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Practical fishkeeping

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10

Win a tank

Win a brand new aquarium set-up worth £150 in our FREE Spot the Difference competition.

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Pond Landscapes

Next to fish and plants, surroundings are important to a pondkeeper. Experts Roger Cleaver and Peter Bull explain landscaping.

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Generating Guppies

Nick Fletcher looks at ways of breeding Guppies to get top results.



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Aquatic Queries

Six pages of expert advice on your aquatic problems... marine... tropical... coldwater... pond.

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Cooling down!

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Fishkeeping in Paris

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Tank Maintenance

This month we give the PRACTICAL FISHKEEPING tropical aquarium a facelift and a clean-up.

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Perfect Planting

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Holiday offer

Join a trip to Israel plus news of what's going on in the world of fishkeeping.

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On File

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The editor's look at fishkeeping PLUS news of what's in the bumper September PRACTICAL FISHKEEPING.

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Yorkshire Festival

Preview to one of the biggest aquarist events of the year.

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Undergravel Catfish!

The amazing story of a disappearing Catfish told on YOUR page—the Letters Page.

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Highrise Fish

Dr David Ford jets to Japan to see an aquarium on the eleventh floor of a highrise block in exotic Tokyo.

Cover picture: Looking more like a snake than a fish, the Reed Fish (*Calamoichthys calabaricus*) from the Niger Delta in Africa. Picture by Heather Angel.

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What's on

Dates for your diary... shows... meetings... events.

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Beating Disease

Our series continues with a profile of the Aquaculture Centre in Kent where our disease experts Andrew Stagg and Ken Digby have their laboratory.

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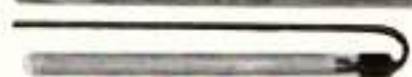
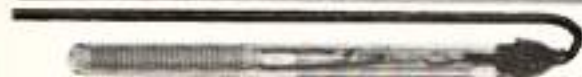
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Depends on the aquarium capacity and room temperature. This table gives a guide (if in doubt choose the highest wattage).

Aquarium capacity (gallons)	Room heating conditions		
	Heated day and night	Heated daytime only	Generally unheated
3	50W	50W	75W
6	50W	50W	100W
9	50W	75W	150W
12	75W	100W	150W
16	75W	150W	200W
20	100W	150W	200W

NO8



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Landscaping your pond

ROGER Cleaver and Peter Bull are well qualified to write about pondkeeping for PRACTICAL FISHKEEPING readers each month.

Both are experts on the subject with Roger specialising in fish and Peter being a pond plant specialist.

Both men come from Coventry, W. Midlands, and both are managers of aquarist shops.

Roger is chairman of the growing Midland Kai Society.



Left: A beautiful spot of landscaping with waterfalls, paths and a little arched bridge.

We have covered building ponds and filters over the past few months. But we haven't mentioned what to do with the pile of soil and debris that is left when the pool is installed!

The answer to that problem is simple:—landscape it into a beautiful rockery.

The design of a rockery is as important as the pond itself, because one enhances the other, and being above ground level it is the first thing noticed when viewing from a distance.

It should be made to blend in with the shape of the pond and the surrounding garden. Then it does not give the appearance of soil being dumped by the pond!

Having decided on the general shape, the method, if a waterfall is planned, is to create the water course. There are several ways of achieving this, firstly by using pre-formed waterfall units which are made of either fibreglass or vacuum formed PVC.

These are simply bedded down into the soil overlapping one another to create a series of falls.

Secondly, you can use pool liner material but this can present problems if distance falls are required rather than a stream.

Another method is to use concrete, which, if constructed carefully, will give excellent results.

To elaborate a little more on these methods, starting with the pre-formed units, as these are bedded into the soil with the outer of the higher unit overhanging the one below, make sure that the water falls into the next unit and not on the soil.

Do not make the falls too high as the splash from one unit to the next will waste water and erode away soil. The units can be staggered down the bank rather than in a straight line.

To imagine a natural stream when building any form of waterfall and make it look as though it flows from under a rock or something similar.

Also remember that most water-courses need to run in a shallow indent rather than deep, so sink the units into the soil using your rocks to hold back any loose soil.

Thirdly will soon soften the initial stark effect. Use a large rock behind your top unit to cover the pipe from the pump up under this stone as camouflage.

Using a liner to make a waterfall needs more thought and work to achieve a natural effect. First dig out the shape you wish to make, cutting out the steps for the actual falls.

If the soil tends to crumble, then use something like a piece of paving slab to give a good raised edge, again do not make the slope too great, as, not only have you the space to consider, but also the liner may be water behind the water and look unsightly when it is not in operation.

However, to a certain extent, be hidden by landscaping with flat rock against the face and covering the water to cascade down this.

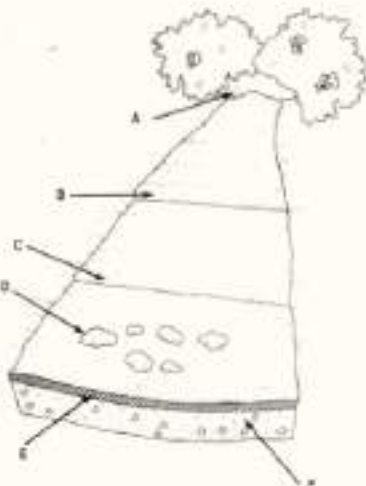
When the shape is ready make sure there are no sharp objects and lay in the liner, remembering that it is pulled fairly taut over the rocks so that any folds that do occur do not act as channels for the water to pass.

Having set the liner in place, carefully arrange rocks inside the stream to hide the lining.



The fibre glass pool method of creating a waterfall.

Build a stream across the garden



- A Stream appears from under rock or shrub.
- B Series of small waterfalls
- C Shallow flow over falls.
- D Small rocks break up water.
- E Cement rendering.
- F Reinforced concrete.

Pebbles may be used in the base of each unit, which will give a pleasing effect.

Concrete probably gives the greatest scope, but it must be constructed properly, otherwise it will leak and crack.

Construction should be the same as for a garden pond with a good sound base making sure that the ground is well prepared.

Begin by making a round shape out of concrete, bearing in mind that rocks are going to be placed with this first layer, so make it fairly wide.

Next, bed into this the required rockwork to form the shape and character of the waterfall using block shapes for the sides and flat pieces for the water to run off to the next pool. Arrange the odd smaller pieces to break up the flow in the streams.

Height of falls does not matter, it depends on the total size of the waterfall. Unless the pond is very large, too much drop back into the water can cause too much disturbance.

The next task is to render the complete watercourse making good where the rocks are imbedded into the base and finally the surface has to be sealed to prevent lime from leaking into the water and killing your fish.

Laying out the rest of the rockwork can now be completed, blending in with the water course. When laying rocks to get the best effect, examine them to see if there is any form of strata. Lay them with the strata all the same way, or with the face which has the most character showing.

Try to use shapes as though they are part of each other.

Landscaping your pond

Treat them as icebergs, bury them so that they appear to be coming out of the ground and not just dropped on top.

A rockery should have little soil actually showing, the rocks can be laid in tiers as though resting on one another with small pockets between where rockery or alpine plants will grow happily giving a natural appearance that will need very little maintenance.

The best types of rock to use are the very hard impervious varieties like Westmorland, or local stone that has been well weathered. Be careful not to choose soft rock as it will tend to break up after the frosts have penetrated and frozen the water within them.

If there is no alternative but to use a soft type of rock then give them a few coats of silicon sealer which is used in the building trade on walls.

A natural progression from the waterfall on a rockery is to build a stream dividing the garden and joining the two halves by a bridge.

Method of construction is again simple. Start by digging out the desired shape, there is no need to make it too deep as a rippling effect over small stones is better than a deep channel which may well end up looking like a canal!

Then lay down a sheet of polythene and commence building with cement and rocks to get the desired shape.

It is best not to have large rocks protruding above the edge as if it is across a lawn, mowing may be difficult.

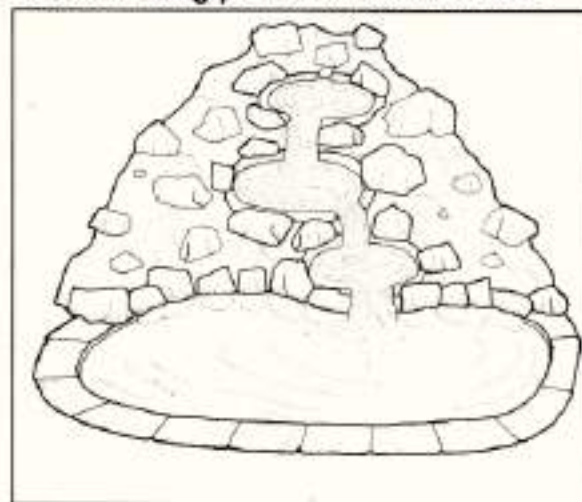
Using pool liners is another method of constructing a stream. Make small steps to give falls and cover the whole of the bottom with fairly large pebbles. A rustic bridge will set off the whole effect.

Pipework from the pump can be laid beneath the stream bed. Obviously, this idea can only work if the ground has a slight slope



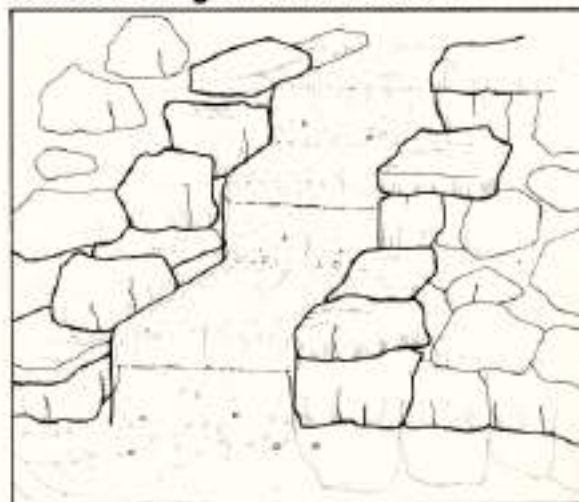
One of the fountain effect you can buy at most water garden centres.

Waterfall using preformed cascade units



Site the units carefully so that the water does not miss one and erode the soil. This type can look very natural.

Waterfall using rock and concrete



An attractive and natural looking way of creating the effect.

towards the pond unless you are prepared to raise the levels to accommodate the flow back to the pond.

One point which should be mentioned is that if you plan a large stream, waterfall or a pond at the head of any of these features bear in mind that it is important the main pond has sufficient volume of water to cope, as many gallons have to be taken out via the pump to create the overflow back to the pond.

You may find you have emptied the main pond before sufficient water has had time to return to keep up the level.

Other features which can be incorporated into a stream are items like a water wheel or a windmill using the water to turn the sails.

When building a pond into a patio, obviously waterfalls are not practical. So to get moving water one must either have a plain fountain or one of the many statues which are on the market.

These are usually made for the pond centre but there are a few which are made to stand on the surround and spray or pour water back into the pond.

Your local aquatic dealer will be able to advise you of the types available. If the thought of a pond in a patio seems a little bit dangerous—allowing people to drop in easily, build the pond half or totally above the ground level.

This not only makes it safer, but the surround can be a useful extra seat, you can



A collection of ideal Alpine plants.

be built in planters to give added colour with heathers, germs, comfers, or leaf-plinths in round tubs on.

The sight and sound of moving water brings any garden to life and we have occasionally been asked if it is possible to have a water feature without a pool, or water garden.

The answer is yes. It is possible to create a very attractive feature that will enhance any garden or patio. The method of construction is very simple.

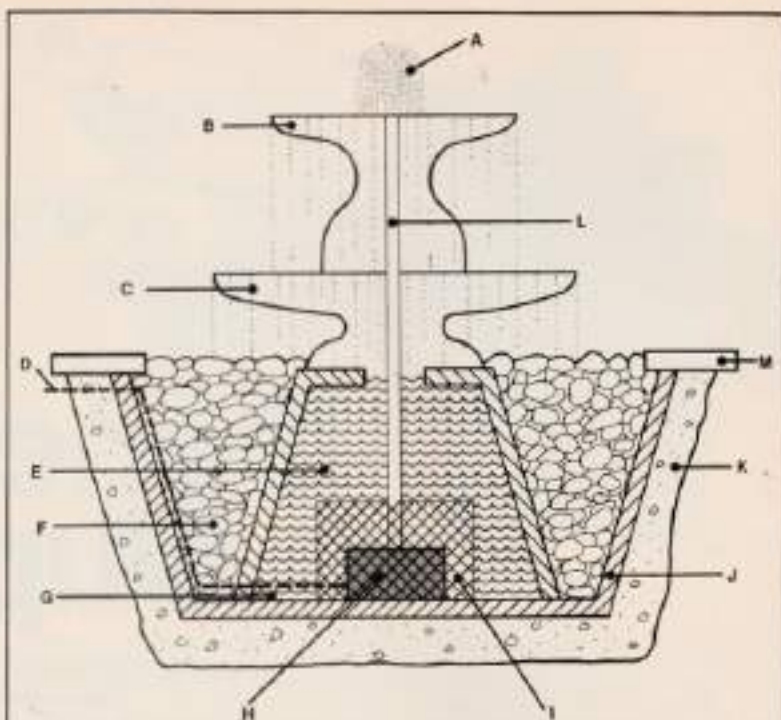
First dig a hole approximately three to four feet in diameter to a depth of 18 inches and concrete as you would for a pool with three inch reinforced concrete and skimmed with about one inch of cement with a waterproof agent added.

The finished article should be saucer shaped with a flat bottom.

Next, build on to the bottom a hollow plinth which is wide enough at the base to house a small submersible pump leaving a hole large enough to enable the pump to be withdrawn when required.

The plinth top should be flat and just below surface level.

On top of this plinth may be stood any of the fountain ornaments offered for sale, but



Fountain feature without pool or visible signs of water

- | | |
|-------------------------------|---|
| A Water bubbles out. | H Submersible pump |
| B and C Two bowl arrangement. | I Grille over hole in plinth for pump access. |
| D Mains cable. | J Cement rendering. |
| E Water. | K Concrete. |
| F Very large pebbles. | L Pipe connected to pump. |
| G Hollow plinth. | M Patio surround. |



Another attractive variety of fountain effect.

for the best effect ornaments having bowls should be sought.

Having connected the pump to the electrical supply and to the ornament by means of a short length of hose the entire pool should be filled with very large pebbles to surface level and then filled with water.

When the fountain is switched on the water will fall from the bowl back onto the pebbles percolating back into the pump which is running in water inside the hollow plinth. Obviously on a small feature, fountain jets should not be used, the water simply bubbling out of the ornament top, cascading into any bowl attached, and from the bowl back into the reservoir.

Getting back to more simple stuff, the planting out of rockery, watercourse or stream must be given some thought.

Alpine plants are the best choice as many of these have good ground cover together with a profusion of colour throughout the summer. And, if used in conjunction with heathers and dwarf comfers this combination will give colour all the year round.

To list plants would be very difficult as we all have our own ideas on colours. Any good garden centre will give you advice on which plant will do what and when they flower.



NICK Fletcher is a regular writer in **PRACTICAL FISHKEEPING**. He is a full time journalist with *Angling Times* and as well as catching 'em Nick is a fanatical fishkeeper. He has kept many species and bred many successfully.

Nick (29) is still expanding his fish set-up. He lives near Peterborough, Cambs.

Generating Guppies

Breeding Guppies is not as simple as it looks says Nick Fletcher

HOW many aquarists proudly boast "I've bred such and such a fish" when what they really mean is the fish have bred themselves?

This is particularly true of the livebearers—platies, mollies and guppies—which are so tolerant of indifferent conditions that they will continue to reproduce as a matter of course; if the fishkeeper wishes to raise successive broods, all he has to do is separate them from the parent fish until they are no longer small enough to be regarded as food.

The indiscriminate cycle will continue from generation to generation. Depending on the pedigree of the parent fish, the young will either breed true—resemble their parents in every respect—or differ in one or more characteristics of colour, shape or finnage.

It is only when the fishkeeper, through a study of simple genetics, is able to predict the outcome of a mating between dissimilar parents that he can be said to be actually 'breeding' his fish. When offspring are no longer a lucky dip, it is plain that he is taking steps to cut out the element of chance. Then fish breeding takes the step from being a hobby into science.

The laws of genetics were outlined by an Austrian monk, Gregor Mendel, in 1865, after experiments with peas in his monastery garden. What he discovered is best illustrated by looking at a crossing of a male albino guppy with a female wild-coloured fish.

