London, S.E.3

P. HOWE

I THOUGHT Mr Ginger's article about unfurnished tanks in the April issue very interesting and must admit that his separate points, such as the advantages of a bare tank with regard to feeding and more space, are true in themselves. But yet I feel that this is not the whole story and that bare tanks aren't good enough (I think this view is probably what most people believe as Mr Ginger suggests that his fellow club members have been 'on' at him to give planted tanks another try). Probably the argument is really the old 'battery hens' or 'lions at the zoo' one.

I'm sure fish in bare tanks will be quite healthy if looked after properly as Mr Ginger outlines and obviously bare tanks are important for quarantining and breeding in some cases. Also I admit that the 'furnishings' in the tank seldom really duplicate the fishes' natural habitat; but I feel sorry for these animals that exist in a 'vacuum'. I bet Mr Ginger's fish in his bare tanks would rather be able to 'casually slip into the foliage' as he describes the fish in planted tanks and 'appear again only when you have forgotten what it was you were looking for'.

Mitcham, Surrey

L. HURST



'His doctor's told him to give up drinking and take up the hobby'



Transatlantic TOPICS

By JIM KELLY

from the danio or livebearer groups. The presence of these 'ditherers' seems often enough to be an inducement for the cichlids to spawn.

Guy isn't a man to waste words and his ideas are often the results of quite a lot of hard work and experiment. Visiting fish shows, where through limited space the fish exhibited have had to be in a divided tank, I have witnessed too many spawnings to argue about this idea—seen too many surprised owners to quibble.

* * *

Frankness is only next to freedom in the hearts of American people and that this carries over to the hobby is soon apparent when reading their forthright club publications. No one is too big, and no matter how small they don't escape the notice of the critics.

With this in mind I was very interested when one Frank (Holcomb), wrote about another Frank (Clickner) on how the latter raises such wonderful fishes at his Garden Grove Hatchery way out on the West Coast.

The answer is typical of the dedicated humour expressed by these fishkeepers. Frank said he simply sits on his porch, rocking back and forth in his comfortable chair. Every once in a while he looks at his fish swimming around in their tanks and gently croons to them: 'Grow you little -----, grow!'

And if show results are anything to go by, they do!

* * *

Setting up as a professional fish farmer is difficult enough no matter where you decide to start but to attempt it right in the heart of Florida, where already there are no less than 72 members registered with the Florida Tropical Fish Industries, would seem to be really asking for problems.

That it can be done (given suffi-

cient patience and know-how), is epitomised by the success story of Hank and Darlene Huff, owners of the Suncoast Tropical Fish Farm on the outskirts of St Petersburg.

Their first venture in building up a livebearer business came to a stop when their land was acquisitioned for other industrial development; but this didn't put them in a 'huff', if you will forgive the pun. Far from it—undaunted, they started afresh at their present location but changed to the breeding of angel fish; 'the condition of the local water wasn't conducive to the production of livebearers and made a repeat of our previous idea impracticable', said Hank.

One item of food, Daphnia, comes from their outside pools; the water fleas are fed with fish heads and cottonseed meal! Yet two more ingredients the do-it-yourself-at-home Cladocera rearer can add to his already large list of suitable feeding materials.

* * *

'Three foot high waves lash our boat, grey, chill water threatens to swamp our launch as ominous fog closes in cutting us off from the distant shore.' Does that remind you of Newfoundland's Grand Banks? Dogger in the North Sea? Or a quote from THE CRUEL SEA? You would be wrong. That incident, described by explorer Willard Price, was taking place some 3,000 miles up the River Amazon. No wonder he refers to it as the Sea River, that home of so many of the tropical fishes that grace our aquaria.

This 4,000 mile stretch of water is fed by the greatest sprawl of rivers on earth and drains a territory of some 3 million square miles. Almost as large as the entire United States. Here are some more 'did you know that' facts about the Amazon.

Its mouth is from 180 to 200 miles wide, depending on what capes you choose. Neither bank is visible from the centre of the river, not even from an aeroplane.

Every second it discharges from 4 to 7 million cubic feet of water into the Atlantic Ocean in a wall of fresh

Continued on page 68

A VISITOR to a recent show mentioned that his plants were suffering from that complaint we loosely refer to as 'cryptocoryne disease'. Manifesting itself as clear spots on the leaves, it progresses steadily until the complete leaf and plant dissolve into a brown goo. Thanks to the work of Dr N. Thomson Lipscomb, from Louisville, U.S.A., which occupied him for 2 years, I was able to help our friend.

According to Dr Lipscomb the conditions which seem to support the disease are: too strong illumination; too much organic matter under the gravel; old and hard water. Correcting these four things always stopped the infection, though in advanced cases the cryptocorynes were denuded and set back months.

For moderate cases about 10 drops of a 1% solution of potassium dichromate per gallon was effective in halting the spread of the bacteria causing the outbreak. At this strength it is said not to be toxic to the fish, though a partial change of water over the next few days is recommended.

* * *

How many times have you tried to induce a pair of cichlids to spawn, given them everything according to the book and then given it up when your fish become 'reluctant breeders'? One famous West Coast aquarist, Guy Jordan, has his own special brand of psychology for such times. He claims that it is often the very peace and quiet that we hobbyists go to great lengths to give our fish that cause this condition and suggests we all try his 'dither' approach.

Divide the breeding tank into two by means of a glass partition and on the other side to your reluctant pair of cichlids place a few active fishes

Breeding Wild-caught Killiefish from Ghana

IN August last year I had the opportunity to obtain some wild-caught *Funduloscopus thierrii* and *Epiplatys bifasciatus*. These were sent to this country by David Blair, who was collecting in Ghana at the time.

After purchasing the fish, my first thoughts were to get them settled in, so that I could attempt to breed them as soon as possible. It is essential to get eggs quickly, as newly imported killiefish tend to be rather delicate, and after seeing these two species I could not bear the thought of losing them.

We will start with *F. thierrii*, as to my mind this is the more interesting of the two. The coloration of this little fish is quite lovely; the basic body colour is a pale greenish blue with irregular red-brown spots on the sides. The pelvic, anal, dorsal and tail fins are yellowish covered with red-brown blotches. They are also edged with the same colour. The tail tends to form a slight lyre shape as in the *Aphyoseioides*; the pectoral fins are clear. The eye has a black pupil surrounded by a bright green ring.

The female, as in most killiefish species, is much less colourful; she is basically brownish grey all over. The fins are mainly clear but there are a few brownish blotches in the dorsal and anal fins. She also lacks the green eye.

The wild stock has quite a nasty disposition: I found that the males needed two females to stop them from bullying them. However, tank-raised specimens do not seem so aggressive and I have just raised a batch of 140 in a 15-gallon tank without any serious fighting at all.

To spawn these fish a 12 in. by 8 in. by 8 in. tank will be sufficient. Half-fill the tank with water of pH 6.5-6.8 and a hardness of 1-2 DH. One inch of boiled peat over the bottom and a few well-boiled willow roots will complete the tank. If, however, you have a lot of light, a

layer of floating plant will help the fish feel more secure. Spawning seems to take place almost continuously and I have found separation of the sexes unnecessary if good feeding is maintained. The fish will eat almost anything alive but I have had no success with dried foods of any kind. Favourite foods are mosquito larvae, *Daphnia*, Grindal worms and *Tubifex*. I find white worm rather too large for these fish.

After the fish have been spawning for 21 days, it is advisable to remove the peat containing the eggs. Half the water should be changed and more peat added. There are two methods by which the eggs can be hatched. Firstly, they can be kept under water. A cover of about 1 in. of water over the eggs will be

and the peat is examined. Several eggs will show very little, or possibly, no sign of any development. If these are left under water for about 14 days and then the peat is dried out again for another 6 weeks, another hatching will take place. In fact it is possible to get three or possibly four hatchings from one batch of eggs. These 'resting eggs' behave like this to ensure the continuation of the species, i.e. from one spawning there are four chances of the fish reaching maturity and spawning themselves. If the first, second and third spawnings do not reach maturity through some natural change, there is still the fourth batch. In other words—something like a cat with nine lives.

I have found the youngsters will take microworm straight away and at 4-5 days old they can be given newly hatched brine shrimp. The rate of growth does not seem to be as quick as in the *Notobranchius* species but they usually become sexable at 6 weeks and will lay well at 12 weeks old. For anyone who is interested in bottom-spawning killiefish, this one is a must for their collection.

We will now consider *Epiplatys bifasciatus*. The wild-caught male I have at present is around 2½ in. long and the females are a little smaller. The coloration of the male is basically green-gold on the body with a dark brown horizontal line from behind the gill plate to the base of the tail. The body is then overlaid with a diamond pattern of very fine and irregular red lines. As he moves, a few minute blue spots can be seen on the lower half of the body. The fins are yellowish to clear and are covered in a variety of lines, spots and blotches of no definite pattern. The colours of these markings vary from blue, green, red and brown. When seen in sunlight the effect is

By PAUL BLOWERS

sufficient; after 5-6 weeks the depth of the water should be increased to 2-3 in. and hatching will take place within about 12 hours. I personally do not like this method; the fish hatch out rather irregularly and although the first may hatch in about 12 hours, some may still be hatching 7-10 days later. This gives a variation in the size of the fry that leads to the smaller fry being eaten by their relations.

I much prefer to dry out the peat and eggs. I first squeeze all surplus water from the peat, which is then placed between two sheets of newspaper for 2-3 days, bagged up in 1000 gauge poly-bags, labelled and stored. Hatching can be attempted at any time after 6 weeks (this is done by placing the peat in a tank and covering it with 2 in. of cool rain-water at 64°F, 18°C—the inclusion of a small amount of microworm will help the hatch).

After a further 2-3 days, the fry are siphoned out into another tank

Continued on page 66

A Garden Pool in a Couple of Hours

THE old way of making a garden pool with concrete involves a great deal of time and a lot of hard

work if the pool is to be of any size. Pool making in the seventies is far easier if one takes advantage of

modern materials. The choice is between rigid prefabricated glass-fibre pools and several sorts of tough sheeting material to be used as liners.

Glassfibre pools are obtainable in various shapes but from what I have seen of them many were obviously designed by people who knew very little about the requirements of aquatic plants and hardy freshwater fishes. The larger sizes are also very expensive. The garden owner who is also keenly interested in aquatic life is more likely to make use of a pliable liner, which allows him to design his pool to the shape and the size he desires.



Final stages of the excavation involve the shaping of the sides. These must slope inwards so that no vertical parts to the sides occur



After completion of the shaped excavation its base is covered with sedge peat and the sloping sides are covered with damp newsprint to cushion the liner

By **BRIAN FURNER**

I have used three different sorts of liner for each of my pools: butyl rubber, Plastolene and Juralene. Butyl rubber is grey-black in colour. Plastolene comes in blue, green or stone and Juralene in blue and natural stone. Both Plastolene and Juralene may also be had in a pebble finish. It is this last finish which I find attractive, but does the colour of a pool liner matter all that much? My main pool is lined with butyl rubber but this and the other liners are masked by the many aquatic plants. Windborne dust has also fallen into the pools and has settled on the liners.

Juralene is the cheapest of the three liners but it is recommended only for pools less than 100 sq. ft. in surface area. Butyl rubber and Plastolene are at least as tough as concrete for lining a pool.

The position for a garden pool is important. One may admire drooping willows around lakes but it would be unwise to imitate this sort of beauty by siting a garden pool

beneath an attractive tree. The leaves can be such a nuisance. They fall into the pool during the autumn and sink to the bottom, where they release gases as they decompose. The gases, if trapped beneath ice during the winter, may foul the water and lead to the death of fish.

An open sunny site is to be preferred. Not only do water lilies and other aquatic plants thrive in sunlight but it also suits pool fish. During the spring months the sunshine raises the water temperature rapidly. This encourages the fish to start feeding and to recover from the winter fast.

Shape of the pool is a matter of personal taste. Square, rectangular and round pools go well with a lawn or paved patio; irregular shapes look fine alongside a rockery. In fact, during the construction of a garden pool the making of a rockery alongside it is a useful way of 'losing' the soil dug from the hole! Incorporating a waterfall in the rockery is an added attraction worth considering.

The size of the pool will depend on how much garden space may be spared for it. A mini-pool not only restricts the number of fishes but is not ideal for fishkeeping at all because the water temperature in a small pool fluctuates rapidly. In a small garden 54 sq. ft. is a reasonable pool area. This may sound rather big but it is only equal to a rectangle measuring 9 ft. by 6 ft. My main pool measures 9 ft. by 9 ft. and I wish now that I had made it larger.

In the south 18 in. is generally considered as quite deep enough for a garden pool but in very cold parts of the country I feel it would be wise to go down another foot. With a depth of 2 ft. 6 in. one is pretty sure that there will always be some unfrozen water in which the fish may safely pass a few weeks in a very severe winter.

Neither 2 ft. 6 in. nor 1 ft. 6 in. is the depth of water favoured by most aquatic plants and in the pond design several shelves should be included. These should be at about 8 in. below the surface of the water. The width of the shelves will depend on how the plants are to be grown. I favour planting them in polythene planting baskets and the shelves in my pools are only 8 in. wide. The shelves with the baskets of aquatic plants form a shallow area of water which pool fish favour as a spawning ground.



With the liner in position in the hole, stone slabs are placed around its overlap to keep the top edges in position during the filling with water

After having decided on the size, shape and depth of the pool one needs to know what size the liner for it will have to be. This may be worked out by using the following formula:

Length of pool liner
= length of pool plus twice the maximum depth.

Width of pool liner
= width of pool plus twice the maximum depth.

When taking these measurements do not add an extra foot or so for the overlap around the edge of the pool. The elasticity of the sheeting auto-

matically creates an overlap. If the proposed pool is to be an informal one then the measurements must be made as if one is dealing with a rectangle. This may mean that one will have some surplus sheeting here and there after the job has been completed and it may be necessary to trim back this surplus with scissors.

Before excavating it will be necessary to cut and dig out any turves if the pool is being made in a lawn. Stack the turves nearby. Some of them will be needed later on. A rake should be used to level the surface of the ground and strings and pegs used



Only 3 months after its completion the author's 9 ft by 9 ft pool already has the look of an established feature of the garden

to mark out the perimeter of the pool and the positions selected for the shelves. Start digging at the centre and work outwards so that the last part of the work consists of shaping the sides. These must be dug out so that there is no straight, vertical drop. Cut into the ground with the spade so that the sides slope slightly inwards towards the base.

This digging out of the hole is the only real work involved in making a garden pool the modern way. The work can be quite hard, too, if one has to deal with clay. It is easy going if the garden subsoil is sand or gravel. It took me only 2 hours to dig the hole for my 9 ft. by 9 ft. pool.

After all the digging has been completed use a spirit level to check that the edges of the pool are level. Some

levelling is bound to be necessary here and there. Although pool liners may be fitted at any time they do become more supple if spread out on the lawn in the sun whilst one is excavating the hole.

Modern liners are tough and are capable of withstanding the pressure of a ton or two of water, but one hazard must be considered and action taken at this stage to prevent it. A small, sharp stone beneath the liner could pierce it when it is supporting a great mass of water, so a pad is needed between the liner and the soil. I used a 1 inch layer of granulated sedge peat. Sawdust (free from nails) and stone-free sand are other suitable materials for a pad. The chance of any holing at the sides is slight. I made sure this could not

occur in my pools by padding the sides with several thicknesses of damp newspaper.

Stretch the liner over the padded hole and anchor the sheeting securely by placing heavy objects like stone slabs and the garden roller along its edges. As the water runs in so the liner moulds itself to the shape of the excavation. When the pool has been filled the edges should be tucked beneath turves, rocks or paving stones.

An added advantage of the use of a pool liner is that the garden pool may be taken with one should one move house. My own pools are likely to be moved within a few years so instead of cementing the pieces of broken paving stones together I have filled the intersections with the small pebbles used to pebble-dash walls.

Breeding Wild-caught Killiefish

continued from page 63

fantastic and, to my mind, makes this fish one of the most colourful of the *Epiplarys*. The female has less colour but does have the horizontal stripe.

When I first received these fish, I thought they would never settle down. Whenever the tank was approached they went mad, dashing against the glass, jumping out of the water and losing every bit of colour they had. I overcame this by setting up a 12-gallon tank as follows: it was filled half with rainwater and half tapwater (they do not seem very fussy about water conditions); then into the tank were placed several bunches of fine-leaved plants with a really good layer of floating plants at the surface, in particular water lettuce as this plant has the long roots necessary for the fish to hide in. I then cut out all side light and just left a loose panel for observation.

The fish were still not settling down too well, so I gave them a few female *N. guentheri* as companions. After about 2 weeks they seemed much happier and the male was in glorious colour, so I decided to try for a spawning. I fed the fish well on mosquitoes and fruit flies for about a week, then placed a couple of mops in amongst the floating plant. I did get one or two eggs, but that was all, so I then changed one-third of the water for fresh.

After about 10 days I had about 80 eggs from the one trio. The eggs were placed in shallow dishes (74°F; 23°C) and hatched in 12 days. The young will take newly hatched brine shrimp straight away.

The young seem to be slow-growing, and at 12 weeks are only about 1 in. They do not seem to be as nervous as the parents, but they are not a steady fish. I shall be looking forward to seeing them when

adult; there is a suggestion that they will not achieve the coloration of the wild specimens, but as mine are being grown in an 80-gallon tank I hope I shall get some reasonable colour in them.

Both the above fish are well worth keeping, and I hope they can successfully be kept with their full coloration intact (some killiefish tend to become drab after continual tank-breeding). I would personally like to thank Mr David Blair for re-introducing these fish to this country, and I hope he got as much pleasure collecting them as I have had in keeping them.

Aqua-tip

ONE of the most common problems encountered in setting up a display of fish is that, unless a spirit level is available, it is almost impossible to ensure that the aquarium and stand are quite level before the water is put in. In large aquaria this can mean a difference of an inch or more over the whole length and results in the water surface showing below the top frame at one end of the front viewing panel. However, use of a car jack will quickly solve this problem without the bother of emptying the aquarium. Place a sturdy length of wood under the lower tank support of the stand, at the end that is too low, and position a jack centrally underneath this. A few turns of the handle will raise the whole unit intact, and it is then a simple matter to pack small pieces of hardboard under the stand legs until the correct level is achieved.

C. HARRISON



Personal COMMENT

by
ARPEE

ALMOST every enthusiastic fishkeeper will be familiar with the situation described by Mrs Harding in the March issue of *PFM*. You start with one tank and finish up with x , x is a variable. It can either equate to an overflowing fish house with a little trading as a sideline or it can equate to an 'Exchange for poultry house' advertisement in the local paper. Sometimes it can equate to an optimum distribution of fish tanks throughout the house, based on square footage, number of rooms, size and sex of family etc.: there is probably some formula for this which the computer boys could work out in a spare millisecond.

The extent of territorial expansion is perhaps more vital than the initial decision to become a fishkeeper, because if it is overdone it can become a positive menace in a household. The idea of a hobby is that it takes its place amongst other things, and not that everything else is subordinated to it. Exactly how you arrange your leisure is, of course, entirely a personal matter, but it is often not realised how much of a crashing bore the enthusiast can be, both to his friends and to his family, if he takes things too seriously. I know this for a fact because I have been guilty of it myself, but having taken a look at the situation a year or so ago I wondered what I could do by way of alleviation, and thereafter set about changing certain of my tactics.

The first thing was to only talk fish to non-fishkeepers if they raised the subject in the first place. This is much more likely to bring converts than any amount of hot gossiping, and it got me out of the obligation to 'lecture' visitors, out of politeness, when it did not take genius to realise that they would have much preferred either to discuss their wretched cars or to have a quiet nap after lunch. If nothing else this has resulted in the certain knowledge that I shall no longer waste my breath, though whether I remain a bore is quite another matter.

Like Mrs Harding I found that the number of tanks was multiplying and the complicated negotiations with my wife on the subject were something like the Korean Peace talks, excepting that she got the worst of the deal and the place became more and more cluttered. The point at which I started to look really closely at the problem was when I found it inconvenient to feed and service all the tanks every evening. Despite what is said to the contrary I am a firm believer that you have to set a routine for fish feeding, and that you have to stick to it, even during holidays. This routine was becoming a nuisance because the tanks were scattered about the house, and some I rarely saw for more than 10 minutes at a time.

Looking at my activities as a whole I realised that I was

trying to do too much breeding and not enough fishkeeping, and it was here that I managed to effect the compromise that made so much difference. After analysis and heart-searching I had to admit that although breeding had been quite fascinating it was nothing like the paying proposition it had superficially appeared to be, and furthermore I was beginning not to care much whether it was or was not. The point was beginning to emerge that I was much more interested in the behaviour of the various species I had been keeping. If they procreated, so much the better, as it indicated that they were happy, but breeding as such was no longer a serious preoccupation.

I straightaway managed to strike two tanks off the complement, with the possibility that another two could follow at a later date. This would enable me to concentrate my efforts into the living room, in which I could introduce larger tanks, but fewer in total number than heretofore. The Peace negotiations seemed somehow to have found a formula. I have now settled for one 36 in. tank for the small tetras, one ditto for a cichlid collection, one 24 in. tank for brackish varieties and two 24 in. tanks for oddments, quarantine etc., and there is one vacancy. This will be a 36 in. tank, at the bottom of a tier in a rather dark situation, and at floor level.

What suggestions for filling this 36 in., please? I have my own ideas and should be most interested to hear how readers would handle this situation. Since I will write about the results for the benefit of *PFM* readers I would only stipulate that the nucleus of fishes must be such that it can be added to from time to time, so piranhas are 'out', likewise the 'fuzzies' such as the butterfly fish.



