

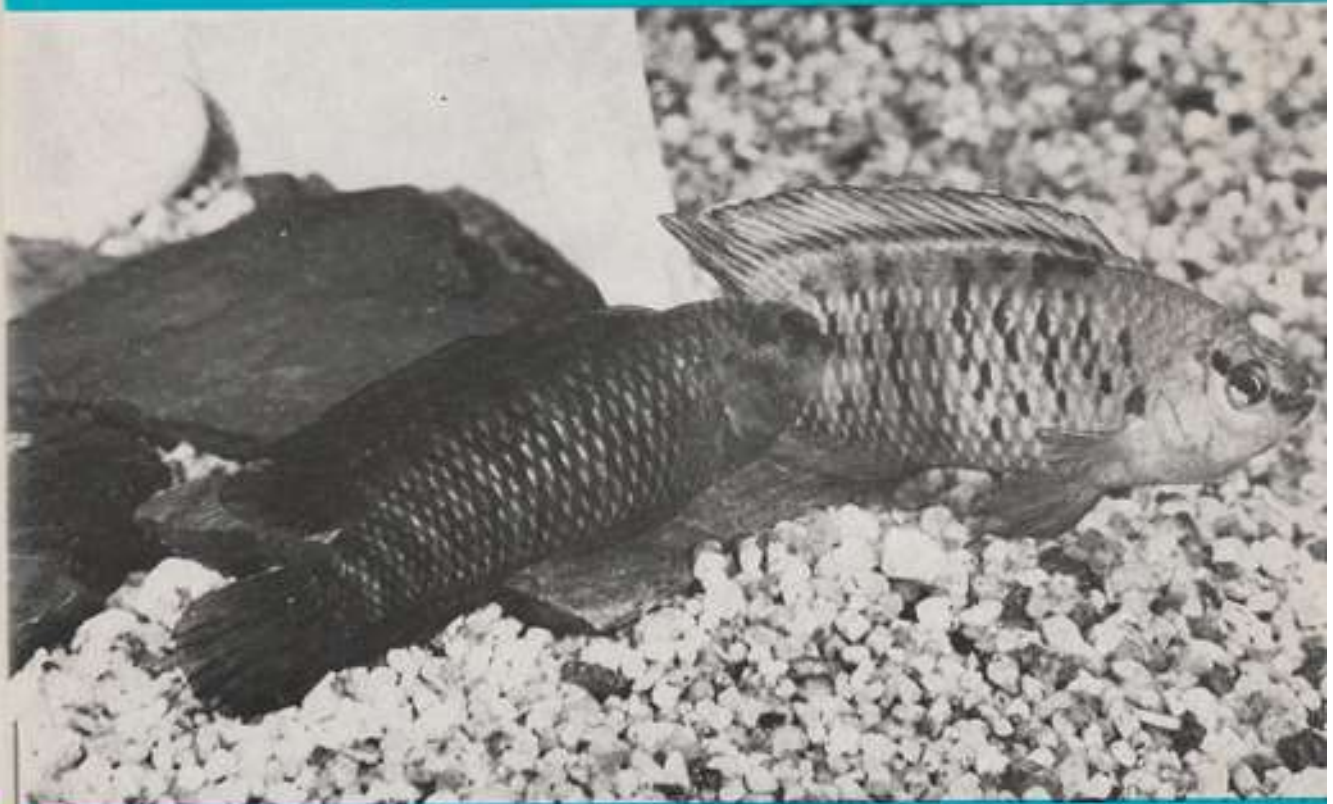
MARCH 1972

15p

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE



Contents include:

Breeding *Badis badis*

Fish House Specialisation

The Elephant-nosed Fish

Cryptocoryne wendtii

Tropical Marine Project

Breeding the Bumble Bee Goby

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In This Issue

| | Page |
|---|------|
| Comments and Quotes | 497 |
| Letters | 498 |
| What's New? | 505 |
| <i>Badi badi</i> —a Forgotten Favourite | 506 |
| Making Haste Slowly | 509 |
| Readers' Queries | |
| Answered | 511 |
| Guppy World | 512 |
| A Fascinating Knife Fish | 513 |
| Personal Comment | 515 |
| Breeding the Bombile | |
| Bee Goby | 517 |
| Elephant-nosed Fish | 519 |
| Economics of the Open Show | 520 |
| Fish House | |
| Specialisation | 521 |
| <i>Cryptocoryna zenatii</i> | 522 |
| Meetings and Changes of Officers | 523 |
| Book Review | 524 |
| Transatlantic Topics | 525 |
| Club News | 526 |
| In Brief | 528 |
| Dates for Your Diary | 530 |

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Comments and Quotes

- Getting them out of dark corners
- Difficult times

Therapy for the Skulkers?

THOSE who wish that their shy, timid or nocturnal favourites would disport themselves a little more often in the front of the tank may yet see the day when a simple purchase from the aquatic dealer will ensure that no fish will again lurk in a dark corner. For many years experimental work has been proceeding on a substance known as scotophobin, isolated from the brain of experimental rats induced to fear the dark. By the application of electrical shocks the animals have been made to shun a dark box and run into a light one (which is, of course, quite contrary to their natural instincts). The material obtained from the brains of these rats has already been injected into mice, in which it instilled the same fear of the dark. Now, the NEW SCIENTIST reports, the researcher, Dr George Ungar of the Baylor College School of Medicine, Houston, U.S.A., has injected scotophobin into goldfish. The reaction of the fish is rather more complicated than that of the mice but the experiment shows clearly that, after the injection, goldfish tend to shun a dark enclosure in their tank. The treatment could certainly save our albino clarias much feverish adornment of the top of his head with gravel whenever his tank lights have to be switched on.

Too Much of a Good Thing

EXPANSION of trade reflecting growth of an interest is a good thing; expansion of services without such growth may not be good. The latter situation appears to apply in the aquatic trade at the present time. Too many imposters, too many wholesalers, too many retailers, too many dabbling at being fish traders, and a market that has slowed in growth and is showing a reduction in spending—this cannot be good for anyone. Those who know the aquatic trade from old are saying this and we believe it is as well for consumers (who form the largest proportion of our readers) to realise it too. The consumer may enjoy being wooed under such circumstances of intense competition for his custom, but any apparent advantage here will be temporary only. We don't suggest that it is up to consumers to sort out the aquatic trade's own peculiar problems but we would advocate, in the interest of a healthy trade in the future, a little steadfastness in placing custom. Certainly not to shore up any inefficient, uncaring or out-of-date business but as acknowledgement of past good service where this has been provided and to encourage some stability in the present state of affairs, which could well worsen rather than improve in the foreseeable future.

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Societies—there is information about Tableaux on page 518



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London SW17 0NY

How to Make 'em Last

READING Personal Comment in the February issue and Arpee's comments on the life-span of fishes reminds me of my own small band of 'odds' and 'ends' that were taken over when I inherited the remnants of a neighbour's fish collection nearly 5 years ago. As I am really a pond fish man I didn't want the fish and had no interest in them but decided to give them a home until they died. They were spread amongst two or three old tanks and include two metynnis, a black widow, two blind cave tetras, a cherry barb, a couple of cardinals and the odd male guppy. They receive, as I admit guiltily, very little attention. The tanks are given a quick 'do round' about once every 6 months, they are fed—but somewhat haphazardly—and they appear to be going to live forever! They have at last won my grudging admiration for sheer tenacity but I am now restraining myself from lavishing any more attention on them as I can't help wondering if the fact that I have given them such little attention might not account for their success.

Grantham, Lines.

D. MARTIN

Try Ours

IN reply to the criticisms of MAAS organisation of open shows, I should like to extend, to Mr Kerridge of Harlow A.S. in particular and to all your readers in general, an invitation to attend GKN Pond & Aquarium Society's Open Show (details from Mr K. Rowley, show secretary, 156 Wolverhampton Street, Darlaston, Staffs.). We feel the best answer to his just criticism would be if he were to see at first-hand that the criticisms he levelled are not applicable to all Midland open shows. See you all on 4th June.

A. T. WRIGHT

P.R.O., GKN P. & A.S.

Entente Cordiale

I AM pleased to announce that we have established what we believe to be a unique relationship with a French aquarists' club. We are in correspondence with a Monsieur Patrick Lancien of the Association Aquariophile de Rozen, exchanging notes on club activities etc. We hope to arrange a meeting with him in the near future.

PETE WATSON

Vice-chairman, Anson Aquatic Club

How Caesar Keeps Warm

WITH reference to Mr P. Sloane's letter (PFM, February), 'Heating for Big Fishes', I also had this problem of heating a large tank with silly short heaters. I heated a 48 in. by 18 in. by 18 in. with two 200 watt heaters with an outside thermostat—the load is too great for an inside one. This made the heat very concentrated around the heater, which was too hot to touch by hand. I must mention that this tank is in an entirely unheated bedroom facing north. After much searching I have now fitted two new 200 watt heaters that are each 22 in. long. These spread a gentle heat the complete length of the tank and do not startle a large fish if it comes to rest near the heater. My snakehead, Caesar, smashed quite a few smaller ordinary heaters, but seems quite happy with the new ones (these bossy fish!). I use three plastic heater holders to each heater, which makes them quite secure. These heaters are W. & D. Aquarium Heaters (of Rochdale, Lancs.) and come in two sizes: 17 in. in wattages 100, 125, 150 and 22 in. in wattages 150, 200 and 250. Nowadays the trend seems to be for bigger and bigger aquaria, so let's get the shopkeepers stocking equipment to match.

Seven Kings, Ilford, Essex (MRS) SYBIL HEDGES

Mrs Hedges' Caesar is the reigning Supreme Champion fish of 1971 (FBAS Supreme Championship), seen by TV viewers and visitors to The AQUARIUM SHOW at the Royal Horticultural Society's Hall last October.—EDITOR.

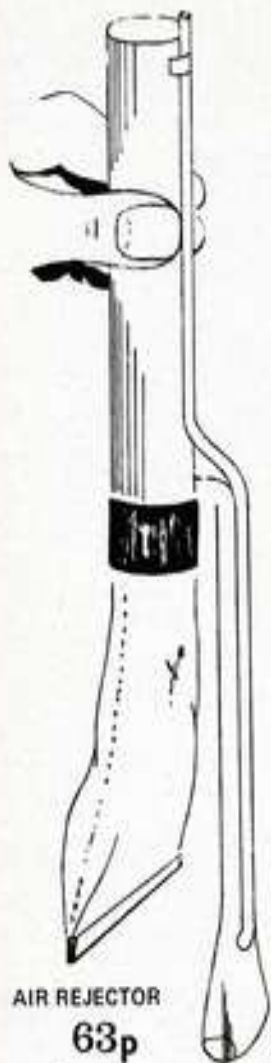
Water for Mollies

MR F. W. Coles in his article of positive tips for beginners (PFM, February) leaves out one or two vital points. Firstly he says that 'mollies are found in both brackish and completely fresh water'. This is only true up to a point—he does not emphasise that there are two distinct species of mollie.

The first, *Poecilia sphenops*, is the species of which the black variety is widely kept. It is doubtful whether this is a brackish water fish, but many

Continued on page 505

THE SIGN OF THE WINDMILL PRODUCTS

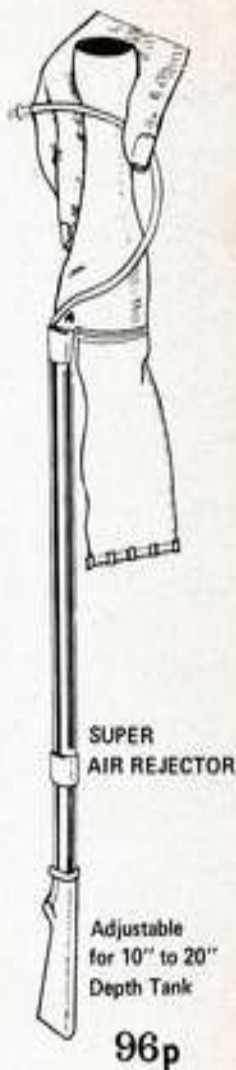


Beware—The Black Peril!

Unconsumed food very soon turns aquarium gravel black in colour and the resultant harmful methane and hydrosulphide gases are fatal to fishes. Muds collected on top of gravel is easily disturbed and stirred up by fishes and when it settles on the leaves of plants destroys their natural beauty. Catfish and snails can do a lot towards lessening these two causes of unsightly tanks, but the safest and surest method is by giving the aquarium gravel a weekly cleaning.

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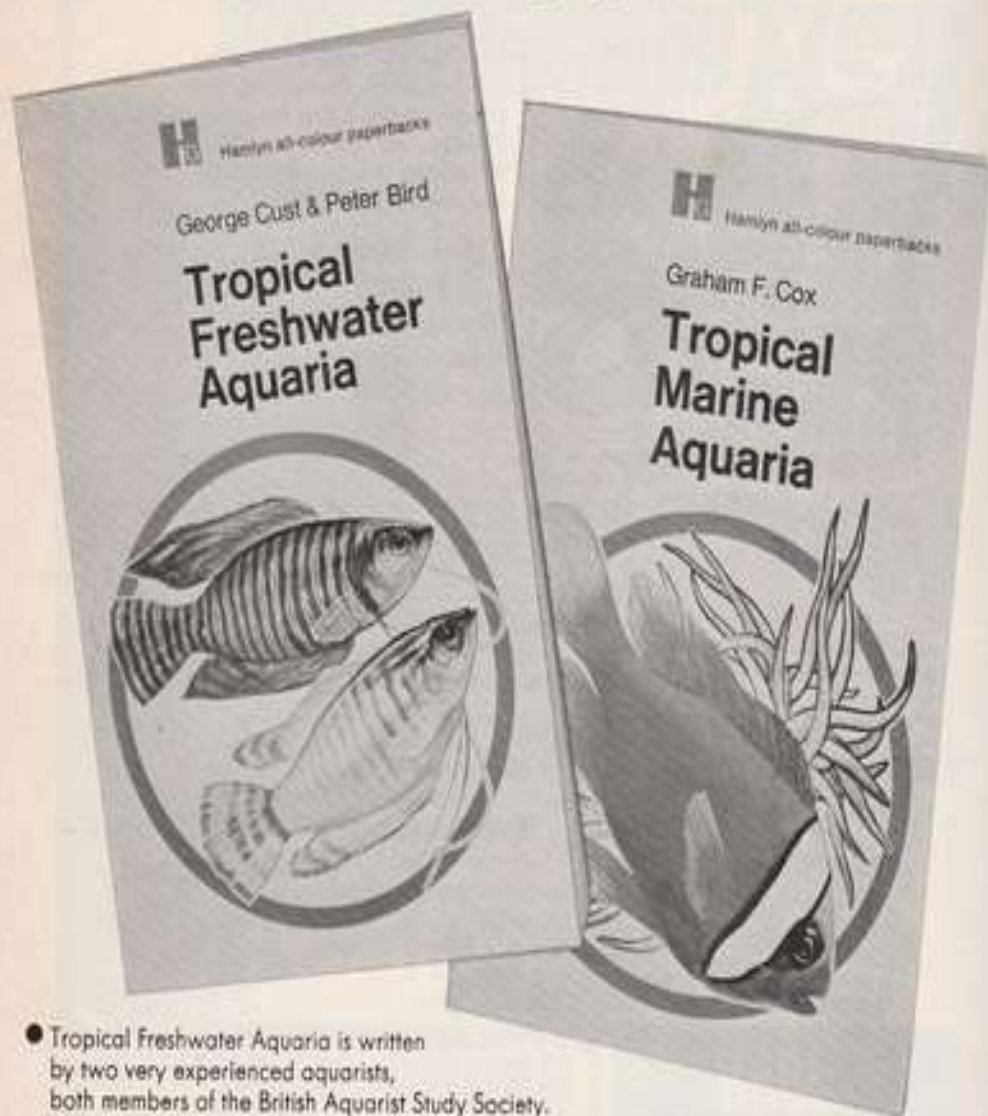
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LETTERS

Continued from page 498

people advocate, and this is my personal experience, that a little salt in the water keeps them in best condition. The second species is *Poecilia tetifera*, which comes from the coastal regions of Yucatan and is therefore most emphatically a brackish water fish. Commonly known as the sailfin mollie, this is a far more beautiful fish than the former and it would be a pity if purchasers buy it only to see it rapidly lose condition in freshwater.