In order to demonstrate Mendel's first law, one must first be sure that both parents are themselves of a pure line... that is, that they are genetically stable. Fish of this type are called homozygous, and if bred with another exhibiting the same characteristics, will produce identical young.

If we take our male albino and mate it with the female wild guppy, we might expect one of two things to happen... either half the brood to turn out like the father, half the mother, or the whole brood to be a

compromise colour between the two. What in fact happens is rather different.

From homozygous parents, the first generation of young will all be of wild coloration. But something sets them apart from their mother, even though they look just like her, and what this is becomes plain if a male and female fish from this first, or F1 generation, are mated together. Seventy five per cent of their offspring will still have the wild colour, but 25 per cent will be albino, like their grandfather.

From this example, it can be seen that Mendel's first law, all F1 descendents are uniform, is true. And equally, with the emergence in the F2 generation of the albino characteristic, we can see the truth of Mendel's second law, which states that here the characteristics of the parent generation reappeared.

There is not space here to go into the biological reasons why these laws always hold true, but straightaway we can put them to use.

For example, a dealer may be offering a particularly fine example of an albino guppy which you would like to breed yourself, for pleasure or for profit. But often, he will have only male fish for sale, believing that if he holds back the females, he will corner the market.

All you need do is apply Mendel's first and second laws, and you will eventually arrive with albino guppies of both sexes... providing you ensure that the wild coloured female you use for breeding is truly homozygous.

Let's take the process a stage further, to short cut the time needed to produce a quantity of albino guppies. It involves mating



Male Neon Guppy and female Lyretail in the **PRACTICAL FISHKEEPING** tropical tank.

PRACTICAL FISHKEEPING

females of the F1 generation with their albino fathers, or F1 males with their albino mothers. This 'back crossing' will produce heterozygous wild coloured fish and homozygous albinos in the ratio one to one.

The genes which produce a wild coloured fish are said to be dominant, because they mask the effects of the albinism in the F1 generation and only if F1 fish are mated together does the albino characteristic reappear . . . and then only in a minority of cases.

Albinism is thus said to be a recessive characteristic, as is any other of the so-called 'fancy' colouration found in guppies today. But it can easily be 'fixed'.

Some of the more complex colouration patterns found in guppy males, however, can only be passed on from father to son because the genetic building blocks determining the pattern are found only in the male chromosome. This process of sex-linked inheritance must not be confused with traits that appear only in male fish by virtue of their sex—like the long fins of the Siamese fighting fish. These traits are suppressed by the female sex hormone, although by injection of male hormones into a female fish they can be brought out.

Sometimes a sex-linked trait may be suppressed by dominant factors in the mother fish's chromosomes, and at other times although a trait may be present, it is masked by another. A good example is where black colouration obscures an iridescent spot on the tail.

The factors determining colour are complex enough, but combine them with those responsible for the shape of a fancy guppy's fins and our problems really start.

The most popular tail shape among breeders, the veiltail, is the result of an interaction between two dominant genes, one sex-linked to the male and one to the female. These are the gene which causes the double sword or lyre tail and the colour gene responsible for a yellow tail. If a male veiltail is bred with a normally finned and coloured female, the resulting brood will contain no veiltails because the two genes jointly responsible for that trait are segregated. But they will come together again in the next generation to produce some veiltails, along with lyre tailed males, females with transparent tail fins and females with the yellow tail. It is the action of the yellow colour gene which causes the space between the upper and lower lobes of the lyre, or double sword tail to fill up and become the veiltail.

Some colour varieties of guppy turn out to be a combination of other colours, which only become apparent in the F2 generation. If for example a white male guppy is mated with a wild coloured female, all the F1 progeny are wild coloured, as one would expect of Mendel's first law. But if two F1 fish are mated together, wild coloured, blonde, blue and white guppies appear in the ratio nine wild, three of each new colour and only one white. So only on sixteenth of the F2 generation is of the expected colour. If, on the other hand, one backcrosses the white parent fish with its heterozygous children, the yield is improved to 25 per cent white fish.



The male Neon Guppy in our office aquarium. Colours go through reds to deep purple.

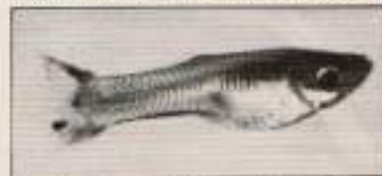
Even at this stage, we barely touched on the possibilities opened up by the laws of genetics when applying them to guppy breeding; it is vital, though, at whatever stage you reach, to keep detailed records of matings and crossings in a card index which will quickly build into a pedigree of your favourite fish varieties. On these records should be entered details not only of the female guppies of the parent generation, but the males too, together with the date of birth

of the young and the ratio into which they are separated regarding colour and finnage.

There are two pitfalls to note and avoid. Guppy females have the ability to store sperm from one mating which will fertilise anything up to ten different broods. So it isn't safe to assume that just because a female gives birth and is immediately mated with another male, the progeny will be that male fish.

Equally, if you buy a female with a view to establishing a breeding stock, make sure she is a virgin fish, and hasn't been unwittingly mated with a male in the aquarist dealer's shop.

Finally, you will have to operate your own segregation system once your fish begin to breed, otherwise unwanted crossings will occur. The only safe way to separate the males and females as soon as they are sexually distinguishable by the growth of the male gonopodium. Guppies, left to their own devices, will propagate their own kind at as very early age.



One of the Guppy fry already showing the characteristics of its father the Neon specimen.



A close-up of a female Guppy—note the gravid spot on her belly.



AQUATIC QUERIES

Research by Dr. David Ford.

Plastic plants for Metynnis

I HAVE a 30x12x15 tank stocked with six Metynnis, each approximately 2 1/2 in long. I have tried keeping several types of tough leafed plants, but all have been eaten with the same relish.

I would like to add some roots or branches, but do not know whether they need treating in any way and if so, with what?

My other problem is that the fish seem to be fighting amongst themselves. At the moment there is no serious damage apart from a few torn fins. According to all the books I have read these fish are supposed to be peaceful with each other. They are well fed and it is

a complete mystery to me why they are fighting. I would appreciate your views on the subject.—**B. Cowens, Market Harborough, Leics.**

Metynnis will chew plants and the only solution is to use plastic ones. Roots and branches scavenged from rivers are usually water-logged and useful for decoration, but you must boil them first to sterilise and remove soluble material. Bark is available at aquarist shops for behind the tank decoration.

Young Metynnis are peaceful but trouble develops as they grow. Separation is the only answer.



Myriophyllum—plants like this don't stand a chance.

Feeding my Oscar



The Oscar—he should eat almost anything.

I OWN a tropical freshwater set up consisting of a 36x12x15 bow front tank with an Eheim 2016 power filter. Every week I remove 30 litres of water and replace this with ordinary tap water which has been standing for 7 days, to this I add boiling water to bring it up to the correct temperature.

No chemicals are added. The occupants consist of one six inch Regular Oscar, one two and a half inch Pleocostomus and three three inch Kuhli Loaches.

Firstly I would like some advice on alternative foods for my Oscar and how to prepare fresh foods (beef heart, beef liver etc.), and how to store them.

I have tried such dry foods as Aquarian Carnivore flake and freeze dried Tubifex worms, but he rarely pays much attention to them and prefers garden earth-worms when available.

Could you also advise me on what types and sizes of fish to keep as tank mates for my Oscar with my present set-up? Also in the near future I plan to set up a 15x15x60 tank with my Oscar and whatever fish I have at the time, could you please advise

me on filtration, heating, lighting and number of fish?—**R. R. Fletcher, Ipswich, Suffolk.**

You should have no trouble with introducing other fish with your Oscar providing they are large enough not to be swallowed. The Oscar is usually an amiable fish. The Tinfoil Barb makes a good contrast in appearance and habits while being just as big, eventually.

You should have no trouble in feeding the Oscar. Any bite-sized food from your kitchen will do, from peas to cheese, as well as the meaty foods.

To ensure trace elements are supplied bury a flake or two of your Aquarian Carnivore Food inside the chunky food.

Since you can feed table scraps there should be no shortage problems, but if you wish, wrap chunks of beef, offal, fish, shrimp etc., in shrinkwrap or polythene and store in the freezer compartment of your fridge.

You cannot say how many fish the 60 inch tank will house, since it depends on the fish's size—try to keep stocks of large fish to one inch of fish per 244 square inches of surface area.

Is this a Porthole Catfish?

I WOULD be grateful for information about catfish of the genus *Dianema*. I purchased one recently but could get no useful information about it and can find nothing in reference books except a picture of *Dianema urostrifata*.

The fish I have is a plain brown one, similar in shape to *urostrifata*, but unmarked save for a diamond shaped patch of lighter brown on its head.

Will it stand brackish water?

Has it any special feeding requirements? Is it safe with smaller fish?

I had hoped to use it as a scavenger in a tank of Malawi Cichlids—hence the query about salt, but if this is impractical it would mean either a general community tank or to dispose of the fish.

Will *Haplochromis burtoni* do well in hard and slightly salt water with Malawi Cichlids, or are its requirements for health different? Again, I had hoped to

use these in a tank with a variety of Malawi Cichlids, but I am hesitant without further information.—**Rev Clifford Charlton, Lancing, Sussex.**

There are two species of *Dianema* catfish that are almost identical in shape, the Stripe-Tailed Catfish (*Dianema urostrifata*) and the Porthole Catfish (*Dianema longibarbis*).

The Porthole is so named because of a row of small spots on its otherwise plain light brown body.

However, these spots may be random or absent in different varieties, so you probably own a *D. longibarbis*. If so, it is a peaceful fish uncritical of water conditions and will eat all foods, it should therefore adapt to your Malawi Cichlid tank.

Haplochromis burtoni (Burton's Mouthbrooder) is an African Cichlid but its natural waters are neutral to slightly acid. It is a tough fish, however, and should adapt to the waters of your Malawi Cichlid tank.



Burton's Mouthbrooder—should adapt to a Malawi tank.

Tiger Barb breeding problems

I HAVE successfully bred live-bearers in my 35 x 12 x 12 tank. I would now like to try and breed Tiger Barbs in my 24 x 12 x 15 tank. I have eight, five females two inches long, two males the same size and a male 2½ inches long.

Five times by placing different kinds of spawning medium in the tank I have successfully collected thirty or so eggs, but for some reason they never hatch out.

After a week they gather fungus or something similar. I tried placing a new male in the tank to see if the others were sterile, but with no success.

The water temperature is 78°F and there is an undergravel filter which is run from a Rena R 301 pump. Please tell me where I am going wrong?

Would it be safe to collect rainwater from a garden shed with an asbestos roof? If not could you suggest some other

way? Could you also tell me what kind of plants to use with Tiger Barbs so they seem to nibble away the ones I have?—**Steven Brown, Leeds, Yorks.**

The Tiger Barb (*Barbus tetrazona*) is one of those popular aquarium fish that have been bred into many varieties (Albino, H-Barb, Scaleless, Moss-Green etc.).

You may well be trying to cross-breed these varieties and this would explain the low fertility. Perhaps you should change the parent fish again. Optimum conditions are about 25°C, pH 6.5 and hardness 100 ppm.

You may collect rainwater from an asbestos roof (especially if a year or so old). Filter before use and store in a lidded container to keep out insects and algae etc.

Tiger Barbs do not usually destroy plants.



Tiger Barbs—problems with breeding are not rare.

Ideal community Characins



Red-eyed Characin—just one of over a thousand species.

I INTEND setting up a tank containing members of the Characin family only. Would it be advisable to use peat on top of the gravel?

I have heard that subdued lighting is more suitable for Characins, therefore what type of plants would thrive in these conditions?

What wattage of fluorescent tubes would be required for a two foot tank and a three and a half foot tank?—**Neil Reid, Greenhills, East Kilbride, Scotland.**

No, you cannot layer peat on top of the gravel. The peat will

stir-up too easily and foul the tank, also the gravel will displace the peat anyway in time because the largest pieces in a mixture always work their way to the top irrespective of weight.

The Characidae are a huge family, some 1,500 species at the latest count, so you cannot really set up an ideal tank for all these fish. Most are good community fish because they are colourful, peaceful and undemanding. Hence the typical values for community tanks are applicable eg a 15 Watt fluorescent for your 2 foot tank and two 20 Watts for your 3½ foot tank,

Superb Silver Shark

I HAVE recently purchased a Silver Shark (*Balantiocheilus manopterus*) and in all my books I can find little or no information regarding this fish.

My shark is feeding on a diet of ox and pig's heart, but still accept no flaked or dried food at all. He is seven inches long and fairly well built, but I am rather concerned that this diet that I'm feeding him on is too rich or may do him some harm.

I would like your advice on what else to feed this fish and what are its water needs and favourite environment?

As I feel this fish is a wonderful specimen I would like to try showing him, but although he's kept fish for a number of years I've no idea on this side of the hobby and would appreciate your advice plus any information you can give me on how this fish can be transported from show to home with the minimum of upsets.

Finally, if any other reader has advice and tips on Silver Sharks I would appreciate their letters and comments.—**Ian McLuggan, Greenwell, Lincs.**

Balantiocheilus manopterus is not usually called the Silver Shark, but the "Bala Shark". It is an active, but peaceful fish that can jump out of the tank, so keep it covered!

It prefers neutral or slightly



Red-tailed Black Shark—a close relative of the Bala Shark.

alkaline waters at 74°F to 78°F. It grows to 14 inches in the wild but aquarium specimens are around five inches. It prefers live food but there are reports of a fondness for boiled oatmeal.

Your diet of ox and pig heart is not too rich, in fact it is too poor, being low in essential nutrients such as Calcium, Phosphorous and Vitamins A and D.

You must supply alternative foods such as earthworms, garden insects, chopped meats, fish, crab, prawn, shrimp and if the fish refuses flake food, then bury a flake within a piece of the heart to ensure trace elements are supplied.

Your second question is about showing the fish—we recommend "The Art of Showing and Judging Fishes of the World" by W. D. Gilding published by the Yorkshire Association of Aquarist Societies. Contact their secretary Mr D. Greenwood, 59 Worsley Rd., Immingham, York-shire, DN40 1DF for more details.



Brackish water

I AM setting up a brackish water aquarium 36 x 15 x 12 in stocked with Monos, Scats and Puffers. Could you please give me some advice on the kind of gravel to use, the amount of lighting necessary so as not to cause large amounts of algae, and the kind of decoration that is preferable?

What kind of plants can be grown in brackish water, if any, and what kind of filtration is best? Finally are there any books on the subject of brackish water aquaria?—K. J. Churchouse, Eastleigh, Hants.

Most aquarium books contain a chapter on brackish water fish, but I do not know of a publication devoted to the subject.

Treat the tank like a marine set up with biological filtration and the usual partial water changes. You can use the artificial seawater salts, but dilute the normal solution 1 part to 4 parts tapwater (S.G. 1.005).

Create turbulence with a strong aerator to simulate natural conditions. 80°F is an ideal temperature.

Few plants are available, but some aquarist claim success with Vallneria, Hygrophilla and Cabomba, if acclimatized slowly, and Java Fern (*Microsorium pteropus*). Plastic plants are probably best.

Choose fish from Monos (*Monodactylus argenteus* or *M. Sebae*); Glassfish (*Chanda ranga*); Archerfish (*Toxotes jaculator*); Target fish, (*Therapon jarbua*); Goby, (*Brachyogobius nanaus*); Puffers, (*Tetraodon plemburgensis*); Scats, (*Scatophagus argus*) and, of course, the Black Molly, (*Poecilia Maxicana*) which will not show the fungus problems so often seen in the freshwater tanks.

All about Marines

Research by Dr David Ford.

Invertebrates

INVERTEBRATES including Starfish, Scallops and Live Corals are the first inhabitants of my marine aquarium. I would appreciate your thoughts on the fish that would live compatibly with such creatures—especially the Live Corals.

I've read that small Gobies, Blennies, Scorpion Fish and smaller Surgeon Fish and Angels would be suitable. Is this correct?

The tank is 36 x 12 x 18 and I would also like to know how many fish I could add bearing in mind that I hope to add more "Inverts" including anemones?

I regularly hatch my own brine shrimps which I feed to my freshwater fish. Are these suitable for marines?—Steve Lawrence, Cambridge.

Yes, the listed fish will be suitable for your invertebrate tank. The fish to beware of are invertebrate feeders, especially "Long-nosed" fish who feed off Live Corals.