I have no doubt that the circumstances described by Mr L. W. Beale in his letter about his fancy guppies (*PFM*, February) will be familiar to many aquarists all over the world. Regrettably, even though I stand on the same side of the counter as he does, I cannot have complete sympathy with him. In this context you simply have to look at the situation from the normal point of view of the dealer, as from elsewhere one can only be biased and emotional. In the first place the dealer is in business to satisfy a demand. Even though our assessment of his judgement over this varies according to whether we are cichlid or tetra enthusiasts, we must assume that he generally knows what he is about or he would be out of business altogether.

He orders his fishes from wholesale suppliers according to his established market, and according to the lists of species which his suppliers tell him they can provide. The chap who catches the fishes probably gets about a twentieth of their across-the-counter price. In between him and the purchaser come the agents and the transporters, both in the country of origin and in the country of destination, all of whom take their cut. The contribution by the catcher, however, remains precisely the same throughout the whole of this chain, and by the time the retailer receives his consignment the fishes have had a number of adventures and gained considerably in value. If they all live. It is true that some losses can be made good;

others are entirely at risk the moment they arrive, even assuming that they survive at all. Thus the sale price of fishes may well have to depend, within reasonable limits, on the way things have turned out generally, rather than on some predetermined concept of what a this or a that should cost.

Now, along comes another seller with surplus fishes. They may be very good or very bad, but whatever they are, they were never ordered by the dealer and may in fact be something of an embarrassment to him. Nevertheless the price offered is probably much nearer the wholesale price than the price which would have been paid to the original catcher of imported fish. I cannot see what quibble one can have with this arrangement, since there is no earthly reason why the private breeder should collect the elements attributable to freight and agents' fees, since he has taken no risks whatever. The dealer retailer has, in my view, every right to profit to this extent because he is entitled to the bonuses of good risks as well as the penalties of bad ones, and since the number of fishes from private sources is only ever a small proportion of his stock it cannot be said that he is making money hand over fist from these activities.

It is a different matter altogether if a retailer comes to an arrangement with a local breeder for the supply of fishes, as in this situation more favourable terms would be offered because the buyer (the retailer) is not in a commanding position. In neither case would I expect the fishes to be retailed noticeably more cheaply than normally. Why should they be? If a collector travels from the north to the south to visit a retailer and buys some superb fish at 5s each (these having come from an amateur's surplus), he is going to be pretty cross when he makes a return visit the following month to find the prices doubled simply because the specimens on view were imported. To me, it's as simple as that.

In fairness, though, I have the feeling that Mr Beale was given a pretty poor deal, and if he takes my advice he will give that dealer a miss in future and tell him why. If anybody develops as good a strain as the writer suggests, I am sure that an advertisement in *PFM* will bring lots of prospective buyers, and the news soon gets round if the stock is unusually attractive, but since 'unusually' is the keynote the average breeder cannot hope for much. I think it should be remembered that this problem of disposal is always a sore point with the livebearer

enthusiast, and it is one reason why I never recommend guppies or the like as a beginner's fish. Beginners are usually nice, normal soft-hearted people who don't like seeing the fry gobbled up by big fishes; this is, however, preferable to flushing them away, which is a positive act of cruelty and should be punishable.

I think that if I felt like Mr Beale I should try the egg-layers for a while and return to his first love when he has hardened his heart. If he finds that he has in fact produced something good, however, he should stick to it and compete with the local dealers, but in doing so he really changes his status and may find his views will become modified as he comes to meeting some of the inherent costing problems connected with the trade. I very much hope that he will find some inspiration from all the advice he will undoubtedly get. The fact that he gets more pleasure from looking at his fish than bemoaning the price the others fetched makes me think that he will rise above his present difficulties because he has got what matters in focus. As I look around at my guppyless tanks, a thought begins to form in my mind... Ah, well, perhaps not!



We are now told that scientists are turning their attention to eradicating garden weeds, not by improved conventional herbicides, but by turning loose plant diseases which are especially harmful to their targets without ill-effect on other plants in the vicinity. So far as aquarium plants are concerned it is hardly likely that the need for such a device will ever occur—rather the reverse, in my experience—but it is interesting to see how this research might develop. If the treatment can be controlled—and this seems to be the weak link—it might not be too long a step towards the possibility that certain parasitic diseases in animals might be treated by letting loose predators which were harmful to the parasites, but with a benign effect upon the hosts. Clearly, this would only have appeal where chemical or physical methods of treatment were less than effective. Perhaps one day we might even find 'black spot' growing on 'white spot', or vice versa. This would surely be the age before which the fish and the rose had never been bettered.

Transatlantic Topics

continued from page 62

water that rushes more than 200 miles into the ocean.

The island of Marajo at its mouth is larger than Switzerland and of its 1500 known tributaries, ten are larger than Europe's River Rhine, seven are over 1,000 miles long. The black, Rio

Negro, is as wide where it joins the Amazon as a distance from Slough to Central London.



At the Fifteenth Annual Professional Aquarium Symposium of the U.S. Society of Ichthyologists in New York, Richard Reckeweg, from the National Fisheries Center, presented a paper on wooden aquaria that created much interest among the delegates.

Made from plywood, impregnated and coated on both sides with a resin

that renders it waterproof, they are known commercially as GPX. And to prove that wood isn't just for the small aquarium, he said that tanks up to 750 gallons capacity had been constructed with success.

Wooden tanks aren't new, we know, but plywood coated with fiberglass cloth and resin, or even epoxy, made these aquaria expensive. What is important to you and I is the simple fact that better technology is making them cheaper and bringing them within the reach of us all, even those bereft of the American high-spending potential.



GUPPY

World

It is one thing for the experts to recommend that a prime requirement in the production of large fancy guppies is to feed them umpteen times per day. Another kettle of fish when most of us have to earn our living and that means being out of the house and away from our fish for a considerable part of that time.

Crash programmes usually involve a hurried first feed before dashing for the morning transport. Dire threats to the rest of the family take care of the rest of the day until we again return from our labours to resume 'normal service'.

Poecilia reticulata, like most fish, don't sleep in the accepted sense of the word. During the hours of darkness they enter into a kind of twilight inactivity during which their body metabolism slows down. It takes approximately 15 minutes before they 'come alive', counted from the time we flood their home with light. During this period they rarely eat so it isn't much use dashing into the fish room on rising, switching on the lights, scattering the food in the aquarium and expecting them to consume it before it hits the bottom of the tank. Some may but the majority will just ignore the food.

Experts fit a time switch that turns the lights on automatically, a quarter of an hour before they feed their fish. Failing this electronic wizardry, turn the tank lights on when rising but delay the feeding until you have washed, shaved and grabbed that cup of coffee. In return for this thoughtfulness your guppies will repay you by increased growth.

My discussion about the lethality of the yellow pigment in guppies (*Guppy World*, 1968, April), seems to have aroused great interest amongst readers, especially those breeding the

zebrinus fish sporting both yellow and black colouring.

Having kept these I can confirm what so many have said in their letters, that so long as the black coloration in the dorsal and caudal fins remain less than a quarter of the total area, the guppies breed normally. As the dark melanophores lessen, a noticeable deterioration is noticed in the strain until sterility, the final step, is reached.

The answer lies in breeding only with guppies containing more black pigment if inbreeding is practised. Better still, why not try introducing new fish from an outside strain?

By PETER UNWIN

Reading about the carotenoid compounds in Alan Charlton's excellent article, 'A Little Known Fish Food' (1968, March), brought to mind an old dodge used by the old-time guppy keepers to enhance the red colour in their *Poecilia*.

Fresh carrots, as red as was possible to obtain, were boiled in as little water as was necessary, and after chopping were mixed with Bemax to form a stiff paste. Stored in glass, screw-top jars, this diet supplement was to be found in the fish rooms of most guppyatics boasting good red guppies.

It takes a little time for the results of feeding this mixture to show, but your patience is rewarded in the fact that unlike many proprietary 'colour foods' on the market, there is no limit to the amount of the do-it-yourself diet that you can feed.

You and your guppies will find this food a good thing—and everyone knows you can't have too much of that.

Fancy a holiday in Austria from 12th to 19th July? Would you like to enter a European show at no cost to yourself? Even have your fish entries sold for you afterwards? And if that sounds too good to be true I can assure you that the only apparent snag will be getting your tongue round the name of the group sponsoring the event—the Österreichische Guppy-Gesellschaft, Wien.

The Austrian Guppy Association will be again holding their annual show at the Museum of Natural History in Vienna. The 1968 show was vividly described for us in 1968 (October, 1968) by British traveller, Malcolm Delingpole. For those interested enough to require more details, write to Max Kahrer, Kaiseralle 23/6/1, A-2100 Kornzeuburg, Austria. Note that this show is limited to 300 entries.

I can hear again the cry of the Viennese Customs Officials: 'Levende fische? L-e-b-e-n-d-e fische!'. I still don't know whether their surprise was at the luggage containing live fish or that fish were livebearing!

Before I was tall enough to struggle with the hieroglyphics on the jam jar and table sauce bottles, my youthful mind fell into the dualistic habit of thinking the world was divided into rival categories. With me it was always either right or wrong, dark or light, black or white. No shades of grey existed! Even McLuhan in later years couldn't convince me that the water in my aquaria was anything but either clean or dirty. I learned the hard way.

Yellow water in the aquarium is usually indicative that it is on the acid side of the pH scale but not always. Because of the high cost of filter charcoal, many hobbyists have started to substitute gravel in their box filters and, judging by the number of readers' letters on the subject, quite a few have found that the water developed a yellow or golden cast.

Gravel can be used safely as a filter medium but in the hands of the beginner, using the wrong kind or even careless about its preparation, it can be more costly than the charcoal it replaces. Use old aquarium

compost, wash it well and don't pack it down too tight. Never use gravel or sand from a doubtful source. Finally, remember to clean all filter materials regularly.

• • •
Most hobbyists are contented if their fish are of saleable or show size in about 4 months but not Bill Harrington. He has developed a

strain that attains this status in just 90 days. He achieved this by rigorously culling all newly born fry that do not come up to his personal standards of growth, in the first 10 days of their life. By close and frequent observation of his guppies, Bill has finished up with some remarkable specimens. It comes as no surprise to learn further that these fish rarely suffer from the usual

disorders, can stand a range of water temperature from as low as 50°F (10°C) to as high as 90°F (32°C). They seem to thrive on adverse water conditions, pH and DH, I kid you not!

Before we come inundated by requests for Bill's stock I should warn you that he disposes of the surplus locally, and that's at Beecher, in the State of Illinois, U.S.A.

GUPPY Types No. 1: The Female

No other tropical fish has such a comprehensive set of Standards as the guppy. The first guppy standards were issued in 1937 and their comparison with the latest Standards Handbook of the Fancy Guppy Association, just published*, reveals how the outlines have advanced. In this new series in PFM the highlights of the story of the development of the guppy varieties will be given.

ON reflection, one wonders how those early breeders ever produced the fish they so much admired, because the two sets of Standards published in the pre-war years did not include a female! As for her human counterpart, emancipation of the female guppy was a slow and long process. Both the 1937 Standards of the Fish Culturists' Circle and the Guppy Breeders Society Yearbook of 1938, though displaying five male types, contained nothing about the opposite sex.

When a standard did finally appear, as a 2-inch-long, clear-finned 'Plain Jane', nothing distinguished one female guppy from another but their body colours of grey, gold, gold-

laced, Robson coloured and albino. The goldlaced had a basic body colour of old gold but with each scale edged with black. The Robson, so named after a famous breeder, sported a grey body with the dorsal and caudal fins all black.

In these original outlines the dorsal fin was D-shaped, the caudal round; body depth at the deepest point was approximately five-eighths of an inch.

It wasn't until the introduction of the American types after the war that English breeders saw other types of finnage on the bench. First of these 'newcomers' was the superba or shark tail, a name that so aptly described the caudal fin. This guppy was claimed by many to produce the

broadtail male, a claim proved to be false over the years. They do produce some large-finned males, but like a similar claim that the roundtail female gave birth to swordtails, both stories had a lot of 'if's'.

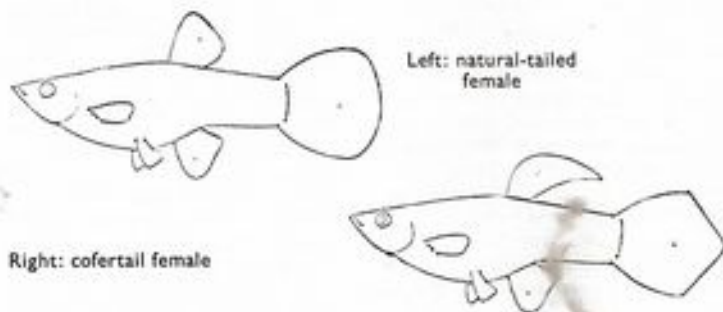
Ironically, in view of what we have just said, another female type, the wedgetail, did for quite some time provide the hobby with many red-finned males. One interesting fact about this fish was its pointed anal fins. Perhaps the fashionable 'winkle picker' shoes of that period had some influence?

Once the new female standards started to show, others quickly followed. Like the 4 minute mile, it seemed the world had just been waiting for someone to do it first. In quick succession came the scalloptail, and later the metropolitan, and it wasn't only the finnage that was changing. In place of the clear fins or drab blue-black, that had been the main finnage coloration, we saw red, green and multi-hued varieties. She was soon just as colourful as the male. After remaining a drab creature for nearly two decades, the female guppy blossomed out. In 1968, a northern breeder, Ken Rigby, had his new cofertail females accepted as a standard, and we once again saw both male and female guppies under the same name.

Today's Standards of the F.G.A. have upped the female's length to 2½ in. (64 mm.) and list seven varieties: roundtail, superba, metropolitan, scalloptail, wedgetail, cofertail and natural tailed.

J.K.

* Obtainable, price 5s (post free), from the secretary, Mr F. Campbell, 37 Cardigan Drive, Bury, Lancs.



Right: cofertail female

Historic House of Fishes

THERE can be few aquatic suppliers in the world who can boast of being housed in premises of historic interest, and probably no others can point to fourteenth century beams above their tanks. However, despite the charm of their old-world surroundings (and possession of unexpected 'perks' such as the rights to graze cattle on nearby Boxmoor), it is the modern presentation of stock and up-to-date fish-keeping methods of Mr and Mrs Roy Skipper, owners of the House of Fishes, that must be the foremost impressions obtained by their visitors.

The House of Fishes first opened in October 1968, the result of Roy and Gwen Skipper's decision to make their fishkeeping, which they had pursued so successfully in scant spare time for so many years, their business as well as their hobby. Every available cubic foot of space

The House of Fishes in the High Street of Hemel Hempstead



at 77, High Street, Hemel Hempstead, has been put to use and this involved making a number of special tanks and stands that fit into the various nooks and corners up and down stairs within the old building. Bulky items of equipment for sale are stored in nearby premises so that, for example, despite a not too large sales

area aquarium tanks of all sizes up to 60 in. length can be supplied when asked for.

Roy Skipper was the first aquarist in this country to breed the discus fish, in 1955. The species is still his main speciality and, as might be expected, it's a discus that forms the attractive sign above the House of Fishes. It is to this front door that so many would-be discus breeders make their way to obtain information and

By ANTHONY EVANS

often to see breeding pairs with fry Roy and Gwen Skipper have prepared a helpful leaflet to guide their discus customers, but they say in it that they make no claim that their techniques give the only route to success. Soft and acid water is essential for keeping and breeding discus, and anyone who buys discus from the House of Fishes can be told precisely the reaction (pH) and hardness of the water in the discus holding tanks. Another point emphasised by Roy Skipper for the discus keeper is that this is a cichlid having quite a small mouth, and hence it should be given foods smaller than those offered to other cichlids of comparable size. Small earthworms form a weekly item on the menu of his large discus.

Other tropical and coldwater fish species form the bulk of the display, however, and of course advice on all



Roy and Gwen Skipper with a customer

aspects of fishkeeping is given. Three attractive marine tropical tanks with a representative selection of aquarium species, including the ever-popular sea-horse, were on show at the time of my visit. I asked Mrs Skipper what practical points about keeping marines were especially important to emphasise, in their experience.

Many of the problems of keeping marine fishes are similar to those with the large freshwater cichlids, she told me. The fish have strong territorial instincts, which means that numbers of marine fish in a tank must be strictly limited or else deaths result from the continual aggression. Plants cannot be kept in marine tanks so, again as with the plant-free cichlid tanks, heavy aeration and filtering systems designed to keep down the nitrogenous waste substances from the fishes are necessary. Undergravel filters linked with Eheim power filters were in use in the House of

Fishes' marine tanks.

Much trouble is experienced by beginners because they have started with stock that is unhealthy and it is most important that the marine fish obtained should be free from disease. The problem of disease in any imported fishes is met by the operation of a quarantine section at the House of Fishes, in which treatment can be applied as soon as any trouble shows up.

Many aquarists are uncertain about the number of types of discus that are available and I asked Roy Skipper his opinion on the elaborate distinctions sometimes made between these fish. He said that the more discus he saw and kept the less he thought he knew about the separateness of many of the kinds. Colours change with environment and he thought that some of the postulated distinct species are in fact nothing more than colour variants. As he

showed me the discus in his tanks he told me that it is his intention ultimately to create a separate section for large aquarium fishes and that he then hopes to have a full collection of types of discus always on display.

Such new developments together with the day-to-day running of a busy shop can leave little time for relaxation. But Roy Skipper is also a very popular lecturer with aquarium societies and at least once a week he is out talking at meetings. If reminder had been needed I would have seen from some fine colour pictures on the wall at the House of Fishes that Roy is a skilled fish photographer, and he has found time to write a section (on discus—of course) for a forthcoming aquarium book, 77 High Street once had a spell as a public house called The Nelson, but then there were no less than 24 pubs in the street. The House of Fishes and the Skippers are unique.

BOOK Review

THE BOOK OF THE GARDEN POND. By George F. Hervey and Jack Hems. Revised edition, 1970. 211 pages, 1 colour, 16 monochrome plates, 12 line drawings in text. Faber & Faber Ltd., London. 45s.

THIS book, first published by Stanley Paul & Co. in 1958, has been strengthened by the addition of a commentary on modern pond-making techniques and by photographs—alas!, not in colour—of some most beautiful pools and their settings. Amidst the clamour of the present commercial drive to sell pools and fountains and all that goes with them, the restrained and balanced appraisal of current methods introduces just that note of calm that enables the beginner to get the best value for his money. The authors question, quite rightly, the assertion that every pool must have a fountain (but they do tell you in which settings they would use one), and they utterly reject the use of chemicals for clearing pond water of algae or cloudiness. They thus balance some of the untruths which assail us in the weekend press and which are derived from the pens of those who ought to know better. We are taken through the Gardens of Spain, through the centuries, at the opening of this book. It is a delight for the scholar, as for the traveller. Those who have ponds will find it a pleasant companion, and those who have yet to share the delights described by the authors will be well guided on their way by the fund of wisdom in this book. Those who find books difficult to read will experience a feast of good writing which soars to lofty heights in its quotations but never loses touch with you and me and the fellow next door. Those who have an instinct for such things will recognise authority when they see it, and this is how I see the writings of Hervey and Hems. You are taken through pool construction in only 24 pages, but there is more fact and lasting impact

here than is often seen in entire volumes on the same subject. A particularly comprehensive plant survey leaves one rather breathless, but it remains in the memory as a good source for future reference. The chapters covering life in the pool are quite conventional, but one can be sure that they are sound on reading that 'It is not given to us, nor, indeed, to any man, to know whether a fish enjoys its quiet and sheltered life under the protection of man'. A tactful allusion to our overall responsibilities as pond-keepers; most of what follows enables us to do our best towards what we might hope would be the most happy state of affairs for our charges.

It would be a dull book which evoked no comment. I could disagree that water lily leaves have no beauty in themselves, that native-caught fish should not be introduced to garden pools, and I could regret that the authors failed to say into which mussel the biterling spawns, but this would be unfair, perhaps, when there is otherwise so much to be said for this classic. Considering the excellence of the contents I feel that the publishers could have done greater honour to them by a more appealing format. At 45s it should not be too much to expect a splash of colour here and there, and it really is time that those responsible for the production of books on fish, gardening, pigeons and the like came to realise that their readers all too often have dirty hands and, whether it is the done thing or not, refer to their favourite books before they have removed the grime. Both binding and pages need therefore a little more thought than is usual and some publishers have already risen to the situation. In this case they have not.

Put this book on your Christmas list. It is for favoured recipients and for those, like me, who greatly appreciate a book in which the authors have endeared themselves to the reader. One notices, with sadness, that the Preface records this book as the swan song of a distinguished trio: Hervey, Hems—and Miss Eileen Hill, who provided the illustrations here and in their FRESHWATER TROPICAL AQUARIUM FISHES. One can only say 'Encore' hopefully.

AQUARIA. By Jim Kelly. 93 pages. 34 colour photographs, 2 in monochrome; line illustrations in text. Brockhampton Press, Leicester, 1969. 12s 6d.

JIM KELLY takes the beginner gently by the hand and leads him through all the initial uncertainties to the setting up of a community tank in all its glory. It is absolutely factual and there is not a wasted word; the copious and beautifully executed black and white sketches are fitting accompaniment to the teaching of one of the 'Greats' of the hobby. The colour photographs are well chosen indeed and I particularly admire Jane Burton's great diving beetle. Those of typical set-ups deserve careful study from those seeking top-class results from their early efforts.