Secondly, Mr Coles says that rainwater should be used as some of the replacement for water loss. Considering that sulphur dioxide is the main cause of industrial pollution, this could be dangerous in many regions and it is also necessary to watch what sort of roof, through what kind of piping and in what kind of container the rain water is collected. Pure rainwater is often very difficult to get hold of!

I would also question the wisdom of not using any form of aeration. Most of the occupants of our tanks come from moving rather than stagnant bodies of water, especially the tetras which most beginners go in for. This ties up with another point about what Mr Cole says concerning the

siphoning off of mulm. He does not mention anything about plant growing in the article and mulm should be available for the plants to convert to food. Most beginners like plants in their tanks and therefore the use of an undergravel filter provides aeration, filtration, helps the plants receive their food, decreases siphoning time and enables that extra fish or two without danger of overcrowding. Most beginners are very uncertain on this point so to avoid the common, and perhaps expensive, mistake of overcrowding a quiet pump is a sound investment at about £1.25.

Lastly the price of stocking a large tank with both fish and plants is exorbitant. £5 can easily be spent on plants to provide a decent background and a further £3 on fish (working at the very conservative estimate of 15p average per small fish). Therefore, besides all the difficulties of installing a large tank (a 4 footer is almost impossible on your own—I tried!) and assuming most beginners go in for small, pretty fish, a 2 foot tank is quite adequate and all that is necessary—the money saved on the larger tank (and all the associated large fittings) can be spent on a far more beautiful display.

I do not think a temperature gradient is necessary when keeping the majority of fish offered for sale, let alone those the beginner is likely to buy.

Epsom College, Surrey

M. FURNISS

What's New?

New U-G Filter Design

BIOLOGICAL filtration, involving the use of under-gravel filters, has received renewed attention from aquarists with the realisation that in the marine tank it is perhaps the simplest and least troublesome way of maintaining healthy tank conditions for the coral fishes showing hypersensitivity to water pollution. To the two distinct types of under-gravel filters already well known on the aquatic market is now added a third, the **Algarde Biological Undergravel Filter** (Algarde, 401a

Ripple Road, Barking, Essex). It consists of an ABS opaque grey plastic base plate that is moulded in longitudinal corrugations, the spaces beneath these interconnecting with two corner positions, into either of which the air-lift tube can be fitted. Narrow slots cut transversely across the 'troughs' of the corrugations allow the water to pass to the air-lift tube after traversing the biologically active gravel or crushed coral bed (at least 1½ in. depth is recommended) above the plate. A broad flange around the base plate provides an

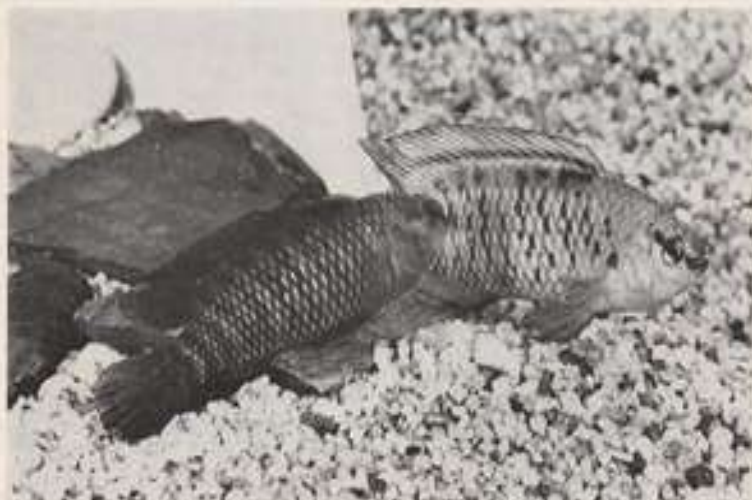
effective seal, under the weight of the gravel, with the aquarium base. The clear plastic air-lift tube is approximately 1 in. in outside diameter, with a fitting to receive the air line and, if required, an air stone of suitable size (not supplied with the filter). Two sizes of filter are available: 9 in. by 17 in. (89p) and 11 in. by 23 in. (99p).

Tropical Mural in Colour

AQUARIUM backgrounds have often made heavy use of fantasy in the underwater scenes depicted. For those who prefer a naturalistic approach, **Interpet** (18-22 Church Street, Dorking, Surrey) are marketing a natural colour photographic background mural for tropical freshwater aquaria. A luxuriant growth of plants in their natural greens and reds has been photographed on to stout card, laminated on both sides to minimise damage from water. Approximately 40 in. long by 18 in. wide, the mural can be cut down for use with smaller tanks. Recommended price 98p.

A VISIT to London is planned by members of the Cercle Aquariophile, Nancy, France on Friday 19th-Monday 22nd May. They hope to contact an aquarist society in the U.K. with which to 'pair' (though their schedule restricts visiting to clubs in London and the Home Counties). Would any interested society, perhaps holding a meeting on the Friday or Saturday evening, please contact PPS's office. We will arrange contact with Monsieur Terrier of the Cercle Aquariophile.

Badis badis— a Forgotten FAVOURITE



Badis badis

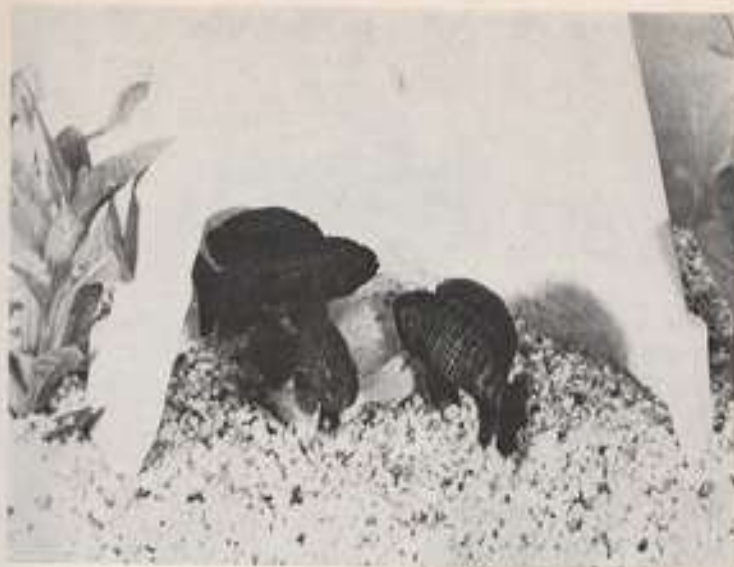
By RUDOLPH ZUKAL

AS an aquarist of many years standing I can boast the acquaintance of many tropical fish hobbyists, and I often take the opportunity to visit them; by this means I frequently see fishes that do not appeal to me personally. Yet in most enthusiasts' tanks only the same old well-known varieties, of tetras and similar fishes, are found and one seldom comes across a new type of fish or species. Indeed, many once well-known fishes are rarely seen at all today. *Badis badis*, from India, can be classed as a fish that has been unlucky in this way. It was imported as long ago as 1904, and a variety, *Badis badis burmanicus* Ahl, was brought to Europe from Rangoon in 1920. Both fish are about the same size and reach a length of 3 in. They are peaceful, very shy and not very active. I appreciate that most tropical fish enthusiasts prefer to keep the more attractive fish; yet, in spite of the fact that these representatives of the family Nandidae live in hiding and avoid the company of other fishes, their way of life, their frequent changes of colour and their propagation are so interesting that they are worth keeping and observing.

Photographs by the author

Translation by F. MARSH

The fish need warm water—minimum 71.5°F (22°C). They can be kept in a medium sized or larger well-planted tank and we put floating plants on the surface to produce a subdued light. *Badis badis* look for hiding places, so we also put flowerpots with the bottom knocked out into the tank or construct caverns out of rocks. The water should be 'old' water and the tank bottom medium soft.



When three males were given the tank with the half-flowerpot one assumed ownership and chased the others out. Colours of the fish became very dark during these skirmishes for breeding territory.

Although these fish are always hungry and consume great quantities of food they will only eat live foods. The males frequently fight, their fins spread wide, but the fights are harmless. During these battles their colour darkens until they are almost black. The defeated combatant will leave the battlefield, whereupon his colour brightens considerably.

From a friend, who had no interest in breeding the fish, I received three males and a female. I put a flowerpot in a 3 gallons tank and raised the temperature to 79°F (26°C), and then placed all the

fish in the tank early one morning. Soon, one of the males was occupying the flowerpot. The others swam around the new home, apparently without interest; but this didn't last long. The two other males paid a call on the flowerpot—and that was what I was waiting for. The display soon started. The fighting instinct of the males increased and their colour became darker and darker.

With fins well spread, the flowerpot owner and another male exchanged blows until the aggressor was nudged aside with a skilful push and promptly



Jaw-tugging was amongst the behaviour shown by the pair of fish (darker fish is the male). The bulging abdomen of the female is easy to see in these pictures.

Before spawning the fish swim close together and around each other within the half flowerpot until finally (lower picture) they embraced and the eggs were deposited.



lost his dark colouring. Then, for hours, nothing happened. The occupier of the flowerpot guarded his lodging place; and I removed the other males from the tank. At long last the female approached. At first she was frequently chased off and when she did get near to the male he rammed her. In one of the accompanying pictures it is possible to see how she pushed her belly towards the male (her full paunch can clearly be seen). Up to this point the male kept up his threatening attitude, and darkened almost to black whilst the female's colouring brightened. There was also some jaw-tugging, in cichlid fashion. The fish moved around each other in a criss-cross movement and I thought that this movement was the spawning prelude. But their behaviour pattern then changed and the male curled his body and tried to embrace the female. They moved around each other and took up some really comical positions. The first embrace was unsuccessful and the female slipped away, but after a time the fish encircled each other and the female was embraced in the manner well known for the fighting fish *Betta splendens*. With this embrace some eggs were ejected. The whole spawning lasted for about 3 hours and I counted about 80 eggs. After the spawning finished, the male chased the



female away and he took over the care of the brood.

Usually the fry hatch after about 48 hours. The young at first are very delicate, and they must be given the finest powdered food.

Film Show

LAST year the Hemel Hempstead A.S. Show of films for aquarists made and presented by the Belgian film-makers M. Carels and C. Wante proved so popular that many

aquarists were disappointed in obtaining tickets. Hemel Hempstead A.S., with the co-operation of Kodak Ltd., have again organised a film show by the same entertaining guests and this is on Saturday 6th May at Kodak Ltd., Maylands

Avenue, Hemel Hempstead, Herts. at 7.30 p.m. Tickets (30p each) are obtainable only in advance from Mr Alan Tuffs, 22 Fir Tree Close, Hemel Hempstead, Herts. (phone 0442 2807), to whom early application should be made.

TROPICAL MARINE PROJECT—2

The Conditioning Process

Making Haste Slowly

THE freshwater enthusiast who uses undergravel filtration may well stock his tanks to capacity within a week or so of setting them up. In fact most beginners do this within a matter of days, whether they use filtration or not, and so often they get away with it. With tropical marines everything is quite different. Here the simple routine to follow is to give the undergravel system something modest to bite on within the first few weeks, whereupon in between 6 and 8 weeks' time the micro-organisms in the gravel will have developed to the extent that dangerous substances within the water will not have accumulated in harmful amounts. The starter process is the provision of excreta from one or two of the hardier and more tolerant marine fish such as *Dascyllus*. The means of knowing how you are getting on is a minute test kit; one make is marketed at about £1.50. The way of getting there quickly and surely is by patience, understocking and the highest throughput of air for the filtration system that you can manage. Mr Maurice Stray recommended me to try this technique, and since it seems to work for him professionally there was no real reason why it should do otherwise for me and beginners generally.

I chose the yellow-tailed blue damselfish and the domino damselfish as my starter fishes in the 15 gallon stainless-steel tank set up as I described last month. I must admit to having been highly sceptical about their chances of living for more than an hour or so in the water I had concocted for them, and I was quite prepared to see them laid over and expire. The many articles and books I had read on the subject brought me out in a sweat as regards the fine tolerances necessary in terms of both salinity and temperature, to say nothing of

ROY PINKS has been testing on behalf of beginners the method of keeping tropical marines with undergravel filtration, in which micro-organisms developing in the gravel deal with soluble nitrogen-containing waste matter from the fishes and prevent this reaching harmful proportions in the sea water. Here, in continuation of his article in the February issue, he reports what can happen for the beginner in the early weeks of conditioning the aquarium, after first setting up, as the biological filter becomes established.

pH, which, typically, I had ignored completely. I thus released these two highly nervous and almost colourless creatures and held my breath! The yellow-tail darted straightaway into a coral cranny and the domino gave a slight shudder and hid behind a filter pipe. Thus they remained, something of an anticlimax, for about 24 hours. This was 26th June. On the following day they took a little nourishment in the form of whiteworms and a little Tropic Marin flake food. As a counter to disease I had been advised to add copper sulphate solution at the recommended dosage every other day, until three applications had been made (i.e. one full tank dosage on 26th June, another on 28th June and the final one on 30 June).