A 36 inch tank will hold 12 inches of marine fish irrespective of the invertebrate levels. And since the latter do not make significant demands on the oxygen levels, more invertebrates may be added as required.

The brine shrimps are excellent for the small marine fish, and for many invertebrates.

Moody Angel

A LETTER was written to your "All About Marines" page about a mystery Angel/Butterfly fish by Mr C. Arnold from Bath, Avon. I have just got a book out of the public library and I would say that mystery fish is a *Chaetontoplus mesoleucus*.

It comes from the Indian Ocean and is classed as an Angel. However, no common name is known.

Three years ago I bought a juvenile, which was said to be Silver Angel (freshwater). Now that it is an adult it has developed a rosy coloured head and no stripes on the body. The amount of red changes according to mood, is this a freak or a rare species?—S. Hickmott, Beverley, N. Humberside.

Thank you for the information about mystery fish. We think you mean the *Chaetontoplus mesoleucus* and the common name is *Vermiculated Angelfish*.

The colour patterns are noted to be quite variable, so the mood changes are quite common.

Overfeeding can be deadly



Anemones—why did mine die so suddenly?

WHY did my two sea anemones die in my 20 gallon marine tank?

Both died in the same way. They were alright for about two months but then started to shrink and eventually died.

I fed the anemones chunks of cooked prawn flesh nearly every night. I now realise I overfed them.

I have recently purchased another anemone for my three Common Clowns. Could you recommend a good book on anemones, and a list of suitable foods with variety for anemones.

I heard that vitamins of the B group are deficient in anemones. Would Marmite smeared on to the anemone food help in this case?—D. Peel (14) Shanklin, Isle of Wight.

You did certainly overfeed the anemones and a diet of cooked prawn is vitamin deficient. But do not use Marmite or similar foods designed for mammals—fish and invertebrates requirements are rather different.

One method of introducing vitaminised food is to take a chunk of the prawn flesh and make a small slit with a sharp knife and stuff some fish food inside the chunk.

Use flake food—the high vitamin black flake in Aquarian's Marine Food would be suitable. Also vary the diet with chunks of meat, fish, crab and earthworms.

For more information, See Anemones by U. Erich Friess, TFH Publications (1972) No H-043, is useful.

Second hand system

I INTEND to set up a marine aquarium and have purchased a second hand three foot tank. It is steel framed but with plastic coating.

Unfortunately when I got it home I discovered that the plastic coating under the top rim of the tank was cracked. Is there any way of treating this so it will not pollute the tank? Or would it be better to get an all glass tank—my budget is limited?

I have a 40 Watt starting unit for fluorescent lighting. Could I use two 20 Watt tubes with it? Would they be wired in parallel?—C. Watson, Dursley, Glos.

An all glass tank is best for marines. But if you really need to use the old frame tank you should cut back the split plastic section to where there is good

adhesion.

Then clean the bare metal with emery paper and paint in the usual way using sealer, undercoat and a good polyurethane gloss.

When using any metal framed tank for marines it must be pre-treated with silicone sealer to give an absolute barrier between metal and seawater. Run a bead of the sealer along all internal corners, including the top rim.

I would prefer not to offer advice on the wiring of your fluorescent tubes because you must be very careful with electricity and seawater.

I strongly advise anyone who plans to use an electrical unit in a different way from its original purpose to consult a qualified electrician first.

PRACTICAL FISHKEEPING

How many Anemones?

At present I have a 36 x 12 x 15in marine tank which has been running for about four months. Inhabitants include two Common Clownfish, one Yellow Tail Blue Damsel, and one Humbug Damsel.

In the near future I intend to set up another 36 x 12 x 15in tank, housing about four or five Clownfish and Anemones.

I have several questions I would like to ask about the proposals.

Firstly, is it necessary to have one anemone per clownfish? Secondly, is it possible to mix clownfish, to have a Fire Clown in the same tank as a Common Clown.

Finally, when the Clowns are moved into the other tank I will

be left with one tank containing just the two Damsels.

Could you recommend a fish that could safely be placed in the tank, one that can look after itself and not be bullied by the damsels?—P. D. Woodward, Horsham, Essex.

It is not necessary to have one anemone per Clown Fish—but it is better if you can arrange it. A pair will share an anemone, but usually the most aggressive fish takes over the anemone and fights off all the others.

Yes, Clownfish can be mixed. Any fish of similar size to the Damsel should settle in, since there will be a lot of space. A Trigger fish (*Balistes* spp) is a good start because it will soon see off any aggressive Damsels.



One Anemone for each Clown Fish if possible.

Curing a sick Sweetlips?



Clown Sweetlips—curing these strange growths.

READINGS of pH, specific gravity and nitrate in my 18-month-old marine aquarium are satisfactory. In the tank are a pair of Electric Blue Damsels, a Cleaner Wrasse, a Clown Sweetlips, an Emperor Angel, a Cream Angel, a Regal Angel and a Coral Hog Fish.

The Clown Sweetlips was bought 14 months ago and had been in good health and had grown well.

Over the last two months he has developed two greyish marks in the same position on each side of his body as the diagram enclosed. They do not protrude and they do not appear to be fungal, but they do worry the Sweetlips.

Have you any idea what their cause is and any treatment that could be used?

My other problem recently is the presence of copepods, which are visibly abundant on the green algae at the back of the tank. Could these be present in the calcium layer which is not disturbed during water changes

because of a gravel tidy? How would you suggest removing them?—P. Watson, Lincoln.

The grey areas on the Clown Sweetlips are probably necrotic—that is dead—tissue. Rather than treating the water with chemicals it is better to treat the actual area affected.

If possible, anaesthetise the fish with MS 222. You would need to see your local vet for this. Or hold it in a towel soaked in the aquarium water. Cover the eyes to give darkness and less tendency to flap.

Dry the affected areas with tissues and paint with mercurochrome solution.

Your copepod infestation can be cleared with a filter—I recommend the diatomaceous earth type.

The infestation and humus build-up indicates that a clean is overdue. Why not remove the fish, siphon out the two layers of medium and rinse them separately and return everything including most of the original water, preferably filtered.

Poisoned!

WE HAVE a marine tank measuring 42 x 28 x 15in. The stock consists of two Mono Angels (*Monodactylus argenteus*), one Tiger Scat (*Scatophagus argus*), one Clown Wrasse, one Cleaner Wrasse, two Pyjama Cardinals, two Saboo Clowns, one Humbug Damsel and a Cherub Angel.

Until a week ago we also had a Candy Anemone, a Boxer Shrimp and a Hermit Crab. Inexplicably these three all perished within a few days of each other.

On checking the water, everything appeared to be in perfect order, there were no nitrites present and the pH gave a reading of 8.1.

Can you give an explanation of these losses, and whether it would be wise to introduce any more invertebrates or crustaceans to the tank.—Ann and Reg Clifford, Stoke on Trent, Staffs. You failed to say how long the shrimp and crab had survived. If new additions it could be that the fish have eaten them. Not all coral fish and invertebrates are compatible we are finding by experience.

If they have been together for some time, it may be water quality that has caused their demise since invertebrates are more sensitive to toxins than the fish. Since you have found the water to be normal pH, salinity and nitrite level, you must suspect poisoning. This could be anything from hair-spray to cigarette smoke. Do several partial water changes before trying a replacement invertebrate.

Marine Molly

SINCE 1972 I have kept a community tank of tropical fish, but in January of this year due to a slight accident one of the ends of my 36 x 15 x 12 inch tank got broken.

I have now repaired the tank and have decided to set it up as a marine tank following your excellent guide of March, April and May with with scaled down equipment.

As I have not yet decided what fish to stock it with I thought that I would seek your advice. What I have in mind is as many small and colourful fish as possible bearing in mind that I shall have some invertebrates in the tank also.

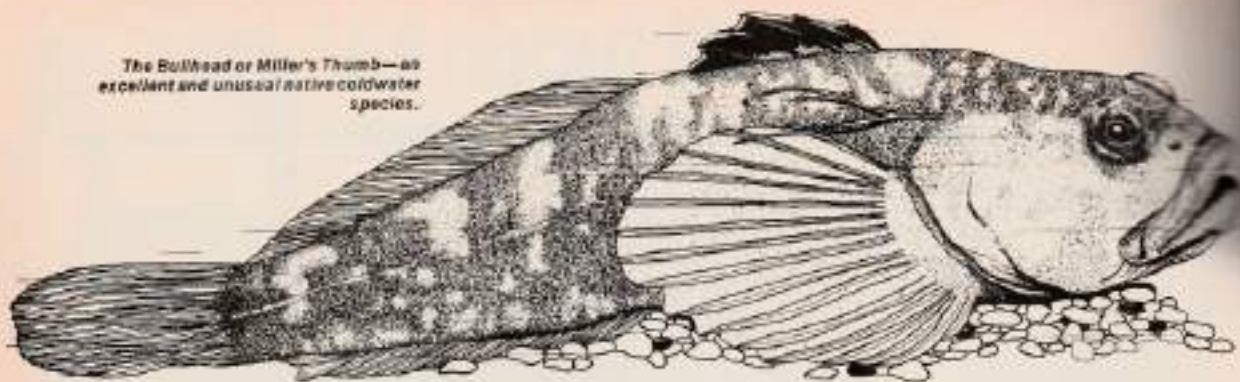
On reading the May issue of Practical Fishkeeping you mention that the Black Molly will adjust to a marine tank. This is one of my favourite which I found quite a prolific breeder in a salt water solution, and it is my intention to introduce some into my marine tank.

Can you suggest any other freshwater tropicals which will adjust in the same way again.—E. J. Parsons, Tidworth, Hants.

The ideal fish for maturing a new marine tank is the Black Molly (acclimatize the fish first by increasing salinity over a few days). It is possible to acclimatize the Guppy too, but a better choice would be the brackish water fishes, e.g. Scats and Monos.

The best small marine fish for the aquarium are the Damsel fishes being lively, colourful and hardy—there are many species to choose from.

The Bullhead or Miller's Thumb—an excellent and unusual native coldwater species.



John Cornelius is a keen fishkeeper—gaining his love of the hobby from his father and by working in the family business in his native Liverpool importing reptiles and amphibians. Now aged 30, John was educated at Liverpool College of Art and has been a singer, guitarist, postman, and freelance writer and artist. John wrote and recorded a record for the "Save The Whale" campaign.

The Heats off!

John Cornelius looks at some unusual coldwater species and 'tropicals' who like it cool.

WHEN coldwater aquarium fish are mentioned, it's a pretty safe bet that the first fish to spring to mind for the average aquarist is the Goldfish.

With a little prompting, he may come up with a few more familiar names—Koi, Orfe and so on.

But in fact, although the intensive line-breeding of fancy varieties is a fascinating and in itself for some, in many ways Goldfish, though attractive in appearance, are the least interesting coldwater fish in habits.

And the obvious problem with Orfe, Tench, Koi, etc., is that although they make fine pond fish, the majority grow far too large to be kept and observed under average aquarium conditions.

With this in mind, I thought it a good idea to take a look at the other species available to the fishkeeper who wants to leave no stone

unturned before plunging into tropicals proper.

Among our native British species, there are unfortunately a good few which do not thrive under captive conditions; Roach are an example.

But amongst those which can be kept are Sticklebacks, Gudgeon, Miller's Thumb or Bullhead, Minnow, Perch, Pike and Rudd.

I daresay readers may have had success with others, in which case it would be interesting to hear the results.

Perhaps the most fascinating of the lot is the humble Three-Spined Stickleback (*Gasterosteus aculeatus*).

Although the majority of British freshwater fish are uncomfortable at temperatures in excess of 80F, I have kept Sticklebacks at 77F, with no apparent ill-effects, during a recent warm spell. The secret seems to be for the temperature changes to be gradual with **NO OVERCROWDING!**

The Stickleback's interesting breeding habits are well-known and always worth watching. Their iridescent turquoise eyes and red flanks of the male, coupled with similar spawning habits, remind one irresistably of some of the cichlid species.

Most authorities state categorically that Sticklebacks refuse all but live foods. I find that when kept with other species which do accept dried foods, they quickly learn to do likewise.

Nevertheless, live foods are preferable but if unobtainable, freeze-dried tubifics (cubes) are a good substitute and if left to float on the surface are torn apart by the fish with relish.

Gudgeon have similar bottom-dwelling habits to Tench but have not yet been "improved" by the breeding of a golden variety.

They can become very tame, as apparently can Pike, I have never kept a Pike, but to all accounts they learn to recognise the hand that feeds them and even show signs of intelligence.

This is something one finds again and again with aggressive species Perch being another example which can almost be regarded as "coldwater cichlids".

The best plan is to experiment as much as possible with whichever fish come to hand,



Common in British rivers is the Gudgeon—a good aquarium fish.

being in mind that one thing that coldwater fish have in common is that they cannot stand cramped or overcrowded quarters (the carnivorous species again being possible exceptions) and many river and stream fish appreciate a little aeration. Otherwise they should be kept and treated with as much respect as the more exotic tropicals, with well-lit and planted tanks.

Among the European species which come to hand, the Spiny or Weather-Loach (*Cobitis taenia*) and the Bitterling are attractive and interesting subjects.

North America offers a wealth of coldwater species which are unfortunately rarely seen in the average dealer's tanks. Amongst these species are some unusual Killies of the *Fundulus*, *Chrysopeops* genera all of which require a maximum temperature of 70F and are happy at considerably less.

One of the most attractive American Killies is, of course, the Florida Flag Fish (*Jordanella floridae*), commonly regarded as a tropical fish but which in fact thrives at 65F, room temperature.

At the time of writing, I have a pair of these in a small plastic tank, unheated, placed on a window sill. This goes against all the rules, I know, but the great water and excessive algae growth seem to provide ideal conditions.

But the whole subject of 'tropical' fish which can be kept at living room temperature will be gone into in more depth later.

The Pumpkinseed Bass and Black-Banded Sunfish (*Mesogonistius chaetodon*) are good aquarium inmates, as is the Pigmy Sunfish (*Epiplatys evergladesi*) which is very colourful and easily bred, though it does not look after its young in the devoted manner of *M. chaetodon*.

The Paradise Fish, from China and Vietnam, was one of the first exotic fishes to be kept in the home aquarium, way back in the 1860's. The treatment given to it by well-meaning but ignorant early aquarists must have been hair-raising to say the least, but such is the hardness of this species it can take accidental mistreatment in good spirit, though of course I don't advise anyone to test its endurance deliberately.

Like its smaller cousin the Siamese Fighting Fish, it is a labyrinth or air-breather and its habits and appearance falls somewhere between this last-mentioned species and the Gouramis.

A male in prime condition is unsurpassed in my opinion and can become quite a character.

I have a beautiful male who not only feeds from my fingers (Tubifex and earthworms are top favourites) but who also shows his annoyance—a common emotion in this species—by deliberately and quite violently butting the stem of the thermometer stuck on the inside of the tank, apparently gaining great satisfaction from the resulting sound—a loud "clack"—as it is knocked against the glass side of the tank.

As regards the supposed ferocity of these fish, my two large males are constantly threatening one another with extended gill-covers and fins stretched almost to splitting point, but this never actually leads to any violence.

Nor do they attack the tiny White Cloud Minnows which share the tank, though they did take exception to a Red-Capped Oranda which was in there for a while, for no apparent reason.

Paradise Fish can stand up to almost freezing conditions. In extremely low temperatures they have an unerring habit of lying

on their sides at the bottom of the tank, waiting patiently for things to start warming up again.

This kind of behaviour usually means the end of the line for most other fish and can dismay the aquarist the first time it is observed.

Mention of White Cloud Mountain Minnows (*Tanichthys albonubes*) finally brings us around to the aforementioned subject of "coldwater tropicals"—or, more correctly, room temperature.

It is well-known that White Clouds can not only survive in cooler temperatures but actually do better in them and are not so prone to Velvet Disease, which seems to be brought on by warmer conditions.

It is well-known too that very few tropical animals will, unlike mad dogs and Englishmen, go out in the midday sun and the majority of fish are no exception.

In any case, many equatorial species actually live in mountainous areas where cool

(*Herichthys cyanoguttatum*) Flame Tetras (65-70F), Black Widows and, of course, Guppies, although the intensively line-bred varieties are not quite as hardy as the rough-and-ready mongrels we don't see too much of these days.