The unwary should ponder a little, perhaps, in their final selection of fishes. I seriously question the wisdom of including small angels in a community tank and the algae eater is also rather suspect. The former can grow into vicious and warlike tyrants and the latter simply grow and grow and stir things into a fine old mess. Therefore miss out the angels and substitute *Otocinclus* for the latter and all should be well. Also, be not tempted to include paradise fish in a mixed bag: they, too, can be horrifying.

In the first revision of this wonderful little book the illustration of arrowhead on page 32 should be replaced by a drawing of what we know as *Sagittaria natans*, as the form shown is seldom met in aquarium keeping and could mislead the tyro in his early shopping. I rather doubt the wisdom of including streptomycin as a remedy in the excellent 'Diseases and Treatments' chapter, partly because of the difficulty in obtaining it off prescription, and partly because the dosage is not indicated.

These few points apart, here is a most wonderful buy for 12s 6d. Added to the soundness and comprehensiveness of the contents, the style of layout and production is something on which the Brockhampton Press can be thoroughly congratulated. The board cover is immediately attractive, the print is clear and the quality of the paper absolutely first class. This book was produced to be used and referred to, and possibly to be annotated in those ample margins. The single word **AQUARIA** is their sole fall from grace, since this is really the guide to the first tropical tank, and coldwater enthusiasts will get little from it except, perhaps, conversion!

R. S. B. PINKS

Readers' Queries Answered



Overcrowding

I have a problem of cloudy water in my 24 in. by 12 in. by 12 in. stainless steel-frame tank. I use two undergravel filters, Gro-lux lighting and keep the tank at a temperature of 78°F. The tank contains: two angels, two kissing gouramis, two opaline gouramis, two cardinals, two danios, two zebrafish, two tiger barbs, two tinfoil barbs, one glass catfish and one sucking loach. No algae has ever grown on the tank and no waste matter has collected on the bottom. There was no problem for 3 months, but for the last 6 weeks the water has had to be constantly changed. I have even taken the tank down and set it up again without gravel or plants, but 20 hours later the water has gone cloudy and two tiger barbs were dead.

You do not state the sizes of your fishes but at a reasonable estimate it appears that you have nearly 40 in. of fish in your tank, which is in excess of the maximum recommended

(about 25 in.) for a 24 in. by 12 in. by 12 in. tank. This would cause the cloudiness and will also be responsible for further losses of fishes. It seems unlikely that all these fishes were in your tank when you started, but, even if they were, over the 3 months of its existence presumably some would have grown (particularly the gouramis and tinfoil barbs) to sizes that certainly make the tank overcrowded. If you reduce the number of fish and take care not to give excessive amounts of food, the problem of cloudy water will not again arise.

Daphnia

I am looking forward to being able to feed Daphnia again in quantity with the summer months but understand that even Daphnia can cause harm if too much is given. Is a bag of Daphnia every day (or most days) too much?

The answer is almost certainly 'no, it is not too much', provided

that you are not proposing to give a bag of *Daphnia* a day to one small neon! A daily bag of *Daphnia* spread amongst the inhabitants of a 24 in. community tank will merely be an extra treat and of great benefit in helping to vary your fishes' diet. Almost any single live food given in quantity and to the exclusion of any other becomes monotonous and could give rise to dietary deficiency, but few if any fishes seem to find *Daphnia* diets monotonous. Too much given at any one 'sitting' could be harmful in that large masses of the fleas can use up available oxygen; *Daphnia* is seldom sufficiently abundant for this mistake to be made, however. *Daphnia* used as an addition to the basic dried food diet is an excellent food, with no disadvantages.

Black Mollies

How long should a molly take to produce young? My large female black molly was moved into a breeding trap over 2 weeks ago and still has produced no young.

Of the more popular livebearers, the black molly is the species that is, in general, the most difficult to breed. In the first place it is obviously not possible to judge when the gestation period is reaching a climax by the easy method—that is by viewing the gravid spot that in the pregnant female fish of the other type of livebearers appears as a black or

how?

How can I stop my garden pond going green?

THE green appearance of the water is caused by thousands of single-celled plants called algae. Though unsightly, these algae are not generally harmful to the fish occupants. Given the right conditions and plenty of light these plants suspended in the pond multiply enormously, using dissolved solids in the water for sustenance. Herein lies the solution—rob them of this rich source of food and the algae will die out. Established ponds packed full of healthy, growing plants and not overpopulated with fish seldom go green. The addition to the pool of live water fleas (*Daphnia*) who filter feed on algae will help, but remember that these 'cleaners' are also valued as food by the fish.

The introduction of live *Daphnia* in the spring will often curtail the growth of filamentous blanket weed at a period when this alga is establishing a foothold.

Chemical 'cures' of various kinds are on the market but though they will often restore the clarity of the pool, the condition of green-ness is likely to return if there is no competition from other submerged aquatic vegetation.

It can be harmful to the pond if this green algae is killed too suddenly. Large amounts of the dead material will only provide rich sources of food for bacteria and can result in the pond becoming really foul. Your nose is a sure guide to this condition. Flushing out the old water with a gentle continuous flow from the garden hose will wash away the excess of algae, dead or alive.

translucent area. There are other guides, of course; when the female mollie is ready to drop her young the half circle of her distended abdomen will usually be seen to flatten at its greatest depth—but it is not quite so easy to judge this until one has had some experience. In any case, the female fish should have been transferred to a breeding tank well before this occurs. We say breeding 'tank' advisedly because mollies do not take kindly to incarceration for any length of time in a breeding trap. It is far better to prepare a small breeding tank provided with a good covering of floating plants.

The time lapse between egg fertilisation and birth varies quite a lot and is affected by factors such as temperature. In any case, unless the aquarist is following a very carefully controlled breeding programme, he doesn't usually know when fertilisation took place. But the growth period is not likely to be less than 4 weeks and may last as long as 8 or 10.

We would suggest that your mollie should, this time, be let out of the breeding trap. Two weeks after the fry have been dropped (although you may see no fry the mollie's shape

should indicate when this has taken place), the mollie can be placed in a prepared breeding tank that contains a thick floating plant cover. This will serve to protect the fry although the female must be removed as soon as possible after the fry are born.

Elephant-nosed Fish

I have recently acquired a mormyrid (Gnathonemus petersi) and should be glad of your advice as to how he should be fed. I have been feeding Liquifry, but I don't know whether this is sufficient. He appears uninterested in dried food. As he is completely nocturnal, it also seems to be necessary to feed him at night.

You have acquired, in your elephant-nosed fish, one of the most delightful of tank inhabitants; however, these fish are not particularly robust when young and need careful rearing. Liquifry is an excellent food made specifically for new-born fish, and will certainly not provide sufficient food for a mormyrid. Your fish will require a substantial diet of live food. Tubifex worms, suspended in the tank from a worm

feeder, white worms and live daphnia are all suitable foods.

Elephant-nosed fish are rather shy and need well planted tanks so that they have somewhere in which to hide. Rockwork or pieces of cork bark also serve to provide hiding places for them. Once the fish is settled in the tank, it will probably feed on tubifex worms throughout the day, but certainly it can be induced to feed by switching out the tank lights. Elephant noses are most unusual in that they have a very well developed sense of play, and a feeding ring suspended in the tank like a hoop, or a ball of tinfoil, will often keep them occupied for a long time. Such behaviour is most likely to be exhibited when at least two specimens of a similar size are housed together.

Albino Reds

Can you please tell me what exactly is meant by an 'albino' fish? I have always thought that an albino strain would be white, but I have recently been told that the red-eyed red swordtail was an albino fish. Can this be true?

The albino animal is one in which the process whereby the normal brownish-black pigment (melanin) is produced is defective. But this lack of black coloration does not mean that the animal need be without colour, although many of the best-known albinos are. The red-eyed red swordtail's 'albinism' is shown by the lack of black pigment in the eye and by the fact that the gravid spot in the female shows no black. This is also true of the albino swordtail itself, named 'albino' because it does closely resemble what is more usually thought of as albino, i.e. it is a pale, pinkish white fish with pink eyes; but in this fish also, although it lacks black pigmentation, some pigmentation is retained, such as yellow, and the pinkness is, of course, due to the red blood pigment being seen in the skin vessels.

Dwarf Rush

I have two Acorus plants in my tank, small ones that never seem to grow at all. They look quite healthy but don't exactly prosper. Is this quite

Continued on page 76

GOING BRACKISH

FOR the last 2 years I have had a 24 in. tank by my armchair, and in it have lived a succession of pairs of adult angels. They produced brood after brood and taught me a lot about the way in which they live. It had never been my plan to start a 'production line' of this species, however, so I gave them the liberty of a much larger tank, which they now share with clown loaches, sharks and catfish, and these will soon be joined by some festive cichlids.

Although the angels moved the tank remained and it took me a long time to decide what should take up residence. Only 'personality' fishes would do, as I had got used to feeding the angels by hand and they had become very tame indeed. The larger cichlids did, of course, suggest themselves, but their nasty habits as regards plant life made it almost inevitable that the physical appearance of the tank would resemble a junk yard rather than some idyllic aquatic backwater.

I had long been juggling with the notion that I might experiment with tropical marines, but since I am not made of money and the tank was an old angle-iron affair, long past its best, this pipe dream soon drifted off. It then struck me that I might invest in a brackish set-up, and in this I was encouraged by my wife who saw a means of disposing of that old tank, which was admittedly by now an eyesore, and the acquisition of a new and gleaming structure which was more in keeping with the room.

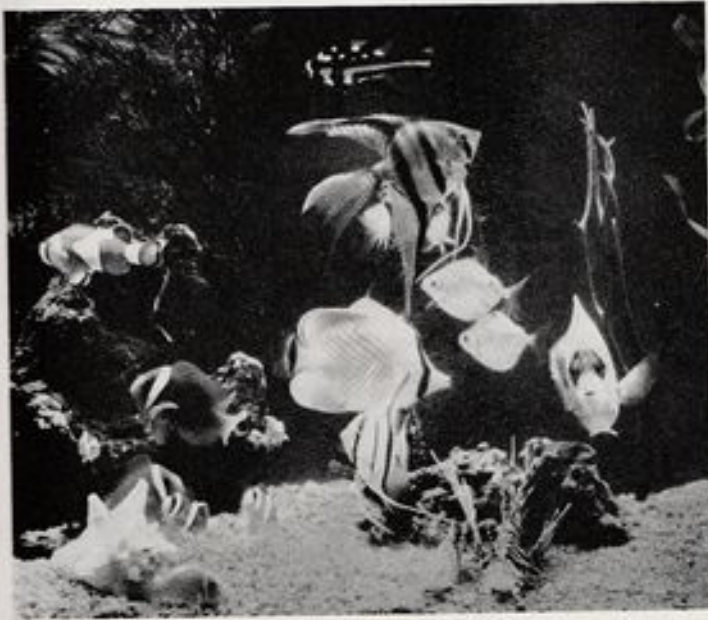
The immediate appeal to me was the prospect of keeping a group of fishes which were quite new to me, such as scats, monos, puffers and the like. Although these are all

By ROY PINKS

tolerant of ordinary water they are said to be happiest in brackish or salt conditions, and I thought that I might gradually convert from brackish to full marine conditions over, say, a year. Even if there were tragedies the trial would be a useful one and might appeal to others of a like mind to myself. I should make it clear that at the outset I saw the brackish tank as a means to an end, and not the end itself.

In this sort of situation you are first faced with the likely cost. This is roughly how my money went: Metaframe tank 24 in.—£9. Dialomatic heater/thermostat—£2 7s. Gro-lux lighting unit—£3. Cover glass—7s 6d. Sand—10s. Thermometer—6s. Coral—£3. Prices are approximate. Thus for about £20 you are well on the way, including some fishes. I did not intend to use a filter but I put an airline in with a quite large diffuser designed to give a maximum output of really fine bubbles.

The sand needed for this sort of tank is the finest you can get. It is vastly preferable to ordinary aquarium gravel because the latter lets waste food particles slip down into its interstices. It is said that one of the greatest menaces in marine tanks is pollution, and therefore it is necessary to confine all extraneous material to the surface of the (finest) sand, whence it can be siphoned,



Neither Salt nor Fresh

Something new is added to the meaning of community tank by this photograph of tropical seawater and freshwater fishes in the same aquarium. They are photographed in Wonder Water, a patented mixture (specific gravity 1.0080) that maintains an osmotic balance which both marine and freshwater fishes of most types are said to find acceptable after a period of acclimatisation that takes from a few hours to days or weeks for individual fish and for different species. Developed originally in Japan, the water mixture is also recommended for use with marines to rid them of external parasites. At present available in the U.S.A., this product is due to be released in Britain by Jonco Wonder Products

dip-tubed or eaten by 'scavenger' fish. The tank itself was very nicely finished and gave promise of a lot of good service, but even so I applied Hykro Aqua Sealer to all the glass joints to keep the salt water as isolated as possible from anything metal. The heater was also chosen with the danger from metal well at the forefront of my mind, as it is simply suspended in the water and does not need any submarine anchor of any kind. The Gro-lux lighting is essential to any modern aquarium and I would not now install any other system especially where a decorative effect is most in demand. It will be noted that I bought coral but no plant life.

A few comments on coral will not be out of place at this early stage. Those who have had no experience in its use will be astonished at its high price. A piece measuring about 9 in. by 6 in. by 4 in. can cost anything up to £1, but as it is sold by weight the dimensions are infinitely variable. It is unwise to buy cheap coloured coral. The commonest form is white but this is frequently stained red or blue or other shades, and it cannot then be regarded as safe, for when exposed to warm salt water the colouring medium usually comes out and can prove inimical to the inmates of the tank. Genuine red organ pipe coral in combination with any of the commoner white forms creates a very fitting association and looks well under Gro-lux.

Apart from the familiar, rather knobby white coral there are forms which resemble flowers and leaves, and the striking cup corals can constitute really significant centrepieces or focal points, around which the remaining pieces can be assembled. Coral is expensive and it is fragile, so treat it like rare china. It is quite obvious that it can be arranged just as it pleases you: it is a dead thing and there is normally nothing to go wrong with it unless you drop it. There do not even seem to be any binding rules or conventions as to how true marines should arrange it, save that it should please the beholder, so you can let your imagination run riot.

Since they do not contain any plant life marine and brackish tanks do not need to be bathed in brilliant light all the time, and hence the growth of algae is discouraged. Nevertheless, over a period, the corals get tired-looking because algae start to gain a foothold. The remedy is to remove the offending pieces and to submerge them in a plastic or rubber pail containing plain water to which a few tablespoonsful of liquid household bleach have been added. Leave for 24 hours and then re-submerge in plain water for a further 24 hours, changing the water as often as possible, until all trace of the smell

of chlorine has disappeared. The original brilliance and beauty of the coral, especially the white forms, is thereby almost miraculously restored, at very little cost, without putting the aquarium fish in any way at risk. Some authorities advise boiling the coral but this is hardly necessary unless a really heavy infestation of algae has been allowed to develop. The bleach method is so simple and trouble-free that it can be carried out every month or so. There is no need for your tanks to look bare during the cleaning sessions if you keep a reserve set of corals for these occasions. You may decide to alternate your layouts every so often by withdrawing all and completely replacing them. This has the advantage that you can service the rest of the tank at the same time, though at the cost of disturbing the fish more than somewhat. It could be that the gradual change of coral is preferable in the interests of the peace of mind of the fish. It should be remembered that the monos are amongst the most emotional of fishes, and it has been known for them to succumb on the occasion of a door slamming or some similar acoustic disturbance. Those who scoff at fish psychology would do well to consider these things.

My initial purchase of coral was not very large and I had to hunt around a bit to secure a piece large enough to conceal the heater, but I eventually found what I wanted at the House of Fishes at Hemel Hempstead. You have to keep your eyes open and restrain your impatience! Some shells—all very carefully cleaned, were scattered informally around the tank floor, but I refrained from buying too many of these, or anything particularly large. I did fall for a lovely but smallish sea urchin whose globular redness was calculated to leap into prominence under the fluorescent lighting—and it did.

As for the water I bought a ten shilling packet of H. W. Meeresalz, a preparation for converting water from your tap to something in which true marines can revel. I decided to use this at the rate of a teaspoonful per gallon. It was easy to mix and I soon had the tank set up and looking very welcoming to potential inmates. From concept to the setting up stage I was pleased that everything had been so trouble-free. Dearly as I love aquatic plants I was relieved that I did not have to go through the expensive process of buying in at a time of the year when it seems that stocks are at their lowest and most expensive. My only speculation was just how long the pristine freshness of the scene would last. According to the dismal jimmies I was in for a disappointment almost before the sediment had settled!

To be continued

Readers' Queries

continued from page 74

usual or are they rotting away underneath?

Acorus is a marsh or bog plant that grows in the wild with its leaves out of the water and grows better at temperatures rather lower than those found in a tropical aquarium. It does live, however, in our tropical tanks,

but added to the fact that conditions in a tank are not really ideal for it, it is also an extremely slow grower. Your plants are probably doing as well as can be expected. *Acorus* is nearly always used in a small clump for purely decorative purposes and not as a tank 'filler'.

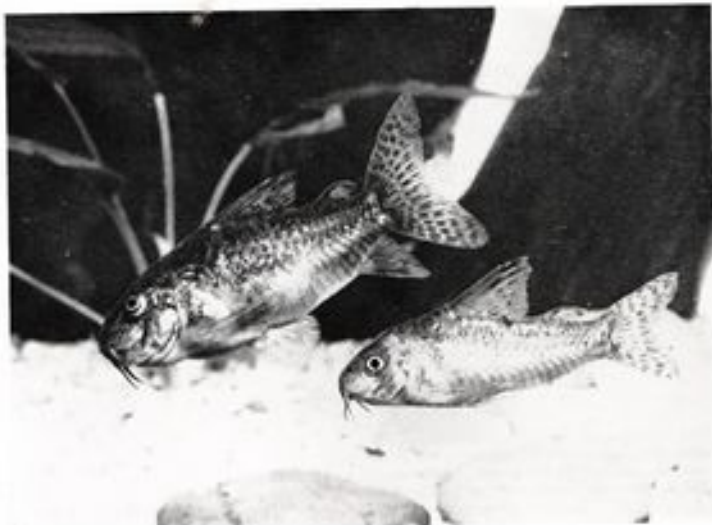
Spawning Medium

Willow root is often mentioned as a spawning medium. Is it sufficient to wash it after it has been obtained?

No, willow root must be boiled and rinsed several times over a period of days. This is to leach out soluble materials that could be harmful to the fry as well as to ensure that no harmful pests are being introduced. If you wish to avoid this troublesome preparation, why not use nylon wool? This has to be made into 'mops' but it can be quite easily done by tying off the skin of wool into 4-in. lengths and then cutting it about $\frac{1}{2}$ in. above each knot.

Breeding the Mottled

'Cat'



Female (left) is pursued by the male before the spawning occurs

By RUDOLPH ZUKAL

Photographs by the author

Translation by F. MARSH

Corydoras paleatus (Jenyns)

THIS month's article is about one of the very early occupants of our aquaria, for this spotted armoured catfish of the family Callichthyidae was already being imported into Europe by 1878. Since then these fish have been a firm favourite of aquarists. They are peace-loving and undemanding, and because of their untiring search for food on the bottom of the tank they are often spoken of as scavengers—the aquarium's 'refuse collectors'. This very virtuous activity does, however, have its shady side because the continual rooting about the bottom with their strong barbels stirs up the detritus and for this reason filtration is an absolute necessity when most kinds of catfishes are kept.

Corydoras paleatus comes from poorly oxygenated, shallow waters in south-east Brazil and along the course of the River Plate. Its general appearance is well known and is illustrated in the photographs. At the sides of its body there are two longish regular rows of bony plates, and there are dark markings on the greenish brown gleaming background.

Catfish are adapted to make use not only of the oxygen dissolved in the water, by their gills, but also of atmospheric oxygen and for this latter purpose an organ situated in the hindgut is brought into action. Air is taken in through the mouth, passed through the intestine and in the hindgut the oxygen is absorbed; the residual gases are passed out through the anus.

Various kinds of tanks may be used to house these fish and they



The photographs above show the relative position of the male (left) and female during the act of milt release by the male and transfer to the female. At the moment of release of milt the male's body writhes into an S-form (top right picture)



Below: the same procedure as shown at the top of the page can also take place in midwater instead of on the tank bottom



can be kept either alone or in company with other peace-loving species. The tank should be thickly planted and contain a few rocks and perhaps wood to give the catfish some places in which they can hide. Ordinary tapwater is suitable for them. They eat any food, taking it from the bottom of the tank.

There is no particular difficulty connected with breeding *C. paleatus*, though it is not always apparent when they intend to spawn and because of this they will often spawn in the community tank when one least expects it. The male is much smaller and slimmer than the female and his dorsal fin is longer and pointed. If they are kept in an 18 in. or 24 in. tank only in the company of their own kind it may be possible to bring on the spawning by raising the temperature to 77°F (24°C) and changing a third of the water for fresh, but it cannot be guaranteed. The best time for spawning is in the early morning hours during the months of February to May, and the fish should be at least a year old. It is also wise to put two or three males with a single female as one male alone is not capable of fertilising all the eggs.