At this stage I decided to run counter to the advice I had been given. Assuming that the average fishkeeper in my position would be as impatient as I was it was natural that another fish would soon be added, and soon another and then another until full capacity was reached painlessly or until something 'gave'. As the two 'starter fishes' were looking fit I added a peculiar clown in the face of advice that clowns can be both temperamental and carriers of disease. There was no immediate sign of any trouble and it took food within an hour or so of joining the tank. The following morning it

was in such an odd position at the top of the water that I reckoned that just about everything had gone wrong—temperature, salinity, the lot, but when it gobbled down a fair helping of breakfast I got my first message from the marines: that things are not always as they seem to be. By 1st July, the tank having had fish in for a week, there were signs that the inmates were gradually settling down; they were timid, the clown excepted, but there were no quarrels and no disease was apparent.

I next talked myself into acquiring a neon goby, on the basis that its reputation as a remover of unwanted tit-bits from the tank floor made it quite indispensable at this vital stage of events, so near were we running all the time to the 'pollution line'. The tiny scrap of organism I got for a little under £2 convinced me utterly that marines must not only be raving mad but millionaires as well, and since I scored on only one of these counts selling matches on the Embankment was nearer by far than I had ever thought.

The absurdity of the situation was enhanced when I introduced this mite to my now proud tank and found that it was about 80% white spot and 20% water. This nearly ended it all. I feverishly added copper sulphate and anxiously studied the other fishes for similar signs of white spot. During this

time I got on quite familiar terms with this tiny goby through the medium of a magnifying glass, and I saw just what a fascinating splinter he was; then his spots got smaller and he got bigger and I felt somewhat happier about my investment. I was completely convinced about him however, when the domino, which had displayed a capricious appetite, appeared quite out of sorts one evening and gently lowered itself to the floor of the tank and clearly invited the goby to rub its back. The blissful episode that followed, in which the goby was ostensibly carrying out its role of cleaning the other fish, will remain one of my most memorable pleasures in aquarium-keeping. Repetition since then has hardly diminished my wonder at the collaboration between goby and temporary host and one can only hope that the experience is as beneficial and enjoyable to the participants as it looks from the outside.

By the 9th July I was testing the nitrate content of the water regularly and as it was not, apparently, near the danger level, I decided to take a further risk and introduce a tomato clown. At the same time I noted the presence of a fine maroon clown in the dealer's tank and reserved it for collection the following week if the water conditions were favourable.

A word at this stage, about the significance of the water tests. The test kit consists of two tubes of different reagents, and if your tank water specimen colours up after drops of these are added only the hardiest of fishes will survive prolonged exposure to the undesirable salts. Sensitive fishes are regarded as butterflies and angels, which should not therefore on any account be used as 'starter fishes' during the water conditioning period. It was the tolerance of the 'in-between' fishes, such as clowns and perhaps some wrasse, that my experiments sought to establish in some way. As it happened the tomato clown got away to a very good start and took dried food on the evening it was released into the tank.

On 16th July I collected the maroon clown. The water conditions were still tolerable to the test though slightly poorer than on the

previous weekend. This fish was rather larger than the others and it took unasily to its new quarters. It introduced a sort of shimmying into the now familiar clown 'dance' and the spectacle was not reassuring. The fact that it refused food was a further danger signal, and it gradually deteriorated during the week. On 22nd July it died very suddenly in a terrible and violent convulsion. I chose to assume that this had been an intrinsically sick fish and decided to continue to add suitable candidates if any presented themselves from within the category that could be regarded as hardy. A superb pink and yellow damsel and a neon damsel, both quite small, suggested themselves as reasonable successors and joined the collection on 23rd July. At this stage my supplier looked at me severely and suggested that I should ease up until the 8 weeks stage, by which time the water would have become more tolerable. I said maybe and left him shaking his head rather sadly. The water conditions were by this time rather worse than a week previously, though not, still, in the danger category.

The first sign of trouble came within a day or so when most of the fish had what I can only describe as the 'jumps'. They would suddenly jerk violently and swim off erratically and aimlessly. A distressing and rather depressing spectacle. Only the tomato clown, the yellow-tail, the goby and the pink and yellow damsel were feeding properly; the percula toyed with bits here and there and the domino and neon damsel were totally uninterested in the subject. On 28th July the neon damsel, which seemed to have diminished in size, died after a great deal of shimmying and the domino, alive one minute, was dead the next. The state of the water now, at the fifth week, had decidedly moved into the danger area and it was obviously foolish to push our luck any further. So conditions remained until 8th August. There was a state of disquiet amongst the remaining fishes and I was both frustrated by the apparent lack of progress in establishing acceptable tank conditions and not a little fearful that further fishes would succumb to what were obviously seriously deteriorating surroundings. The water tests were uniformly

discouraging during this period.

Like Christmas to a small boy, it never seems to be coming any nearer, but dramatically on 9th August there was a marked change. For the first time the water tests gave a colourless reaction, which indicated that the nitrite concentration had been dealt with by the increasing micro-organisms in the gravel. What was more remarkable was the sudden change in habits of the fishes. From a state of communicable indecision and nervousness they suddenly emerged into visible alertness and purpose. They began to feed as though they had just come through a long fast and their colours seemed really to glow for the first time. A further message appeared to have got through to me—that marines really can take some punishment and still flourish.

The sight of these 'survivors' so evidently having overcome what must have been a pretty unpleasant ordeal was to me quite moving and to some extent made the loss of some fine fishes that much more bearable. I abhor the unnecessary sacrifice of life as, I am sure, do most of our readers. Not the least encouraging part of this process was the fact that a prophecy had come true. As I have a lot of time for accurate prophets I set out at a later stage to validate this for a second time with a larger aquarium. I shall be giving away no secrets if I say at this juncture that I wasn't disappointed.

The significant aspect of this episode for the beginner seems to be that this technique can be successful almost to the letter if faithfully carried out. Further, any notion that all fish should be introduced at the same time would seem to be highly dangerous if the range of species included those which, like the butterflies, are sensitive to the conditions that prevail until the seasoning process is complete. It may be noted that no quarantine process was carried out in this experiment. Superficially the copper sulphate preventive treatment made this unnecessary, but whether I should consider this adequate when adding a new damsel to an old-established tank containing rare and expensive fishes is quite another matter.

We will discuss the matter of quarantine separately, though the reader will no doubt have noted

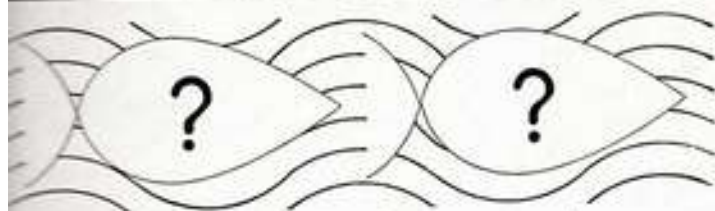
the disease brought in by the marine white spot) remained fixed to the host fish, from which it disappeared within a week. That it did not spread to the other fish came when they were under very considerable stress—which was visible as well as theoretical—inclines me to the view that if you leave a fish with the dealer for a week on arrival, as he so often advises, it is looking good and clean and eating food after this period it can be regarded as acceptably safe. I was now at the stage when I had to consider what further fishes,

if any, I should add to my collection. Indeed, whether the collection should remain within the confines of a 15 gallons tank. Certainly my initial scepticism had been overcome in a convincing way, and I was already becoming more than a little interested in the possibilities of keeping some of the larger yet more peaceful fishes to set off those small and brilliant ones I already had. At the same time I had to realise that few beginners would have overmuch spare cash to lash out on dubious purchases so my next investigation was that of a colour and species

range that would appeal most to the onlooker yet provide the fishkeeper with still something of a challenge.

I therefore set a £5 limit to individual purchases and developed a plan for the next part of my marine project, still bearing in mind the interests of the aquarist who has made his hobby part of his home and who hopes to charm his family with it and to enable them to share his enjoyment of its pleasures.

To be continued



Readers' Queries Answered

Weather Loach

I have a small Japanese weather loach and would like to know that to put it on. Its weather forecasting seems to have been restricted so far to trying itself in the gravel.

Misgurnus anguillicaudatus is omnivorous but will prefer tubifex and any garden worms. Burying itself in the gravel or sand (or mud in its native waters) is a means of protecting itself from predators and from water's lower temperatures. It is likely to be more active when the lights are off and at night. The reason for its name is that it is said to be one of the loaches particularly sensitive to atmospheric pressure and by its restless movements when pressure falls is supposed to give notice of impending storms hours before they break.

Shallows are Preferable

My garden pond is something like 2 ft. deep all round. It has no shallow section at all and I am wondering if this means that if I buy some goldfish they will not be able to breed in it.

Lack of a shallow section in your pond will certainly not prevent your fish from breeding, but a shallow shelf actively encourages breeding as goldfish prefer to spawn there. In a natural pond with a gentle slope

down to the central depths it is in the shallows that spawning takes place. Lack of a special spawning area at the end or side of a pond also means that it is very much more difficult to control the hatching—it is not so easy to watch for the eggs, to remove them if necessary, or to bar the parent fish from the shallow area once spawning has taken place and so prevent them from finding and eating the eggs.

Breeding Harlequins

I have a very definite pair of harlequins and would like to breed them. Can you give me some tips please?

Many breeders prefer to set up a tank containing half-a-dozen harlequins as a surer way of obtaining good results, but you could be successful with just the two fish provided that they are compatible. Water composition is all important in the successful breeding of these fish; it must be old, it must be soft and it must be acid—so clean rainwater that has been filtered after standing over peat for some weeks previously will be suitable. A temperature of 80°F (27°C) is required and the tank, about the 24 in. by 12 in. by 12 in. size would be suitable, should

be planted with *Cryptocoryne* as the fish most usually spawn on the underside of the leaves. Leave the fish together in the tank for several days but if no attempts are made to spawn the male will have to be substituted. If eggs are laid the parents must be removed from the tank. The eggs will hatch in 24–28 hours and the fry must be provided with Infusoria as a first food.

Pond Breeding

I bought some small goldfish in the early part of last summer. Are they likely to breed this year? They are quite a bit bigger than they were.

Assuming that the batch of fish you bought contained both males and females, and assuming that they have been well fed in your pond, the fish should be sexually mature this year. Not every goldfish develops the organs necessary for the reproductive process by its second summer—this development depends much more upon feeding and husbandry than upon size or age—but in a group of youngsters bought to stock a pond some of them should almost certainly be ready to breed in their second season. This may take place from spring onwards—the increase in the intensity and duration of the light and the rise in water temperature occurring in the early months of the year bring about the development in the fish of the sperms and eggs that will be shed during the breeding months from the end of April to late August. If you want to see some young fish remaining from a spawning you will need to ensure that there are some thick masses of water plants in the pond as shelter for the small fry.



GUPPY

World

RED, black and gold are a combination that is very pleasing to the eye, a fact not overlooked by those old-time craftsmen in wood and ceramics. Some of the finest half and three-quarter black guppies that it has been my pleasure to see have had an underlying gold coloration.

Now it seems that we shall shortly be seeing such guppies also sporting a red caudal—the work of that well-known combination, Alan Fowles and Henry Vinall. Yet another success to add to their long list of guppy prowess.

Considering that about 2 years ago these lads lost most of their fish through an unfortunate accident, this promised new achievement seems all the more remarkable and an example to the many beginners and old 'uns alike who say it cannot be done.

I often wonder what these two Londoners would have produced had they not experienced such a setback?



To those who have often pondered the question why our American cousins have always emphasised colour in their guppies only next to size, I have the answer. I found it when sorting through some old magazine cuttings, an article reporting on the work of a Colorado, U.S.A., scientist, circa 1954.

Researching in the fields of electromagnetism and radioactivity, this learned gent had come up with an interesting, if somewhat hard to swallow theory:

'The North American continent by reason of its geographical location is receiving a considerable concentration of radiation from natural elements. These have a definite bearing

on the number of colour variations appearing in the guppy, *Lebistes reticulatus*, the effects on the colour genes resulting in numerous mutations being reported. A consequence it would seem is that our guppy breeders have a colour pattern potential that will overshadow colour variance in their European counterparts.'

Prophetic? Credible? To think that all these years I have been under the impression that it was their emphasis on colour and ours on shape that caused the difference! Funny though, that these 'magic radiations' didn't single out any other fish but the guppy, or was it that our little friends were more numerous?

By PETER UNWIN

Poecilia reticulata and *Homo sapiens* share one thing in common: they both have 23 pairs of chromosomes, those thread-like bodies that carry the coded message of inheritance. Chromosomes are only clearly discernible during cell division, when they contract in length to become short, thick rods just a few microns long.

If we are to be successful in the breeding game then whether we like it or not we must understand some of the basic facts of genetics. This discounts the odd top men who disclaimed any genetical knowledge. They were the exception who seemed to do the right things despite their lack of knowledge.

Unfortunately, many would-be aquarists have not the ideal background—a scientific one—to cope with this subject. They make a genuine attempt to acquire such knowledge but because most of the

text-books deal with humans, peas, mice and fruit flies, they come to the conclusion that what works for these doesn't work for guppies.

Guppy inheritance is somewhat specialised but the basic laws apply to everything. I once showed an excellent film made by the 'Bird's Eye' people on Mendel's Laws of Heredity—a film that used pea plants to illustrate his experiments. Its explanations and diagrams left the majority of the audience cold, despite the high percentage of expertise present. Yet, when I asked them to see the film again but this time to substitute guppies, many admitted after this second showing that things had clicked into place.

Your local librarian will help you if you explain what you seek. One recent book in the Tutor Text series covers genetics in such a way that you progress only when a thorough grasp of each part of the book is obtained.



When it comes to the disappearing act baby guppies have Houdini licked to a frazzle. Apart from the obvious source of their demise (down the throat of some predatory adult fish), young fry can wiggle their way into spaces beyond our ken.