There are no doubt many more. But if you're thinking of experimenting along these lines, beware of rush-reared stock—that is those fish which have had their growth artificially speeded up through specialised feeding, high temperatures and heavy aeration. They are just not as hardy as fish reared under more natural conditions.

For fish which spend most of their time at the surface, the heat emanating from an ordinary tungsten light bulb fitted into the hood of the tank can often give sufficient extra warmth.

There is plenty of room for experimentation in this field. But needless to say, fish showing any signs of distress should not be subjected to low temperatures.



The White Cloud Mountain Minnow 'tropical' species that can be kept at cooler temperatures.

streams are the general rule, or heavily shaded pools in the jungle lowlands wherein temperatures probably average 70F, although in some places may fluctuate wildly from 60-110F.

Obviously there are a great many fish which DO prefer higher temperatures (e.g. Discus) but there are many more than is commonly supposed that do very well at 65F—average living-room temperature.

The late William T. Innes went to the trouble of compiling a list of tropical species that can adjust to a temperature of only 60F: Bloodfins, Medakas, Speckled Catfish (*C. paleatus*), Platy Variatus, Zebra Danios (on record as living in outdoor pools in the USA at an unbelievable 30F!) *Poecilia shenops* (the ordinary Black Molly—not Sailfins or the fancy varieties), Australian Rainbows, Silver Tetras (*Gambusia affinis*), Chanchitos (*Cichlasoma fasciatum*) and *Barbus semifasciatus*, plus its "Shuberti" variety, the Golden Barb.

My own research and practical experience has come up with the following additions to the list: all of the Danios (with the exception of *Brachydanio nigrofasciatus*), Florida Flag Fish, Combtails (most books specify that this is a high-temperature fish; my specimen is thriving at 65-70F) various African Killies, Rosy Barbs, Ticto Barbs, Checker Barbs, Bronze Catfish (*C. aeneus*), Blue Gouramis, Buenos Aires Tetras, Pristella riddler, Glassfish (*Chanda ranga*), Texas Cichlid

They are very individualistic and conditions which suit one specimen may not necessarily suit another, even of the same species, particularly if they originate from different breeders.

The main criteria would seem to be a healthy, well-established and well-planted tank, not overstocked with fish. Temperature is a secondary consideration next to the above.

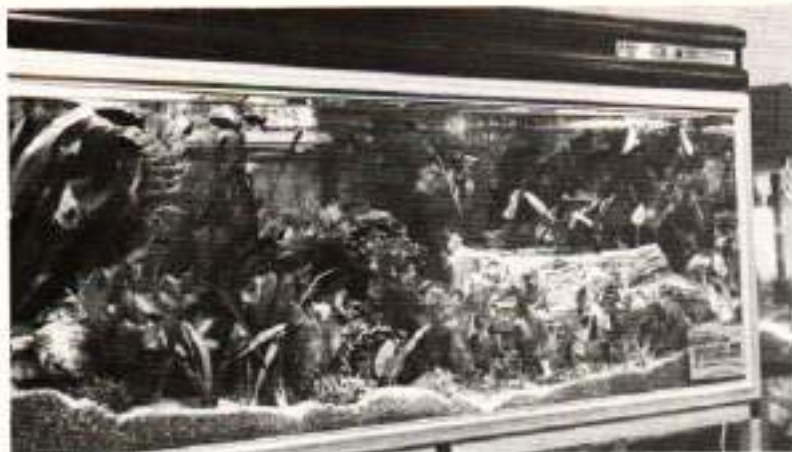
Finally, it must be stressed that none of the above is designed to encourage anyone to madly plunge his fish into freezing-cold, fresh tap-water.

This is a sure way to kill any fish, even Goldfish. Any alterations of temperature should be gradual. If you have specimens of tropical fish known to be hardy (a little time spent studying their place of origin can be helpful), just try adjusting your thermostat to 60F and see what happens.

You'll probably find by checking the thermometer that the room temperature is a lot higher than you'd suspected.

Even on the odd freak night of very severe cold, the tank water will take a long time to drop, even without any heater at all, anywhere near a dangerously low temperature before the room starts heating up again, particularly if it's a large tank.

And if nothing else comes of the experiment, there should at least be a saving of a few pounds on your next electricity bill!



The French are great plant fans. Just look at this beautifully decorated tropical tank.

PARIS is just the way you expect it to be... from the beautiful architecture and romantic River Seine right through to the incredibly bad traffic and even worse driving!

Artists and musicians throng the banks of the Seine and camera-toting tourists—who seem to be either Japanese or American—take over riverside attractions like the Louvre and Notre Dame Cathedral.

Notre Dame soars into space, spectacularly dwarfing the thousands who visit daily. The rest of the Seine's bankside buildings are splendid and the atmosphere of the bistros and boutiques in the narrow streets of the Left Bank is a magnet to sightseers.

But overshadowed by the conventional sights are plenty of other splendid places tucked away in the middle of the Seine tourist area.

And for fishkeepers one of those smaller attractions is pure magic, and no less spectacular.

Most British cities have a handful of aquarist shops widespread among the districts. Paris has a dozen or so all in a row!

The result is tremendous competition to put on the best display—and a fascinating world for fishkeepers.

Within 100 yards you can see fish of all descriptions, a staggering array of superb tanks and some of the most luxuriously planted aquaria you are likely to come across.

Fish are not the only stars of this show. The aquarist shops all supply other pets as well.

In a row of cages on the pavement outside each shop are bizarre assortments of fur and feather.

Rabbits, cockerels, pigeons, doves, even peacocks are displayed for the passing public.

And inside the shops a further exotic selection of cats, dogs, pythons, gerbils, terrapins. In fact the list is endless. It's as good as a Zoo.

The finishing touches are supplied by a dozen garden shops which split up the pet shop with vivid bands of colour in the form of hundreds of different flowers and plants.

And the effect is of a colourful bustling pavement filled with fluttering cages and exotic animal and bird calls.

Just the exhibits of fish and fishkeeping equipment make the shops well worth a visit.

The row takes its name from the ancient



Pont Neuf bridge over the Seine. The shops are perched on the edge of the river under the shadow of Notre Dame.

Pont Neuf means "new bridge". But the aged stonework and weathered arches testify to centuries.

The first thing you notice about the aquarist shops is the range of unusual coldwater bowls on display outside the shops.

Some are champagne glass shaped, like the colour picture complete with Black Moor.

Others are more like old-fashioned sweet jars and many have tinted stalks and lids. They obviously would not replace your coldwater tank but they make a super little display to back up any enthusiasts main set-up.

Inside the biggest of the shops—the Pont Neuf Aquarium—is more like it.

The fishkeeping section is down in the basement—a darkened world in which the lit tanks stand out beautifully.

At the top of the stairs is a superbly planted coldwater tank with a school of Fantails.

At the top of the stairs is a superbly planted tank built into a reproduction treasure chest. The lid of the chest becomes the tank hood and all filtration and electric are built into the back of the cabinet.

Again magnificently planted the tank is a superb piece of furniture—mind you it will set you back over \$500!

Another unique set-up stands out among the many aquaria which are built into furniture. That's a two foot tank which is set in the side of a barrel.

Marine fish are also popular in this shop and the most common display tanks for marines were treated by shining oxidised aluminium.

The selection of fish is very similar to

An incredibly beautiful collection of corals and shells to grace any marine aquarium.

Fishkeeping in



A selection of glass-shaped aquaria on sale at the Pont Neuf shops.



RADIO

LANICU

Story and pictures by Norman Wright



Top: Looking across the River Seine from the Pont Neuf bridge—superb setting for a dozen aquarist shops.

Above: A superb coldwater tank—with built in cupboards and lighting.

Right: Black Moor in a champagne-glass aquarium.



Right: A tiny marine aquarium with super corals and two Clowns, made into a table lamp. Magnificent but pricey at over £300!



Below: Another selection of corals. These ranged from delicate pinks through to blues.



British shops but the prices are way out of our class. It looked like the cost of most fish and equipment was almost doubled.

But the French most certainly are more interested in planting and furnishing their tanks than in the fish.

They go for a really natural looking aquarium and their idea of planting is a luxurious carpet of varied greens and contrasting browns and reds.

That was obvious from the tanks on show in the shops. But it was more marked at the pet trade exhibition which was my main object in visiting Paris.

If the shops were worth the trip alone, the show was something else again.

As an international exhibition it was held in the huge exhibition centre at the Porte de Versailles on the outskirts of Paris.

The show was designed to cater for the whole of the pet industry and as you can imagine the French are very keen on dogs and Poodles in particular.

Some of the cat and dog accessories looked fit only for an Oil Sheik's palace. The luxurious velvet lined baskets and jewel encrusted collars were stunning.

But it was the aquatic displays that stood out as the biggest part of the show—and easily the most attractive.

There were many British firms exhibiting including King British and Anglo Aquatic Plants.

And all of them put up a tremendous competition against the French and German leaders.

But, of course I was most interested in

those foreign displays.

Just like the aquatic stores the tanks were superb. They just do not stint on making a tank into a piece of beautiful furniture.

Antique look vied with ultra modern stainless steel in the huge selection of tanks on show.

One of the most incredible tanks was a marine tank built as a table lamp which you can see from the picture.

It really was a beautifully made tank complete with filtration, heating, an attractive coral and a pair of Clown Fish.

The difficulty of designing something like

this which is capable of supporting fish life adequately must have been tremendous. So was the cost at over £300!

Corals are to the French mania keeper what plants are to the tropical man—everything.

There were two superb coral stands at the show and displays of corals on many other stands.

The owner of one Paris coral importers explained that he could not get enough to supply aquatic dealers in the area.

Most of the Coral was very good looking with huge pieces of blue, pink and black coral fetching up to £200.

Many of the pieces were enough to transform an ordinary aquarium into something really special.

Much of the coral on display came from the Red Sea although the dealer explained he bought from anyone anywhere who had coral to sell.

As usual the Americans were not far behind when it comes to selling and marketing with a very attractive stand featuring just the opposite type of decorations to those beautiful plants and corals favoured by the French.

Complete with Loch Ness monsters, giant Clams and Chinese Fisherman they had tanks full of novelty aerators.

Then there were the tank backgrounds—the lost city of Atlantis, Neptune's Palace, an incredible scenario as a diver attempts to rescue a treasure chest—all in 3D too!

Wrecked Gallions abounded, skulls and treasure chests lurked behind every corner.

If I was a fish I think I would be scared to death! But it takes all sorts and although I prefer the natural look, undoubtedly aquarists do love some of these items and can obviously create a very outstanding effect with them.



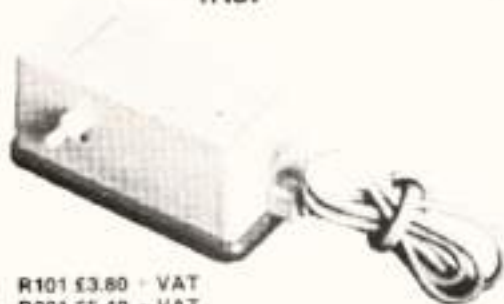
Another example of the neatly finished French tanks. This one has a leather frame.

Fishkeeping in Paris

**RELIABILITY
IS**

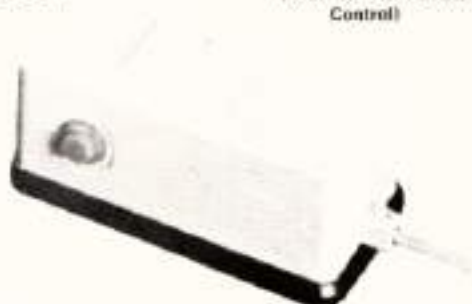
RENA

***R101**



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

***R301R**

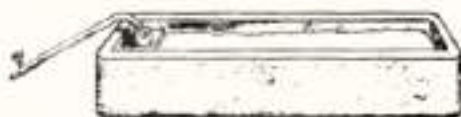


***R301**
(Without Potentiometer
Control)

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Water
Circulating
Pump
Shown complete
with carbon
and filter case

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F FILTER £1.40 + VAT
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OR FROM

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

Price 90p + VAT

Dr David Ford is a specialist in fish nutrition and head of the Fish Research Laboratory of the Animal Studies Centre, Melton Mowbray. The team of Veterinary Surgeons, Biologists, Nutritionists and Technicians, using the facilities of the Centre, which is Europe's largest Pet Care Study Unit, have completed more than five years of research and trials into modern fish foods. The result of their labour has been Aquarian, made in the highest quality control conditions and developed as the perfect food for all fish.

Dr Ford himself is a Chartered Chemist and Food Scientist who has been keeping fish now for over 35 years. He answers some common questions raised about Aquarian.

WHAT DIFFERENCE WILL AQUARIAN MAKE TO MY FISH?

Feeding your fish Aquarian will make them bigger and brighter because it's made from fresh food. It provides your fish with essential vitamins, proteins and amino acids in a scientifically balanced

diet that none of the world's fish foods can match for quality. Aquarian has a taste fish actually prefer as it's closest to their natural food. Because of this your fish will thrive, reaching peak condition. For breeding fish this is especially important. Aquarian fed fish show their true colours and whether you're a hobbyist or specialist routine can be more rewarding.

IT SOUNDS GOOD IN THEORY, DOES IT WORK IN PRACTISE?

The majority of prize winners in the national shows for the past three years have used Aquarian. It's brought their fish to true championship form, and they've quite openly endorsed Aquarian as the one food they put their trust in. The same is also true for professional fishkeepers. The reliability it offers them it also offers you.

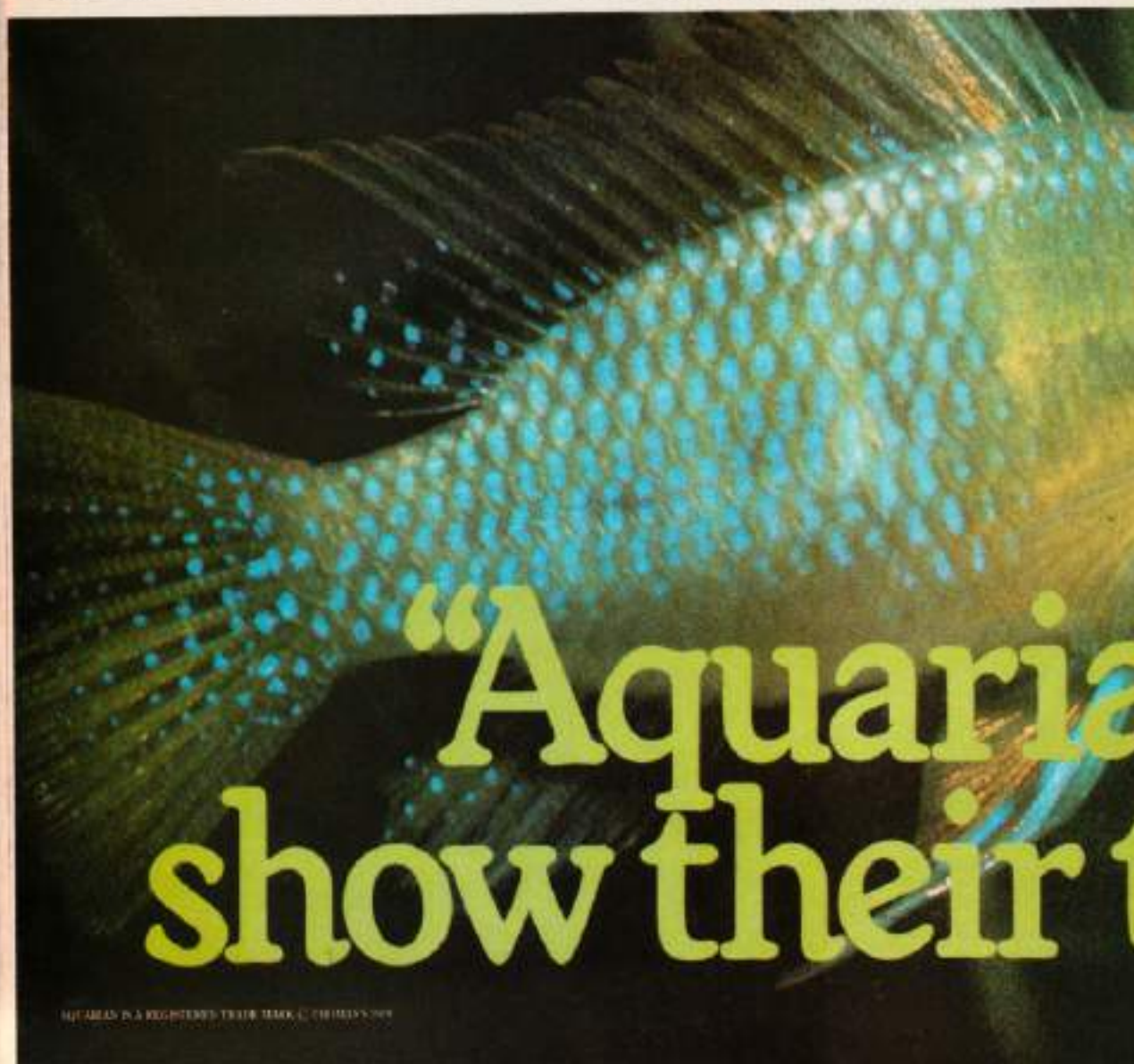
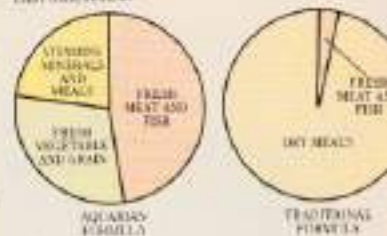
WILL ALL MY TROPICAL FISH EAT AQUARIAN?