Whereas *C. schultzei* lay their eggs on the leaf of a plant, *C. paleatus* prefer a hard surface—in the instance I am reporting, the fish used the tank glass. At the moment of mating the male's body was held by the female's barbels; as the male writhed he expelled the sperm. This then entered the pocket formed by the folded ventral fins of the female and into which she had already passed her eggs. In this pocket the eggs were fertilised. The female then sought a suitable spawning place on the tank glass and after it had been quickly cleaned



During the mating procedure the female (left in this picture) grips the male's fins in her mouth

the eggs were stuck on it. Each laying of eggs was followed by a further mating and the whole process lasted for about 2-3 hours. A female lays up to 200 eggs and it is a wise precaution, when the spawning

process has been completed, to remove the parents to prevent the eggs being eaten. The brood hatches about 6 days later. The eggs are white to start with but become progressively darker until just before



Here the female is seen carrying a few eggs in the special 'pocket' formed by her folded ventral fins



Top left: after cleaning the aquarium glass the female deposited some eggs there (shown in the picture) before being coaxed by the waiting male to a further mating act



Top right: head-on view of the female, shortly before egg deposition, showing the ventral fins folded around the eggs

Right: the albino form of *Corydoras paleatus*



hatching they are dark brown. The tiny brood should be fed on fine foods and it is a good idea to aerate the tank and change part of the water fairly frequently.

An albino variety of this species is also bred; like all albino varieties it requires a higher temperature.

QUICK TIPS

- Having trouble in keeping your dried foods just that? Next time you buy a new drum, empty out the contents on to a sheet of clean paper and line the inside of the can with a strip of blotting paper cut to fit. When refilling with the food you may have to keep shaking the contents down to get all the food back. Tins or containers lined thus will make your food and your pocket money last that much longer.

- Glue a strip of coarse sandpaper round all bottles of medicine that are poisonous or require special attention when in use. This will remind you on the odd occasions you are tempted to use chemicals indiscriminately in your aquaria. If you have the patter of tiny feet around the house, the kids can be taught never to touch such bottles and the coarse feel of the sandpaper gives them a forcible reminder.

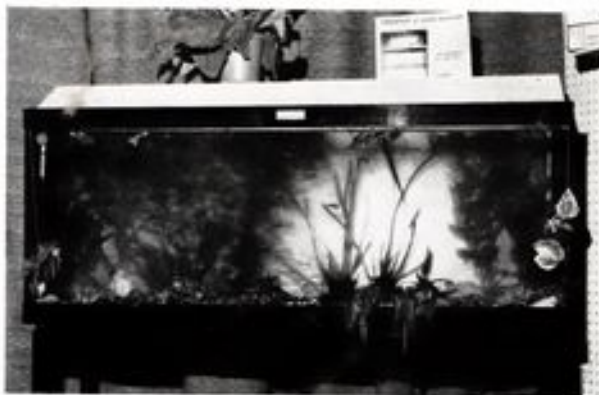
- Troubled by a smoky wick on your fish room oil heater? If so, the next time you buy a new wick, first soak it in vinegar, allow to dry and then use in the normal manner. It won't smoke any more.

What's New?

IF the aquarium tank does not feature as no. 1 decorative item in every self-respecting home of the future it will not be the fault of the aquarium manufacturers in this country. On display at this year's Pet Trade Fair in Harrogate were a selection of tanks—leakproof, rust proof, decorative and ranging in shape from the purely orthodox to the distinctly unusual.

Aquaria

Inter-Pet's (18-22 Church Street, Dorking, Surrey) new range of stainless-steel tanks, doubly sealed by setting the glass in the frame with hot bitumastic compound and then sealing the bottom with silicone rubber sealant, were on show for the first time and included the Contemporary Book Case Unit. This accommodates tanks sized 24 in., 30 in. or 36½ in.; three glass shelves in a glass side unit and a long glass panel underneath the tank itself provide storage space for books, drinks, etc. The problem of



One of the Trophy Products Crystal Aquaria. The front glass slants to provide a frontal trough which contains house plants

whether to fit tungsten bulbs or fluorescent strip is neatly solved as provision is made in the hoods of these tanks for both forms of lighting to be used simultaneously.

If the words 'all-glass aquaria' conjure up a picture of the thick moulded tanks of the past, dismiss it from the mind. The modern all-glass aquarium is an elegant sight. **Trophy Products** (Laurence Drive, Stover Trading Estate, Yate, Bristol) Crystal Aquaria are made with 6 mm. glass for strength and oversealed with Trophix silicone rubber sealant. The sides of their 37 in. by 12 in. by 15 in. model and a top and bottom front strip are in black glass, and the

front glass—sloped backwards to reduce reflection—is recessed to form a trough that can hold small rocks and pebbles and indoor plant cuttings. The price of this tank is £16. 0. 0, and a plain black matching stand is £7. 12. 6.

The revolutionary Aquadome was exciting a good deal of interest on the **Fish-E-Quip** (2 Shrewston Road, London, S.W.17) stand. The Aquadome is a rectangular plastic tray base, 21 in. by 29 in., out of the middle of which rises a large plastic dome. The area of open water can be planted with surface plants such as water lettuce, while taller plants are accommodated inside the dome. Fish can move freely between the dome and the pond area and the unit is said to have a water/air surface equal to that of a 4 ft. tank. The water in the unit is continually filtered, being drawn from the dome, passed through an outside filter and pumped back into the tray. The price of the complete unit (£19.19.0) includes the base tray, Aquadome, air pump, outside filter, charcoal, terylene wool, hose, airline and fittings. A low wrought-iron stand on which the unit fits at exactly the right height for seeing it to full advantage can be supplied (£8).

A conventional rectangular tank was another centre of an admiring crowd on the **SCAN Group** stand. If its 15 in. width by 18 in. depth were not unusual its 10 ft. length certainly was. It had been made by Lee Reid & Co. (London) Ltd. (6 Beaumont Road, Banbury, Oxon).



The Aquadome. Fish can swim from and into the dome and the water tray

who were separately displaying traditional tanks in many finishes, and was being offered by SCAN as the prize, fully stocked and decorated, in a 'guess the fish' competition.

Glazing with silicone rubber is the guarantee against leakage in the new range of stainless-steel aquaria, from size 24 in. upwards, being marketed by **King British Aquarium Accessories Co.** (Cannon Mills, Union Road, Bradford 7, Yorks.). With matching stainless-steel hoods, the tanks are entirely suitable for marine fish as well as freshwater tropicals. A range of smaller, non-rusting tanks from 12 in. by 8 in. by 8 in. to 24 in. by 8 in. by 8 in. has been introduced by **Genyk Products Ltd.** (Miles Road, Mitcham, Surrey). Glass-pannelled aquaria, they have an all-plastic moulded frame in which the glass is permanently sealed with a special silicone rubber. Hoods to match are obtainable.

Foods

The fish food manufacturers had a number of new products on view. **Phillips Yeast** are introducing Maxi-flakes. The manufacturer explains that these large flakes, which if held in the fingers just below the water

surface will attract the larger fish so that they can be hand-fed, are based on a high-protein content that makes them as nourishing as a live food. A 1½ oz. tin is priced at 7s 2d. A new range of freeze-dried foods was being shown by **Eric Woods (Rosewood) Ltd.** with a protein value of 60% to 70%. Beef heart and ox liver retail at 5s 6d., roe at 6s, shrimp at 6s 10d and tubifex at 3s 6d. **Herb-Royal Ltd.** have devised a freeze-dried food pressed into tablet form to adhere to the tank glass and advise that their Tetra Tips eliminate waste and allow the fish to feed as they require. **Fish-E-Quip's** Tosca Flakes joined their food range (retail, 4s 6d) and **Fantasy Pet Products** displayed a new koi food with long-floating capabilities combined with the advantages of a pelleted food. Two packs, at 2s and 4s 7d, are available in fine, medium and coarse grades. A new supplier of live foods is **King British**, who now offer whiteworm (4s 6d) and microworm cultures (3s 9d).

Heat and Air

Inter-Pet have combined their Steady-Stat thermostat with their Hi-Duty heater to produce the Combined Heater-Thermostat.

Aquarium Kits by **Thomas's** (Shelf, Halifax) have been devised with the beginner in mind but they would also make ideal aquarium gifts of spares for the established fish-keeper. For 69s 11d, the kit contains pump, heater, thermometer, tubing, connectors, clamps, clips, food, filter, airstone, wool and thermostat, all from the Petcraft range. The Eheim 476 is a new addition to the range of complete custom-built enclosed circuit filters that Europe's largest manufacturer of precision power filters offers. The **Major Eheim** gives an output of 400 litres/hour (for freshwater £27 3s 9d and for salt-water £28 2s 6d).

Airstones 6 in. long are now available from **Miracle Products** (13 Nutley Lane, Reigate, Surrey) and also available from this firm are aquarium decor panels measuring approximately 23½ in. by 16 in., portraying various stone work (flint, Cotswold, rustic, Roman etc). These retail at about 14s 6d.

The **Inter-Pet** Powerstream Conversion Unit operates ideally on the Airstream range of filters, but it can be fitted to most air-operated outside filters as well as undergravel filters to turn them into power units. The unit is made to pump 40 gallons an hour (cost £6 16s).

Meetings and Changes of Officers

AMESBURY & D. A.S. Chairman, Mr M. Sansbury; vice-chairman and treasurer, Mr Elliott; secretary, Mr N. Davidson (15 Rosedale Road, Boscombe Down, Amersbury, Wilts.).

BETHNAL GREEN A.S. Meetings: Every Tuesday evening at 7.45 p.m. at the Bethnal Green Institute, 229 Bethnal Green Road, London, E.2. All welcome. Details from secretary Mr P. Arnold, 24 Rowson House, Slapworth Road, E.9; phone 01-981 1010.

CARSHALTON & D. A.S. Meetings (new venue): The Sun, North Street, Carshalton, Surrey.

CHESTER & D. A.S. Chairman, Mr P. Millington; vice-chairman, Mr E. V. Stokes; secretary, Mrs A. Dutton (The James Farm, Tetton, Chester); treasurer, Mr M. Jones; illenians, Mr R. Dutton. Meetings: every first and third Thursday of month at the Oddfellows Hall, Lower Bridge Street, Chester.

CLYDE A.C. Chairman, Mr C. Murray; vice-chairman, Mr J. Murray; secretary, Mr T. Boyle (44 Mitchell Drive, Rutherglen, Glasgow); show manager, Mr J. Wyllie; treasurer, Mr P. Adamson. Meetings: first Monday of month in the Orange Hall, Tullo Street, Glasgow.

CROYDON A.S. President and vice-chairman, Mr P. S. Bova; chairman, Mr H. S. Wood; secretary, Mr D. H. Crowley (198 Lower Addiscombe Road, Addiscombe, Surrey); assistant, Mrs S. D. Dryden; show secretary, Mr A. J. H. Smith (1 Hordhead Way, Wallington, Surrey); assistant, Mr K. E. Dryden. Meetings: second and fourth Tuesday in the month at Woodside Social Club, Emere Road, South Newwood, London, S.E.25, at 8.0 p.m. New members and visitors welcome.

EALING & D. A.S. Secretary: Mr T. Cooper (12 Nonsuch Road, Acton, London, W.3).

E.G.A. SOUTH LONDON Section. Meetings (change of venue): The Labour Rooms, 431 New Cross Road, London, S.E.14. Held on fourth Sunday of the month at 3.0 p.m. Enquiries to secretary Mr H. C. Brock (20 Barnford Crescent, West End, Woking, Surrey; phone Chobham 8763).

GOLDFISH SOCIETY OF GREAT BRITAIN. President, Carl L. C. Betts; vice-presidents, Mr M. D. Chase, Mr O. D. Taylor, Mr R. J. Uychigels, Mr W. L. Wilson; chairman, Mr G. H. O'Neill; secretary, Mr G. A. W. Fleming (1 Rutland Road, Wainstead, London, E.11); assistant,

Mr R. D. Esam; treasurer, Mr W. F. Walters; bulletin editor, Mr R. Whittington; show secretary, Mrs P. Whittington; technical co-ordinator, Mr J. H. Boudell; P.R.O., Mr J. Linsie.

GOSPORT & D. A.S. Secretary: Mr D. T. Haines (4) St Marys Road, Stubbington, Fareham, Hants.).

MIDLAND AQUARIUM & POOL SOCIETY. Meetings (change of venue): Ladywood Community Centre, Ladywood Close, Ladywood, Birmingham.

NOTTINGHAM & D. A.S. Chairman, Mr A. Saxton; vice-chairman, Mr N. Goodfife; treasurer, Mr R. Bova; show secretary, Mr N. Kenney; secretary, Mr K. Green (13 Sandford Road, Mapperley, Nottingham); bulletin editor, Mrs B. M. Goodfife.

SMETHWICK & D. A.S. Chairman, Mr D. Johnstone; vice-chairman, Mr E. Woodward; treasurer, Mr J. Harris; secretary, Mr W. Downes (17) Ayles Road, Smethwick, Walsley, Worsley; show secretary, Mr and Mrs J. Hodgetts. Meetings (change of venue): Ayles Road School, Smethwick.

TONBRIDGE & D. A.S. Chairman, Mr J. Marlborough; vice-chairman, Mr John Bellingham; treasurer, Mr Dick Baker; secretary, Mr Gerry Rogan (12 The Aquarists, Boughton Monchelsea, Kent); show secretary Mr L. Getley (66 Pembroke Road, Coxheath, Kent).

WEDNESBURY & D. A.S. Meetings (change of venue): The Midland Vaults, High Bullen, Wednesbury, Staffs. First Monday in the month at 8.00 p.m. All welcome.



19th APRIL is probably remembered by the scientist as the anniversary of the death of Charles Darwin and by the poet as the same for Lord Byron: but to the aquarist, especially if he lives in the north, it will be remembered as the date of the thirty-fourth annual fish show organised by **BELLE VUE A.S.** Held in spacious new premises, the event proved a Mecca for hobbyists from all over the north and judges Mr A. Lindley and Mr P. Moorhouse had their work cut out assessing the entries.

The show was also a special event for four ex-officers of the club—Dr J. F. Wilkinson, Mr T. R. Lee, Mrs Constance Kelly and Mr Jim Kelly. During the presentation to them of Life Honorary Membership scrolls, the present chairman, Mr Stan Taylor, spoke of their past services to the Society and said that the club was proud to have numbered such distinguished and well-known hobbyists on the membership roll. The presentation was made by Mr R. E. Legge, Zoological Superintendent and present president of the Society. The honorary members, judges and officers of the club later enjoyed a dinner provided by the Ladies Committee—Mrs Shackleton, Mrs Miller and Mrs Cobb. All enquiries about the club should be addressed to the secretary, Mr Roy Davies, 38 Wetherby Street, Nr Openshaw, Manchester M14 1WU (phone 061 379 1976).

Details of the results are:

Guppies: 1 and 2, Mr M. Buchanan (Rainworth, 72, 71); 3, Mr and Mrs Cobb (B.V., 70). Platy: 1, Mr D. Norris (Oldham, 71); 2, Mr and Mrs Webb (Salford, 74); 3, Mr Hodgkinson (Gorton & Openshaw, 70). Mollies: 1, Mr and Mrs Hogarth (Salford, 76); 2, Mr J. Igoe (Rainworth, 74); 3, Mr N. Jones (Valley, 73). Swordtails: 1, Mr K. Stafford (Oldham, 74); 2, Mr B. South (Top Ten, 72); 3, Mrs C. Kaye (Top Ten, 70). A.O.V. livebearers: 1, Mr and Mrs Heap (B.V., 72); 2, Mr K. Harrop (Oraon, 70); 3, Mr F. Lodgey (Top Ten, 68). Fishers: 1, Mr B. Wright (Hyde, 72); 2, Mr and Mrs Hogarth (70); 3, Mr B. South (Top Ten, 66). Anabantids: 1, Mr L. Hindley (Salford, 74); 2, Mr R. Bowker (Ind. 74); 3, Mr R. Parkes (Merseyside, 70). Dwarf cichlids: 1, Mr R. Davies (B.V., 74); 2, Mr A. Seabright (G. & O., 74); 3, Mr B. Novell (G. & O., 74). Large cichlids: 1, Mr and Mrs Webb (76); 2, Mr M. Lennon (Salford, 74); 3, Mr J. Mooney (Glossop, 72). Angels: 1, Mr P. Unsworth (Macclesfield, 72); 2, Mr J. O'Neil (Ind., 70); 3, Mr H. Lees (Oldham, 69). Small barbs: 1, Mr and Mrs Wild (Salford, 74); 2, Miss R. Kaye (Top Ten, 71); 3, Mr S. Harrop (Oraon, 71). Large barbs: 1, Mr K. Parkes (71); 2, Mr D. Harvey (Sunnybrow, 75); 3, Mr F. Mulla (Merseyside, 74). Small characins: 1, Mr M. Jones

(Valley, 70); 2, Mr Higgins (Ind., 76); 3, Mr and Mrs Hogarth (74). Large characins: 1, Mr K. Parkes (77); 2, Mrs V. Parkes (70); 3, Mr A. Leontis (Salford, 74). Toothcarps: 1 and 2, Mr Johnson (Salford, 70, 68); 3, Mr F. Lodgey (Top Ten, 67). Flying foxes and sharks: 1, Mr F. Mulla (75); 2, Miss and Mrs Grimshaw (Sunnybrow, 74); 3, Mr P. Canyon (B.V., 67). Rasboras, danios: 1, Mr and Mrs Hogarth (74); 2, Mr Aston (Ashton, 73); 3, Mr K. Parkes (70). Cyprinids: 1, Mr R. Davies (B.V., 77); 2, Mr and Mrs Grimshaw (75); 3, Mr R. Bowling (Sunnybrow, 73). Loaches: 1, Mr and Mrs Webb (Salford, 74); 2, Mr P. Kerrow (72); 3, Mr F. Mulla (70). A.O.V. catfish: 1, Mr F. Mulla (77-8); 2, Mr G. Stewart (Ind., 74); 3, Mr G. Roberts (B.V., 74). A.O.V. tropical fish: 1, Mr and Mrs Heap (76); 2, Mr L. Kaye (74); 3, Mr C. Stewart (Ind., 70). Pairs livebearers: 1, Mr and Mrs Webb (74); 2, Mr M. Buchanan (Rainworth, 71); 3, Mr and Mrs Wild (70). Pairs egglayers: 1, J. & K. Barlow (Ashton, 72); 2, Mr S. Robinson (Sunnybrow, 76); 3, Mr F. Robinson (Sunnybrow, 74). Common goldfish: 1, Master F. Cobb (B.V., 72); 2, Master A. Kaye (Top Ten, 69); 3, Mr Walsh (Accrington, 68). Fancy goldfish: 1 and 2, Mr Walsh (77, 74); 3, Mr Whitney (Accrington, 73). Furnished water jars: 1, Mr and Mrs Heap (B.V., 76); 2, Mr and Mrs Cobb (B.V., 73); 3, Mr F. Cobb (B.V., 74). Breeders livebearers: 1, Mr J. B. Dawson (Oraon, 74); 2, Mr T. Hallett (Accrington, 68); 3, Mrs Brewley (B.V., 65). Breeders egglayers: 1, Mrs Shackleton (B.V., 74); 2, Mr R. Bowling (Sunnybrow, 73); 3, Mr S. Cain (Sunnybrow, 71). Juniors livebearers: 1, S. Clarke (Rainworth, 74); 2, Miss B. Kaye (Top Ten, 71); 3, K. Tomkinson (B.V., 70). Juniors egglayers: 1, Master Seabright (Gorton & Openshaw, 77); 2, Novell (Hyde, 74); 3, Miss A. Davies (B.V., 73).

AT the STRETFORD & D. A.S.

open show a record number of entries, 372, from 26 societies from all over the north of England ensured healthy competition for the 'Best in Show' trophy. This was won by the entry benched by Mrs D. R. Stenden of Loyze A.S.—a silver shark which obtained 82 points. The Junior 'Best in Show' trophy was won by Master A. Kaye of Top Ten A.S. with a goldfish (76 points). The exhibitor with most points was Mr Whitney of Accrington with 375 points from five winners. Prominent aquarist supply dealers and local aquarist shops contributed prizes to the value of £75 so that every first prize winner in the 33 classes received a worthwhile prize. 300 visitors in addition to the exhibitors visited the show. Results were:

Guppies: 1, Mr Hepinstall (76); 2, Mr Lennon (72); 3, Mr R. Johnson (66). Mollies: 1, Mr A. Stear (74); 2, Mr and Mrs Hogarth (70); 3, Mr and Mrs Heap (67). Swordtails: 1, Mrs Kaye (74); 2, Mr N. R. Gibson (69); 3, Mr Danielson (64). Fishers: 1, Mr D. Sewell (72); 2, Mrs Davies (70); 3, Mr and Mrs Webb (67). Dwarf cichlids: 1, Mr R. Davies (76); 2, Mr N. R. Gibson (70); 3, Mr Hepinstall (70). Medium cichlids: 1, Mr M. Roberts (74); 2, Mr D. Sewell (70); 3, Mr A. Seabright (78). Large cichlids: 1, Mrs D. R. Stenden (76); 2, Mr and Mrs Openshaw (75); 3, Mr Nicholls (74). Angels: 1, Mr William (70); 2, Mr Todd (69); 3, Mr R. Antonio (68). Fishers: 1, Mr and Mrs Hogarth (74); 2, Mr Hepinstall (72); 3, Mr R. Hutton (64). Gouramis: 1, Mr D. Sewell (76); 2, Miss L. Hindley (74); 3, Mr F. Lodgey (70).