That column of bubbles may show that the air stone and pump you recently purchased are working well but the rapid ascendancy of those bubbles in the water produces a whirlpool for young, very young. *Poecilia* and buffets those caught in the maelstrom into oblivion.

Sub-gravel filters, especially those not covered by a good depth of gravel, can suck fry beneath their impersonal white plates. Should the guppies survive to reach the air-lift tube, the activity here propels them heavenwards towards that happy hunting ground in the sky.

And before those pro-external filter types say 'I told you so!', let us not forget that the delivery tubes of such filters often gather a surface layer of algae, rich in the tiny creatures on which young fish feed. Lured there by a good meal, fry are

Continued on page 516

A Fascinating KNIFE FISH

(*Sternopygus macrurus*)

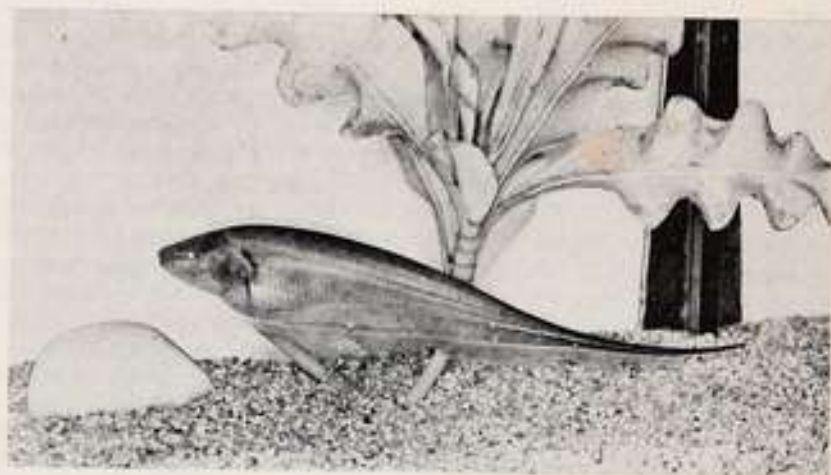
By BRAZ WALKER

THE knife fishes of the suborder Gymnoidei from South America have for many years been attractive to aquarists in an odd sort of way, primarily because of their strange appearance. They have been especially valued by the collector of oddballs as showpieces because of their obviously knife-like appearance, the long, rippling anal fin, which can propel them almost equally well both backward and forward, and a general overall

glass knife fish, *Eigenmannia*, with which it shares the family Sternarchidae, it becomes much larger in size, according to Humboldt reaching a length of as much as 3 feet. Linnaeus (Gmelin, J. T. (translation) *Linnaei Systemae Naturae*, Ed. 13, 1788) said it reached a weight of 10 pounds, and it does not seem surprising that the fish is eaten by both natives and travellers. Although Ellis says that *Sternopygus* is quite difficult to distinguish from *Eigenmannia* in

Photograph
by the
author

Sternopygus macrurus, a species of knife fish often neglected by aquarists. It possesses the electric organs for 'navigation' described in the article



strangeness about their appearances and actions.

The electric eel (*Electrophorus electricus*), with its devastating wallop, has been the most legendary and widely known of the group, but other smaller gymnotoids have appeared in the aquarium hobby for years. Most have belonged to the genera *Gymnotus*, *Eigenmannia*, *Hypopomus* and *Apteronotus*, because these have generally been the most satisfactory.

Sternopygus macrurus (Bloch and Schneider 1801) is one of the most widely distributed and numerous of the gymnotoids but for some reason is seldom seen in aquaria. Even when it is occasionally seen, its identity is usually unknown, since the species has been neglected in aquarium literature. Although its colour, which is a rather muddy chocolate, is unspectacular, the delicate transparency of the long, constantly rippling anal fin as it tapers sternward has a beauty of its own not found elsewhere. Similar in general features and shape to the

the field because both fish are not only similarly shaped but have translucent flesh, the specimens I have kept and which came from different sources over a period of several years were always a brownish colour. Ellis did, however, mention that the specimens caught at several places were considerably darker than the others.

Linnaeus wrote: 'There are little holes all over the body but principally about the eyes, for letting out a viscous matter', in speaking of this fish which he called 'the long-tailed carapo'. Little could he have imagined the real purpose of these little 'holes', for these are the electroreceptors, the 'antenna system' of an almost unbelievably sophisticated and efficient navigation system which has surprising similarities to radar, although it is really quite different.

Sternopygus macrurus, like other gymnotoids, possesses electric organs. Far too small to be used in defence or predation, as in *Electrophorus*, the

purpose of the organs in *Sternopygus* is to transmit a coordinated electric signal, which is the basis of their navigation system. The little 'holes' that Linnaeus said were 'principally about the eyes' are modified lateral line receptors designed to receive minute electrical impulses, where more ordinary lateral line receptors are sensitive to pressure or wave motion.

Each receptor pore is hooked to a lateral line nerve fibre, and each impulse a given receptor pore receives generates other impulses in the nerve fibre. When a signal leaves the electric organ of the fish, it is broadcast into the surrounding water and unless interrupted by an object, perhaps a stump or fish, whose conductivity is different from that of the surrounding water, the signal should predictably reach every receptor at a certain time and in a certain way.

Electronavigation System

Fishes employing electronavigation are generally distinguishable from species to species on a purely electrical basis. Some vary the number of impulses per second, or their *repetition rate*. Others use a constant *repetition rate* but instead vary the intensity or *amplitude* of the generated signal, maintaining instead a rather constant frequency. The *wave form* of electronavigation signals is usually predictably uniform within a species and is recognisable when viewed on an oscilloscope. When the electric signal is picked up by electrodes immersed in the aquarium with the fish and fed into the input of an audio system, the electrical energy is converted into sound. Many of these sounds are quite characteristic also, resembling thumps, clicks, buzzing noises and tones of various frequencies. With a bit of experience many species can thus be recognised 'by ear'. The signals are easily recorded by feeding directly from the electrodes into the microphone input of a tape recorder.

Sternopygus exhibits a frequency range, or more correctly a repetition rate, of 60-100 Hz (Hertz, formerly designated as cps or cycles/sec.). This remains reasonably constant within a given specimen although it may vary a bit with changes in temperature. The fish can also voluntarily vary the frequency somewhat, although the range is rather narrow and at this low frequency the variation is not too noticeable since it occurs gradually in most cases.

Although the frequency or repetition rate of the long-tailed knife fish is similar to those of the gymnotoids *Gymnotus* and *Staetogenes*, the duration of each impulse is longer and the wave form, instead of appearing as a series of sharp peaks and valleys, more closely resembles a slightly distorted sine wave.

Each impulse which is generated by the electric organ of the long-tailed knife fish excites the nerve in each electroreceptor when it is received, causing the nerve to discharge as many as 2-3 impulses. The number of impulses discharged by the nerve depends upon the intensity of the signal reaching it. The fish can alter the amplitude of its signal when more or less intensity of the entire electrical field is required, but objects moving in and out of the field which have a conductivity different from that of the surrounding water will alter the intensity of certain portions of the field. Through a remarkable system of coding and triangulation based on which receptors receive signals of what intensity, *Sternopygus* can not only identify objects or creatures by their electrical conductivity, but even the movements of the object in question can be carefully followed electrically.

Perhaps even more remarkable in its way than the almost unbelievably sophisticated electronavigation system of the long-tailed knife fish is its ability to regenerate lost tissue. As much as one-third of its body length can be lost and will be regenerated in time, skin, scales, nerves and even vertebrae being replaced. All the vital organs are located toward the front end of the fish. Since most of the gymnotoids including this one are at least equally at ease swimming backward as forward, going into an unknown situation tail-first could conceivably be advantageous in their hungry realm!

Sternopygus, which is found as far north as Panama, feeds primarily on insects and their larvae in Nature, particularly water beetles. Feeding in the aquarium is most easily and cleanly accomplished with earthworms. The worms may apparently be ignored for the first time or two that they are offered, but they will usually disappear overnight. Like other gymnotoids, this is a nocturnal creature whose activity both physical and electrical will increase greatly at night.

Water conditions don't seem to be too important for this fish as long as the water is clear and not extreme in pH or hardness. A temperature in the range 70-80°F (21-26°C) is suitable, and an individual *Sternopygus* can be easily kept in a well-aerated aquarium of 10 or 15 gallons. If the tank is well planted and provided with a few hiding places, two specimens can sometimes be kept together, although they may be quarrelsome. When an individual reaches a length of 12 in. or more it is best to provide an aquarium at least 24 in. in length.

The knife fishes are a fascinating and remarkable group, which are being carefully scrutinised by science because of their abundance of physical innovations. They comprise one of Nature's best examples of adaptive evolution, having achieved their unusual status of form and function after beginning as some type of ancestral characid.



Personal COMMENT

by
ARPEE

NEARLY all small fishes have attractions for the collector, and for the beginner in particular, because they have minimum space requirements and can be overcrowded almost with impunity. There can be some very nasty surprises, however, when very young cichlids, for example, are not recognised for what they are, and are bought in the mistaken impression that they will grow on very little, if at all. It is nevertheless a fact that young cichlids are extraordinarily attractive in themselves and, like other young fishes, exhibit a brilliance and quality of form which do not always improve with age. Enthusiasm must therefore be tempered with some skill in judgement before buying members of the cichlid family as the mature versions are often incompatible one with another (even within the species) and the strain on your accommodation can become quite intolerable. One may well look around and decide to keep some of the dwarf cichlids, and this is an experience in itself. On the debit side, though, there is the feature that fishes in this group are not very long-lived, and this brings into the limelight the smaller members of the cichlids proper. Perhaps the first consideration in deciding on one of this group is whether it is peaceful or not, and after this come size, colour, breedability and so on. I had a few vacancies in one of my tanks recently and when I saw a nice batch of florin-sized keyhole cichlids in a local dealer's tank, I took the plunge and bought a trio of them.

Aequidens maroni is not one of the most colourful of the family and cannot be compared with the firemouth or the jewel. It nevertheless has a most attractive coloration, light fawn and pinkish tones contrasting agreeably with the black vertical band passing through the eyes and with the well-known black elongated spot towards the tail which gives it the keyhole name. It is a nicely rounded fish which never seems to assume the grossness of some of the elderly specimens of other species, and it thus manages to conceal its age rather well. Delicacy therefore is the characteristic that it seems mostly to display, and the books will have it that it is a shy and rather retiring creature and not easy to breed. The latter may well be true, but mine have never struck me as being timid and

once they had transferred from quarantine to their permanent quarters, they became much in evidence and put on size and colour.

They are all that is claimed for them in terms of peacefulness and they have never even looked askance at a plant, which is quite a change considering that they are members of the cichlid family. Their progression through the water is very much start-stop, every 2 or 3 in., and they rather remind me of sun beetles busily but erratically exploring their domain. Like most other cichlids they propel themselves in a completely dignified fashion, excepting, of course, when they are attempting to escape from a pursuer.

With all these attributes they seem ideal for the beginner at cichlids, but they can certainly be mixed with other families such as catfish, sharks and the like: any of the bigger non-predatory fishes would act as good foils. There are no apparent problems as regards feeding and packet food is taken as readily as anything that wriggles. Those I have seem to have monstrous appetites and I never let them indulge to the full for fear of the consequences. They have shown no signs whatever that they wish to spawn and I cannot differentiate the sexes so far. The only social activity of any note is that two appear to have the mildest of grudges against the third, but as this has never developed into anything like a real cichlid feud I have left well alone.

I do not intend to make any effort to induce them to breed, but I am delighted that I introduced them as they are living up to their early promise. I had originally seen them as possible companions to my brackish fishes in slightly salt water—the chromides are often chosen for this role—but I am not sure now that I want to separate them from my angels and festives. The temptation remains quite strong, all the same, because the keyhole has something of the contours of many of the commoner marines such as the damsels and the clowns, so the part may yet come to be played at some time in the future. Whatever I may decide to do I shall be thankful that I can count on this little cichlid to provide gracefulness and charm in any surroundings, and that it will do so ungrudgingly and without a display of temperament. We all have room for fish like these.



For those of us who can recall it World War 2 was a period of the most astonishing technological adventures and when the aftermath came there was nothing that seemed beyond the range of human ingenuity. Moreover, since wartime successes had to have integrity as well as novelty we

came away prepared almost to believe anything, so successful had been the propaganda of those fateful years. This made us easier meat than usual for advertisers, especially those whose products had even a suspicion of a wartime ancestry, and indeed for the most part there was much to be thankful for. However, just as the war itself had shattered many of our earlier misconceptions, so did our faith in the new technology sometimes take more of a strain than many would have cared for.

My own moment of truth in this connection came when I saw one of those magnificent British films of the fifties in which particular one was told the horrible story of metal fatigue—quite a new concept for most of us. Even now I can recall the terrible tension of the last half hour in which the aircraft in which we were cinematically travelling was due to disintegrate any moment. Such undermining of faith in apparently timeless things was in itself a godsend, since the isolation of the cause of so many accidents redirected scientists and technologists on yet further steps towards greater safety.

It is with this background that I pose the question as to just how much confidence we should rightly have in this new generation of silicone rubber sealing agents as means of holding together aquaria containing many hundreds of pounds of water (mainly salt). Well may the Editor of PFM, in a recent Book Review, have wished for more information on this subject: certainly I would hope to see something authoritative quite soon which adequately explains the process and attempts a life-expectancy forecast for the technique. It is, without a doubt, one of the most revolutionary and interesting developments in aquarium construction for very many years, but for me at present it is more of a scratching on the surface of something more fundamental. One must be fair,

though. A few years ago one would have scoffed at the notion of sticking together bits of glass, unframed, with any confidence at all that the resultant container would hold water. Now, almost everyone is doing it.

My cause for concern rests on the fact that time has not yet played with this new substance in quite the same way as its bench tests. I have no doubt at all that the most careful trials have been undertaken, but I do ask for greater evidence than has so far been evident. I have little doubt that these comments will cause fury in some circles. Remember, though, that polythene sheeting was once sold for pond lining, and did we ever hear that this would crack at the waterline after just a season? Twelve years ago I invested £30 in a Plastolene pond liner, which is fabric coated with plastic, and nobody at the time suggested that this would begin to crack up after 10 years or so, but it has done so. Then there was the drug thalidomide and like accidents. None of them, excepting possibly the polythene pond liner disaster, could have been foreseen in the normal and reasonable course of production, but they have all been the causes of some regret.