The answer is yes. Tests held at the Animal Studies Centre proved that all tropical fish thrive on Aquarian. Fish from the Piranha right down to the Guppy find Aquarian the ideal food. In fact, talking

about Piranha, it might interest you to know that we've fed them exclusively upon it. And they loved it!

AREN'T ALL FISH FOODS BASICALLY THE SAME THOUGH?

Ordinary fish foods, yes. Years of testing here at the Aquaria proved they're cereal or meat meal and fish meal with negligible fresh content. Aquarian, however, consists in a high proportion of fresh food cooked gently into eggs to feed fishes. Comparison of Aquarian with traditional food shows that difference:



**“Aquaria
show their t**

WHY ARE AQUARIAN FLAKES ALL DIFFERENT COLOURS?

The colours in Aquarian are not artificial. They are, in fact, the colours of the individual ingredients. Brown is fresh meat, green is fresh vegetable, and so on. Eight different formulae nutritionally balanced, to satisfy, and enrich the lives of all tropical fish.

AREN'T THE FLAKES TOO BIG FOR MY FISH?

Aquarian refuse to use gelatine and such like glues to stick ingredients together. Instead, the freshly cooked foods are delicately blended, making a soft, palatable form which the smallest and the largest fish find equally appealing. Because the flakes are bigger than you'd find in ordinary foods, you can select and hand feed any of the eight ingredients and see your fish race towards your fingers in obvious enjoyment.

WON'T IT DETERIORATE QUICKLY?

The answer is no. At the time of taking all the carefully cooked food, we seal it hermetically into



CAROTENE
COLOUR
ENHANCER

EGG &
VEGETABLE
PROTEIN

FRESH
LIVER

FRESH
PORK LUT
MEAT

FRESH
VEGETABLE

FRESH FISH
& CEREAL

FRESH
WHEAT &
GILY RICE

VITAMINS &
TRACE
ELEMENTS

its container so it stays fresher longer. We put a reclosable lid on every container so that the flavour remains tightly locked in after use.

WON'T THE FRESH MATERIALS IN AQUARIAN CAUSE WATER POLLUTION?

Quite the opposite! The fresh content of Aquarian with its higher quality protein, in a way, actually helps keep the water clear. Ordinary fish foods with their emphasis on quantity of protein rather than quality cause fish to excrete more, introducing poisonous ammonia and nitrite into the water. Aquarian avoids this excess, concentrating on quality for a more digestible, attractive and healthy food.

IS IT EXPENSIVE?

You might expect that it is, with all these fresh ingredients scientifically balanced and a back-up of years of research. But in fact, Aquarian tropical fish food is no more expensive than many ordinary fish foods.

DO AQUARIAN CATER FOR OTHER TYPES OF FISH?

Aquarian actually make 13 different types of food for fish, ranging from Marine Fish food to Carnivore food and Goldfish food. There are also tablet foods for Catfish and larger Cichlids, pellets for pond fish and a range of seven ailments remedies and water treatments. So you see, Aquarian do more.

than just cater for the fish keeper - we specialise in everything for successful fishkeeping.

CAN I CONTACT YOU WITH ANY FURTHER QUESTIONS?

Yes. We run a free service for all Aquarian users, including a very special guide for beginners. Write to me:

Dr David Ford, at the -
Animal Studies Centre,
Freeby Lane,
Wadtham on the Wolds,
Melton Mowbray,
Leicestershire
LE14 4RT.

aquarian

The fresh approach to flaked fish food.



n fed fish true colours."

Dr. David Ford.

Cleaning up

Giving the Practical Fishkeeping tropical tank a new look
By Norman Wright and Clive Nicholls.

WITH summer holidays and the light evenings the average community tank tends to get a bit neglected during June, July and August.

The garden usually makes greater demands on time, than the fish who don't seem to mind your tank getting untidy.

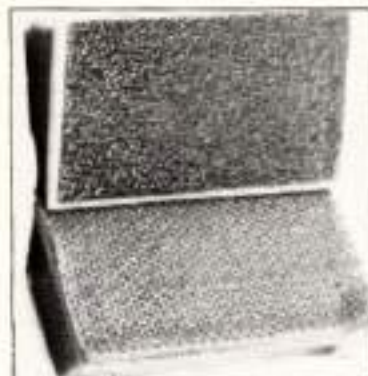
But eventually you will have to get round to sorting it out.

There is the algae growth to remove, excess mulm to siphon off, a good water change to complete to make sure quality doesn't slip too far off course.

But why not give the tank a completely new look. It takes very little to add a new rock or two, or shift your existing decorations around, then add some new gravel and plants.

The result is completely different and can renew your interest in the simple community tank.

That's just what we did to the PRACTICAL FISHKEEPING tank. And here's how we did it.



FOR the first step you will need your algae magnet and scraper. Use the two pieces of equipment to thoroughly clean the entire inside of the tank cleaning the corners to make sure you do not disturb the sealer and start a leak. Switch off the heater and clean the algae from it with a soft cloth. Use a test tube brush to clean down the airlift pipes of your undergravel filter, make sure you under water airlines are also cleaned.



AN excellent piece of equipment is the tank vacuum cleaner. This is great for a smaller tank like our two foot affair. It means you can clean a lot of algae and mulm out of the tank before siphoning off the water. You cannot hope to get all the rubbish when siphoning off three gallons from a small tank. Simply connect the cleaner up to your air pump and "hoover" around the gravel. It is a good idea to stir up the gravel now and the mulm will settle on top read for the cleaner or the siphon tube. The muck is collected in the muslin bag which is easily removed and rinsed in the sink to clean it out.



REMOVE all the rockwork from the tank during the cleaning operation so that you can thoroughly stir up all the filter bed. Wash the rocks thoroughly under the tap and remove any algae. You can wash new rocks at this stage ready to arrange them in the new look tank. Once you have stirred up the filter bed and let the mulm settle siphon off about a quarter of your water "hoovering" as much muck and rubbish as possible.



IF you are adding some new gravel you should get it thoroughly washed ready. Stir it for several minutes in a bucket under a running tap until the water runs clear. We added 5 lb of ordinary aquarium gravel plus 5 lb of white gravel just to add contrast. It worked well when mixed thoroughly with the larger and dull-coloured tank bed.



NOW you can add the new gravel to the tank. Use it to build up the back and sides of the bed to make an interesting slope for rocks and plants. This adds contours to the tank and makes it much more attractive. More gravel also helps the filtering process as a thick bed is more efficient. It also helps plants to grow better.



ROCKS can be reintroduced to the tank now while the water level is still down. Try to arrange them with the plants in mind allowing plenty of room for the fish to be displayed at the front of the tank where you can see them nicely.



NEXT comes planting—while the water is still low to make it easier to manage. Use lead strips like this to keep the roots bedded down into the gravel.



CAREFULLY wash the plant roots and remove any dead leaves. Then equally carefully pinch the lead around the roots or base of the plant. Try not to break or damage any roots or runners.

PRACTICAL FISHKEEPING



USE a planting stick like this to push the plant firmly down into the gravel. Arrange the plants to complement the rockwork and fish. Like many readers we have been following David Shields advice on this in his Perfect Planting series in PRACTICAL FISHKEEPING and we used his methods for arranging and selecting them.



NOW it is time to prepare the new water to bring the level of your tank up to the correct mark. Fill a marked bucket with tap water. Make sure it is from the cold tap and not from the hot water tank. Bring it up to the temperature of your aquarium by adding some boiling water from a kettle and checking it with a thermometer.



WE used a chemical de-chlorinator to remove the chlorine. But you could leave the water to stand overnight or give it a couple of hours of fierce aeration with an airstone. This way you simply add the dechlorinator, mix it into the water and it is safe for fish.

TO acidify the water slightly we added some water conditioner. We also added a dose of Tonic Salts to keep the water just slightly salty.



IT is a simple task then to siphon the new water into the tank. Direct the water on to a rock so that the gravel or plants are not disturbed. Fill to the rim of the tank. Then you can replace the cover glass which should be previously washed thoroughly. You can then replace the hood and switch lights, heater and filter back on and watch the water gradually clear. Next morning it will be like crystal and your fish will look brighter in their redesigned home. ONE more additive you can put in the tank later is plant food. Follow the manufacturers instructions and add the correct amount for your gallonage.

Charming CHARACINS

Splendid aquarium species

CHARACINS are some of the finest and most easily kept of tropical fish —the basis for many excellent community or display tanks.

And this PRACTICAL FISHKEEPING colour poster features four beautiful species which belong to the order Characoidae.

There are around 1,500 species belonging to this order and with their bright colours and peaceful nature it isn't difficult to see why they are so popular as aquarium fish.

All the fish we feature here are South American. The Black-Line Tetra, Cardinal Tetra and the Callistus Tetra are true Characins.

The Marbled Hatchet Fish is very closely related and belongs to the Characoidae order.



Above: The Brazilian Black Line Tetra is a beautiful bright little fish. It is given its name by the black stripe that runs from gill cover to the black triangle on its tail root. Above the black line is another line of iridescent scales.



Left: Subtle and delicate reds and browns are the attraction of the Callistus Tetra. It is a shorter and more compressed species with a magnificent high dorsal fin with black marking.

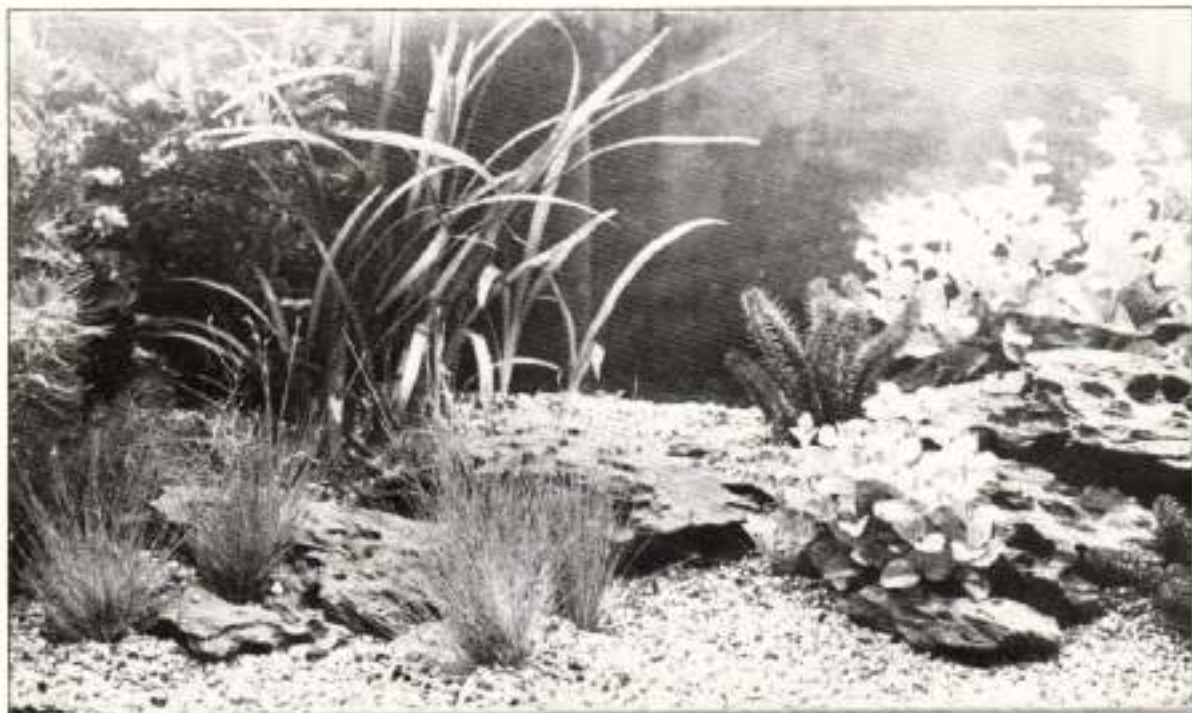
Practical fishkeeping

Superb electric blue and
Cardinal Tetra as one of
the brightest of Characins.



Above: It isn't difficult to see why
the Marbled Hatchet Fish was given
its name, its hatchet shape
combines perfectly with the black
and brown marbled colouring. It
lives in small forest streams in the
Amazon Basin and is easily kept in
aquaria. It has a big appetite but is
generally peaceful.





Join David Shields for the next few months in his new series we have called *Perfect Planting*.

It is the ideal way to describe David's articles, for he is a plant perfectionist and his expert advice can help you to display plants and fish to their best.

Each month David will show you how he matches up various species of fish to the plants available and makes both look beautiful!

David is well qualified for this task. He is a leading show winner in furnished aquaria sections and his selection of plants grown at his Halifax, Yorks, home is tremendous.

David (39) is a sales manager and he is a leading member of Halifax A.S. He has been a fishkeeper for more than 20 years.

Coldwater Planting

David Shields designs a coldwater display tank

PERFECT planting shouldn't be restricted just to tropical tanks. Coldwater aquaria can be made to look just as attractive with a wide range of plants.

I have designed two coldwater tanks to give you an idea of the possibilities available. The first which I deal with this month is a simple, basic design. Next month I will go on to explain a more complicated tank.

Both however have similar plants. They are all very easy to obtain—and many you can get for nothing in your garden or the local canal!

But more of that later. Let me start as usual by giving you a run down on what gravel, lighting and filtration I use.

The gravel is medium grade aquarium gravel—and you could use river sand sprinkled in the right place to create depth and a contrast effect.

The rocks I have used come from Wales on one of my collecting operations. But I suggest that you might find some natural river rock.

Look for a shallow swift running stretch—one of the moorland stretches of a river is ideal.

These the rocks have been eroded and shaped by the currents for years. You can pick up some beautiful specimens.

Use the same rules for arranging the rocks and gravel. That is build up the back and sides, leave room for plants around the rockwork and room for the fish to be seen.

Filtration in my tank would be an outside filter. But many people get on very well with undergravel. Either method could be used.

Lighting should be two 60 Watt bulbs for eight to ten hours a day. But bearing in mind the tank is coldwater and the tungsten bulbs do create a lot of heat you could use strip lights to cut down the heat.

Now on to the plants. Two I have used here you can get for nothing. And really you could furnish a tank with just these species.

The first is Creeping Jenny (*Lysimachia nummularia*) a beautiful bright green plant that grows in many gardens over rocks and by pools.

It is in fact a marsh plant but grows extremely successfully under water.

My garden has Creeping Jenny by the pond and over a small wall. It is very common and you should be able to find some locally. Just



Perfect Planting

Left: The completed tank—it looks good without paying a lot.

Right: Creeping Jenny—this garden plant looks so good underwater it is difficult to believe it is not a true aquatic species.



Giant Elodea—an excellent variety.

take a cutting and it should root and grow.

The specimens in this tank were taken from the clump near my pond and grown on in an outside tank.

I have used this at the back right hand corner of the tank and among the right hand rockwork.

The other free plant is used at the left back corner, it is Wavy Pondweed *Potamogeton* (*lanceus*) and can be found in almost every canal in England.

The plant turns a rusty brown when the sun has been on it. You can use this to mix in with the shaded dark green versions to create an interesting background.

Simply find a supply and take a few clumps.

A word or warning here to anyone who uses plants from a canal or from the



garden—they must be sterilised first.

To do this simply fill a two gallon bucket and add a tablespoon of household salt. Put the plants into the bucket for about 20 minutes. That should do the trick.