Small barbs: 1, Mr Stafford (86); 2 and 3, Mr F. E. Gregory (78, 76). Medium barbs: 1, Mr Hepinstall (71); 2, Mr and Mrs Gates (66); 3, Mr Tomkinson (64). Large barbs: 1, Mr and Mrs Grimshaw (74); 2, Mr Tomkinson (70); 3, Mr R. Cook. Small characins: 1, Mr D. Sewell (76); 2, Mr F. E. Gregory (74); 3, Mr and Mrs Cobb (73). Medium characins: 1 and 2, Mr A. Bellingham (71, 71); 3, Mr D. Sewell (70). Large characins: 1, Mr K. Parkes (81); 2, Mrs V. Parkes (80); 3, Mr Lennon (74). Carps and minnows: 1, Mr Stafford (74); 2, Mr Bowman (72); 3, Mrs D. R. Stenden (74). Killifish: 1, Mr A. Johnson (74); 2, Mr D. Sewell (73); 3, Mr A. Bellingham (72). Cyprinids: 1, Mr R. Davies (81); 2, Mr S. Hunt (78); 3, Mr B. Roberts (76). A.O.V. catfish: 1, Mr R. Antonio (74); 2, Mr F. Mulla (78); 3, Mr J. Bowick (74). Loaches and eels: 1, Mr F. Mulla (75); 2, Mr F. Kerrow (72); 3, Mrs R. Fyres (70). Sharks and flying foxes: 1, Mrs D. R. Stenden (84); 2, Mr F. Mulla (86); 3, Mr and Mrs Grimshaw (74). Goldfish: 1, Master A. Kaye (76); 2, Mr Walsh (74); 3, Mr Whitney (70). Shadokins: 1 and 2, Mr Walsh (78, 74); 3, Mr Isherwood (71). Fancy goldfish: 1, 2 and 3, Mr Whitney (77, 76, 74). A.O.V. coldwater: 1, Mr and Mrs Miller (71); 2, Mr Whitney (70); 3, Mr Walsh (74). Pairs livebearers: 1, Master D. Goddshere (74); 2, Mr and Mrs Webb (68); 3, Mr Tomkinson (67). Pairs egglayers: 1, J. & K. Barlow (78); 2, Mrs D. R. Stenden (78); 3, Mr F. Robinson (72). Breeders livebearers: 1, Mr N. R. Gibson (78); 2, Mr J. B. Dawson (74); 3, Mr Danielson (73). Breeders egglayers: 1, Mr Healy (86); 2, Mr F. E. Gregory (76); 3, Mr M. Roberts (78). A.O.V. tropical: 1, Mr C. G. Bostain (74); 2, Mr and Mrs Heap (68); 3, Mr L. Kaye (68). Junior livebearers: 1, Miss R. Kaye (74); 2, Miss C. Pedley (68). Junior egglayers: 1, Miss R. Seabright (74); 2, Miss E. Kaye (72); 3, Master F. Cobb (74). Mini-furnished jars: 1, Mr and Mrs Cobb (69); 2, Master F. Cobb (68); 3, Mr and Mrs Heap (67).

SATURDAY, 14th April was not

only the date of the **CATFORD A.S.** open show but also the day of the first Cup Final and many of the visiting aquarists and their friends were delighted to be able to watch the latter on the colour television set that club members had obtained for the occasion. The fish were judged by Mr C. A. T. Brown, Mr R. D. Esson, Mr T. Jessopp, Mr F. Tomkins and Mr J. Stillwell. Special thanks were paid to Mr G. Greenhalf, Mr S. Mooney and others who assisted the show secretary in the final layout of the show. Prizes were presented by Mr Esson to:

Furnished aquaria (Lee Aquarium Cup): 1, Mr S. G. Mooney (Tetterham); 2, Mr A. P. Love (Catford); 3, Mr R. Mepstead (Catford). Barbs: 1, Mr W. D. Harper (Kingston); 2, Mr Y. Woodfall (Catford); 3, Mr J. Bellingham (Tonbridge). Characins: 1, Mr G. Greenhalf (Kingston); 2, Mr R. Cooper (Kingston); 3, Mr A. J. H. Smith (Crookson). Cichlids: 1, Mr J. Bellingham (Tonbridge); 2, Mr P. Nandrick (Freeton); 3, Mr R. Brown (Walthamstow). Angels: 1, Mr J. Stephens (North Kent); 2, Mr J. D. Wilson (Catford); 3, Mr J. J. Stamp (Beigate & Redhill). Dwarf cichlids: 1, Mrs D. Nicholson (Tonbridge); 2, Mr G. Greenhalf; 3, Mr R. Brown. Labyrinth: 1, Mr F. R. Kendrick (Freeton); 2, Mr S. Cowell (Walthamstow); 3, Mr R. Cooper (Kingston). Egglaying toothcarps: 1, Mr J. E. Collier (Catford, Iris Trophy); 2, Mr J. T. Mathison (Tonbridge); 3, Mr F. J. Stamp. Tropical catfish: 1 and 2, Mr G. Greenhalf; 2, Mr S. Cowell.

Corydoras and Brochis: 1, Mr S. G. Mooney; 2, Mrs R. Lippert; 3, Mr P. Harrison (Chingford); *Rasbora daniconi* and *minckleyi*: 1, Mrs D. Mathison (Tonbridge); 2, Mr W. D. Harper (Kingston); 3, Mrs A. Pollard (Kingston); *A.n.o. tropical fish*: 1, Mr J. E. Colson (Cotford); 2, Mr W. D. Harper (Kingston); 3, Mr G. Greenhalf (Walling trophy); 4, Mr J. Berryman (Bracknell); 5, Mr J. D. Wilson.
Guppy: 1, Mr J. Stephens (N. Kent); 2, Mr W. D. Harper (Kingston); 3, Mrs R. Greenhalf (Kingston); *Swordtail*: 1, Mr E. Howley (Carchalon); 2, Mr A. J. McCarthy (Cotford); 3, Mr J. Stephens, Platy: 1, Mr N. Wood (Croydon); 2, Mr L. G. Little (Bracknell); 3, Mr A. Howes (Preston); *Molly*: 1 and 2, Mr J. D. Wilson; 3, Mr L. G. Little.
Singletailed goldfish: 1, Mr J. Stephens; 2, Mr K. E. Dudley (S.P.A.S.); 3, Mr V. P. Voysey (Salisbury); *Twinstails goldfish*: 1, Mr A. D. Summons; 2, Mr A. C. Fawke; 3, Mr A. G. Pease; *A.n.o. coldwater*: 1, Mr V. P. Voysey (Salisbury, Olive Cup); 2, Mr R. E. Dudley (S.P.A.S.); 3, Mr A. C. Fawke.
Brooders egg-layers: 1, Mr J. Berryman (Bracknell); 2, Mrs K. Barrett (Woking); 3, Mr B. Beasley; *Brooders livebearers*: 1, Mr L. C. Little (A.J. shield); 2, Mr K. Dryden (Croydon); 3, Mr L. C. Little.
 Mr G. Greenhalf was awarded the Colson coupe trophy for the best fish in the show, a *Kingston* received the Jamison Shield as the highest pointed club.

VAUXHALL MOTORS A.S. are all savouring the pleasure occasioned by their first major achievement since their formation a year ago. They successfully competed against both Kettering and Dunstable to win the East Midland Amateur Aquatic Society's trophy. Details of the semi-final with Kettering were: *Livebearers*: 1, Mr J. Biggs (V); 2, Mr J. Baines (V); 3, Mr E. Martin (V). *Catfish*: 1 and 3, Mr J. Springham (K); 2, Mr J. Biggs (V). It was a close match, with the victors winning by only seven points. The results of the contest with Dunstable (classes, *labyrinth and rooted plants*) was *Vauxhall 901, Dunstable 866*.

RESULTS of the inter-club show between PORTSMOUTH, MID-SUSSEX, LITTLEHAMPTON, BOGNOR and BRIGHTON & SOUTHERN A.S. were:

Characins: 1, Mr E. Cox (81); 2, Mr V. Aldis (84); 3, Mr S. Crabtree (79); *Labyrinth*: 1 and 2, Mr H. Maddison (80, 79); 3, Mr D. Soper (78); *Rasbora*: 1, Mr S. Crabtree (79); 2, Mr E. Cox (81); 3, Mr B. Stale (77); *Rooted plants*: 1, Mr J. Howard (85); 2, Mr R. Smith (84); 3, Mr M. Ross (81).

The match was won by Portsmouth with 923 points (2, Brighton & Southern, 915; 3, Mid-Sussex, 904; 4, Littlehampton and Bognor, 902).

ENTRIES from Glossop, Stockbridge and Lancaster were among those benched by the 96 competitors at the NELSON A.S. open show and judges Mr M. Jones, Mr B. Pengilly and Mr J. Wiseman had 362 entries to judge. Results were:

Guppies: 1, Mr and Mrs Barrag (Aireborough, 79); 2, Mr L. Hepinstall (Cast-

A completely revised edition of the Standards Handbook of the FANCY GUPPY ASSOCIATION is now available, price 51 post free, from the Association's secretary, Mr Fred Campbell, 37 Cardigan Drive, Bury, Lancs. It presents not only all the information members of the F.G.A. may require to select and exhibit their fish at Association meetings, but is a comprehensive guide to all who are interested in the breeding of Poecilia reticulata.

ford, 78); 3, Mr C. Brison (Aston, 77); *Swordtails*: 1, Mr N. R. Gibson (Huddersfield, 77); 2, Mr and Mrs Barrag (Aireborough, 76); 3, Mr and Mrs Hogarth (Salford, 76); *Nudes*: 1, Mr and Mrs Hogarth (Salford, 76); section winners: 2, Mr S. Harrop (Orem, 78); 3, Mr and Mrs Boardman (77); *Platy*: 1, Mr I. Hepinstall (77); 2, Mr and Mrs Webb (Salford, 76); 3, Mr Hodgkinson (Gorton & Opershaw, 75); *A.n.o. livebearer*: 1, Mr J. A. Whitley (Aireborough, 78); 2, Mr L. Kaye (Top Ten, 76); 3, Mr P. Reynolds (Swillington, 75).

Small characins: 1, Mr G. Todd (Accrington, 79); 2, Mr and Mrs Cobb (Belle Vue, 80); 3, Mr M. Dwyer (Aireborough, 77); *Large characins*: 1, Mr J. A. Whitley (Aireborough, 82); section winner: 2, Mr D. Kennedy (Bradford, 79); 3, Mr R. Taylor (Aireborough, 78); *Angels*: 1, Mr W. Harley (Nelson, 79); 2, Mr C. Asquith (Castledon, 78); 3, Mr N. R. Gibson (Huddersfield, 77); *Dwarf cichlids*: 1, Mr B. Megson (Aireborough, 82); 2, Mr J. A. Whitley (Aireborough, 80); 3, Mr I. Hepinstall (79); *Large cichlids*: 1, Mr and Mrs Ormscher (Southport, 83); section winners: 2, D. & R. Stauden (Leyce, 80); 3, Mr Hodgkinson (Gorton & Opershaw, 77); *Catfish*: 1, Mr R. Taylor (Aireborough, 78); section winner: 2, Mr A. Baldwin (Nelson, 78); 3, Mr and Mrs Bewick (Valley, 77); *Loach*: 1, Mr R. Taylor (Aireborough, 76); 2, Mr and Mrs Boardman (21); 3, Mr B. Megson (Aireborough, 74); *Sharks and flying fish*: 1, Mr and Mrs Bewick (78); 2, D. & R. Stauden (77); 3, Mr N. R. Gibson (76).

Mimosa: 1, Mr M. Dwyer (Aireborough, 75); 2, Mr J. Stafford (Oldham, 74); 3, Mr and Mrs Hogarth (Salford, 76); *Rasbora*: 1, Mr and Mrs Grimshaw (Sneybush, 76); section winners: 2, S. & A. Irvine (Dunm, 74); 3, D. & R. Stauden (72); *Toothcarps*: 1 and 2, M. & A. Coother (Swillington, 74); 3, Mrs Gae (Kegblay, 71); *Danio*: Mr and Mrs Hogarth (71); 2, Mr B. Ellingsworth (Castledon, 79); 3, Mr and Mrs Cobb (Belle Vue, 74).

Small barbs: 1, Mr J. A. Whitley (Aireborough, 80); section winner: 2, Mr and Mrs Wild (Salford, 79); 3, Mr J. Tomkinson (Clitheroe, 78); *Large barbs*: 1, Mr I. Hepinstall (74); 2, Mr and Mrs Grimshaw (72); 3, Mr A. Baldwin (Nelson, 71); *Fighters*: 1, Mr I. Hepinstall (71); 2, Mr Davies (Heywood, 72); 3, Mr and Mrs Hogarth (79); *A.n.o. anabantids*: 1, Mr D. Godbehere (Stockbridge, 74); section winner: 2, Mr N. R. Gibson (71); 3, Mr and Mrs Cobb (Belle Vue, 72); *A.n.o. tropical*: 1, Mr D. Kennedy (Bradford, 81); section winner: 2, Mrs Tange (Oldham, 79); 3, Mr P. Reynolds (Swillington, 75).

Pairs livebearers: 1, Mr H. Gaudier (Aireborough, 76); section winner: 2, Mr D. Godbehere (74); 3, Mr and Mrs Webb (79); *Pairs egg-layers*: 1, Mr F. Lodge (Top Ten, 74); 2, D. & R. Stauden (Leyce, 71); 3, Mr M. Tange (Oldham, 79); *Brooders livebearers*: 1, Mr N. R. Gibson (77); section winner: 2, Mr P. Reynolds (73); 3, Mr T. Hallett (Accrington, 75); *Brooders egg-layers*: 1, Mrs Gae (Kegblay, 75); 2, Mr S. Walsh (Accrington, 74); 3, Mrs J. Shackleton (Belle Vue, 71); *Goldfish*: 1 and 2, Mr S. Walsh (Accrington, 78, 77); 3, Mr Whitley (Accrington, 76); *A.n.o. coldwater*: 1, Mr and Mrs Miller (Belle Vue, 79); section winners: 2, Mr C. Asquith (Castledon, 77); 3, Mr S. Walsh (Accrington, 76); *Juvenis tropical*: 1 and 3, Master A. Kaye (Top Ten, 79); section winner: 2, Master B. Bone (Nelson, 78); *Juvenis coldwater*: 1 and 2, Master A. Kaye (Top Ten, 79, 76).

Out of 26 different societies whose members exhibited, 22 were represented in the award list. The best fish in the show award went to the male *tanis* child entered by Mr and Mrs Ormscher.

ENTRIES at the READING A.S. third Open Show were up on last year's count and judges Mr B. Baker, Mr R. Matley, Mr J. Stillwell, Mr A. Wilkinson and Mr W. Ryder commented on the high standard exhibited among the 384 entries received. Two added attractions this year were society tableaux entered by Bracknell, Portsmouth and Reading and an exhibition of snakes and other reptiles staged by a member. Prizes and cards were presented by Society president, Mr A. Crisp, to:

Singletail goldfish: 1, Master P. Macle; 2, Mr V. P. Voysey; 3, Mr E. Wilson; *Shubunkins*: 1 and 2, Mr A. W. Atkinson; 3, Mr C. Beavis; *Twinstails*: 1, Mr A. W. Atkinson; 2 and 3, Mr D. Stokes; *A.n.o. coldwater*: 1 and 2, Mr V. P. Voysey; 3, Mr P. Merritt.
Guppy, male: 1 and 3, Mrs P. Gough; 2, Mr P. Merritt; *Guppy*, female: 1, Mr M. Davies; 2, Mr P. Merritt; *Platy*: 1, 2 and 3, Mr L. Little; *A.n.o. livebearer*: 1, Mr R. Cox; 2, Mr M. Maddison; 3, Mr A. Blake; *Characins*: 1, Mr P. Merritt; 2, Mr M. Carter; 3, Mr Stoad; *Barbs*: 1, Mr and Mrs C. & V. Pike; 2, Mr Carter; 3, Mr A. Blake; *Labyrinth*: 1 and 3, Mr A. Blake; 2, Mr I. Lamb; *Rasbora*: 1, Mr P. Merritt; 2, Mr A. Wilkinson; 3, Mr B. Roberts; *Danio* and *mimosa*: 1, Mr M. Carter; 2 and 3, Mr A. Blake.

Corydoras and Brochis: 1, Mr R. Cox; 2, Mr R. Norris; 3, Mr D. Jones; *A.n.o. coldwater*: 1, Mr D. Eaton; 2 and 3, Mr P. Merritt; *Betta and loach*: 1, Mr M. Carter; 2, Mrs G. Carter; 3, Mr C. Beavis; *Dwarf cichlid*: 1, 2 and 3, Mr M. Strunge; 3, Mr M. Davies; *A.n.o. cichlid*: 1, Mr M. Davies; 2, Mr T. Hood; 3, Mr L. Jordan; *Toothcarps*: 1, Mr D. Jones; 2, Mr H. Gough; 3, Mr B. Wiles; *A.n.o. egg-layers*: 1, Mr M. Davies; 2, Mr A. Blake; 3, Mr P. Merritt.

Brooders pairs: 1, Mr A. Blake; 2, Mr M. Carter; 3, Mr J. Frost; *Brooders livebearers*: 1 and 2, Mr L. Little; 3, Mr C. Beavis; *Brooders egg-layers*: 1, Mr M. Strunge; 2, Mr R. Cox; 3, Mr J. Berryman; *Furnished individual coldwater*: 1, Mrs V. Voysey; 2, Mr B. Carpenter; *Furnished individual tropical*: 1, Mr D. Schreiner; 2, Mr C. Masters; 3, Mr O. Merchot; *Furnished aquarium, club*: 1, Portsmouth; 2, Reading; 3, Portsmouth.

The best fish in the show award went to the *H. fasciatus* entered by Mr M. Davies.

RESULTS of the YORK & D. A.S. Open Show are the following:

Guppies: 1, 2 and 3, Mr J. Hepinstall (Castledon, 84, 77, 75); *Swordtails*: 1, Mr T. Douglas (Hall, 83); 2, Mr I. Hepinstall (75); 3, Mr J. Scull (Selly, 71); *Mollies*: 1, Mr Patten (Selly, 81); 2, Mr S. Whittaker (Sheffield, 80); 3, Mr J. A. Whitley (Aireborough, 78); *Platy*: 1, Mr J. Tansley (Stockbridge, 78); 2, Mr P. Reynolds

(Swillington, 77); 3, A. D. & E. Ward (Rotherham, 75). A.o.v. livebearer: 1 and 2, Mr J. A. Whiteley (80, 78); 3, Mr J. M. Grundy (Halifax, 77).

Small barbs: 1, Mr J. A. Whiteley (80); 2, Mr Cranswick (Featherstone, 79); 3, Mr Charlesworth (Barnsley, 78). Large barbs: 1, Mr D. W. Smith (Tadcaster, 76); 2, Mr M. Allison (York, 75); 3, Mr J. A. Whiteley (74). Small characins: 1 and 2, Mr B. Eyre (Workop, 78, 77); 3, Mr P. Reynolds (78). Large characins: 1, Mr R. Taylor (Aireborough, 81); 2, Mr G. Monk (Aireborough, 80); 3, Mr D. Kennedy (Bradford, 79). Carps and minnows: 1, Mr T. Barkworth (Newton Aycliffe, 76); 2, Mr M. Dwyer (Aireborough, 75). Rasboras and danios: 1, Mr M. Purvis (Hull); 2, Mr J. Tunney (77); 3, Mr and Mrs V. B. Hargreaves (York, 75). Sharks, flying fishes: 1 and 2, Mr J. Scarril (Selby, 80, 75); 2, Mr D. Hockley (York, 78).

Siamese fighters: 1, Mr E. Whitelock (Tadcaster, 80); 2, Mr G. Roberts (Peterlee, 79); 3, Mr N. Spencer (Bradford, 78). Anabantids: 1, Mr D. Hockley (York, 78); 2, Mr M. Purvis (Hull, 77); 3, Mr and Mrs Cohen (Castleford, 76). Dwarf cichlids: 1, Mr B. Eyre (75); 2, Mr R. Taylor (74); 3, Mr J. A. Whiteley (74). Large cichlids: 1, Mr C. Thompson (Aireborough, 78); 2, Mr J. Helm (Horsforth, 74); 3, Mr J. A. Whiteley (73). Angels: 1 and 2, Mr R. R. Williams (Four Star, 81, 71); 3, Mr C. Asquith (Castleford, 80).

Corydoras: 1, Mr R. Taylor (78); 2, Mr P. Reynolds (74); 3, Mr S. B. Furness (Sheffield, 73). Loach: 1, Mr D. Jackson (Dukeries, 80); 2, Mr Mellis (Newton Aycliffe, 78); 3, Mr J. Dickens (Sheffield, 75). A.o.v. catfish: 1 and 3, Mr A. S. Allison (York, 79, 74); 2, Mr and Mrs Gates (Castleford, 76). Toothcarps: 1, Mr S. Gear (Keighley, 77); 2, M. M. & A. Crowther (Swillington, 75); 3, Mr Rimmer (Hull, 74). Breeders livebearers: 1, Mr T. Douglas

The GUEST, KEEN & NETTLE-FOLD P. & A.S. would be very pleased to contact societies by newsletter. Those interested please get in touch with the secretary, Mr A. Horne at 223 Wolverhampton Road West, Bentley, Nr Walsall, Staffs).