For my part the mere notion of several hundred gallons of water held back by a frameless tank is an agonising one and I wouldn't have such a risky affair in the house; and since the cost, as compared with that for a framed tank from well-tried sources, is not all that much lower, I just wonder whether we are not just going overboard for technique for its own sake. I have an old-fashioned feeling that if any of my now outdated framed tanks is going to expel its contents on to the floor it will share the secret with me beforehand in one of many known ways. How these newcomers communicate their intention I do not know, but I wonder what the trade think about the life of these types of aquaria?

Guppy World

Continued from page 512

drawn into the box filter often to perish un-noticed amongst the filter media.

The golden rule is to keep aeration and filtration out of the nursery tank. Provide plenty of plant cover for the fry, especially the floating varieties, and don't be in too much of a hurry to 'count your chickens'. In this Eden young guppies can

happily survive until their size makes them obvious. The cannibalistic mother will soon tire of trying to catch them in a jungle of floating plant.

To B.B., Aberdeen:

Yes, there is a specialist guppy group called 'The Paul Hahnel Society'. It was formed in the U.S.A. in 1958 with the late guppy king as titular head. All those who joined the club agreed to raise their guppies ac-

ording to Mr Hahnel's methods—no hormones, chemical foods or any artificial means to promote growth or to enhance coloration.

The 'Bill' whose observations were quoted in a paragraph in Guppy World on page 412 of PFM for January is Mr Bill Myers. Unfortunately the lines identifying Mr Myers and introducing him as an aquarist who 'knows a thing or two when it comes to the swordtail varieties' were omitted by a printer's error.

Breeding the

BUMBLE BEE GOBY

By J. LEE



The coloured bands of the bumble bee goby (*Brachygoriscus xanthozona*) give the popular name to this fish.

THERE comes a time to each one of us in this hobby when we seem to get a craving or fever to own and breed a particular fish. This happened to me some years ago when, wherever I travelled, there was evidence of a glut of small bumble bee gobies. I soon took a great fancy to them and, as there were plenty to pick from, I was able to hand-pick my purchases. After a few months of visiting shops in different cities and collecting gobies from them all I had built up a nice shoal of these amusing little fellows—about three dozen in all.

They were housed in a 7 ft. by 15 in. by 12 in. single-pan tank furnished with a 2 in. layer of well-washed silver sand. Along the back and round the sides I placed an assortment of small Westmoreland rocks interspersed with fancy pieces of blue and green slate; here and there amongst the rocks were placed half a dozen small 3 in. flower pots. Dominating the centre of the tank was a very large fountain sword plant and sweeping out to both sides large sagittaria intermingled with small clumps of dwarf vallisneria. I kept the tank at a temperature of 75°F to 78°F (24-26°C).

The fish were fed over the months on a good, varied, supply of live foods, such as whiteworms, tubifex, bloodworms, Grindal worm, daphnia

and cyclops. The last-named food they seemed to relish particularly and would fill their bellies to bursting point—they also greedily ate large amounts of whiteworms. I further added to their diet meals of scraped meat and liver and, after feeding them on this menu for a few months, it was hard to tell which were females and which were males as they all looked so robust. When I did eventually put them out I had a lot of trouble sexing them and made one or two mistakes, so that I tried over a dozen times to spawn them without success. I very often found that I had put two females out and on one occasion two fat males. I was getting very confused until one day I thought of getting above the tank and looking at them from the top as they moved slowly about the aquarium. It was very amusing to see them as their colouration made them look like a swarm of wasps. I found this method a lot better for sexing them—I looked for the yellow band round the head, which, in the males, carries a far deeper colour than that of their mates.

Brachygoriscus xanthozona is a native of Borneo and usually only attains a length of about 1½ in. Although to some it might not seem a beautiful fish it is certainly a very striking little fish when

in good condition. The coloration can be described easily enough—the body is yellow with three black bands; the first passes down from the forehead and through the eye over the lower gill or cheek, the second band includes the dorsal fin and goes through the base of the pectorals and includes the ventrals, and the third band starts in the second dorsal and crosses the body into the anal fin; there is also a large patch at the caudal base. The yellow band or, as I used to call it, the 'scarf' round the head is the one that has more intense colour in the male than in the female.

I browsed through several books and magazines only to come up with the information that although bumble bee gobies were not too difficult to spawn the difficulty lay in getting the eggs to hatch and that there was a high risk of losing the fry after a few weeks. I was soon to discover the truth of this. Bumble bee eggs are very apt to develop fungus, so that when spawning is completed a dye is needed even to try to save some eggs, such as the addition of some 5% solution of methylene blue, when artificial incubation is attempted.

After about a dozen failures I started to prepare for what I thought was further punishment. All attempts in large tanks had failed and, in any case, as all my large tanks were in use, I used a perspex 18 in. by 10 in. by 10 in. tank that was painted black on the outside but had the front left clear. This tank was disinfected with potassium permanganate and Dettol and well cleaned out. Aged tap water (depth 4-5 in.) was used with a final 1 in. depth of fresh tap water over a ½ in. layer of boiled and cleaned deep brick-red sand; a 3 in. earthenware flower pot was scalded and scrubbed and placed on its side just off-centre of the tank. When tested the water reaction was about neutral. I added 2-3 spoonfuls of salt and then allowed the water to stand and settle for a few days. Just before the breeding fish were introduced into the tank I added a thick growth of weighted down young Indian ferns about 4 in. in height. The temperature was stable at 78°F (26°C).

I selected a fat female full of roe and a good male with high colour. The pair were put in the tank late at night, and the top of the tank was shaded from excess of light with a sheet of newspaper. In the afternoon of the following day I noticed that

the female had made a hole in the sand beneath the flowerpot and was hiding under the flowerpot while the male was active about the tank but took no notice of her at all. At the end of the third day I peeped into the tank and was greeted with rather an unusual sight. There must have been about 200 eggs—not on the roof of the flowerpot as they usually are, but scattered throughout the tank, all over the sand and plants and on the pot. Even at this early stage it appeared to me that about half of the eggs were white and with fungus. Under a strong lens I could see that some were in small clusters and seemed to have a fine thread attached—they reminded me of the shapes of a hen's egg, tapered at one end.

I took the female out first and left the male a bit longer. I added methylene blue without delay and then darkened the tank. I could see that a large number of the eggs were developing fungus even with the dye in the water and I was beginning to fear that it was another failure, with a complete loss of eggs. But this time I was rewarded. The eggs hatch in 5-7 days according to temperature and, after a week had gone by, I was delighted to see some fry free-swimming—not many, about 30, but enough to keep me satisfied. They were started feeding on Infusoria and egg yolk, then brine shrimp, and with light aeration they seemed to be doing well.

Then after 3 to 4 weeks things started to go wrong. About five fry were seen twisting round and round at the top of the tank, very pale and whitish-looking. It was hard to tell at their size what the symptoms were but the fish had a fuzzy look and it appeared to have been fungus. I tried in vain to save them but eventually they all died. So for the first time after years of breeding all kinds of fish I finally ended with no fish at all. But bitter disappointment and failure comes to aquarists as well as great success and, after all, advancement in this hobby involves trial and error and perseverance.

This rather squat-looking little fish with its large head and big mouth has a docile look but must be put under the heading of fin-nipper; however, they are not very active swimmers—they move about the tank very slowly and spend long periods stuck to the glass—and I have had no trouble mixing them with other species.

AS in the four previous Shows, at The AQUARIUM SHOW '72 (27th-29th October) the Society Tableaux section will be specially featured. Prizes of £25, £20 and £15 go to the societies with entries placed first, second and third by vote of all competing societies; every

society staging a Tableau receives £5 towards expenses. Societies can choose any theme appropriate to a show open to the public; this year a larger area of staging is being allotted—8 ft. frontage by 4 ft. 6 in., viewable from three sides. Furnished aquaria and/or aquascapes from

individual members or from the whole society can be entered in the appropriate competitive classes and staged as part of the Tableau. Full details will be sent next month; for these or for further information please contact the Show Organiser, P.P. 354, Garratt Lane, London SW17 2NY.

Out of the Usual Run: Elephant-nosed Fish

By
J. ELIAS

Photograph
by the author



Gnathonemus petersi

THIS much-prized fish of the family Mormyridae comes from an area from the Congo to the Niger. Even in Nature it grows only to a length of some 10 in. (23-25 cm.) so it is a perfectly suitable fish to keep in an aquarium.

The lower jaw of the tube-shaped mouth is drawn out into a tiny trunk. This is curved downwards and the fish uses it to explore the ground. The eyes in its tapered head are quite undistinctive and indeed have the appearance of being velvet covered. Its elongated, dark grey-brown body slopes away sharply at the sides and there, two-thirds along its body, it carries a darker, white-edged diagonal marking. Dorsal and anal fins are placed well back along the body and from their blunt peak gradually narrow towards the tail. Each side is a mirror reflection of the other. The tail fin is deeply forked.

Gnathonemus petersi closely resembles *G. elephantinus*. The latter has similar diagonal stripes on each side though these make a more oval marking. Its body is rather more robust and its upper lip is also partly

drawn out as well as the lower. Some species of mormyrids have an additional means of orientation with the aid of an organ that produces electric impulses of a very low voltage (of the order of 0.01 volt).

The first time I received any *G. petersi* the fish died from the journey but on the second occasion I was to be pleasantly surprised. For the first fortnight they ignored all food offered to them while settling themselves in and familiarising themselves with their new surroundings. After the initial 2 weeks they started taking the live foods that were being offered to them (of a suitable small size)—I did not attempt to give them dried food. The water composition did not appear to be critical and a temperature between 74 and 77 F (23-25 C) proved suitable.

It was with these fish that I witnessed an example of behaviour that I have only seen once before in the aquarium—and that time it was with *Botia macrocaulis*. One day I saw that one of the elephant fish was lying on the floor of the room (they are great

jumpers). I quickly tossed it back in the aquarium in case there was a chance that it might revive. But the fish lay on its side and was obviously incapable of holding itself the right way up. I had given up hope that it would recover. However, the two remaining elephant fish appeared on the scene. It was as if they had noticed the danger and were determined to assist. It was an impressive scene. The sick fish noticeably roused itself, tried to keep

its balance and made an effort to move. When it gave up the other fish offered help. Next day, it was as if nothing had been wrong in the aquarium. Solidarity had saved a life, even though it was only that of a fish.

At present nothing is known about breeding these fish in captivity, but this doesn't alter the fact that *G. petersi* is a fascinating species for the tropical freshwater aquarium.

Economics of the OPEN SHOW

I DON'T know who it was that thought up the oft-quoted saying about some being born great, some achieving greatness and some having greatness thrust upon them. Whoever it was he could have had in mind those misguided individuals who undertake the organising of their society's open show; the sentiments fit them admirably, for they could experience a modicum of all three.

The person who shows a profit at the first attempt is hailed as great, obviously a born show organiser. If, on the other hand, the show is a flop, nobody says anything because they are afraid of being landed with the job themselves, so the first man carries on and makes a success of the next one. He has achieved greatness and discovers he has got himself a job for life; he cannot lose it through failure and, by being successful, it is thrust upon him year after year.

Seriously though, it is a most exacting job and calls for a great many attributes, perhaps the most important being that indefinable quality known as organising ability. Some are blessed with it, yet there are others who would be incapable of organising a sit-down strike in an arm-chair factory. Assuming then that he does have it, he should be orderly and methodical, he should have a finely balanced sense of proportion in matters relating to finance and he should have a certain degree of clerical aptitude. Thus equipped he sets out on his thankless task.

Finding a suitable venue can be a major problem and, of course, one that varies according to the location and facilities available to the society concerned. If the biological aspects of fishkeeping are put before the Educational Authorities, and the schedule

By FRED CAMPBELL

includes classes for children, they will very often provide a room free of charge. Normally, however, this involves discussion by the Education Committee before going on the agenda for the next Council Meeting and can be quite a lengthy procedure. In any case they will not open up on Sunday because the caretakers insist on their day of rest and, as Sunday seems to have become the accepted day for open shows, I find from my own experience that Church Halls are the best. They are large enough without being expensive and are invariably well equipped with facilities for providing refreshments. You cannot, of course, have trade stands and the conducting of the raffle has to be done in a furtive manner, bringing with it an air of conspiracy. A touch of drama can be introduced by using ticket-sellers who speak out of the sides of their mouths.

If the judges you want live near at hand so much the better (their expenses will be less), although, in spite of the criticism often showered upon this much-maligned body, I cannot accuse them of being mercenary. They usually keep their demands to a minimum where society open shows are concerned.

So, having fixed the venue and judges, the schedules can be prepared and distributed. These should cost next to nothing. Most societies have their own duplicator and to run off a sufficient supply, with the details neatly and clearly set out, is a

simple procedure. Anything more elaborate is unnecessary, adds little to the society's prestige and can have a damaging effect on expenditure. Postage rates being what they are distribution should be limited to societies within 50 or 60 miles radius. It is unlikely that those further afield will be prepared to make the journey for an afternoon show.

The main danger of overspending lies in the ordering of the trophies. One can easily get carried away by the attractiveness of some new design; but the show committee must not lose sight of the fact that the outlay is governed by the number of exhibits that can be reasonably expected. There are many who advocate the soliciting of donations from leading manufacturers; these are usually willing to give aquatic appliances or dried food in furtherance of their sales. This, of course, saves a great deal on expenditure but, to offer a prize card with a drum of food resting on it as though on a plate, brings to the occasion a great loss of dignity, particularly if the Mayor is presenting the prizes.

I attended a show some years ago where all the prizes had been donated by local traders. There was everything from kitchen utensils to bed-linen, and even an oven-ready chicken. Imagine your prize cichlid, which you have nurtured for so long to bring into peak condition, being awarded a chicken. It's nearly as incongruous as a champion Rhode Island Red taking home a box of kippers. No, I think the majority of exhibitors appreciate something they can keep, suitably inscribed to commemorate the occasion, and point to with pride in the years ahead.

It is unlikely that the entry fees will cover the cost of the room, the judges and the trophies, so the deficiency must be made up in other directions. Perhaps the real money-spinner is the refreshment stall. People get hungry and, in any case, will nibble sandwiches and sip cups of tea just to while away the time during judging. Children, too, of which there are usually an abundance, will make frequent demands for potato crisps and orange drinks. Care must be taken, however, not to overtax the spending potential of the visitors. At my own Society's show

last year it was decided to make available a limited number of hot meals consisting of a liberal portion of meat pie and peas plus a slice of bread and butter and a cup of tea. We sold them, but at 18p a time the price proved unpopular, yet people were willingly paying somewhere in the region of a shilling less for a couple of sandwiches and a piece of cake, demonstrating that these, at a reasonable price, are the most popular victuals to provide.