The next plant is Giant Elodea which I have used on the right side of the tank. A close relative is the Canadian Waterweed (*Elodea canadensis*) you can see that in a small clump just right of the centre next to the rockwork.

In the centre of the design at the back is Tape Grass (*Sagittaria natans*) which adds some background and a contrast with the Wavy Pondweed next to it.

Then down the left hand side of the aquarium is the old favourite Milfoil (*Myriophyllum spicatum*).

The display plant is at the front in several small clumps—it is certainly one of my favourites and I grow a five foot tray of the stuff every year in my greenhouse.

It is of course Hairgrass *Eleocharis acicularis*. It is delicate, a beautiful green and in my opinion extremely attractive.

Well, that covers the plants. Now for the fish.

You could use small Common Goldfish or young Fantails in here. But I think my layout next month would be more suited to that type of fish.

I think some of the native river fish would look best in this aquarium.

A shoal of Minnows would look perfect and very natural.

Golden Rudd again would be spectacular in a tank of this kind.

One thing you must be prepared to do is transfer the fish when they grow too large. Coldwater species will always tend to grow too big for a two foot tank.

So you need to move them or convert my ideas on furnishing this two foot tank to a three or four foot affair.



Milfoil—the old favourite still looks good. This came from my pond. Make sure you sterilise any plant that comes from outdoors.

EHEIM aqua- diagnosis

a breakthrough in test kits



Single pack test kits.



One of four comparator sets available.

WHY USE A TEST KIT?

The correct composition of the water in your aquarium is essential for the welfare of the fish it contains. Biological and chemical influences, such as impurities caused by food remains and waste matter, are continually changing the state of the water in your tank. Whereas outdoors, nature ensures a healthy balance, these natural conditions must be simulated in your aquarium artificially. EHEIM aqua diagnosis test kits will ensure that the water in your aquarium is just right.

WHAT IS EHEIM AQUA-DIAGNOSIS?

The EHEIM diagnosis is clearly laid out, practical and extremely easy to use. The most modern analysis methods, the effective measuring range and the considerable cost saving per analysis all combine to make the aqua-diagnosis a perfect low-cost miniature laboratory.

In contrast to the usual tests, only a very small sample of 1.2 ml is required. This means the dosing syringe supplied can be used to take the water sample. There is no longer any need for the immersion of chemical measuring containers, a process which is complicated and at times dangerous.

Each set, in addition to the appropriate reagents, includes two measuring tubes, the dosing syringe and rotatable colour value disc.

Send now for descriptive colour leaflet.

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Air

MOST aquarists try to stick as closely to nature as possible, avoiding artificiality where it would clash with the environment they have created in their own tanks. This is generally a good maxim to follow, but on occasions we have to abandon it if we are to succeed.

Aeration and filtration are two of the most obvious "artificialities" in the hobby, but without these we would be unable to keep large numbers of fish in the relatively confined quarters that the typical aquarium represents.

Aeration maintains a high level of dissolved oxygen in the water, it circulates the water around the aquarium to prevent "hot-spots" building up near the heaters or at the water surface, and it also creates currents against which the fish like to swim.

By means of an "air-lift", the air supply can be put to good use in operating filters, purifying the water and removing unsightly sediment that would otherwise detract from the beauty of the display.

So you can see that air is really a very precious commodity in the aquarium, not just a means of overcrowding the tank beyond its normal limit—and that should NEVER be done.

Unfortunately, many people underestimate the amount of air they will require, something that is dependent not only on the number and size of the aquaria, but also on the type of filters used and what the fishkeeper regards as an adequate flow of air through a diffuser stone. Suffice to say that there is always a certain amount of juggling with the air-control valves to get a satisfactory balance.

For the serious aquarist, as well as the dealer and importer, the answer could well lie in the purchase of a compressor, a piece of equipment that really does become indispensable to the fortunate owner. A range of three such compressors manufactured by Lacey Hulbert and Co. is distributed by Norwood Aquarium Ltd., and they form the basis of this review.



The air filter is an important part of the compressor.

The three compressors are of similar general design, each using a fractional-horsepower electric motor directly coupled to rotary-vane compressor unit. The vanes themselves are made of a carbon compound, and are located—as a loose-sliding fit—in slots cut radially round a metal drum. As the electric motor rotates the drum, the carbon vanes press outwards to create a seal against the outer casing which is slightly offset from the central axis of the drum.

This compresses the air, having the virtues of high output, even flow and relative quietness when compared with old-fashioned designs of piston compressors.

In detail the three models are quite different: first the RB 1201, the smallest of the range, and the one most likely to appeal to fishkeepers (in addition to many aquatic traders, of course).

This features a Crompton Parkinson motor with a consumption of approximately 95 watts, and I measured its output at 1.9 cu ft/min. (53 litres/min), connected to a 1 metre length of open-ended 1/4 in bore tubing.

The distributors suggest that this model will be adequate for around 30 aquaria, but this would seem to be a rather conservative estimate: a standard airstone will operate very satisfactorily on just 1 litre/minute of air, or even less with some careful adjustment of the control valves and clamps, so a figure of 50–75 outlets would seem to be quite realistic unless you really want the air gushing out.



The compressor vanes which produce such a constant air supply.

Of course, with the high output of a compressor you will need to distribute the air through 3/8 in or 1/2 in bore hosepipe if frictional losses are to be minimized: run this to a spot adjacent to each bank of aquaria, then fit an adapter so that each individual tank can be supplied through standard airline. The noise level is, not surprisingly, much higher than that of any air pump, and would be objectional in a peaceful living room: but since hardly anyone will be keeping 50 tanks in a living room, this aspect is not likely to be a serious obstacle.

After a short while one becomes used to the constant whirring noise, and in practice that is likely to be effectively drowned by the sound of the air bursting forth from dozens of airstones.

The RB1201 features filter canisters on both the air inlet and outlet to ensure that only clean air enters your tanks, and the cartridges themselves should be regularly inspected and replaced when the flowrate is affected. All three models incorporate a thermal trip—an automatic device to stop the motor before any damage is done if the vanes should jam in the compressor. Routine servicing of the 1201 is simple, the main requirement being a visual inspection of the carbon vanes every month or so: this takes about 30 seconds, and is achieved by removing the three bolts holding the end cover in place.

The vanes gradually wear down in use, and must be replaced when they reach a length of 10mm—if this is not done they may jam or break, and your fish consequently left without air.

The two larger models, the RB1361 and RB 161, are clearly of most interest to the



On File

Equipment reviews by technical writer
Cliff Harrison

commercial user. The 1361 is in many respects a scaled-up version of the 1201, with air filters and simple access to the vanes. It features a 370 watt motor, and its output was measured at 6 cubic ft/min (166 litres/minute).

The 161 was a more complex design, with a pressure gauge, pressure-release valve, a different style of air filter on the inlet side only, and shrouding around the compressor unit to permit force-flow cooling.

It also uses a 370 watt motor, but achieves a prodigious output of 8.7 cubic ft/min. (270 litres/minute): the noise level is naturally quite high, but in a commercial establishment that is not likely to be an important factor.

Whether you buy a compressor rather than an assortment of smaller air pumps to aerate your tanks is, unfortunately, likely to be dictated primarily by economics. It is quite expensive to buy, the carbon vanes need to



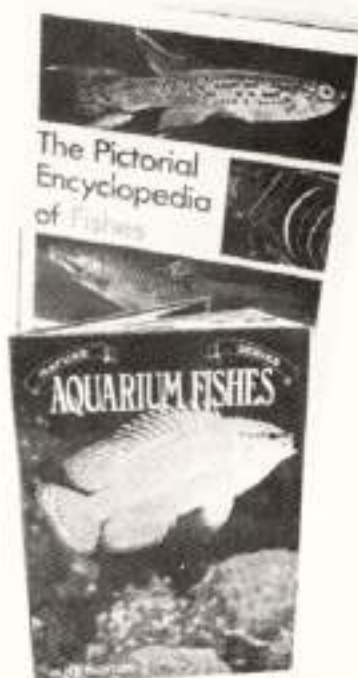
The larger compressor is the RB 1361 model.

be replaced at intervals of perhaps 6–24 months (depending on model), and it will use a considerable amount of electricity.

Moreover, it must be regularly checked if failures are to be avoided, though this takes only a couple of minutes each month. You must ensure a free flow of air all around to prevent overheating, and the noise level may be intrusive in some locations. But, as I said earlier, once you have enjoyed the benefits of the huge amounts of air produced by a compressor, it is highly unlikely you will ever settle for anything less: in that situation, economics become very much a secondary consideration.

The Lacey-Hulbert air compressors are distributed by Norwood Aquarium Ltd., (01-680-3425), and the prices of the 3 models reviewed are: RB 1201—£166.08; RB 1361—£253.48; RB 161—£359.56 (including VAT) at 15%.)

Books



Book reviews by Norman Wright

The Pictorial Encyclopedia of Fishes by Dr Stanislaw Frank, Hamlyn, £2.95.

ANOTHER very reasonably priced book which gives value for money.

More than 500 pages feature pictures of hundreds of species from huge Thresher Sharks through to the tiniest tropical fish.

Most of the pictures are black and white with colour pictures dotted through the book. But the quality is good.

Each species pictured has a short explanatory entry giving details of its origin and brief notes on keeping it in an aquarium where applicable.

It is not a new book but has recently been re-issued in this country.

While not being a completely comprehensive book it is still full of useful, interesting information for aquarists at a keen price.

Aquarium Fishes by Jane Bartoe, Colour Library International, £1.99.

THIS book is well worth £1.99 for the 64 pages of superb colour pictures of fish.

The quality of photography and printing is really excellent and is bound to be of interest to any fishkeeper.

Tropical fresh water and marine species are featured in pictures. They are grouped into species with similar characteristics and types of behaviour.

The text is not an attempt to instruct on keeping fish. It is interesting and informative material on the unusual and incredible behaviour of fish.

For the price this is well worth a space on the aquarist's bookshelf.

PRACTICAL FISHKEEPING

Disease Test

DISEASE is undoubtedly a major worry to fishkeepers. Even if your fish are perfectly healthy in appearance there is always the lurking possibility that they could become infected.

The **Disease Diagnosis Kit** from **New Technology** can help to remove those fears because it enables you to test your freshwater aquarium for signs of bacterial or fungus disease.

The disease may be present in your tank just waiting for a fish to become stressed and then susceptible to infection.

Similarly if a fish has become diseased the kit can be used to try and determine the exact infection, so that you can treat it specifically and avoid further stressing a fish with blanket cures.

The kit is simple to operate. It has a full instruction sheet which is easy to understand and shows you how to read the results.

It consists of two test tubes—one with a red top and the other with a white top.

Attached to the lid of each tube is a double-sided tab covered with culture medium.

A sterile swab is also included so that you can take samples from a diseased fish to put directly onto the culture medium.

You must take care to keep the tubes sealed before use.

To test the water you simply unscrew each

cap in turn and dip them into a clear space of tank water for ten seconds. Then re-seal the tube and leave them in room temperature for two days.

The culture medium encourages different organisms to grow and identify themselves. At the end of two days you can use a colour illustration to find out if your tank carries specific bacteria or fungal infection or sufficient organisms to be of danger.

There are four main groups of disease that the kit will identify.—Fin and Tail rot; Cotton Mouth and Columnaris; Septicaemia and Red Spot; Saprolegnia fungus.

I tried the kit out on the PRACTICAL FISHKEEPING tropical tank in my office. Thankfully the tests were all negative.

It certainly is very pleasing to know that your aquarium is clear of this type of infection.

But at just under £2 for a kit that can be used only once it is perhaps a kit which will not be used all that often unless your fish show signs of suffering.

Then it moves into its own giving the aquarist at least some help in trying to cure his fish in the most kind and effective way.

The kit is useful, but obviously cannot pinpoint exactly all diseases. But it is an advantage to have something to fall back on when fish are sick.



This picture shows the way bacteria grows on the culture medium. This isn't bacteria from a tank just from the air. A tube was accidentally unsealed during packing.



The kit showing the sealed test tubes before use.

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NEXT month's PRACTICAL FISHKEEPING is going to be another cracking issue. So don't risk missing it... place a regular order with your newsagent or take out a subscription NOW.

September is an important month for fishkeepers and YOUR favourite aquarist magazine will be reflecting that next month.

For instance the pondkeeper is now thinking about preparing his pool and fish for the winter harshness.

With the nights drawing in the tropical enthusiast can start to plan that new set-up or an attempt to breed a new species or give his aquarium a needed clean-up.

Societies are now starting their winter programmes after the summer holidays.

Yes, September is a month when the hobby comes into its own. So stay with PRACTICAL FISHKEEPING the brightest and biggest aquarist magazine in Britain.

Just to whet your appetite here are a few of the top articles and features you can't miss.

September PRACTICAL FISHKEEPING is on sale on the first of the month... see you then.

September Ponds



Undoubtedly September is the crucial month if you want your pond prepared thoroughly to withstand the rigours of winter. PRACTICAL FISHKEEPING'S experts Roger Cleaver and Peter Bull have been busy compiling a comprehensive guide to preparing the pond for winter and repairing the summer's damage. They will bring you practical information on both fish and plants.

Aquatic Answers

Your questions to PRACTICAL FISHKEEPING experts are still pouring in. We will publish another big selection of them in September on the Aquatic Queries page. And the advice given by Dr David Ford of Aquarlan could help you. So keep a look-out or better still, if you have a problem and need aquatic advice, write us now.

PRACTICAL FISHKEEPING



The big show

The annual Yorkshire Aquarists festival at Doncaster Racecourse in August is one of the big events of the year in fishkeeping circles. PRACTICAL FISHKEEPING will be there along with around 30,000 aquarists. Read all about it in a special picture report in September.

Fighting disease

Ken Digby and Andrew Stagg turn their attentions to marine fish in September. They give you their expert advice on main ailments and ways to prevent your fish suffering. Don't miss their thoughts... it could be vital to your fish.

Fishkeeping Background



A brand new series begins next month which will be fascinating to all fishkeepers. Written by biology lecturer John Dawes of Bath University it brings you some of the interesting stories behind fish. Have you ever wondered why your fish have particular shapes, why they are patterned in different ways? John Dawes reveals some of the secrets of fish evolution and on the way produces some astonishing facts.

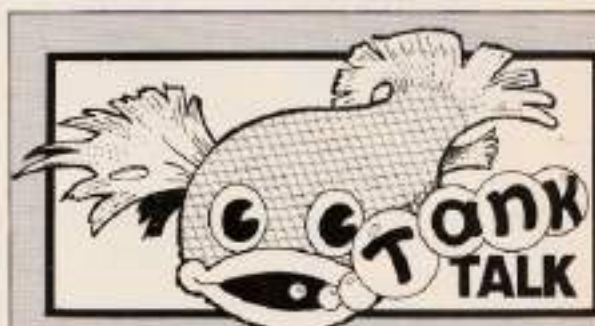
Buying PRACTICAL FISHKEEPING is one of the best things any aquarist can spend his money on.

Your fish will be pleased too! They may not be able to read it, but they will count the benefits of all the practical tips you will pick up from our experts and advertisers.

Don't miss out buy a copy on September 1.

Breeding Discus

Most Discus keepers become fanatical about this beautiful fish. But many aquarists have never tried keeping Discus because they have heard that it's too hard, not to mention very expensive! But it is worth considering for Discus are truly magnificent creatures and once hooked you will want to keep them all the time. Nick Fletcher continues his breeding features with solid practical information on these Cichlids.



Editor Norman Wright's look at the fishkeeping world

YOU have got to admire Koi enthusiasts who show their fish. The trouble they take to get the fish safely on display is endless.

And the end result is a superb show of colour — perfectly contented fish and very few problems.

That's the impression I got from last month's Midland Koi Association Open Show at Coventry.

There are few really big Koi shows and many aquarists won't have been to one before. After seeing the Midlands show I can confidently advise you to try one.

The fish are well worth seeing and even to someone who is not versed in the judging points of Koi you can easily spot the class fish.

There's a couple more big shows to go this summer. The Yorkshire Koi Association hold theirs on August Bank Holiday Monday. And the British Koi Keepers' Association Open is in September.

My congratulations certainly go to the MKA for their superb organisation and to all the exhibitors for splendidly presented fish.

On the subject of shows I am sure many readers will be visiting the Yorkshire Aquarists Festival later this month (full preview on Page 59).