(Hull, 81); 2, Mr G. Hoyland (Stockbridge, 79); 3, Mr G. Monk (Aireborough, 73). Breeders egg-layers: 1, Mr and Mrs F. Buckton (Barnsley, 82); 2, Mr F. Sonley (Independent, 73); 3, Mr E. Whitelock (Tadcaster, 77). Paris livebearers: 1, Mr T. Douglas (Hull, 80); 2, Mr Bearpark (York, 79); 3, Mr J. A. Whiteley (76). Pairs egg-layers: 1, Mr J. Helm (Horsforth, 81); 2, Mr T. Tunney (80); 3, Mr G. Hopkinson (Independent, 78). A.o.v. A. S. & M. Allison (81); 2, Mr E. Whitelock (80); 3, Mr J. Hield (York, 77).

Common goldfish: 1, Mr A. S. Allison (60, 59); 2, Mr I. Hepinstall (60). Fancy goldfish: 1, Mr G. Thickbroom (Castleford, 72); 2 and 3, Mr C. Asquith (Castleford, 68, 66). A.o.v. coldwater: 1 and 2, Mr C. Asquith (70, 61); 3, Mr A. S. Allison (60). Furnished show jars: 1, Mr B. Megson (Aireborough, 76); 2 and 3, Mr P. Reynolds (73, 70).

The best fish in the show award was made to the knife fish exhibited by A. S. & M. Allison of York (85 points) and Mr J. A. Whiteley of Aireborough was the exhibitor gaining most points.

In Brief . . .

... **LEEDS & D. A.S.** has recently re-formed after a successful search for a new meeting place. Meetings on 10th June, 15th July, 19th August, 23rd September, 14th October, 11th November and 9th December will be held at the Leeds Anglers Club, junction of Beckett Street and Stoney Rock Lane, Burmantofts, Leeds 8. New members, both beginners and experts, are most welcome and should contact Mr D. A. Eamsonson, 34 The Oval, Leeds 14, for details.

... **CRIES** of horror from lady aquarists present greeted the jars of wingless fruit flies and micro worms that Mr R. C. Armstrong used to illustrate his talk to **SOUTH-AMPTON A.S.** on feeding tropical fish. However, members thoroughly enjoyed this very helpful lecture. In the table show for barbs, advanced class, Mr H. Armitage of Havant awarded first, third and fourth places to Mr E. Hearn and second to Mr J. Gilbert.

... **THE FIRST** presentation of the **AMESBURY & D. A.S.** trophy for maximum points gained from the

year's bottle shows, the Stonehenge Challenge Cup, was made to Mr Lune.

... **AFTER** an enjoyable lecture by Mr Casey of Warham, during which he performed some unusual experiments to illustrate the properties of water, Mr Jones won the **WEYMOUTH & D. A.S.** table show for barbs (2, Mr Carter; 3, Mr Jones).

... **MR C. BOWYER** of **CHESTER & D. A.S.** was awarded three of the Society's annual trophies when these were presented at the club's A.G.M. and Dinner. These were the Russell Allan trophy for best breeding achievements, the John Evans trophy for the highest number of show cards collected for club table shows and the Fish of the Year Award. The Mottershead Cup for the best furnished aquarium in the home was won by Mr E. V. Stokes and the runners-up shield by Mr R. Needham. The Pabo Cup for the most outstanding achievement of the year was awarded to Mr E. V. Stokes.

... **SOCIETY** funds profited from the proceeds of the Bring and Buy auction held by **BARNESLEY T.F.S.** and presided over by Mr J. Howard. Master J. Howard won the table show for livebearers (2, Mr B. Bettow; 3, Mr R. Absom).

... **MEMBERS** of **BURTON & D. A.S.** found the specimens that Mr J. Foden took along to illustrate his lecture on reptiles most interesting. They included an alligator, an African rock python, a hissing sand snake and red-eared terrapins. Mr B. Pointon won first and second awards in the table show for characins and Mr J. Sharratt third. Meetings are held on the second Thursday of the month at the Fox and Goose, Bridge Street, Burton-on-Trent at 7.55 p.m.

... **M.A.P.S.** have moved their headquarters to Ladywood Community Centre, Ledbury Close, Ladywood, Birmingham.

... **MR F. HARKINS** won first and second places with *A. australis* in the **THURROCK A.S.** table show for egg-laying toothcarps (3, Mr G. Eaton) and Mr H. Juson won the first two places in the table show for cichlids with angel fish (3, Mr D. Durrant).

... **THE** fish of the Month competition in April saw a variety of excellent fish on the bench at **BETHNAL GREEN A.S.**—a fact commented on by Mr Tomkins who judged them. A piranha owned by Mr P. Brindley came first (2, Mr D. Bundy; 3, Mr T. Hands).

... **CARSHALTON & D. A.S.** members enjoyed an interesting talk by Mr Gerry Greenhalf on points to watch when entering fish in an open show. Mr Greenhalf also judged the table show and gave the first award to a *H. pulcher* entered by Mr D. Wiltshire (2, Mr E. Horsley; 3, Mrs Ransom). The meeting took place at The Sun, North Street, Carshalton.

... **MR J. HODGETTS** both lectured to **ACCRINGTON & D. A.S.** on marine fish and judged the table show, with the following results: dwarf cichlid, Mr T. Allet; livebearer, Mr B. Tattersall; killifish, Mr C. Whitsey; labyrinth, Mr S. Taylor; loach, Mr G. Todd; characin, Mr G. Todd; pairs, Mr G. Todd; breeders, Mr T. Allet; best in show, Mr G. Todd.

... **JUNIOR** members were highly successful in winning the first three places in the Fish of the Month (catfish and loach) class at the April meeting of **KEIGHLEY A.S.** 1, Master Shillam; 2, Master Mosley; 3, Master Ebbs. Mr R. Hampson gave a very interesting slide show on livebearers at this meeting.

... **A NEW** idea for a Challenge Table Show proved popular with **BISHOPS CLEEVE A.S.** members. Challenges were issued by Mr K. R.

Burton (for cichlids) and Mr C. Surgeoner (for a.v. guppy) to club members to beat their entries. Mr Burton lost his challenge to Mr N. Dooley and Mr P. Tredgold and Mr Surgeoner to Mr F. Scrivin, Mr N. Binding has won the Society's home aquarium competition (2, Mr T. Duffin; 3, Mr N. Dooley), and Mr N. Dooley was voted aquarist of the year. At the club's A.G.M. secretary Mr Dooley was voted in for a second term.

... **COVENTRY POOL & A.S.** have been enjoying table show entries in the region of 38, 52 and 39. At the April meeting after a very informative talk and slide show by Mr Bernard Broomefield, Mr Ken Russel judged the table show entries and was presented with a pen and pencil set for his ever-willing assistance. Winners were: a.v. cichlids, Mr R. Coulson; a.v. barbs, Mr E. Sheehy; a.v. guppies, Mr D. Easingwood; breeders egglayers, Mr D. Easingwood.

... **YATE & D. A.S.** are fast becoming the unofficial champion exhibiting Society in the south west. At the Bath open show 10 members entered 72 exhibits and collected 22 prize cards.

... **SECRETARY** of the **G.S.G.B.**, Mr W. L. Wilson, did not seek reelection this year and in recognition of his loyal services to the Society over many years he was unanimously elected a vice-president. The new secretary is Mr G. A. W. Fleming (3 Rutland Road, Wainstead, London, E.11). At this meeting, after lecturing, Mr Bundell, the Technical Co-ordinator, outlined a plan for members to co-operate in a series of proposed experiments, under his guidance, during the present decade.

... **ATHERSTONE A.S.** member Mr A. L. Trotman took first award in three of the four classes (a.v. barb, a.v. characin, rasboras/danios) when the Society were hosts on the return leg of the inter-society table show with **TAMWORTH & D. A.S.** and winners by 29 points to 11. The class for a.v. livebearer was headed by Master Ison, also of Atherstone.

... **WEDNESBURY & D. A.S.** were hosts to **STONE A.S.** at an inter-society show in April. The table show for characins, judged by Mr F. Bolton of M.A.A.S., attracted a good entry and the home team took first and third places. An hilarious evening's entertainment was provided by a film show of the Society's non-aquatic activities including a cricket match with a local cricket club shown in reverse. The Society has

been forced to change its venue because of lack of space and is now at The Midland Vaults, High Bullen.

... **LOSS** by cannibalism of gold and albino young in mixed broods was one of the subjects under discussion at the April meeting of the **EASTERN COUNTIES SECTION** of the **F.G.B.S.** At this meeting the section was shown a roundtail male of surprisingly high standard, though the standard of the 28 entries in the table show was itself quite good. Visitors are welcome to meetings. Please contact secretary Mrs L. Myers (40 Charford Road, Canning Town, London, E.16; phone 01-476 2919) for details.

... **LEAMINGTON & D. A.S.** members are planning well ahead for the Exhibition they are staging over the August Bank Holiday in the Pump Rooms Annexe. Those members who are not staging actual set displays will be loaning plants and equipment. Members recently enjoyed a follow-up visit to Rosedale Aquatics, Eathorpe after a lecture and slide show by the owner, Mr Fox, had shown them the whole process of the construction of his fish house.

S.O.S. from CATFORD A.S.: to the winner of the Iris trophy for 1979—please contact Mr J. D. Wilson, 130 Parton Crescent, Lee, London, S.E.12 (phone 01-837 4013).

... **EALING & D. A.S.** began the 1979 season successfully in their three-way match with **RUNNYMEDE** and **RIVERSIDE**. The match ended with Ealing joint first with Runnymede (21 points) but as Ealing supplied the best fish in the show, it was felt that a moral victory had been achieved! Runnymede will be hosts for the second leg of these matches on 13th October. The third will take place at Ealing's regular meeting place, Northfield Community Centre, Northcroft Road, London, W.13, where new faces are always welcome on the first and third Tuesdays of each month.

... **FOR** the first time in the club's history the first, second and third places in one class were won by the same person at **TONBRIDGE & D. A.S.** This was Mr Iain Mathieson in the livebearer pairs. Mrs Elizabeth Allen, wife of the Society's chairman, presented annual trophies to members: livebearer breeders: Mr Mark Bromwich; egglayer breeders: Mr Lawrence Getley. Open show championship: Mr John Bellingham (2, Mr Iain Mathieson; 3, Mr Ron Taylor). Club championship: Mr

Ron Taylor (2, Mr Iain Mathieson; 3, Mr John Bellingham).

... **MR P. SEALEY** of **YEOVIL & D. A.S.** was presented with the Knight Knockout Cup by last year's winner Mr C. H. Busbell. This competition, organised by show secretary Mr T. Rendell and judged by members, has proved very popular and drew 30 entries. Winners of the table show classes at this meeting were: livebearers: Mr K. Wright; goldfish: Mrs W. Gaylard. Spurred on by his success in the table show, Mr K. Wright took his guppy to the Bath open show where it won first prize in its class.

... **WHEN** Mr N. **SHORT** of **Nero Aquatics**, Haywards Heath, gave a demonstration and talk to members of **MID-SUSSEX A.S.** on the principles of tank glazing, members who had never done this successfully before were given the opportunity to cut glass and help to glaze a tank. Welcoming new members, chairman Mr R. Johnson reported that membership now exceeded 100, and the month's table show attracted over 50 entries.

... **AT** the A.G.M. of **NOTTINGHAM & D. A.S.** Mr Bruce Inman was made a vice-president and Mr H. Odam became a life-member of the Society. The MacKenzie & Lynn Points Cup was presented to Mr Selby, who was also awarded the Appreciation Cup for all the good work he has done for the Society during the year. The George Bullement trophy for the best effort in breeding fishes was awarded to Mr K. Lowe for his neon tetras.

... **WHEN MERSEYSIDE A.S.** held an auction recently, there was not only a good attendance of members but also an astounding number of visitors present, 20 of whom joined the Society on the spot. A Study Group has been formed so that matters particularly interesting to the members may be studied in greater depth than time allows at regular club meetings.

... **AT** the start of their fourth year **HORSFORTH A.S.** have 64 members including corresponding members. At the A.G.M. the committee, with one or two vacancies yet to be filled, was re-elected for another year. Annual trophies for the highest number of points won over the year were awarded to Mr C. Coers (a.o.v.), Mr J. Girdham (specified class) and junior a.o.v. to Master Jimmy Dugdale.

... **SOUTHEND, LEIGH & D. A.S.** are to award medals for firsts in

table shows, and any dozen firsts will entitle the winner to have the medals set on a shield.

...WINNERS of the NEW FOREST A.S. annual home aquarium competition were: tropical: 1, Mr C. Knapp; 2, Mr D. Harding; 3, Mr R. Moseley. Coldwater: 1, Mr D. Harding; 2, Mr A. Williamson; 3, Mr L. Menhennett. Members have enjoyed lectures by Mr R. Manley of Bournemouth A.S. on how to set up competition aquaria and one by club member Mr C. Knapp on judging common barbs. The club has also acted as host to the finalists in the

A.S.A.S. quiz, supplying questions and judges. Portsmouth won the quiz by one point against Bournemouth's 68½ points.

... AT SWILLINGTON A.S. first quarterly members' show for 1970 Mr Paul Reynolds received the Harry Spruce trophy for guppies (placed 1, 2 and 3) and the Swillington A.S. trophy for platys. Mr L. Longfellow received the Swillington A.S. molly and swordtail trophies and Mr R. Stringer that for plants. Judge Mr A. Firth of Bradford awarded the best in the show to a guppy entered by Mr Reynolds.

Dates for Your Diary

7th June. NUNEATON A.S. Open Show. Schedules from Mr S. Blackburn, The Shop, Beaumont Road, Nuneaton.

7th June. LINCOLN & D. A.S. Open Show. The Drill Hall, Broadgate, Lincoln. Commencing 2 p.m. Schedules from Mr A. Clarke, 8 Lane Crescent, Bress Road, Lincoln.

7th June. HYDE A.S. Open Show. Queens Hotel, Hyde, Cheshire.

12th June. LLANTWY MAJOR A.S. Open Show. Town Hall, Llanrwst Major, Glam. All fish benched by 12.30 p.m. Schedules from Mr A. Ibbertson, 84 St. Mary's Avenue, Barry, Glam.

14th June. BOURNEMOUTH A.C. Open Show. Kinon Community Centre, Bournemouth.

14th June. LOUGHBOROUGH & D. A.S. third Open Show. Town Hall, Market Place, Loughborough. Schedules will be available from Mr I. Pandy, 41 Poplar Road, Loughborough, Leics.

21st June. WEST LONDON SECTION, F.G.A. Open Show. The Community Centre, Clifton Road, Isleworth, starting at 1.30 p.m.

21st June. SWILLINGTON A.S. Open Show. County Primary School, Church Lane, Swillington, Near Leeds. Schedules from Mr P. Reynolds, 60 Lawrence Road, Leeds LS8 3HS.

21st June. ATHERSTONE A.S. Open Show. Memorial Hall. Schedules from Mr A. L. Trotman, 15 Meadow St., Atherton.

25-27th June. BRISTOL T.F.C. Open Show. Congregational Church Hall, Newton Street (off Stapleton Road), Bristol 4. Details from Mr E. Newman, 71 Somerdale Avenue, Knowle, Bristol 4.

27th June. SOUTHAMPTON A.S. Open Show. Details from Mr C. McCann, 7 Waterhouse Way, Southampton.

28th June. BISHOPS CLEEVE A.S. Open Show. Tythe Barr, Bishops Cleeve (on the Cheltenham to Evesham Road, A415). Benching to be completed by 12.30 p.m. Schedules from Mr N. W. Dooley, 37 Welch Road, Cheltenham, Glos.

28th June. BRADFORD & D. A.S. Open Show. Unity Hall, Rawson Square, Bradford. Details from Mr P. S. Moorhouse, 114 Carr Street, Marsh, Huddersfield.

28th June. NORTHWICH & D. A.S. Open Show. Scout Hall, Noxley Road, Cuddington, Nr Northwich. Details from Mr C. Davies, 70 Harburt Avenue, Middlewich, Cheshire.

28th June. ALFRETON & D. A.S. Open Show. Allerton Hall, Allerton, Derby. Details from Mr S. Hill, 33 South Street, Riddings, Derby.

3th July. GLOSSOP A.S. Open Show. Glossop Centre, Talbot Street, Glossop, Derby. Schedules from Miss M. D. Smith, 3 Chapel Lane, Hadfield via Hyde, Cheshire.

3th July. GOSPORT & D. A.S. Open Show. Bridgeman Community Association, Brewers Lane, Bridgeman, Gosport. Details from Mr K. Clough, 16 Newport Road, Gosport.

3th July. HIGH WYCOMBE A.S. Open Show. West Wycombe Hall, West Wycombe, Bucks. Schedules from Mr R. Cook, 282 Oak Tree Road, Marlow, Bucks.

3th July. LYTHAM A.S. Open Show. Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

11th July. Basingstoke & D. A.S. Open Show. Details from Mr A. Blake, 50 Boney Road, Basingstoke, Hants.

11th-12th July. ROMFORD & BEACONTRÉE A.S. (Dagenham Town Show). Details from Mr J. M. R. Pym, 3 Ashvale Drive, Cranham, Upminster, Essex (phone Upminster 28435).

12th July. GRANTHAM & D. A.S. first Open Show. Guildhall, St Peter's Hill, Grantham. Schedules available mid-February from Mr S. Pavey, 59 Alexander Avenue, Newark, Notts.

14th July. TADCASTER & D. A.S. Open Show. Collingham Memorial Hall, Collingham, Wetherby, Yorks. Benching 2.00-2.0 p.m. Only 1 mile from A1. Large car park, no stairs. Schedules from Mr J. W. Holmes, Newsagent, Collingham, Wetherby, Yorks.

18th July. NORTH KENT A.S. Open Show. Details from Mr John Parker, 6 Moore Road, Swanscombe, Kent.

19th July. BARNESLEY T.F.S. Open Show. Mappleton & Staincross Village Hall (formerly the Towncroft), Darton Lane, Mappleton, Nr Barnsley. Details from Mr J. Howard, 57 Woodley Colliery, Darton, Barnsley, Yorks.

25th July. STOCKTON A.S. & CLEVELAND A.S. Open Show (joint venture incorporated into the Teesside Agricultural and Horticultural Show). Stewart Park, Teesside. Schedules from Mr K. Low, 2 Farnbank Road, Ormesby, Middles-

Badge of the Month



One club badge that causes some curious enquiries wherever it is seen is that of EALING & D. A.S. When the club first started 2 years ago a badge with the silhouette of an angel fish was used, the name of the club being shown below it on a silver bar. As a contrast to this, the cards awarded at table shows bore a picture of a velifera mollie. As many other clubs had similar badges, it was thought that a really distinctive design would be a good idea. A Badge Design Competition was held at the club to produce a design; the winning design (more symbolic than realistic!) was given preference since nobody could agree on a species of fish, and it was the general feeling that something different was needed. The Ealing badge is described by them as a 'crowned rampant piscine vertebrate vert on a blue ground'. No identifying initials were incorporated in the design for two reasons: first, they would have been too small to be easily legible and, secondly, it has been found that people just have to ask what the badge is for, which after all achieves the object of the badge! Secretary of Ealing & D. A.S. is Mr R. C. Mills, 70 Lee Road, Perivale, Middlesex.

brough, Teesside, TS7 4EG or Mr K. Clegg, 26 Thomas Avenue, Thornaby, Teesside.

25th July. PLYMOUTH A.S. Open Show. Sherwell Hall, Sherwell, Plymouth. Details from Mr R. Garsell, 51 Biggin Hill, Ermeston, Plymouth, Devon.

1st August. STROUD & D. A.S. third Open Show. Mid-Gloucestershire Technical College, Stratford Road, Stroud (change of venue). Schedules from Mr P. L. K. Treadgold, 11 Kings Road, Rodborough, Near Stroud, Glos.

2nd August. BLACKPOOL & FYLDE

A.S. Open Show, Arnold Boys School, Lytham Road, Blackpool. Programmes obtainable mid-June from Mr G. Howard, 55 Standard Avenue, Blackpool (phone 44676).

8th-10th August (provisional), **THE MIDLAND SHOW**: Bingley Hall, Birmingham.

8th-15th August, **PORTSMOUTH A.S.** Open Show, Schedules from Mr V. Hunt, 120 London Road, Witley, Nr Portsmouth, Hants.

16th August, **NORTH STAFFS A.S.** second Open Show, Meir Community Centre, Uttoner Road, Meir, Stoke-on-Trent. Details from Mr K. Balch, 78 Courway Drive, Stoke-on-Trent, ST1 6DU.

16th August, **BEDWORTH A. & P.S.** Open Show, Nicholas Chamberlaine Comp. School, Bulkington Road, Bedworth. Schedules from Mr K. Edkins, 74 Sister Street, Amlborough, Nuneaton.

22nd August, **YEovil & D. A.S.** Open Show, Grass Royal Secondary School, Yeovil. Details from Mr D. M. Pison, 1 Hill Terrace, Bower Hinton, Martock, Somerset.

4th September, **YATE & D. A.S.** Open Show, Christchurch Hall, North Street, Downend, Bristol.

4th-6th September, **MID-HERTS A.S.** Open Show (Hertfordshire Horticultural Society Show), Francis Bacon School, Drakes Drive, St Albans.

6th September, **WEYMOUTH & D. A.S.** Open Show, Details from Mr Hamon, 53 Rowenlow Street, Weymouth.

6th September, **CLEVELAND A.S.** third Open Show, British Legion Hall, West Gate, Guisborough, Yorks. Schedules from Mrs Avery, 7 Dorset Road, Guisborough, Yorks.

12th September, **HOUNSLOW & D. A.S.** Open Show, Hounslow Youth Centre, Cecil Road, Hounslow, Middlesex. Schedules from Mr D. J. Woodward, 34 Uxbridge Road, Harworth, Middlesex.