Then, of course, there is the good old stand-by, the raffle. Here again I am in favour of three good prizes

rather than twenty small ones donated by members. The reason for this being that it takes a considerable time to draw out twenty tickets and hand out twenty prizes and people do not like hanging about. Some 15 minutes after the last class has been judged the raffle should be drawn and the prize cards be ready for distribution. This constitutes the major factor in stabilising the economy for future years. Your visitors will spread the news of your efficiency, come again next year and probably bring many more with them!

Fish House Specialisation

By F. W. COLES

ALTHOUGH people who keep fish houses usually advise beginners not to buy two of this and two of that etc. for their community tanks, when one looks at their own fish houses they do not appear to carry out their own suggestions. True, there is a much greater knowledge of fishkeeping evident, and the tanks are clear and well maintained, but what do they hold? Usually a few tanks of larger, separate fishes, kept for exhibition, and the rest a mixture of egg-layers, livebearers etc., without any specific plan of campaign being evident. In short: a community aquarium split up into a number of tanks.

There is no reason at all why any hobby should not be run on a well-planned basis without losing enjoyment in the process; rather, more enjoyment can be obtained in a well-ordered scheme, and without many of the usual disasters, too!

Perhaps the best way of running a small fish house would be to specialise. Not like some of the dog breeders do—'Specialist breeder of bloodhounds, corgis, spaniels, boxers, collies, dachshunds etc.'—which is frankly ridiculous, but to keep to one, or sometimes two, varieties, one being complementary to the other. But if we are going to look at our efforts realistically we have first to decide the actual objective we have in view. If it is the show bench, once again (risking the wrath of some of our judges), more success will be obtained with large fish than small ones, and if

you decide to keep a large variety then guppies would seem to be a complementary kind to go with them, as the surplus fry would help in feeding.

Many of these large fish would not be bred by the aquarist owing, amongst other things, to the restrictive size of his tanks, and breeding guppies or other livebearers could have an interest of its own. There is no reason why egg-layers should not be used instead, other than the fact that a steadier supply of live food would be available with livebearers; that is, of course, if proper precautions were taken to keep the fry from being eaten by the parents.

If a small variety is to be kept and bred for exhibition, the choice of fish is far more critical. To a breeder, the classes he is interested in, besides the variety class, are of course the breeders' and pairs' classes. Many of the smaller varieties more or less rule themselves out of consideration because they become transparent in an exhibition jar and lose their colour. Exhibitors are often told that judges will make allowances for this, but most exhibitors are not that ingenious, and prefer not to risk it, so many more satisfactory varieties being available. Again, in the breeders class (whether four as for FBAS

shows or six for FNAS events) it is not very profitable to choose a variety which loses half the marks for difficulty before judging starts, particularly as some of the varieties listed as difficult are as easy to breed as some of the ones classed as easy. So care in choosing needs to be given in this respect. There is no question, though, that a small breeding establishment, with tanks specifically arranged for spawning, rearing and maintaining the adult stock will be more successful than any haphazard arrangement, and more exhibition fish will certainly be kept. Moreover, young fish will usually be available in reasonable quantity for the breeders' classes as they come along. The exchequer could also be assisted by the greater throughput of youngsters available for sale if a suitable outlet can be obtained.

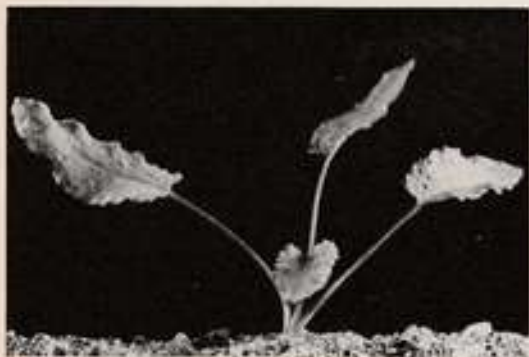
One cannot rear reasonably large quantities of fish unless a steady and reliable supply of food is obtainable. In a specialist establishment the necessary foods for fry rearing will be Infusoria and brine shrimp, or brine shrimp only, depending, of course, on the variety of fish kept. For the adult fish a whiteworm colony or two (or dozen, depending on the size) will usually be kept, and as an addition to brine shrimp, micro worm can also be cultured for the youngsters.

Continued on page 526

Cryptocoryne wendtii A Plant in

By K. RATAJ

Photographs by RUDOLPH ZUKAL



THIS plant belongs to the arum family (Araceae) and comes from Thailand. It is an amphibiously-growing species with a leaf-stalk approximately as long as the leaf blade, and it is one of the bigger species of *Cryptocoryne*, growing up to 8 in. (20 cm) in height. The leaf blade may be 4 to 6 in. (10-15 cm) long and up to 2 in. (5 cm) wide, having an oval base drawn out to a long point. The upper surface may be olive-brown to red-brown, or green with darker striping; the lower surface, as a rule, is green to brown-violet. The leaf blade tends to show undulations, particularly at the edges.

Cryptocoryne wendtii is a very variable species with at least five varieties not so far categorised. The basal variety (green, broad-leaved) grows up to 8 in. high (20 cm); the blades in its emersed form are green and dark striped and in its submersed form are olive-brown with a darker lower surface. The narrow-leaved variety of this green-coloured plant reaches 6 in. (15 cm) in height with blades only 1 in. (2.5 cm) wide.

The red, broad-leaved variety grows to 8 in. (20 cm), with blades 2½-3 in. (6-7.5 cm) wide and this plant is perhaps the most decorative form of this species, with the upper and lower surface of its leaves a dark red-brown. Its narrow-leaved variety is similar but its leaves are only 4-5 in. (10-12.5 cm) long and 1 in. (2.5 cm) wide.

Finally there is the variety that comes into the shops under the commercial name of '*C. rubella leaf*'. This is an intermediate form, its leaves only 4 in. (10 cm) long and 1-1½ in. (2.5-3.5 cm) wide with both surfaces of the blades olive-green or olive-brown, dark striped in the emersed form, red-brown under water.

The inflorescence is usually only 2 in. (5 cm)

Top picture: submersed form of *C. wendtii* with leaves showing conspicuously wavy edges

Middle picture: submersed form of *C. wendtii*, of the broad-leaved green variety

Bottom picture: the red variety of *C. wendtii* in the submersed form

Five Guises



Left: the twisted blade of the inflorescence of *C. wendtii* seen in close-up.
Right: Narrow-leaved variety of *C. wendtii* growing underwater

long, though on rare occasions it may reach 3 in. (7.5 cm). The blade of the inflorescence is twisted and never opens fully. It is red-brown in colour with a darker purple-brown throat to the spathe.

The plant can be classed as one of the easily cultivated species. Like the other amphibious *Cryptocoryne* it can be easily propagated and could

be said to be one of the more common aquarium species (and one that is a lot more decorative than many of the others). It will stand subdued as well as direct illumination and survive falls in temperature to 59 F (15°C), though it does, of course, grow best at temperatures between 68 and 77 F (20-25°C).

Meetings and Changes of Officers

ANSON A.C. Chairman, Mr A. Wood; secretary, Mr A. Taylor (23 Priory Park Road, Wembley); treasurer, Mrs R. Howe; show secretary, Mr T. Butler (16 Piplan Avenue, London, N.W.2); vice-chairman, Mr P. Watson; assistant show secretary, Mr R. Bullock. Meetings: every Wednesday 7.30-10.30 p.m. Anson Hall, Anson Road, Cuckfield, London, N.W.2.

BORHAM WOOD & D. A.S. Chairman, Mr R. Ramsey; vice-chairman, Mr J. Burrows; treasurer, Mr R. Woolridge; secretary and P.R.O., Mr J. Crockett (64 Hines Drive, Borham, Wood, Herts; tel: 492 8873); show secretary, Mr D. Hennessey (13 Kenilworth Drive, Borham Wood; phone: 915-957 2345). Meetings: Every second and fourth Monday at The Community Centre, Allan Lane, Borham Wood, Herts. All welcome.

BURNMOUTH A.S. President, Mr Jim Scott-Morgan; chairman, Mr B. Coovios; secretary, Mr B. Matley; treasurer, Mr L.

James; show secretary, Mr J. V. Jeffery; P.R.O., Mr J. V. Jeffery (20 Braemar Avenue, Southbourne, Bournemouth); Meetings: New Hall, Kinon Community Centre.

BRADFORD & D. A.S. President, Mr G. Fairclough; vice-president, Mr T. P. Charley; acting secretary, Mr J. P. Charley (31 Spanton Avenue, Great Harwood, Bradford 7, Yorks.); phone: Bradford 229660; treasurer, Mr E. J. Brown; social and P.R.O., Mr B. Southrop (3 Alma Street, Castle Heights, Bradford 4; phone 74643).

BRISTOL A.S. President, Mr H. Jago; vice-president, Mr J. Phillips; treasurer, Mr W. Ham; registrar, Miss H. Morgan; secretary, Mr H. C. B. Thomas (1 Green Park, Rodford, Bristol BS6 6PP). Meetings: second Monday of month, 7.45 p.m., Bishopston Parish Hall.

BRITISH ICHTHYOLOGICAL SOCIETY. Secretary, Mr D. Marlborough (122 Ninebough Green, Weyburn Garden City,

Herts); editor and librarian, Mr W. Ballou (4 Green Vale, Berleyfont, Kent, DA6 8TT).

CARSHALTON & D. A.S. Chairman, Mr B. McConnell; secretary, Mr R. Thomas (182 Dunsard Close, Carshalton, Surrey); show secretary, Mr C. Wilson.

CASTLEFORD & D. A.S. New venue. Now at Postoffice Caxton Community Centre.

CLAPHAM A.S. New venue. Now at Services Residents Club, 4 North Side, Wandsworth Road, London, S.W. Meetings: 8.0 p.m. every other Tuesday (14th March). New members welcome. Please ring Mrs Fagan, 21-272 1464 for details.

COVENTRY POOL & A.S. President, Mr B. Bezzel; chairman, Mr E. Shuster; secretary, Mr C. J. Grant (16 Cecil Road, Coventry); show secretary, Mr B. Hirst; treasurer, Mr F. Shapton; editor, Mr R. Patterson. Meetings: every second Tuesday, Foleshill Community Centre, Foleshill Road, Coventry.

EALING & D. A.S. Chairman, Mr F. G. Marsh; vice-chairman, Mr J. Hraley; secretary, Mr J. Batts (99a Valetts Road, Acton, London, W.3); treasurer, Mr B.

Secretary, show secretary, Mr T. Crulshank; social secretary, Mr J. Irvine.

EBORACUM AQUARISTS, New Society. Secretary, Mrs I. Stephenson (43 Hamilton Drive East, Holly Bush, York, YO2 4EH). Meetings: first Tuesday of month. The Woodpeck Hotel, Passolun Green, York. Correspondence from other societies welcome.

FGA CENTRAL SUSSEX SECTION. Meetings: third Sunday in month, The Park Centre, Park Road, Burgess Hill, Sussex, 7.30 p.m. Secretary, Mr R. F. Elms (14 Sawrey Avenue, Falcham, Sussex); phone Peconham 2234. New members welcome.

FGA MANCHESTER SECTION. Chairman, Mr R. Young; secretary, Mr F. Campbell (37 Cardigan Drive, Busby BL6 9LG, Lancs.); treasurer, Mr A. Charlton; show secretary, Mr J. Hedderth; assistant, Mr D. Glen; P.R.O., Mr T. Hallatt. Meetings: 2.30 p.m., first Sunday in month, Tudor Room, Longwalk Hotel, Belle Vue, Manchester.

FGA SOUTH LONDON SECTION. Chairman, Mr H. Vinal; vice-chairman, Mr T. Hibbert; secretary, Mr H. C. Brock (28 Barnard Crescent, West End, Woking, Surrey; phone Chobham 8761); treasurer, Mrs G. Brock; show secretary, Mr J. Hegan; assistant, Mr P. Knevet; entertainments officer, Mrs L. Knevet. Meetings: fourth Sunday of month, Bode Centre, Abbeyfield Road, London, S.E.16, 2.0 p.m.

GLOSSOP A.S. Chairman, Mr A. Newall; secretary, Mrs M. Brazley (9 Waterside, Hatfield, Hyde, Cheshire); show secretary, Mr R. Tomkinson; treasurer, Mrs S. Hampson.

HADEN A.S. Secretary, Mr R. Smith (28 Thornhill Road, Halesowen, Woxs.); New venue. Meetings: first Tuesday in month, 7.30 p.m., Carlton Room, Halesowen Public Library.

HARROGATE & D. A.S. Chairman, Mr Penfold; secretary, Mr D. Taylor (1 Ashgate Rise, Rav Gap, Knaresborough, Yorks. HG5 0EG); treasurer, Mr D. Foster; editor, Mr M. Lewis. Meetings: every second Tuesday of month. The Conservative Rooms, Park View, Harrogate.

HARWICH & D. A.S. Chairman, Mr A. Clayton; secretary, Mr M. Bird (144 Franks Road, Downcourt, nr. Harwich, Essex); treasurer, Mr M. Mason.

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KEIGHLEY A.S. President and editor, Mr H. Smith; vice-president, Mr G. Crouley; secretary, treasurer and P.R.O., Mr J. Moxley (11 Moorcroft Avenue, Oakwood, Keighley, Yorks. BD22 2NE); assistant treasurer, coffee steward, Mrs O. Taylor; librarian, Mr Hart; trophy steward, Mr Bottomley; junior representative, Mr A. Ellingworth.

KIDDERMINSTER & D. A.S. Chairman, Mr L. C. Edwards; secretary, Mr G. J. Wilcox (1 Heathfield Crescent, Kidderminster, Woxs. DY11 6PF). Change of venue. Meetings: every other Tuesday, 8.00 p.m., The Alma, Habberley Street, Kidderminster (opposite Mill St. Hospital). New members very welcome.

LEAMINGTON & D. A.S. Chairman, Mrs J. K. Smith; secretary, Mrs P. Stoodley (2 St Margarets Road, Leamington Spa); social secretary, Mr F. Stoodley; treasurer, Mr P. N. Thomas; show secretary, Mr D. Hazz; assistant, Mr K. Russell; editor, Mr D. Hawkins.