PRACTICAL FISHKEEPING will beat the show putting on

various interesting displays and shows. The Yorkshire committee have lined up a magnificent schedule for the weekend event and I will be delighted to meet readers who attend the show.

The Supplies and Plates in the PRACTICAL FISHKEEPING tropical tank in my office have been hard at work producing two generations of fry.

Surprisingly for a community tank the fry have not been eaten by the adult fish. Remarkably they have survived and are now being shipped off to the tanks of many other aquarists who work on other magazines in our building.

And just to keep you up to date with the PRACTICAL FISHKEEPING marine tank our Picasso Trigger has been in trouble!

He has a favourite shell which he frequently hides in. But his other occupation is digging up the aquarium bed and distributing it all over the tank.

He digs under rocks and under his shell. The inevitable happened recently when the shell collapsed on him during the night because of the burrowing.

He was rescued in the morning but was obviously severely shocked. We are now waiting to find out if the experience will prove harmful or not.

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Fishkeeping's big day out

Preview of the Yorkshire Aquarist Festival

THE biggest and best day out in Fishkeeping... that's what the 1979 Yorkshire Aquarist Festival on Saturday and Sunday August 18 and 19 promises to be.

There is a tremendous line-up of events scheduled for the Festival plus a magnificent array of fish in an unequalled tableaux display. And to complete the day there is a huge selection of trade stands.

Without doubt it is pure paradise to the fishkeeper. But it is a family day too.

The organisers—the Yorkshire Association of Aquarist Societies—have fixed up a cinema all day to entertain the children.

There will be police displays, an air display and many other attractions.

PRACTICAL FISHKEEPING will be playing our part in providing additional entertainment. We have organised a special room where we will be staging slide shows, a fish-keeping forum for a question and answer session and tank planting displays by David Shields.

The festival is open between 9.30 am and 6.30 pm on both days at the Doncaster Racecourse.

The show is held in the Racecourse's huge stand. Catering facilities are provided in this modern complex.

As the biggest show in Britain this is well worth a visit. Around 38,000 turned up last year and the organisers are hoping to break the magic 20,000 barrier.

Competition is bound to be fierce after last

By Norman Wright

year's superb tableaux display. But as with everything at the Festival it will also be friendly. Societies will be pulling out all the stops to win the coveted Tableaux Trophy you can expect superb plants, magnificent fish and spectacular designs.

The Fish of Fishes competition is going to be stiff. Best in Show award winners from any show in the country are eligible—and entries can still be accepted by contacting Brian Chester whose address appears in the advert on this page.

There will be competition too from many trade exhibitors who will all be trying to produce the best stand in the show.

You will be able to see an incredible range of aquatic products and buy the aquatic items you need.

Don't forget to call in at the PRACTICAL FISHKEEPING stand. We will be delighted to meet readers.

And we shall have a special competition for great prizes for everyone who calls to enter.

Full details of our PRACTICAL FISHKEEPING forum and displays with their timings will be at the stand, so don't miss us.

Make it date with the Yorkshire Aquarist Festival now. It will be an excellent day out for you and the family.

And just one tip—why not come on

Saturday. Sunday is always a busy day. On Saturday there is always more room for an excellent look round.

THERE will be a big bonus for all at the show who buy a copy of PRACTICAL FISHKEEPING—a FREE FISH.

Yes, we will have a stock of free tropicals at our stand for everyone who buys our August magazine.

You will be able to collect your fish from the stand when you are ready to leave the show.

Can you guess the weight of a trout? If you can, take a look at the fish in the tank on our Stand.

For the person who gets the weight correct a superb aquatic prize is waiting.

The Doncaster Racecourse is an ideal venue for the show with ample car parking. The course is signposted on the town's ring road.

Doncaster itself is just off the A1 (M) in Yorkshire.

The huge grandstand is the Venue for the Tableaux and trade exhibits.

Although the area looks huge when it's empty every available corner is used for display space.

The end result is the biggest show in Britain with more interest per square foot than any other show.

Make a date now to visit the Yorkshire Aquarist Festival on August 18 and 19.

Over £1,000 in prizes at

THE 1979 YORKSHIRE AQUARIST FESTIVAL

Doncaster Racecourse, August 18/19

Tableaux prizes of up to £120, lowest £25

Fish of fishes: 1st £50, 2nd £30, 3rd £20

This contest is open to any fish that has gained a best in show anywhere.

(Details: B. Chester, 7 Rose Lea, Ordeall, Retford, Notts)

Schedules: R. Singleton, 13 Schofield Drive, Darnfield, Barnsley.

Trade: E. Stanton, 57 Medlock Crescent, Handsworth, Sheffield, Yorks.

Open to public 9.30 a.m.—6.30 p.m.

Admission: Adult 50p, Children 20p

Write to:

Letters

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

Come along

WE ARE looking for new members, both beginners and experienced aquarists to raise the numbers of our Society. We have quite a full programme for 1979 including visits by Dr. David Ford of Aquarian, and Dr. Christopher Andrews of Tetra.

We meet at the Half Moon Hotel, Market Place, Hucknall, Nottingham, each alternate Wednesday evening 8pm-11pm.

Parents are allowed to bring their children, although it is a public house. Further information may be obtained from the following people: Mr J. Pass, Treasurer, Tel Nottingham 202345; Mr J. Buck, Chairman, Tel Nottingham 626696; Mr S. Sanday, Show Secretary, Tel Nottingham 208190. — J. Pass, Treasurer, Hucknall & Bulwell Aquarist Society.

Mystery marine

I WRITE regarding the mystery fish in Marine Queries in the May issue of Practical Fishkeeping. I think you will find that this is *Chaetodon topus mesoleucus*.

It appears not to have a common name although I once saw it described as a Yellow Tailed Angel, a description which would also fit half-a-dozen other angel fish.

Apparently some specimens have yellow tails, others orange. It is a medium sized angel growing to approximately 15cm, and is found over a wide range of the Indo-Pacific. — B. Copper, Kings Lynn, Norfolk.

Weight facts

HAVING read your interesting article on starting a tropical fish tank in June's edition of PRACTICAL FISHKEEPING I feel that I must point out that you have not mentioned two very important factors, "weight" and "support".

For the beginner, who is filled with joy and excitement at setting up his first tank, it is very easy for him to overlook the "weight factor". Also for a person who has spent a considerable sum of money on his tank and equipment, might not wish to go to the further expense of a suitable strong steel stand, and so sites his tank on something that is inadequate.

I would like to give you a couple of examples of what I mean. A friend of mine bought his first tank 30 x 12 x 12 and planned to stand it on a shelf in a



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

small alcove. This shelf had previously supported a few small ornaments. He was really amazed when I pointed out to him that the water weight alone would be around 150lb, since then he has built himself a strong wooden stand.

Only last week, a young lady relative of mine, bought a 18 x 10 x 10 and decided to site it on one of the shelves in her wall unit. This shelf was supported by four wooden pegs, fortunately after explaining to her about the weight she resited the tank.

But lastly, which is both rather funny and disastrous is about a chap I once worked with. He placed a 36 x 15 x 12 tank on the sideboard in his living room and when it was almost filled, the top of the sideboard collapsed, the tank tipped over and flooded his room. I believe his wife was rather annoyed!

My house has wooden cavity floors and before installing my two, three foot stands I took the precaution of fitting down steel plates to bridge the floor rafters (under the carpet) that was some years ago.

I would just like to stress how important it is for beginners to realise the weight of their tanks and the need for good support. Naturally, the bigger the tank the more important especially glass to glass tanks. — P. Wallis, Ipswich, Suffolk.

Thanks to Mr Wallis for pointing out facts which could easily be forgotten.

Undergravel Plecostomus!

THE two reference books that I have consulted state that the breeding of *Plecostomus* in an aquarium is unknown. As two which I possess have just bred, I feel the following information may well be useful to some of your readers.

One of my tanks is just under four and a half feet long and is fitted with two Intercept CV Undergravel Filters. The airlift tubes are about an inch in diameter and have no bars on the splash shields as the filters are the earlier models.

In July 1978 I added two immature *Plecostomus* to the tank, and one began almost at once to investigate the airlift tubes. As the fish was able to extricate itself and as it was doing an excellent job of keeping the tubes clear of algae I ceased to bother about it disappearing below the gravel level.

However, at the beginning of this month (May 1979), I realised that I had not observed for several days this particular fish. A search located it in the chamber at the base of one of the airlift tubes, and I checked its being alive for ten days — until I was sure it was not going to

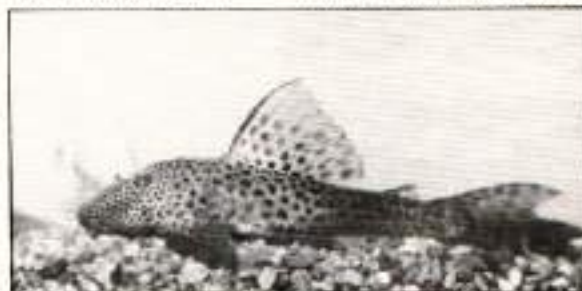
return to the main tank of its own will.

I removed the gravel and the filter base; the *plecostomus* swam clear, and with it went several fry. How many I cannot know because the water was opaque with disturbed muck.

I managed to capture two of the fry and saw a third later settled in such a place that I could reach it only by killing it. The two caught were placed temporarily in a plastic tub floated in the tank and they were almost transparent replicas of the adults.

A day later I transferred the fry to a breeding tank, but sadly I had not located a bottom plate properly, the fry escaped into the tank and were obvious prey to the gourami or catfish in the main tank.

The family is egg-laying, these fry were small, and so I believe the adult *plecostomus* must have incubated the eggs in the chamber at the base of the airlift tube. However, I don't know if the oxygen-rich water at the base of the airlift tube was as necessary as the absolute seclusion which the fish had sought and which I unfortunately disturbed. — R. B. Eldred, Hamsell, Gainsborough, Lincs.



Plecostomus—have any other readers bred these in their aquarium?

Temperature problem solved

WITH reference to your Letters Page in the June 1979 issue and the letter from D. Johnson, Southend-on-Sea. A thermometer which I purchased some months ago would appear to fit the requirements of your reader, it is made by "Paterson" and its true purpose is for use in photographic developing where accurate temperatures are required.

It has a temperature range of 58°F-88°F, and from memory is

guaranteed accurate to $\pm 1/10$ °C. It should be easily available from any good photographic shop which sells a good range of developing and printing equipment.

The thermometer is just like a long clinical thermometer, and it comes complete in a long plastic container, so it is very portable. I hope this information is of use. — R. M. Ingber, Mappeshall, Nr. Shefford, Beds.

Highrise fish

By Dr. David Ford



Dr. David Ford became a man in a suitcase during part of his work in developing the Aquarion range of fish foods. He was sponsored by his firm to travel the world to see most of the important public aquaria. It sounds a dream job for a keen aquarist!



One of the bow-fronted tanks — complete with Coral fish exhibits.

IMAGINE an aquarium high in a tower block, complete with performing fish and the most unusual display tanks ever dreamed up!

It sounds impossible. But not for the Japanese. My visit to the Sunshine City Aquarium in Japan was a real eye opener in more ways than one.

It just shows what can be done given the money and vivid imagination. I have never seen such a fabulous place.

The Japan Urban Development Co. Ltd. built Sunshine City as a "city within a city" complex in the Ikebukuro area of Tokyo. Conceived in 1966 the complex was opened in 1978 and will be complete by 1980.

Japan is very crowded, especially cities like Tokyo where daily traffic jams occur in the business centres such as Marunouchi, and night-time jams occur in the entertainment centres such as Ginza.

The planners decided to build a centralised complex which included areas for business, shopping, education, culture, health care, housing and hotels all virtually under one roof.

It was built to cater for 23,000 residents and up to 235,000 visitors with the largest car park in Asia (1,800 cars) and within walking distance of two stations of Japan National Railways.

Left: The Sunshine City complex in Tokyo.

The complex includes the tallest building in Asia (50 stories, 240 metres high) built to withstand Japan's frequent earthquakes.

The leisure areas include a school of culture, restaurants from around the world, a wax museum, entertainment arcade, a planetarium and a public aquarium called "Sunshine International Aquarium".

Situated on the 11th floor it can boast to be the world's first high-rise aquarium with some 400 tons of water 140 metres above sea level!

The entrance fee is 900 yen (about £3) for adults and 500 yen (£1.70) for children. This includes a guide, and uniformed girl attendants are available to explain the displays.

There are 43 aquaria and the viewing route is 240 metres long. A 290 ton capacity water tank feeds the display aquaria, and there are 300 different kinds of Fish and Aquatic mammals on display.

The aquatic mammals include the rare Dugong one of the only two specimens in Japan, the Finless Black Porpoise and a Pacific Dolphin.

The fish include all the popular aquarium species, but usually as part of some special or educational display.

For example, several aquaria labelled "Fish from Famous Rivers" show the range of species in the Mississippi River, the Danube, and the Nile. There are even fish from Loch Ness, but not including the monster!

Special displays include tanks whose indicators show the level of electrical discharge from electric eels.

A fish circus where the fish can do tricks such as swimming through pipes and moving floating balls is popular.

Some aquaria are shaped like cocktail glasses, contain special designs, are as tiny as a postcard or taller than a man.

One tank has a diamond-cut front glass so visitors see a kaleidoscope view of the fish. One tank even has a movie-screen at the back so pictures of a species, including spawning, hatching and growth, can be viewed through the aquarium, which contains living examples of the film's subject.

An "endless" aquarium has two parts with a warm water current in one section and a coldwater current in the other, hence completely different types of shoaling fish can be seen at the same time.

A large aquarium containing roots of trees and jungle species of fish simulates part of the Amazon river, including a thunderstorm with lightning, thunder and pouring rain!

But the most attractive tank is the simulated Coral-Reef Beach where a double-decker tank contains corals and coral-fish set so low viewers look down into the sea water and can even touch the exhibits.

The scale of the tanks and their beautiful condition as well as the size and health of the fish are in keeping with the grandeur of the Sunshine City Complex.

A final thought, and only the Japanese would tackle a job like this, for a routine water-change over 200 tons of water are needed, and all on the 11th floor!



The entrance to the superbly luxurious aquarium on the 11th floor.



This Marine tank is self contained with all equipment inside the marble plinth. This is a feature of the aquarium. Everything is so luxurious you can't see the normal aquarium "works".



A Kaleidoscope of fish—one of the amazing displays.



The two layer Coral reef display—you can look down on the fish.

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-Fish-to-Cod-

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

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

Simply write to Diary Dates, Practical Fishkeeping, Breilton Court, Breilton, Peterborough.

We will do the rest. Make sure you give the date, the details of the event and the full name of your society. Include addresses or telephone numbers where necessary.

AUGUST

Saturday, August 4: Northern Goldfish & Pondkeepers Society hold their 30 Goldwater Fish Show at the Sports Centre, Silverdale Street, Bolton, Lancashire. Schedules from Brian Rowland, 4 Wharf Road, Hale, Cheshire. (Tel: 061 280 6851.)

Saturday, August 4: Northern Goldfish & Pondkeepers Society Aquarist Show at the Sports Centre, Silverdale Street, Bolton. Details from W. Lord, 40 Hospital Road, Broomley Cross, Bolton. Tel: Bolton 28186. A great day for the family.

Sunday, August 5: Blackpool and Fylde A.S. Open Show at St Augustine's Hall, Newton Drive, Blackpool. Starting 11.30 to 2 p.m. 21 tropical classes, 7000 water classes. Prizes and raffles to be awarded.

SUNDAY, August 5: Oldham and District Aquarist Society Open Show at Werneth Park, Oldham. FNAS Rules. Starting 12 to 2 p.m. Trophies for all class winners plus prizes for 1, 2 & 3, 21 tropical and 15 coldwater classes. Schedules from P. Harris, 21 Richardson Road, Sootie, Tel: 061-701-1365 or J.A. Chadevall, 3 Brimville Close, Chadderton, Oldham, Tel: 061-652-6227.

SUNDAY, August 5: British Kai Keepers' Society East Anglian section Open Show at Warenes Fish Farm, Doo, Norfolk. Details G. L. Wright, 47 Latham Close, Brome, Norfolk. Tel: 0493-89234.

Sunday, August 8: Oldham & District Society Open Show at Werneth Park, Music Centre, Oldham. Starting 12 noon to 2 p.m. Eight judges in attendance to cover 29 tropical classes and 10 coldwater classes. Schedules from Mr P. Harris, 21 Richardson Road, Sootie. Tel: 061 707 1306.