20th September, **FOUR STAR A.S.** Open Show.

25th September, **RIVERSIDE A.S.** Open Show, St Ethelredas Church, Fulham

Place Road, Fulham, London, S.W.6. All enquiries to Mr M. Goss: phone 21-775 6149.

26th September, **BRACKNELL A.S.** Open Show, Pinnerwood Community Centre.

27th September, **TORRAY A.S.** Open Show.

27th September, **STROUD & D. A.S.** Convention (details to follow).

2nd October, **EAST LONDON AQUARIES AND PONDKEEPERS ASSOCIATION** Open Show, Pippin Road School, Barking, Essex.

17th October, **G.S.G.B. CONVENTION** and Open Show, St Marks Church Rooms, Belgrave Gate, Leicester, at 4.30 p.m. Details from Mrs P. Whittington, Pices Lodge, Ringley Park Avenue, Reigate, Surrey.

17th October, **BRENT A.S.** Open Show, Sydney Memorial Hall, High Road, Willesden, London, N.W.2. Details from Mr A. J. Raymond, 39 Innan Road, London, N.W.11.

Classified ADVERTISEMENTS

AQUATIC SUPPLIERS

OVER 120 VARIETIES tropical, marine and pond fish—for personal shoppers only. Kingfisheries, 308 Croydon Road, Beckenham, Kent. Phone 01-650 3716. Closed Wednesdays.

MALDON AQUARIA (Mr G. F. Yallop). Varied stock of fish, plants. Tubifex, 10-6.0 except Wednesday. 191 High Street, Maldon, Essex.

PLYMOUTH TROPICALS for your fish, plants and equipment. North Hill Nurseries, Tavistock Road, Plymouth. Phone 62663.

OLDBURY'S OF CHESTER, 100 varieties tropical fish, freshwater and marine. 40 varieties plants. Equipment. Live foods. Evenings after 7 p.m. Weekends 2 to 6 p.m. 36 Pearl Lane, Vicars Cross, Chester 41671.

CLASSIFIED ADVERTISEMENTS

Rates: 8d. per word (minimum charge 8s.); Box no. 2s. extra if required. Remittance with order to be sent to

PetFish Monthly

554 Garratt Lane, London, S.W.17

WE ARE MAKING GREAT STRIDES IN TROPICAL FISH. 100 tanks, plenty of quarantined fish, plants and equipment. Water Gardens section open for all coldwater fish, pools, pumps, liners, etc. Give us a call—open 2-9 p.m. every day except Mondays. Stainers Water Gardens, North Street, Martock, Somerset (phone 3331). Fish Clubs welcome from May onwards—by appointment.

FERNWOOD AQUARIUM, 132 Havant Road, Hayling Island. Open for the sale of fish and plants until 5 p.m. Sundays.

BIND your copies of **PETFISH MONTHLY** as you receive them. Binders 20s (53) each post free from PFM offices.

FISH

SUPERB VEILTAIL GUPPIES. Awarded "Water Life" diploma. Best in open show £1 per pair, carriage 9s. C. R. Perry, Professional Aquarist, 615 West Street, Crews.

Post Mortem Examination

W. HAROLD COTTON, F.R.M.S., Ichthyonomist, post mortem examination of tropical and coldwater fishes. Specimens should be wrapped loosely and very wet in grease-proof paper, surrounded by a damp cloth and then re-wrapped in dry grease-proof paper and sent in strong container. A brief history and any relevant details should be given. No preservatives please. Examination fee 5s. 39 Brook Lane, Kings Heath, Birmingham 14. Phone: 021-444 1693.

Continued on page 90

ACUREL[®] Q for WHITE SPOT, fungus and algae
NOW IN CAPSULE FORM, 10 accurate easy to administer dosages. Retail 6/9d.

Bioquatic Laboratories: 161 Rustlings Road, Sheffield S11 7AD.



New - Spratt's Flaked Fish Food for tropical fish.

Now you can buy a top-quality flaked fish food especially prepared for Spratt's - the greatest name in the pet world.

Spratt's Flaked Fish Food for Tropical Fish has been formulated by experts to give complete nourishment to all species of tropical fish.

It's available in three sizes, approximately $\frac{1}{2}$ oz., 1 oz., and 2 oz., packed in easily recognisable drums.

Try it - and you will be very

pleased with the quality and the price. Spratt's Patent Ltd., Wakering Road, Barking, Essex.

SPRATT'S

- the people
who care for pets.



" I saw your advertisement in PFM "

ACUREL® F A GREAT NEW CONCEPT IN aquatic environmental control. Clears cloudy and green water, improves filter capture efficiency by over 500%. Keeps decorative aquaria crystal clear. HARMLESS TO FISH AND PLANTS. Bioaquatic Laboratories: 161 Rustlings Road, Sheffield S11 7AD. Retail 8/6d.



Classified ADVERTISEMENTS (continued)

REPTILES

REPTILES, AMPHIBIANS. Free list. J. & D. Naturalists, 51 Sandy Road, Seaford, Liverpool, 21.

TORTOISES, TERRAPINS & TURTLES by I. and A. Noel-Hume. 112 pages, 13 plates, 19 line drawings. 6s. PetFish Publications, 554 Garratt Lane, London, S.W.17.

EQUIPMENT

LARGE AQUARIA FRAMES, STANDS, SHADES. 361 x 15 x 12 in., 30s; 361 x 15 x 15 in., 34s; 42 x 15 x 12 in., 40s. 11 x 11 x 1 steel angle: 48 x 15 x 12 in., 46s; 48 x 15 x 15 in., 50s; 48 x 18 x 15 in., 58s; 60 x 15 x 12 in., 60s. Stands to take 2 tanks: 37 x 12 x 36 in. high, 55s; 42 x 12 x 36 in., 60s; 48 x 12 x 36 in., 65s; 48 x 15 x 36 in., 70s; 60 x 12 x 36 in., 78s. Aluminium shades 361 x 12 in., 30s; 361 x 15 in., 36s; 42 x 12 in., 48s; 48 x 15 in., 52s; 60 x 12 in., 57s. Glazing compound 1s 4d. lb. Shades and compound sent only with frames or stands, Carr. paid. Money back if not satisfied. Any size. List, s.a.e. Hockney Engineers, Derwent Place, Leeds 11. (Phone Leeds OLE2-25061).

RUSTPROOFED AQUARIA, ornamental stands, glazing cement. Equipment manufacturers: s.a.e. Westbys, Barton, Ormskirk.

F.B.A.S. SHOW STANDARDS for Cultivated Tropical Fish, 24 pages, 2s 6d post free. PetFish Publications, 554 Garratt Lane, London, S.W.17.

BOOKS

1969 F.B.A.S. SHOW FISH GUIDES and Technical Information, 24 pages, 2s 6d post free. PetFish Publications, 554 Garratt Lane, London, S.W.17.

MISCELLANEOUS

BADGES. Every Society needs bright enamel badges. For best service and quality contact R. E. V. Gossin Ltd., 14-15 Frederick Street, Birmingham 1.

PLEASE MENTION PETFISH MONTHLY when replying to advertisers.

WHITE WORM BY WEIGHT. 1 oz. 6s 6d, 2 oz. 11s, 4 oz. 20s, 8 oz. 37s 6d.

Post paid, C.W.O. Activated worm compost, 6 lb for 20s. V. J. Dene, Denford Aquatics, Alcester Road, Portway via Alvechurch, Worcs.

TROPICAL FISH (Discus, Oscars, Marbles), Plants and Aquariums for sale. By rail, Box no. 72.

DRIED SHRIMP MEAL, fine, medium, coarse. Small whole dried shrimps. Daphnia, 28 lb minimum. Prices on application. H. E. Daniel Ltd, London, S.E.19.

WATER PLANTS

PLANTS TOP QUALITY. Cryptocorynes: Becketti, 1/9; cordata, 3/6; Griffithii, 4/3; lingua, 4/-; Nevilli, 1/6; Willisi, 2/-; Wendtii, 2/6. Echinodorus paniculatus, 3/-; Sagittaria natans, 1/-; Bulbs: Aponogeton crispus, 1/3; Nymphaea stellata, 1/3. Postage and packing 1/6. Sovereign Aquaria Supply, The Street, Newton Flotman, Nr. Norwich, NOR 5 9W.

PERRY'S FOR PLANTS. 1st and 2nd Awards British Aquarists' Festival. Assorted selections tropical or cold, 7s 6d, 10s 6d, 12s 6d. *Fallis nova*, *S. natans*, 6s doz. *Cryptocoryne beckettii*, *willisi*, *haerrelliana*, 2s 6d each, six assorted 10s. Water wisteria, giant hygrophila, 2s 6d. Post 1s. All advertised accessories. C. R. Perry, Professional Aquarist, 615 West Street, Crewe.

30 QUALITY PLANTS 18/- plus 2/- postage. Includes Crypto., Hygrophila, Vallis, Ludwigia, wisteria, Cabomba. Money back guarantee. RED veiltail, snakeskin, De Gaulle guppies, 30/- true pair, including postage. 2 pairs £2. S.a.e. for list. Hurstwood Aquarium, Hurstwood, nr. Burnley, Lancs.

Aquarium Paperbacks by Post

10s 6d each

PLANNING AND DECORATING THE AQUARIUM
by Wilfried Weigel

FOOD FOR THE AQUARIUM AND VIVARIUM
by Willy Jocher

BREEDING AQUARIUM FISH
by Dr Wolfgang Wickler

THE MARINE AQUARIUM
by Dr Wolfgang Wickler

AQUARIUM HYGIENE
by Hellmuth Wachtel

POND LIFE IN THE AQUARIUM
by Horst Janus

DISEASES OF AQUARIUM FISH
by Gottfried Schubert

PetFish Publications

554 Garratt Lane, London, S.W.17

FOR HEALTHY TROPICAL FISH AND WELL ESTABLISHED PLANTS

—AND A VERY COMPREHENSIVE STOCK OF AQUARIUMS AND ACCESSORIES

WINGATE 7 MARKET STREET WINCHESTER

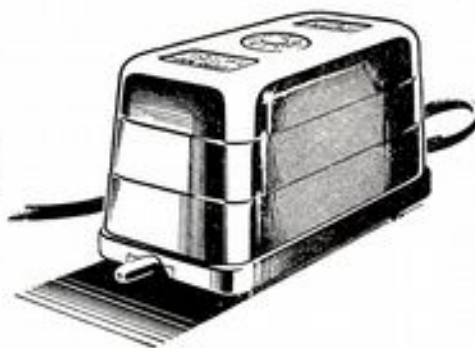


Main stockists of JUVEL and GEM aquariums. Retail and Wholesale

Phone 2406

Please mention PFM when writing to advertisers

THE CREAM
OF AQUATIC PRODUCTS
COMES FROM
CORNWALL



FOR EXAMPLE TAKE OUR

'SUPER SUMMIT'
AIR PUMP

QUIET AS A CAT'S PURR _____
_____ **ABUNDANT AIRFLOW**

ROBUST CONSTRUCTION - ATTRACTIVE DESIGN
FULLY RUSTPROOFED - SIMPLIFIED CONTROL
EXTRA PNEUMATIC SPARES - MODEST PRICE
WITH ALL-TIME FREE REPAIRS GUARANTEE
AGAINST FAULTY WORKMANSHIP OR MATERIAL

AN

AND ONLY 27/6 RETAIL

E S E S

PRODUCT

From your dealer only

It is regretted that we cannot undertake to supply direct

manufactured by

SINGLETON BROS. (Electronics) LTD.

TRURO HILL • PENRYN • CORNWALL

"I saw your advertisement in PFM"

The House of Fishes

Telephone
HEMEL HEMPSTEAD
4723

IF THE GLASS UPSET should affect the supply of aquariums, please remember we always hold good stocks of Lee Reid and Genyk aquariums—you won't find a good display in the shop however—there is no room—we have separate premises for tank storage and display.

IMAGINE THAT! A certain young married couple, at a loss to know what to read when retiring early, hit on the idea of reading all our past advertisements from this magazine and the other one, and cried themselves to sleep—gospel this! Name and address supplied. We are not contemplating rivalling Giles for cartoonship, nor do we propose publishing an annual.

IF CHAPS WILL BUY our fish, show them and get best-in-show awards, this is up to them. But please don't tell the others—we are bursting at the seams with customers as it is.

WE HAVE BEEN ASKED to quote our STD number: so if you have one of those electrical contraptions of Mr Edison dial 0442 4723 and we can speak person to person. They'll be flying to the moon next!

Don't miss the next thrilling instalment.

77 HIGH STREET, HEMEL HEMPSTEAD, HERTFORDSHIRE

Open 9 a.m. to 7 p.m. Closed Wednesday and Sunday.



In our Showrooms at all times

A wide variety of rare and interesting specimens of tropical fish

Complete selection of Aquatic Equipment

SEND 1/- IN STAMPS FOR OUR NEW 12-PAGE PRICE LIST

OPEN DAILY 9 am—6.30 pm.
9 am—8 pm, each Friday
Half-day closing Wednesday, 1 pm.
Open Saturday to 5.30 pm.
Closed all day Sunday.

keith barraclough AQUARIST

568 GREAT HORTON ROAD, BRADFORD 7, YORKSHIRE Tel: BRADFORD 73372

Please mention PFM when writing to advertisers

Huge stocks of nishiki koi, goldfish, shubunkins, rudd, orfe, tench, moors, fantails, oxygenating plants, bog plants, lilies, etc. Pumps, fountains, Remanoid ponds and liners.

Abramites (M)	Cichlids	King Cobra (XL)	Pipe fish (S)
Aleopetersi caudatus (M)	Convict (SML)	Black delta (XL)	Pristella vittata (M)
Angels	" gold (SML)	Blue delta (XL)	Rivulus cylindraceus (M)
Silver (ML)	Festive (M)	Red delta (XL)	Rashora
Black lace (SM)	Foremouth (S)	Golden (XL)	borapensis (M)
" veil (SL)	Geophagus jurupari (S)	Mogano (XL)	einshoveni (M)
Black (SL)	Jewel (ML)	Gobi	elegans (L)
" veil (XL)	Keyhole (M)	Bumble bees (M)	harlequin (M)
Marble (L)	Marble (M)	Rhino-horn (M)	maculata (M)
Anost. anostomus (L)	Severum (M)	Half-beaks (M)	Red line (M)
Apistogramma	Jack Dempsey (S)	Hemiodon vorderwickleri (M)	Sosorail (S)
agassizi (M)	Texas (SM)	Hatchets	Redtail scissorail (S)
ameovus (M)	Orange chromide (SM)	Marble (M)	vaenifloris (M)
combrinae (M)	Pearl chromide (M)	Silver (M)	Sharks
reintzi (S)	Catfish	Jordanella florides (S)	Red fin (M)
" ramirezi (L)	Callichthys callichthys (M)	Knife fish (striped) (S)	Black (M)
" gold (L)	Pseudohemiglanis macrostoma (L)	Loaches	Silver (L)
steindachneri (L)	Clarias (M)	Clown (M)	Scats (ML)
Archers (M)	C. agassizi (M)	aymonieri (M)	Snakeheads (L)
Aphyosemion	C. albino (M)	Kuli (M)	Sunfish, Black banded (L)
australe (M)	C. auratus (M)	Oreochromis (M)	Swordtails
flavimentosum (M)	C. reticulatus (L)	Modesta (M)	Albino (M)
gardneri (M)	C. spilargenteus (L)	B. subhamkii (M)	Green (M)
wikleri (M)	C. schultzei (M)	Madagascar rainbow (M)	" wagtail (M)
Aplochelidus	C. schwartzi (M)	Monodactylus argenteus (SM)	" wagtail (L)
blocki (M)	C. melanostictus (M)	Mollies	Red wagtail hi-fin lyretail (L)
platyfari (L)	Myxus tengara (M)	Black sailfin (SML)	Red wagtail hi-fin (L)
Acara, blue (SM)	Clown (M)	" lyretail (ML)	Tuxedo red (L)
Australian rainbows	foolsie (L)	Green lyretail (M)	" gold (L)
Barbs	Midnight (M)	Valeria (XL)	Red-eyed red (L)
arvlus (L)	Pangasius (M)	Moenichania oligolepis (S)	Black (L)
Checker (L)	Copina guttata (M)	" pittieri (M)	Red hi-fin lyretail (M)
Cherry (S)	Danio	Metymnia (XL)	Spinny eels (ML)
chola (L)	Leopard (M)	Mosquito Fish (M)	Tetras
Clown (ML)	Pearl (L)	Nannacara anomala (L)	Black neon (M)
Clown (L)	Gene (S)	Nannostomus	Bleeding heart (S)
duckeri (L)	Zebra (SL)	harrisoni (L)	Bloodfin (M)
Ember (M)	Dineros	auratus (L)	Cardinalis (M)
fuscatus (M)	Blue (SL)	marginatus (M)	London paradoxus (M)
fuscicollis (M)	Brown (L)	Oscar (SM)	Glowlight (M)
flavimentosus (L)	Red Heckel (L)	red oscar (M)	griemii (M)
fluying barb (L)	Fighters	Piranha	Platinum (M)
gononotus (L)	Flite (L)	brandi (M)	Lemon (M)
grillus (M)	Female (XL)	masteri (ML)	Nano (M)
indonesian red tail (L)	Flying fox	Platy	Phantom, red (M)
niger (XL)	Siamesis (S)	Red (L)	" black (M)
orphoides (L)	Ipilbeorhynchus kallopterus (M)	Red hi-fin (L)	Pulchra (M)
osteocheilus vittatus (M)	Girardinus metallicus (M)	Red wagtail (M)	Red fin (L)
Roy (S)	(livebearer) (M)	Lemon (S)	Rosaceus (M)
schuberti (SM)	Glanfish (M)	Lemon wagtail (M)	Slender (L)
semilasciatus (M)	Gouramis	Marigold variatus (L)	Sergae (M)
Spanner (L)	Blue (S)	Blue (L)	Silver tips (S)
Tuftail (SMXL)	Blue (S)	Black (M)	Sergae minor (M)
size (M)	Dwarf (L)	Puffers	Flames (S)
" gold (S)	Honey (L)	Perch, climbing (M)	Tilapia peacock (L)
Barilius christyi (M)	Giant (M)	Pseudohelodus inelgnis (M)	" laportii (S)
Black widows (ML)	Leoni (SM)	Pelmatochromis	Weather loach (M)
" veiltail (L)	Cyline (ML)	annectens (M)	White C.M. minnows (M)
Bacone (M)	Ophthalmemus (XL)	faciatus (L)	Xenocara
Butterfly (L)	Snakekin (ML)	kribiaensis (L)	Bearded sucking cat (M)
Blind Cave Tetra (M)	Thick-lipped (L)	subocellatus (L)	Codei (XL) extra large:
Chela labiosa (L)	Guppies	thomasi (L)	(L) large: (M) medium:
	De Gaulle (XL)	Paradise fish (M)	(S) small

All your requirements for successful fishkeeping
Superb quality plants

224 Varieties
Minimum rail order £10
Carriage and packing £2

QUEENSBOROUGH FISHERIES

111 Goldhawk Road Shepherds Bush London W12

Tel. 01-743 2730

Queensborough Fish Farm
Ferry Lane, Hyde End
Wraybury, Staines
Telephone: Wraybury 2885

Hours of business:
Monday, Thursday, 9 a.m.-5 p.m.
Saturday, and Sunday 9 a.m.-7 p.m.

BUSINESS HOURS

Monday-Saturday 9-6
Late night Friday: till 7.30
Closed all day Thursday

"I saw your advertisement in PFM"

14 Picton Place
London W.1
(1 minute from Selfridges)
Telephone Welbeck 0418

Hours of business:
Monday to Friday 9.30 a.m.-6 p.m.
Saturday 9.30 a.m.-6.30 p.m.

The HOBBYIST'S

written for beginners & experts . . .

AQUARIUM FISH DISEASES

Dr. Rolf Geisler



Detection, prevention and cure of fish diseases made easy . . . with emphasis where it should be. Of use to every fish keeper, entirely practical in its approach.

M-516

7/6

BEGINNING WITH TROPICALS

Diane Schofield



Practical, sensible information made easy to understand and easy to apply. Covers everything from choosing equipment to how to train your fishes. With 32 pages of colour photographs.

M-523

7/6

FANCY GUPPIES FOR THE ADVANCED HOBBYIST

Drs. C. W. Emmens & Herbert R. Axelrod



A brand-new book about the enduring favourite of the aquarium world. Colour breeding, genetic selection, feeding . . . every important area covered. Fully illustrated, including colour photos.

M-526

10/6

FANCY PLATIES

Dr. Joanne Norton



Throws a new light on the care and breeding of these interesting and immensely variable livebearers. Shows how to develop fancy strains of platies, completely illustrated, including colour photographs of the world's newest platies.

M-534

7/6

AVAILABLE AT YOUR

LOCAL PET SHOP OR BOOKSELLERS

Please mention PFM when writing to advertisers

LIBRARY



... by the world's leading authorities

LIVING TURTLES OF THE WORLD

Peter C. H. Pritchard



The most complete and up-to-date turtle book available. Covers every known living species, with absorbing, informative detail. Contains more colour photographs of turtles than any other book published.

H-922

75/-

STARTING RIGHT WITH GOLDFISH

Robert Gannon



Universally acclaimed for its presentation of the information goldfish keepers really want to know. Colourful, painstakingly detailed. A truly valuable goldfish reference book.