MEDWAY A.S. Chairman, Mr R. Mayne (phone 3384); treasurer, Mr C. A. Elliott; secretary, Mrs B. A. Marsh (107 Dale Street, Chatham, Kent); show secretary, Mr J. Marshall (97 Dargot Road, Chatham, Kent); phone 61121. Meetings: second and fourth Wednesday, 8.00 p.m., Danecourt School, Watling Street, Gillingham (A1).

NEWBURY & D. A.S. New Society. Chairman, Mr G. Swift; vice-chairman, Mr R. Lloyds; secretary, Miss M. Bance (105 Turpin Road, Newbury, Berks.); treasurer, Mr N. Richards. Meetings: third Monday of month, Municipal Buildings, Market Place, Newbury.

NOMAD A.C. Change of secretary to Mrs

E. Blackwell, 9 Bourne Lane, Craytham, Surrey, CR3 2BP.

NORWICH & D. A.S. New secretary: Mr R. G. Green (1 Kempe Close, Norwich, Norfolk, NR1 1BR).

RIVERSIDE A.S. HAMMERSMITH: New secretary, Mr P. Maslin (16 Northgate House, Sutton Estate, Sutton Way, North Kensington, London W10 4EP; phone 960 1015). Change of venue: 101 St. Saviour Church Hall, Cobbold Road, of Akew Road, London, W.12. First and third Monday in month.

TORBAY A.S. Chairman, Mr M. Matthews; vice-chairman, Mr F. Osman; secretary, Mr P. J. Deming (107 Teignmouth Road, St Marychurch, Torquay TQ2 4RT); treasurer, Mr J. Spinks; show secretary, Mr J. Beag (26 Jordan Street, Bickington, Devon); editor, Mr R. Barnes; librarian, Mrs M. Matthews; social secretary, Mrs G. Brown.

TROWBRIDGE & D. A. & P.S. Chairman, Mr D. Hayter; secretary, Mrs S. Scudamore (43 Trowbridge Road, Bradford-on-Avon, Wils.); treasurer, Mrs P. Huxley; show secretary and P.R.O., Mr W. Burrell; entertainments officer, Mr C. Cuss; secretary, Mrs J. Burton; table show organizer, Mr M. Samuels; editor, Mr S. Hamer; librarian, Mr M. Parnick.

WEYMOUTH & D. A.S. Chairman, Mr R. Forrester; vice-chairman, Mr P. Cunn; secretary, Mr A. C. Worth (67 Queens Avenue, Dorchester, Dorset); treasurer, Mrs D. A. Fitzgibbon; publicity and press officer, Mr C. Field; show manager, Mr E. Jones (11 Ludlow Road, Weymouth); fundraising, Mr R. Peel and Mr A. Billings. Meetings: first Tuesday of month, 7.30 p.m., Small Salsley Hall, Weymouth, Dorset.

WHITLEY BAY A.S. Chairman, Mr G. Emmerton; vice-chairman, Mr P. Manningham; secretary, Mr M. Rodgers (34 Strawson Avenue, Seaton Delaval, Northumberland); treasurer, Mr D. Glynn. Meetings: alternate Thursdays, 8.00 p.m., R.A.F.A. Club, South Parade, Whitley Bay.

YORK & D. A.S. Meetings: New holding two meetings monthly, 7.30 p.m., second and fourth Tuesday of month at the Railway Working Men's Club, Blossom Street, York.

Book Review

TROPICAL FISH. By Douglas Gohm. 143 pages, 36 colour plates, line drawings in text. Hamlyn Publishing Group, London, and impression, 1971. £1.75.

FIRST published in 1952 as **TROPICAL FISH IN THE HOME**, this book was republished by Hamlyn with new text and a host of illustrations. The result is a fine opportunity for the artistic talents of Jane Burton (especially), Alan Cupit and David Carl Forbes: the first two did the colour photographs and the latter contributed some 150 most skilfully executed line drawings. The book thus has a modern look, which starts with its impressive coloured cover and continues into the lavish interior with its rather luxurious paper and coloured plates. There the matter ends. The text is very dated indeed.

There is a laboured section on how to make tanks and tank putty. There is a reference to a formula for making salt water in **WATER LIFE** for 1938. The breeding of neons is still a novelty. Quite apart from this there are some curious statements, such as adding salt to water to correct acidity (and what about the catfish?), and an extremely primitive and unsafe way of hatching brine shrimp. One hardly washes encystrae for an hour, nor is the standard soap solution test for water hardness quite the subject for a book at this level. The insertion of information about marine aquaria is hardly worthwhile in view of the superficial treatment of the subject; it would have been better to omit it altogether. In a general sort of way there is a lot of useful but not very profound information in this book, and the large section on fishes is easy to follow. The plant survey is also

attractive, but the drawings make it what it is and are in many ways even more appealing than those of the fishes. I don't quite know to whom to recommend this book. It is too out of date to be of much use to the beginner (and far too pretentious), and the expert will find that it does not compare in any way with, say, Innes. It is probably better on a public library shelf than in a private collection, not on account of its value as a reference work, but as a piece of publicity material for the aquarium hobby. Its visual impact is good to excellent and may well catch the jaded eye of someone seeking a new interest. Whether this is a good thing is a matter of opinion. My view is that it is not, and this wedding of the old and the new enhances our respect for neither of the partners to such an ill-chosen match.

ROY PINKS



TRANSATLANTIC TOPICS

By JIM KELLY

DURING the winter rains, the water in the San Fernando Valley, California, is very soft, not very good for the breeding of such fish as *Monodactylus*, yet one fishkeeper, Wesley Wey, living in this area has become an authority on the mono, and has even, despite the soft water, bred them in his tanks.

Following the book, he added salt regularly to his tanks but his experiences showed that after monos reached 2 inches the addition of salt was no longer necessary unless the water is very soft.

When tiny, these fish need a high mineral content in their water and Wesley found that marine salt provided it. Spawnings have produced up to 60,000 eggs. The period between spawning seems to be entirely at the whim of the female. The fact that the adults eat some of the eggs soon whittles the numbers down to workable amounts.

The eggs will develop faster initially in fresh water but if the water isn't approximately 15% saline within 40 hours of their being fertilized, the fry quickly die. His conclusion is that the fish in the wild swim upstream into fresh water to deposit the eggs and that these eggs then drift back into brackish water over the next 2 days.

* * *

Since their introduction, all-glass tanks have been finding increasing favour amongst the ranks of the D-I-Y hobbyist, especially since the introduction of safe sealing compounds.

I first came across these aquariums in Kentucky, some 6 years ago, and though I could see the possibilities with the experienced fishkeeper I

thought that they were not for the beginner. Having had a few sleeps since then I now claim the human right to change my mind.

One British manufacturer of both sealer and tanks supplies its customers with instructions, so easy to follow that even I have been able to make all-glass aquaria. However, a word of warning when searching around for suitable pieces of glass.

It is very tempting to use plate glass taken from shop windows, especially if you live in a large city undergoing a clearance scheme. This type of glass can be obtained from the demolition people for a song. One correspondent employed in the glass business writes that most windows subjected to strain over the years from passing traffic develop tiny, often invisible cracks. Under the pressure of water in the aquarium they may crack.

Those of us who have experienced the messy business of having a tank leak all over the carpet will understand. If you want to avoid a disaster area in your home use only new glass when constructing your own fish tanks.

* * *

I am a very trusting chap and when my old science teacher told us that water does not run uphill I believed him. But now, according to the Edmund Scientific Company of New Jersey, things 'ain't what they used to be'. After their compound is added to water the fluid actually flows up the sides of the glass, siphoning freely into another container. To stop this anti-gravity flow you simply cut through the stream of water with a pair of scissors!

The secret lies in the special

additive they have developed with a long molecular structure that acts as a friction-reducing medium: a pinch of this powder added to an aquarium makes the fish slide through the water faster. That should give the compilers of the GUINNESS BOOK OF RECORDS something to think about. They claim that the Atlantic sailfish *Istiophorus americanus* can do 100 yards in 3 seconds. Pre-additive era, of course!

* * *

My mail bag often contains comments from individual aquarists on both sides of the Atlantic criticising or singing the praises of some item of aquarium equipment or fish food. These comments, like oil and vinegar, are inclined by their very nature to enjoy separate existences, but can on occasion be mixed together with advantage.

Such was the information I received recently on a brand of brine shrimp eggs emanating from a firm called Pioneer Enterprises. So many fishkeepers sang their praises that I felt it was about time we in Britain heard about them.

In appearance they resemble neither the familiar Utah nor San Francisco eggs; for one thing some of them floated and about two-thirds sank, but it took much less salt to make up an efficient mixture—only four tablespoonsful per gallon. Apart from excellent hatching the young, newly hatched nauplii lived up to 3 days in the confines of the hatchery and grew to about double their size.

If you would like to hear more about this product the address I found was: Pioneer Enterprises, c/o Robert Von Hein, Dunsmuir, California 96025 (P.O. Box 918), U.S.A.

* * *

Most people allow for the gay abandon that appears to affect almost all the copy-writers who are set to work on travel brochures, and we hobbyists have also become inured to the claims put out by manufac-

turers for their products. The Trade Descriptions Act has done much to right things here in Britain but in the U.S. and Canada the sky is still the limit. Therefore it was refreshing to hear of one company that was honest and frank enough to state that their product had certain limitations.

Object under fire was the Shell Chemical Company's 'No-Pest Insecticide Strip', a useful gadget to keep homes free from those legions of flying pests.

Writing in a Stateside magazine, a leading aquarist had complained that in the presence of the strip daphnia quickly died in the aquaria and asked the manufacturer to comment. The reply by the manager

of the Company's Pesticide Regulation Department, Mr L. E. Mitchell, was a lesson in proper public relationships. It was honest and to the point: 'Although their safety to man when used as directed has been conclusively documented, the effect of No-Pest Strips on fish and other lower life forms is not always predictable.'

The letter went on to describe tests carried out by the Company on tropical fish: some neon and angel fish did succumb. They concluded that these two species were more susceptible than others. Mr Mitchell suggested caution when using the anti-fly strip in the vicinity of aquaria or any area being used for the production of certain live foods.

Fish House Specialisation

Continued from page 321

If you care to try micro-reef, these can be cultured as well.

For a steady supply of brine shrimp to be available it will be necessary to deal with this as scientifically as one deals with the fish, and one of the most reliable ways is to use a small tank with heater and thermostat so that the necessary temperature will be kept at all times and nothing left to chance. If the tank is blacked out in the divided portion where the eggs are inserted, the shrimp will come into the light area and can be siphoned off as required. One thing not to overlook is that if one is feeding daily from such a tank, a daily replenishment of eggs will be needed. Infusoria, if required, can be cultured in a large sweet jar (and without using decaying materials, lettuce leaves etc.) if Liquifry is used for the fry as a starter. Perhaps 3 or 4 days at fish house temperature will be necessary before a usable culture is obtained.

Some people may wish to have plants in their fish houses but this usually needs far more lighting than the fish themselves actually need, with a consequent increase in the cost of electricity used. Tungsten lighting may help to heat the fish house, but it certainly does not save in the amount of electricity used, the reduction in heating current

being small, and as bare tanks without plants can be satisfactory for most varieties, why go to this additional expense? Fish needing vegetable food can be catered for in other ways (using duckweed from the community tank in the living room, for example).

One method of dealing with livebearers is to treat them more or less in the same way as your brine shrimp and put a net partition across, to divide off the lighted end of the tank, and have the parents at the darker end. The young fry migrate into the light through the net, and stay there, where the parents cannot reach them. To be fair to them however, most of the livebearers if well fed with live food are not really cannibalistic, and with this method most of the fry can be saved. They are large enough to be taken out with a fine net or fry tube as soon as they are seen, for rearing in a separate tank, which will make sure of their survival.

A well thought-out scheme for fish breeding for exhibition can be more interesting than a dilettante approach to the hobby, and one of the things I have not mentioned is that it usually causes less work in the long run, and it certainly will tend to reduce the disasters or fear of them, which beset most of us.



PORTSMOUTH A.S. celebrated its 21st anniversary with a dinner and dance at their club rooms in the Portsmouth Community Centre. Chairman Mr J. Stillwell introduced the guest of honour, Mr R. D. Esson, chairman of the Federation of British Aquatic Societies, to the 82 members and guests present and thanked the Federation for all it had done for the hobby particularly over the last few years. Mr Esson congratulated the Society on reaching its majority when many aquatic societies flounder long before attaining this seniority. The president of the Society, Mr A. C. Winsor, who is also the assistant youth and community officer, spoke of the close ties between the Society and the Community Centre. Mrs Lesley Howard then cut the cake that she had made and iced with the club emblem.

SECRETARY OF TONBRIDGE & D. A.S., Mr I. T. Mathison, reports that the Society have enjoyed a varied programme with help from friends old and new. The first visitors were the proprietors of The Hive Aquarium, Gravesend, who joined in a question and answer session and judged the cichlid classes, awarding first in class D to the white convict of Mrs I. Bellingham (Da, Mr W. Rood, silver angel; Db, Mr J. Bellingham, P. *kribensis*). Mr Ron Dodkins, E.L.A.P.A., was the next visitor. He gave details on breeding goldfish and described the standard varieties. He also went into details of the G.S.G.B. pointing system, which varies considerably from the five

... The Show Committee of the FEDERATION OF NORTHERN AQUARIUM SOCIETIES, pending a final decision by the Judges & Standards Committee, have agreed that some confusion appeared to have arisen over models in aquascapes that served a decorative purpose and models that formed an integral part of a miniature landscape. Any attempt to define the two classes of model would be open to misinterpretation and it was finally decided that an aquascape containing any model must be shown in the Novelty Aquascape Class. This arose from a request for clarification of the definition of aquascapes by delegates from Oram A.S. at the FN&E Council Meeting last year.

countries for tropical. Mr A. Harris, also of East London A. & P.A. judged the rufosera class and awarded first, second and third places to entries from Mrs D. Mathieson. Mr I. Mathieson judged the platys, won by Mr W. Rood, and Mr T. Amos judged the egglayer sexed pairs, won by Mr R. Baker with a pair of *P. mabellatus*. Club treasurer, Mr Dick Baker, has given a talk on dwarf cichlids and at this meeting Mr J. Bellingham received first award in the fighter class (judge, Mr R. Taylor) and Mr I. Mathieson received first, second and third in the sword pairs (judge, Mr J. Bellingham).