Sunday, August 18: Southern Essex London A.S. Open Show at 141 Greenwich High Road, SE15 6D. Details: Mr S. Jeffrey, 257 St Albans Road, SE12.

SUNDAY, August 18: Longridge and District A.S. Open Show at the Civic Hall, Willow Park Lane, Longridge, Nr. Preston, Lancs. Schedules from Mr A. Lyons, 62 Heath Street, Ashton, Preston, Lancs.

Saturday, August 26, 26 and 27: Leamington and District A.S. Exhibition and Show at the Royal Pump Rooms, Leamington Spa. Details from M. Burdidge, Flat 1, 36 Warwick New Road, Leamington Spa, Warks.

Sunday, August 28: Long Canon Aquarist Society Open Show at Gregory's Rose Garden, Toton. Details: P. Wood, 137 Longhor Road, Long Eaton, Notts.

Monday, August 27: Peterfield and District A.S. Second Open Show, at the Town Hall, Heath Road, Peterfield, Hants. Schedules from D. Stacey, 4 Highfield Road, Peterfield.

Monday, August 27: Yorkshire Kai Society hold the 3rd Yorkshire Kai Festival, at Harwood House, near Leeds. Commencing 2 p.m. Show schedules, Trade Stand information, etc., from Stuart Bent, 20 Oakwood Road East, Hetheringham.

Monday, August 27th - Tuesday 28th August: St Yarnmouth & District A.S. Exhibition 7th Tropical & Coldwater Fish plus Society Tables. Hopkin Village Hall on A12 between St Yarnmouth and Lowestoft.

SEPTEMBER

Saturday, September 8: Bethnal Green Aquarist Society Open Show. Contact Peter Riley, 1 Harford Street, London E1. (Tel: 01 520 3911 Ext. 150) for details.)

Saturday, September 8: Bristol A.S. Jubilee Open Coldwater Show, St Andrew's Church Hall, Stratford Road, Whitshall, Bristol 5. Schedules from Mr W. D. Hart, 20 Inpsell Road, Bristol, BS16 6ED. (Tel: 0272 776234.)

Saturday, September 8: Kingston and District Aquarist Society Open Show at Hayes Park Methodist Church Hall, Worple Road, Hayes Park, London. SW15. Details from D. Mackay, 12 Victoria Road, Twickenham.

Sunday, September 9: Kai '79, The British Kai Keepers' Society 4th National Open Kai Show, at Totton Park, Knutsford, Cheshire. Come and see the finest selection of Japanese fancy koi in the country. Details and entry forms from the Show Chairman, Mr P. Waddington, 1 Axon Drive, Bury, Lancs. Tel: 061-764-2191.

Sunday, September 9: Coventry Pool and Aquarium Society Open Show, St. Christophers School, Almsley, Coventry. Details from Show Secretary, R. A. Cress, 46 Lynton Road, Warwick. Tel: Warwick 495236.

Sunday, September 9: Wellingborough & District Aquarist Society Show at the Victoria School, Hill Road, Wellingborough. Details from Show Secretary, Mr M. Cox, 20 Salisbury Street, Kettering.

Sunday, September 9: Longridge and District A.S. Open Show at the Civic Hall, Willow Park Lane, Longridge, Nr. Preston, Lancs. (15 minutes from M6 and M55.)

Sunday, September 9: Middlesbrough A.S. Open Show at James Finlayson Hall, Eppon. Trade stands, great water competitions. Details from S. Cook, 15 Bower Street, Middlesbrough.

Sunday, September 9: Bridgewater A.S. Open Show at St George's Community Centre, Kenyon Way, Little Hulton, Manchester. Details from M. Burpines, 15 Parry Road, Farnworth, Bolton, Lancs.

Sunday, September 9: Evesham Fishkeepers' Society's Second Open Show at Evesham High School, Four Pools Road, Evesham, Warks. Schedules later from E. M. Thornton, 41 Crooks Lane, Studley, Warks. Tel: Studley 7125.

Sunday, September 9: Zenth Aquarist Society (Southport) 1st annual open show at Charter Hall, Southport. Judging by Y.A.S.S. standards and rules. Starting 12 noon to 2 p.m. Judging 2.10 p.m. Schedules available from T. Robinson, 62 St John Road, Southport, DN 10 2HU. Tel: Southport 58540.

Sunday, September 9: Kai '79 The British Kai Keepers' Society's 14th National Open Kai Show at Totton Park, Knutsford, Cheshire. Membership 60000 from Mr M. Wainwright, 165 Woodcote Road, Amersham, Bucks, HP8 1NR.

Sunday, September 9: British Kai Keepers' Society Fourth National Open Show. Come and see the best selection of Japanese Fancy Koi in the Country at Totton Park, Knutsford, Cheshire. Details from Show Chairman, Mr P. Waddington, 1 Axon Drive, Bury, Lancs. Tel: 061-764-2191.

Saturday, September 15: Hounslow & District Aquarist Society Open Show to be held at Hounslow Youth Centre, Cecil Road, Hounslow. Schedules from Show Secretary Mr T. Dunningbrooke, 7 Holmwood Close, Addlestone, Surrey. (Tel: Weybridge 54976.)

Saturday, September 15: Plymouth and District Aquarist & Pondkeepers Society Open Show at The Trinity United Reform Church, Torridge, Hatherly, Plymouth. Show schedules from Show Secretary, John Ruxley, 30 Dartmouth Avenue, St. Judas, Plymouth, Devon, PL1 8SR.

Sunday, September 16: Barnsley Tropical Fish Society Open Show at Academy Oaks Youth Centre, Barnsley. Details Secretary, M. Whitley, 89 Clough Road, Hoyland, Nr. Barnsley, S. Yorkshire.

Sunday, September 16: Leamington and District A.S. Open Show at Trinity Hall, Trinity Street, Leamington Spa. Details from M. Burdidge, Flat 1, Warwick New Road, Leamington Spa, Warks.

Sunday, September 16: Midland Aquarist League Open Show & 16th Society Show, Coventry. Schedules from P. Underwood, 10 Hyde Road, Kenilworth, CV8 2PD. Tel: 58285.

Thursday, September 20: Kent Area Group - C.A.G.B. 1st Annual General Meeting, at Collin Hall, 56 Phillips Church, Waterloo Street, Maidstone. Details from J. Gibbet, 1 Highfield Cottage, Lower Hasle, Canterbury. (S.A.E. please.)

Sunday, September 20: Torridge and District A.S. Open Show at Hedden Village Hall, Wiltonfield, Hatherly, Torridge, Kent. Details from Mrs S. Purford, 6 Alston Road, Torridge.

Sunday, September 20: Beckenham & District Aquarist Society 1st Open Show at T.A.V.R. Centre, Watling Street, Beckenham, Kent. Details and schedules: Norman Raven, 39 Mount Pleasant Road, Lewisham, London, SE13 6ND. (Tel: 01 890 2641.)

OCTOBER

Sunday, October 7: Wokerhampton Aquarist Society Open Show at Odey Community Centre. Starting 12 noon and 2 p.m. Details from M.L. Crook, Tel: Wokerhampton 53383.

Sunday, October 7: South Leeds Aquarist Society Annual Open Show at Harrogate Boys Club, Hillside Road, Leeds 10. Starting 12 to 2 p.m. 26 classes, annual trophies for section winners. Trophies for all class winners. Schedules from Show Secretary, Mr A. Aushack, 151 Thorne Road, Middleton, Leeds LS10 4HH.

Saturday, October 20: Ingham Parish Society National Open Show at St Pauls Church Hall, Woodford Bridge, Essex. 7 classes including a sales class. Trophies and plaques will be awarded in every class except the sales class. There will be entry for the new challenge class. This is a specialist show for forward goldfish only. Details and schedules from Mr G. Lewis, 81 Bayne Avenue, Hayes, Middlesex. Tel: 01-573-1776.

Friday 10 October - Sunday 21 October: South East Aquarist Society's 52nd Annual Open Show at McLellan Galleries, Southwell St, Glasgow. Details from Show Secretary, Mr W. Hamilton, 16 Burn Street, Paisley, PA1 1BY.

Sunday, October 7: Newcastle Guppy & Livebearer Society and the Tyne/Wear section of the Farley Guppy Association are holding a joint 'International' All Live Dealer Open Show at St Catherine's Church Hall, Chillingham Road, Heaton, New castle upon Tyne. Details from Mrs J. Penlon, 'Halfpenny House', 146 Chillingham Road, Heaton, Newcastle upon Tyne. NS3 5BT.

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Scientists at the centre are learning a great deal about fish diseases and how to prevent and cure them.

And last month Andrew Stagg and Ken Digby from New Technology began a new series aimed at passing some of that knowledge on to PRACTICAL FISHKEEPING readers.

Next month they continue with Marine diseases. But this month the Beating Disease article features the company and the work they are doing.



Beating disease



One of the huge marine display tanks in the retail section of the Aquaculture Centre.

PRACTICAL FISHKEEPING

How fish farming helps fight disease



Scientist Ken Digby watched by Shawn Prescott (left) uses a television monitor.

New Technology had its origins in the world of fish farming and research.

Managing director Shawn Prescott is a marine biologist and did a great deal of work in developing commercial oyster farming.

He has advised on fish farming throughout Europe and the Middle East and the fish farming side of the business now has many contracts in that area.

New Technology advises and acts as consultants to fish farming projects and they have been building a wide experience in the subject.

Their hobby side includes various disease care products, a disease test kit and an expanding range of aquarist products.

But raising Carp for food in Greece seems totally removed from a British fishkeeper's tank of Guppies.

In fact they are not worlds apart.

"It is remarkable how much each side of our business helps the other. Things we learn in a trout hatchery can be applied to the hobby fishkeeper.

"But even more remarkable is the fact that we have adapted many ideas to come from the aquarium to fish farming," says Shawn Prescott.

"I think both fishkeeping and fish farming owe a lot to each other," he adds.

New Technology had humble beginnings when it moved into the Aquaculture Centre at Hadlow. At first it was just a base for the fish farming consultancy when it got too big to be housed in Shawn's home.

Their development work started on the New Technology range of products and the old shop at the site seemed too good to waste.

Then Shawn decided to use the space as an aquarist shop which is flourishing.

"It is now very important to us. It brings everyone into close contact with the aquarist and means we can judge his needs far better," explains Shawn.

Even better for the shop's customers is the fact that so many fish scientists are on hand to help.

Customers can get a free diagnosis service for their fish which are suffering from disease or have died. A commercial rate is charged to aquarists who want to use the service when they are not customers of the shop.

Ken Digby does most of this work. When PRACTICAL FISHKEEPING visited he had discovered gill flukes had killed a customer's Regal Tang.

Work like this can prevent the disease or parasitic spreading and wiping out the entire population of a tank.

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At present the manufacture of drugs and products are carried out in the main laboratory and packed and dispatched in a special department.

But the company has expansion plans for their aquarist side and American Jim Coogan has recently been recruited to head their sales team.

New laboratories are planned and new products are bound to follow as the research programmes go ahead.

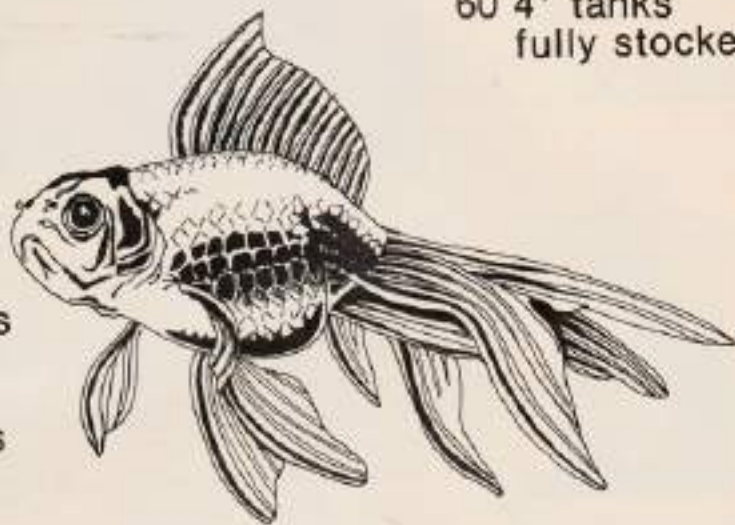
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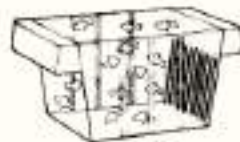
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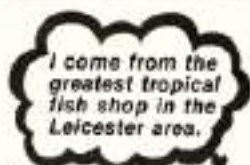
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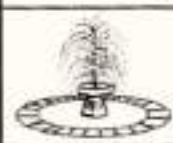
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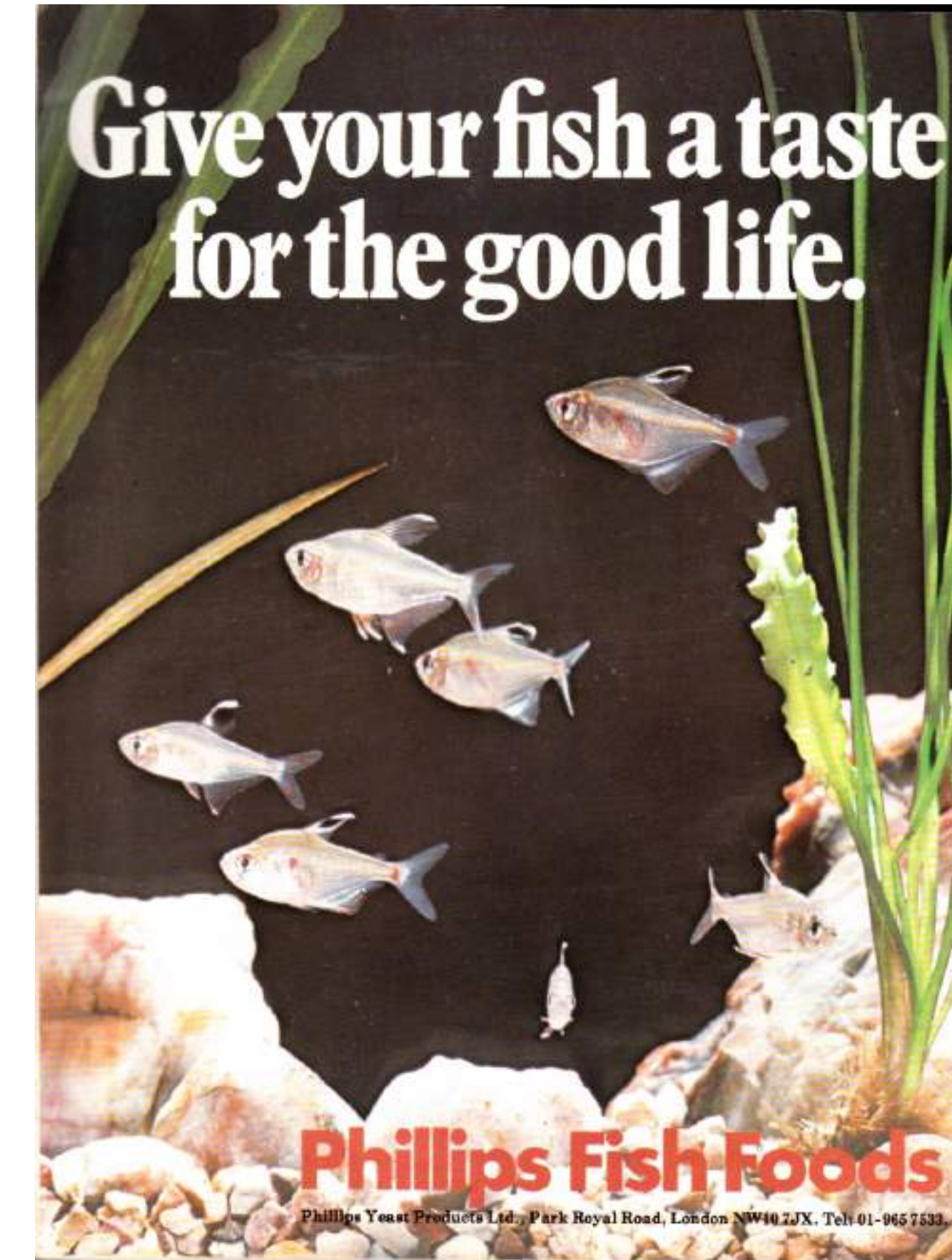
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