M-504

7/6

SWORDTAILS FOR THE ADVANCED HOBBYIST

Drs. Myron Gordon & Herbert R. Axelrod



The only book in the world that offers a combination of pertinent information about all of the swordtail species and colour photographs of the beautiful new strains introduced in recent years.

PS-655

15/-

SIAMESE FIGHTING FISH

Drs. Myron Gordon & Herbert R. Axelrod



A colourful and informative book that paves the road to success with bettas for every hobbyist who accepts the challenge of breeding really worthwhile specimens. Outlines sensible, easy-to-use methods of raising, breeding, feeding and caring for bettas. Includes genetics, colour breeding, illustrated with colour photos.

M-536

7/6

DISTRIBUTED IN THE U.K. BY:
T.F.H. (GREAT BRITAIN) LTD
13 NUTLEY LANE · REIGATE · SURREY Phone: Reigate 47305

"I saw your advertisement in PFM"



GIVE YOUR FISH A TREAT...

Tubifex average 10 grms. net weight per container.

British freeze dried fish foods available in conventional and tablet form.



Freeze dried fish food by
CRYOAQUA

Order your supplies *now* from your local wholesaler or contact the manufacturers, Cryogenic Suspensions Limited, for full details of the range including the new shrimp and Tubifex foods in tablet form.

Cryogenic Suspensions Ltd

30 Brookside Walk, Radcliffe, Lancashire. Tel : 061-764 1680

Agents—South Midlands:
North Midlands:
Yorkshire:
Tyneside:
Merseyside:

Fendley, Newark, Aswood Bank, Redditch. Tel: 073-84 2975
R. J. Cook, 134, Horseley Heath, Gr. Bridge, Tipoon. Tel: 021-557 2695
Suzak Aquatic Supplies, Aston Croft, Aston Lane, Aughton, Sheffield. Tel: 074-136 2586
Aquarium Installations, 91, Pilgrim Steps, Newcastle-on-Tyne. Tel: 0632-28839
Water World Ltd., 337, Smithdown Road, Liverpool. Tel: 051-733 1106

Please mention PFM when writing to advertisers

**NOW! See the fish
in your pond**



New, revolutionary "KING BRITISH"
**GARDEN POOL Filtration
PLANT** will give you **CRYSTAL-CLEAR WATER**

Needs very little attention. A highly efficient filter, easy to install, works in conjunction with almost any fountain or waterfall pump and does not impair performance. Same size as average planting orso. Made from high density Polystyrene to withstand outside temperatures down to freezing.

**ONLY
65/-**

Ask for this filter at your local aquarist or pet shop or, in case of difficulty, send cash with order, plus 4/- p. & p. (Money-back guarantee) to:

**KING BRITISH AQUARIUM
ACCESSORIES CO.**
Dept. PFM, Cannon Mills, Union Road, Bradford 7, Yorkshire
or send S.A.E. to above address for free leaflet.

**TROPHY PRODUCTS
NOW MAKES AVAILABLE
NEW FORMULA**

Silicone **TROPHIX** Rubber
AQUARIUM SEALANT

- * The First Name in British Aquarium Sealants
- * Smoother Flowing
- * Easier Application
- * More Economical
- * Fantastic Strength
- * The Cheapest and Best Obtainable
- * As used in Trophy Workshops
- * Will not 'Dry Out', Crack or Craze
- * Suitable for Freshwater and Marines
- * The Ultimate in Aquarium Sealants

ONLY 18/- ONLY

From your local aquatic dealer or pet shop

FREE Construction Coupon with each Tube
In case of difficulty send 18/- P.O. direct
Trophix will be sent by return

TROPHY PRODUCTS

Laurence Drive
Stover Trading Estate
Yate, Bristol

Tel: Chipping Sodbury 2454

YOUR FISH DESERVE A TROPHY

HALVIN®

The complete range of airlift filters
for all aquariums

BOTTOM FILTERS

- HALVIN No. 32 "Babysaver" 7/-
- HALVIN No. 34 "House Type" 9/-
- HALVIN No. 4 "House Type"
Fitted with airstone for
improved lift 12/6
- HALVIN No. 35 Small corner
filter fitted with anchor plate 10/-
- HALVIN No. 36 Medium corner
filter fitted with anchor plate 12/6
- HALVIN No. 37 Large corner
filter fitted with anchor plate 18/-

OUTSIDE FILTERS

- HALVIN No. 12 Small outside
filter 12/6
- HALVIN No. 10 Medium out-
side filter 21/-
- HALVIN No. 17 The "Cham-
pane" filter 30/-
- HALVIN No. 11 Small outside
"Filterfast" 30/-
- HALVIN No. 18 Medium out-
side "Filterfast" 50/-

HALVIN PRODUCTS

Distributed by
AQUATIC HOBBY LTD
Farnburn Industrial Estate
Farnburn Avenue
Farnham Road, Slough, Bucks.

and available from all good dealers

HALVIN & FILTERFAST® MARKS OF
HALVIN PRODUCTS INC., U.S.A.
AND THE SCAN GROUP

"I saw your advertisement in PFM"

At last!

SILICONE AQUARIUM SEALER
at a price we can **ALL** afford!

The **NEW**



SILICONE SEALER

Enough to seal a 36×15×12 tank.
Supplied complete and ready for use,
with nozzle and tube-key, plus full
instructions. Contents 50 cc.

13/6

Retail Price

Say "Goodbye" to leaking aquaria! We strongly advise that every new putty-glazed aquarium be internally sealed with **DATAM SILICONE SEALER**. This results in avoidance of those annoying leaks which might otherwise occur.

- Perfect for sealing leaky old aquariums, too! ●

Trade Enquiries only:

DATAM PRODUCTS, 9 Station Road, Beeston, Notts.

EARLSWOOD
Water Gardens

165 Wood Lane
Earlswood, Solihull
Warwickshire
Telephone 056-46 586

Everything for the Water Garden

Fibre Glass Pools and Cascades
Butyl and Plastolene Pool Liners
Fountain and Waterfall Pumps
Growers of Water Lilies and Aquatic Plants
Large Stocks of Coldwater Fish

JAPANESE COLOURED CARP

Very large selection at
unbeatable prices

Send for free **Water Garden Manual**

Open 9.0 a.m.-6.0 p.m. every day including Saturday and Sunday

Please mention PFM when writing to advertisers

*Neals garden and
pet centre*

Heathfield Road London SW18

telephone 01-874 2037

open 8.30 am-6 pm

BREEDING STOCK

Bristol shubunkins Calico veiltails

We specialize in garden pools,
plants and coldwater fish and
have a vast stock for your
inspection

Over 200 species of tropical
fish usually in stock
and a large selection of tanks
and equipment including
Gro-lux lighting.

*Extensive parking facilities available in our
5 acre Nursery Showground and ariaries*

WHOLESALE RETAIL

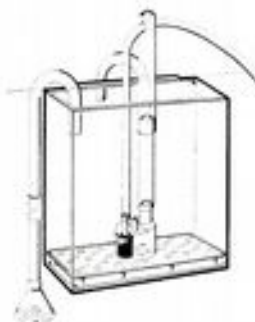
**BONNER AQUARIA
19 BONNER STREET
BETHNAL GREEN
LONDON E.2
Tel. 01-980 1488**

**TROPICAL PLANTS
 FISH
COLDWATER ACCESSORIES**

Importers of Tropical Fish and Plants.
Trade Supplied. Phone or call any time.
Thursdays by appointment only.
Mon.-Fri. (except Thur.) 9 a.m.-8 p.m.
Thurs. 9 a.m.-1 p.m. Sat. 9 a.m.-6.30 p.m.

**HALVIN[®]
No. 17
CHAMPANE[®]**

OUTSIDE FILTER



Air bubble lift for rapid
flow and dispersion of
gases. Silent operation

AT **30/-**

YOUR BEST OUTSIDE
FILTER BUY

From all good dealers

Distributed by

AQUATIC HOBBY LTD

Farnburn Industrial Estate

Farnburn Avenue

Farnham Road, Slough, Bucks.

*HALVIN PRODUCTS INC., NEW YORK
AND THE SCAN GROUP

"I saw your advertisement in PFM"

GILLWAY AQUATICS

14 THE PRECINCT, TAMWORTH, STAFFS. Tel. TAM 5617

149 GILLWAY, TAMWORTH, STAFFS. Tel. TAM 4020

WHOLESALE — AQUARISTS

POOLS, FISH, PLANTS AND PUMPS

We have them all in stock plus thousands of tropical fish

Opening times MON, TUES & THURS 9 a.m.—5.30 p.m. FRI 9 a.m.—7.30 p.m. SAT 9 a.m.—6 p.m.
SUNDAY 10 a.m.—12 noon, 2 p.m.—4 p.m. Half Day WEDNESDAY

WHOLESALE AND RETAIL

250 Tanks on Display
Open till 10 p.m.
for wholesale customers
Wednesday and Thursday
evenings

HARROW GREEN AQUATICS
825 LEYTONSTONE HIGH ROAD LONDON E.11 Tel. 01-539 1250

HARROW GREEN AQUATICS
have now started importing. We are well known in Essex for selling reasonably priced fish and would like to pass this service on to other shops. We are sure that once you have seen the fish that we have to offer for wholesale, you will not hesitate to come back again. Free delivery in London area. Send for our price list.

Please mention PFM when writing to advertisers

NORTH STAFFS A.S. 2nd OPEN SHOW

16th AUGUST 1970

All details from:— K. BALCH (Secretary),
78 COURTWAY DRIVE,
STOKE-ON-TRENT,
ST1 6DU.

A PRACTICAL FISHKEEPING MANUAL



IN
FULL COLOUR

10/6

KOI

By COLIN D. ROE
& ANTHONY EVANS

This new PRACTICAL FISHKEEPING MANUAL from PetFish Publications is the first comprehensive book in English on the fancy Nishiki-koi from Japan.

Colour photographs show a wide range of the available koi varieties; information on the origin of these, as well as practical advice on keeping and breeding koi, is made available for the first time in Britain.

56 pages 8 in. by 5½ in.

Published by

PETFISH PUBLICATIONS

554 GARRATT LANE, LONDON S.W.17

HALVIN[®]

OUTSIDE FILTERS

No. 12



12/6

FOR THE SMALL AQUARIUM

No. 10



21/-

MEDIUM-SIZED OUTSIDE FILTER

From all good dealers

Distributed by

AQUATIC HOBBY LTD

Farnburn Industrial Estate

Farnburn Avenue

Farnham Road, Slough, Bucks.

Books by post for the fish-keeper

- | | | |
|--|---|---|
| Advanced Aquarist
Dr FERDIE GHADJALI 27s 6d | Tropical Fish in the Aquarium
J. H. LODGEWIKS 21s | The Marine Aquarium
WOLFGANG WICKLER 10s 6d |
| All about Tropical Fish
DEREK MCINERNEY and GEOFFREY GERARD 85s | | The Marine Aquarium for the Home Aquarist
ROBERT F. O'CONNELL 35s |
| Aquarist's Guide
JIM KELLY 27s 6d | <i>Water plants</i> | The Salt-water Aquarium in the Home
R. P. L. STRAUGHAN 63s |
| Breeding Aquarium Fish
WOLFGANG WICKLER 10s 6d | A Manual of Aquarium Plants
C. D. ROE 27s 6d | Tropical Fishes of the Great Barrier Reef
TOM C. MARSHALL 75s |
| Breeding Aquarium Fishes
Dr HERBERT R. AXELROD and SUSAN R. SHAW 86s | Aquarium Plants
H. C. D. DE WIT 35s | |
| Encyclopedia of Tropical Fish
Dr H. AXELROD and W. VORDERWINKLER 75s | Biology of Aquatic Vascular Plants
C. D. SCULTHORPE 67 | <i>General</i> |
| Exotic Aquarium Fishes
W. T. INNES 34s 6d | Encyclopedia of Water Plants
JIRI STOODOLA 86s | Aquaria
JIM KELLY 12s 6d |
| Freshwater Fishes of the World
GUNTHER STERBA 90s | Seaweeds and other Algae
C. L. DUDINGTON 26s | Aquariums
ANTHONY EVANS 4s |
| Illustrated Dictionary of Tropical Fish
HANS FREY 80s 6d | <i>Coldwater fish and ponds</i> | Aquarium Care
GUNTHER STERBA 70s |
| Keeping Tropical Fish
LESLIE B. KATTERANS 21s | Garden Ponds
ARTHUR BOARDER 6s | Aquarium Hygiene
HELLMUTH WACHTEL 10s 6d |
| Know How to Breed Egglayers
R. L. CORTE 7s | Goldfish
ANTHONY EVANS 4s | Aquarium Techniques I and II
A. O. JANZE 12s 6d each part |
| Know How to Breed Livebearers
ALBERT J. KLEE 7s | Know Your Goldfish
NEIL TEITLER 7s | Cultivated Tropical Fish Show Standards (P.F.A.S.)
C. VAN DUIN INR. 50s |
| Know How to Breed Tropical Fish
RICHARD HAAS 7s | Koi
COLIN D. ROE and ANTHONY EVANS 10s 6d | Diseases of Fishes
C. VAN DUIN INR. 50s |
| Know Your Guppies
ALBERT J. KLEE 7s | Marsh Gardens
ERNEST RICHARDSON 1s 6d | Electricity in Your Aquarium
L. WARBURTON 2s 6d |
| Portrait of the Guppy
LARRY KONIG 12s 6d | Pond and Stream Life
JOHN CLEGG 2s | Food for the Aquarium and Vivarium
WILLY JOCHER 10s 6d |
| Tropical Aquaria for Beginners
JEAN CHRISTIE 7s | Pond Life in the Aquarium
H. JANUS 10s 6d | Functional Design in Fishes
R. M. ALEXANDER |
| Tropical Fish
DEREK MCINERNEY 6s | The Goldfish
G. F. HERVEY and J. HEMS 42s | Know Your Aquarium
RICHARD HAAS 7s |
| Tropical Fish and Fish Tanks
REGINALD DUTTA 6s | The Water Garden
H. C. WITHAM FOGG 5s | Live Foods for Aquarium Fishes
A. LAWRENCE WELLS 2s |
| | Water in the Garden
D. BARTRUM 25s | Looking After Your Tropical Aquarium
JOHN GRAHAM 2s 6d |
| | <i>Marines</i> | Planning and Decorating the Aquarium
WILFRED WEIGEL 10s 6d |
| | Exploring the Reef
ROBERT STRAUGHAN 66 6d | The Complete Aquarium
D. VOGT and H. WERNHUTH 25s |
| | Know How to Keep Saltwater Fishes
WILLIAM P. BRAKER 7s | The Life of Fishes
N. B. MARSHALL 63s |
| | Marine Aquaria
L. A. J. JACKMAN 33s | |
| | Salt-Water Aquarium Fish
Dr HERBERT R. AXELROD and W. VORDERWINKLER 75s | |

Pet Fish publications

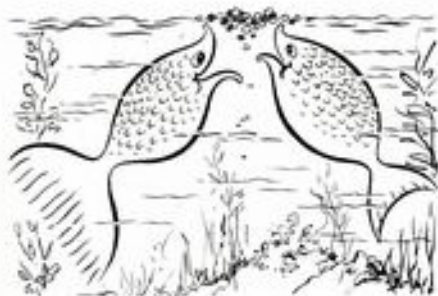
When ordering please indicate your name and address clearly and enclose remittance.

554 GARRATT LANE LONDON S.W.17

Phone 01-947 2805

Please mention PFM when writing to advertisers

It's fun watching fish enjoy FLOATAFOOD



Fish at feeding time add entertainment for family and friends providing even greater pleasure to an already fascinating hobby ... and you'll love watching them as much as they'll love Floatafood.

Floatafood is the complete fish food—contains all known ingredients for health and a good growth rate. Suitable for all pond and cold water fish. It floats for some considerable time and any surplus can be easily removed when your fish have finished feeding. This way it doesn't sink, decompose and pollute the water. Perfect for happy healthy fish



2 oz carton	3/-
5 oz "	5/2
14 oz "	11/-
7 lbs boxed sack	35/-

Note: The cartons are re-usable and make useful household containers.

Available from your local stockist or direct from:-

THE SURBITON AQUARIA

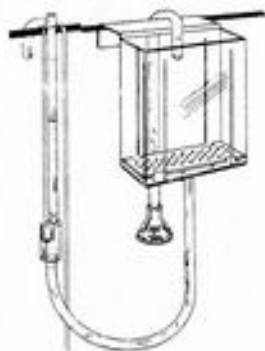
Established 20 years

Box 57, Brighton Road
Surbiton, Surrey

Phone 01-399 6783 Open 9-5.30
Closed Sundays and half day Wednesday

HALVIN® FILTERFAST™

The unique outside filters fitted with patented aerator connector airlifts, giving exceptional return



IN TWO SIZES

HALVIN "FILTERFAST" No. 11
(Illustrated)

30/-

HALVIN "FILTERFAST" No. 18

50/-

SPARE CONNECTORS AVAILABLE
ITEM 11/18K 6/- each

From all good dealers
Distributed by
AQUATIC HOBBY LTD
Farnburn Industrial Estate
Farnburn Avenue
Farnham Road, Slough, Bucks.

"I saw your advertisement in PFM"

Tachbrook Tropicals Ltd.



Tachbrook Tropicals is much more than a shop. Its offices are constantly in touch with importers and exporters all over the world. International visitors who visit London make Tachbrook a must to visit. No wonder! From the ground floor up, Britain's finest display of everything of interest to the aquarist is set out in modern spacious surroundings. Experienced staff are always at your service and ready to give advice or help.

Over 250 varieties of Tropical Fish

On the ground floor hundreds of tropical fishes in fully planted aquaria can be viewed in the pleasantly lighted Aquaria Section. You have as well an extensive variety of foods and equipment to choose from.

Aquaria and Equipment of Every Kind

The first floor showroom has displays of aquaria and stands to grace any home in all designs and finishes. Rock sets to enhance aquarium furnishings are set out for selection.

Over 200 varieties of Aquatic Plants

Plants specially imported by Tachbrook Tropicals, as well as a full range grown at the extensive private fish and plant nurseries owned by Tachbrook Tropicals, are available for selection by customers at these London showrooms.

Open every weekday. National Car Park 1 minute away (local parking unrestricted after 1 p.m. Saturday). Close to: B.O.A.C. Terminal (10 minutes), Victoria Main Line and Underground Stations (2 minutes) and Victoria Green Line Bus and Main Bus Terminals (2 minutes).

244 VAUXHALL BRIDGE ROAD, LONDON S.W.1

Telephone 01-834 5179

of Victoria

Managing director's office
(top right), reception
lounge and second floor
general office



Below: two views of the
split-level first floor
showrooms



Left and right (below) are views of the
ground floor equipment sales area and
Aquaria Section. All sales tanks are of
stainless steel



Shirley Aquatics LIMITED

STRATFORD ROAD · MONKSPATH · SHIRLEY · SOLIHULL
WARWICKSHIRE Phone: BIRMINGHAM SHIRLEY 1300

Water Plant Nurseries and Fish Hatcheries

LATE SHOPPING EVENING THURSDAY UNTIL 9 p.m. FROM MAY TO SEPTEMBER

Introducing—

COLIN ROE'S



Price
10/- per bag
(weight not less
than 1 lb.)
post paid

THE NEW SANDER OZONIZER

Incorporating a new and revolutionary Ozone Chamber
Now Manufactured under Licence by Shirley Aquatics Limited.

What is Ozone?

An unstable molecule comprised of three atoms of oxygen which readily breaks down to release active atoms of oxygen.

What does Ozone do in the Aquarium?

Burns dangerous protein and kills bacteria.
The Cilia of Protozoa are burned thus preventing them from swimming and feeding so that they die.

What is the overall effect?

Cleaner, safer water

INVALUABLE FOR MARINE OR FRESHWATER AQUARIA

No. 2. Large enough for 4 sixty gallon aquariums. Price £15 15 0

No. 3. Large enough for 8 sixty gallon aquariums. Price £17 17 0

DIRECT FROM US POST FREE OR FROM ALL GOOD DEALERS, TRADE ENQUIRIES INVITED

For success with Marine Tropicals—	5 gallon size	9/-
NEW TROPIC MARIN	10 gallon size	17/6
The ready-to-use artificial sea salt	20 gallon size	32/6

WITH GUARANTEE
From us Direct or from your Dealer

Postage:
4/6
any quantity

This salt makes artificial sea-water almost indistinguishable from natural sea-water.

VISIT OUR 3½ ACRES OF WELL-DESIGNED WATER
GARDENS AND SEE FOR YOURSELF STOCK OF
INCOMPARABLE QUALITY

Wonderful selection of Young and Adult Pond Fishes on display. Golden Orfe, Golden Tench, Goldfish and Fancy Varieties—Shubunkins.

NISHIKI KOI

Send S.A.E. for list, or better still come and see them.

PLEASE NOTE—All enquiries requiring a reply **MUST** be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 8 miles from Birmingham. Midland "Red" Bus No. 150 from Bus Station, Birmingham, passes the door, slight at "The Crown," Monkspath.

HOURS OF BUSINESS—Weekdays 10 a.m.—6 p.m. Sundays 10 a.m.—12.30 p.m. for sale of plants only.

CLOSED ALL DAY EVERY MONDAY

TERMS OF BUSINESS—Cash with order please. Fish sent by rail. Tropical minimum order £7 10s., insulated container and carriage 30/-. Cold water minimum order £5 plus 20/- can and carriage. Plants by post (minimum order 10/-) please add 2/6 post and packing.