Extra meetings have also been held for a trial period. The first one took the form of a Christmas party with aquatic quiz, team games, prizes and free drinks. This meeting produced the highest attendance of the three extra meetings proposed. The Henderson A.S. slide show on barbs has also been a star attraction. At this meeting, Mrs M. Davenport won in class B with a half-banded barb (judge, Mr R. Taylor) and class X (G-T) was won by Mr K. Shoebridge with a team of guppies.

MEMBERS of the SOUTH WESTERN GROUP of the BRITISH MARINE A.A. have been discussing plans for 1972 and have asked for at least two more Seafari trips and more meetings along the lines of their recent get-together with the local sea anglers and sub-aqua clubs. The meeting was held at the home of the secretary, Mr Law Doubleday, and there was some discussion about bullying amongst marine fish. Mr Doubleday said that he had found that when *Dascyllus* and *Chaetodon* were kept as pairs one would be so dominated that it wasted away and eventually died. Mr D. Farham said he had also observed this with native marines. The answer would seem to lie in keeping one only or at least three. The chairman of the Judges and Standards Committee, Mr John Haynes, explained the pointing system devised by the Committee. It was felt that the question of the ownership of an exhibit needed

FEDERATION



NEWS

Sub-division

of Showing

Class for

Cichlids

WITH the opening of another competitive season, the Federation has geared itself to meet the demands of societies, and the various departments within the Federation are 'standing by'.

From the Judges and Standards Committee comes the announcement that there is a further sub-division in the Cichlid Classes. Several societies have staged special and separate classes for 'Lake Malawi' or 'Rift Valley Cichlids', and in response to this a sub-division (Dc) has been set up. The genera pertaining to this Class will be: *Cyathochromis*, *Cynotilapia*, *Geryochromis*, *Haplochromis*, *Hemibaplochromis*, *Hemitalapia*, *Julidochromis*, *Labretrophus*, *Labidochromis*, *Lamprologus*, *Melanochromis*, *Petrotilapia*, *Pseudotropheus*, *Tropheus*.

On the trophy side, in addition to the Championship Class trophies there is a growing list of perpetual trophies for award at open shows thanks to societies donating trophies to the Federation for this purpose.

Ties, badges, show jars, class and award stickers, together with publications, complete the picture of services available to Societies and this year's Free Offer is of 100 Exhibit labels, available upon application (together with open show schedule) to the Publications Secretary. The Federation's new Show Stand will visit your show upon request for the sale of ties, badges, publications etc.—details from the General Secretary (K. Pye, 35 Steeles Road, London, N.W.3) for the booking of the stand.

The Federation will be opening the '72 season with a dinner and dance on 8th April.

Championship Classes 1972

The allocation of Championship Class trophies to the open shows of societies who have made applications for these will be announced at the Federation's general assembly on 4th March. The full list will be published in Federation News next month. Individual winners in Championship Classes will be eligible to enter their fish in the supreme Championship 1972 at The AQUARIUM SHOW in London (27th October-29th October); the owner of the supreme champion holds the FBAS Council Supreme Championship Trophy until the end of 1973.

re-considering and that it was a pity that some societies had dropped the 30-day ownership rule. The South

Western Group would like to see this rule reintroduced at least to counter the bought-the-same-day entrant.

Record Entry of 1,075 at Sherwood A.S. Show

SHERWOOD A.S. wish to thank all the exhibitors who attended their second Open Show and made it the success that it was with a record entry of 1,075. The standard of fish was excellent and the six judges had the fearsome task of selecting card winners from very large classes of fish. Competition was very keen with 46 societies and 105 independent

entries competing for the many trophies and prizes, especially Sherwood's own original Robin Hood trophies, which were very popular with the exhibitors. Special thanks go to the judges, Mr K. Colton, Mr A. M. Deakin, Mr A. Abdy, Mr G. Rhodes, Mr G. Sibson and Mr B. Inman. The only regret of Sherwood members is that, being so few in

number, they are all too busy on the day organising the show to enter their fish in competition.

Trophy winners were: The Mansfield Pet Store Rose Bowl for best fish in show (marine, emperor angel, 85 points) Mr W. Goodwin of N. Staffs A.S. The Margaret Igoe

trophy for best cichlid, Mr G. C. Haynes of Smethwick. The John Igee trophy for best livebearer, Mr B. Stabler of Hull. The R. Clarke trophy for best junior entry, R. Ankers, N. Staffs. Pet Supplies trophy for best characin, Mr G. Thickbroom, Castleford A.S. The Ken Carby trophy for best breeders egglayers, Mr J. Lee, independent. The W. Downing shield for best breeders livebearers, Mr and Mrs Cohen of Castleford. The Harrison trophy for best anabantid, Mr J. Rhodes, Scunthorpe A.S. The Huckle Killifish trophy, Mr I. Stevenson, York A.S. The D. Sewell shield for best catfish or loach, Mr A. Gregory of Hadon A.S. The A. K. West shield for best barb, Mr and Mrs Williams of N. Staffs A.S. Mr J. S. Hall of Aireborough A.S. was the entrant both with most entries and most awards. The society with the highest points was Castleford A.S. (2, N. Staffs A.S.; 3, Aireborough A.S.; 4, Hadon A.S.).

Livebearers: Guppies: 1, Mr K. L. Brown (Midland T.A.); 2, Mr N. Ankers (N. Staffs); 3, Mr Simpson & Mr Horsfield (Barnsley). Platy: 1, Mr C. Mansion (Workop); 2, Mr M. Clarke (N. Staffs); 3, Mr M. Alsop (Allerton). Mollies: 1, Mr and Mrs J. Bremley (Belle Vue); 2, Mr J. S. Hall (Aireborough); 3, Mr K. Thomas (Lucas). Swordtails: 1, Mr B. Stabler (section winner, Hull); 2, Mr and Mrs Cohen (Castleford); 3, Mr B. Towhley (Belle Vue).

Characins: Small: 1, I. & R. Hepinstall (Castleford); 2, Mr M. Alsop; 3, Mr J. Brook (Huddersfield). Large: Mr G. Thickbroom (section winner, Castleford); 2, Mr B. Booker (Loyne); 3, Mr J. Lee (Independent). **Cichlids:** Dwarf: 1 and 2, I. & R. Hepinstall; 3, Mr H. Kubo (Lincoln). Large: 1, Mr G. C. Haynes (section winner, Smethwick); 2, Mr V. Knowles (N. Staffs); 3, Mr D. Robertson (Dorby Regent). Angels: 1, Mr J. A. Whiteley (Aireborough); 2, Mr K. Sax (D. Bevers); 3, Mr D. Jackson (Dakeron). **Barbs:** Small: 1 and 2, Mr J. Demie (Dakeron); 3, Mr B. Smith (Lucas). Large: 1, Mr and Mrs Williams (section winners, N. Staffs); 2 and 3, Mr A. Gregory (Hadon).

Killifish: 1, Mr I. Stevenson (York); 2, Mr Simpson & Mr Horsfield; 3, Mr D. Jackson. **Minnows and danios:** 1, Mr G. Malpas (section winner, Swillington); 2, Mr K. L.

Brown (M.T.A.); 3, Mr D. Neenan (Nottingham). **Sharks and loaches:** 1, Mr A. Ankers (section winner, N. Staffs); 2, Mr B. Bing (S. Leeds); 3, Mr and Mrs Stanton (Sheffield). **Rainbows:** 1, Mr P. Cyrille (Nottingham); 2, Mr J. Lee; 3, Mr K. L. Brown.

Anabantids: Fighters: 1, Mr J. Rhodes (section winner, Scunthorpe); 2, S. & A. Thomas (Castleford); 3, Mr J. Turnbull (Edinburgh). A.O.V.: 1, Mr and Mrs Williams (N. Staffs); 2, Mr J. Summers (Doncaster); 3, Mr J. Demie.

Breeders: Egglayers: 1, Mr J. Lee (section winner); 2, Mr and Mrs Walls (Doncaster); 3, Mr J. E. Shree (Oxram). Livebearers: 1, Mr and Mrs Cohen; 2, I. & R. Hepinstall; 3, Mr K. Pratt (Bedworth). **Pairs:** Egglayers: 1, Mr J. Demie (section winner); 2, Mr J. A. Whiteley (Aireborough); 3, Mr and Mrs Pagan (Scunthorpe). Livebearers: 1, Mr K. L. Brown; 2, I. & R. Hepinstall (Castleford); 3, Mr and Mrs Williams (N. Staffs).

Catfish and loaches: Catfish: 1, Mr A. Gregory (section winner, Hadon); 2, Mr I. Stevenson (York); 3, Mr Atwood & Mr Williams (Barnsley Select). Corydoras: 1, Mr M. Buxton (Sheffield); 2, Mr N. Jackson

(Workop); 3, Mr B. Towhley (Belle Vue). **Loaches:** 1 and 2, Mr A. Gregory; 3, Mr and Mrs Stanton (Sheffield). A.O.V. tropical: 1, Mr Whitfield & Mr Massey (section winners, Barnsley Select); 2, Mr Watson & S.W. Waltham (Spalding); 3, Mr C. Mansion (Workop).

Juniors: Egglayers: 1, R. Ankers (section winner, N. Staffs); 2, G. Thickbroom (Castleford); 3, T. Shepard (Doncaster). Livebearers: 1, D. Milburn (ind.); 2, Miss Susan Clarke (Barnsley); 3, C. & G. Beckett (Huddersfield). **Ladies class:** 1, Mrs Cohen (Castleford); 2, Mrs Hubert (Dorby); 3, Mrs Harlow (D. Regent). **Marines:** 1, Mr W. Goodwin (section winner and best in the show, N. Staffs); 2, Mr W. D. Taylor (ind.); 3, Mr Buckley (Alfreton). **A.V. female fish:** 1, Mr G. Thickbroom; 2, Miss B. Kaye (Top Ten); 3, Mr M. Clarke (N. Staffs).

Coldwater: Goldfish and comets: 1, Mr and Mrs Toyne (section winner, Sheffield); 2, Mr P. Bremley (ind.); 3, Mr C. Asquith (Castleford). Fancy goldfish: 1, 2 and 3, J. S. Hall (Aireborough). A.O.V.: 1, Mr M. Clarke (N. Staffs); 2, Mr J. S. Hall (Aireborough); 3, Mr Pollard (Huddersfield). **Shubunkins:** 1, Mr A. Kaye (Top Ten); 2 and 3, Mr J. S. Hall.

In Brief . . .

. . . MRS W. ATKINSON of **HARROGATE & D. A.S.** won the Unifex challenge trophy for most points in the Society's table shows last year (2, Mr M. Levett; 3, Mr D. Taylor). The Society is soon to be deprived of the services of member Mrs Shirley Briggs, to whom they have presented a fish book as a token of their thanks for all her efforts on their behalf.

. . . New society **NEWBURY & D. A.S.** would like to hear from other societies and would welcome advice on running a successful club. Please contact secretary, Miss M. Bance, 105 Turnpike Road, Newbury, Berks.

. . . THE large number of **PRIVATEERS A.S.** members attending the meeting at which Mr J. Mosley, secretary of Keighley A.S., lectured much appreciated the interesting talk he gave on making all-glass tanks and breeding killifish.

. . . CLUB members Mr R. Cox and Mr D. Calway staged a tape and slide show on the egg development of killifish for fellow members of **YEOVIL & D. A.S.** The table show for a.v. livebearers was judged by Mr M. Hulbert and won by Miss K. Rendell (2, Mr A. Rendell; 3, Mr R. Cox).

. . . **NEW FOREST A.S.** enjoyed a slide show on cichlids and it was agreed that the colours photographed in most of the slides were very true to life. The show was presented by Mr George Danby. Mr D. Knapp won the *Corydoras* class in the table show judged by Mr D. Lane (2, Mr D. Harding; 3, Mr C. Krapp) and Mr B. Higginson won the mollies class (2, Mr D. Harding; 3, Mr R. Menhennet).

. . . MR Ray Hargson presented **HORSFORTH A.S.** with an interesting evening's entertainment when he gave a slide lecture on the cultivation of live daphnia and presented a film on marines in the oceans. He also showed film of members' own tanks from some years past. Mr M. Ott won the monthly trophy for best fish in the show and together with Mr C. Corns took most of the honours at the table show. Prospective new members are welcome and are asked to contact the secretary, Mrs B. Helm at Leeds 21025.

. . . **CARSHALTON & D. A.S.** now possess four new shields, donated by members, for award in the club competitions at the end of the year.

. . . **KEIGHLEY A.S.** recently enjoyed the presentation of some interesting films by Mr Medved of the Keighley Cine Circle. Table show results at this meeting were: table class: 1 and 2, Mr Ibbotson; 3, Mr Hart. A.O.V.: 1 and 2, Mrs Beckett; 3, Mrs Hepp. Novice A.O.V.: 1, Mr Hart; 2, Mr Ibbotson; 3, Mr Sagar. Junior A.V.: 1, Master P. Beckett; 2 and 3, Master P. Cutting.

. . . AFTER their Christmas recess, **HEMEL HEMPSTEAD A.S.** got back into the swing again with a general discussion about members' fish problems and fish diseases. They also discussed plans for The Aquarium Show 1972.

. . . **BRISTOL T.F.C.** table show awards for 1971 have been presented to the following: open, Mr G. Furber; novice, Mr Bob Lawrence. The society's programme officer, Mr Mick Ellick, presented the Club with an excellent programme for their first meeting in 1972—a slide show on home aquaria featuring slides he had taken of his fish and aquaria past and present, which represented a wide variety of species including marines.

The BRITISH AQUARIST STUDY SOCIETY (B.A.S.S.) is holding its next meeting on 23rd March in the Fellows Lectures Hall, London Zoo, Regents Park, at 2.00 p.m. Mr Eli Hemmingway will be talking on keeping and breeding some of the difficult characins from his own experience as one of the most successful breeders of this type of fish in the country. The Society extend a warm welcome to all. Tickets are 45p each and the cost includes light refreshments. After tea the meeting will continue with a talk by a second speaker. Tickets are available from: Mr F. Keess, Highcliffe, Old Hill, Woking, Surrey. Following meetings will be held on 13th May and 7th October.

AT the presentation of club shields for the year at **WHITLEY BAY A.S.** Mr A. Lisle of Blyth won the bi-annual shield, Mr R. Massingham of Whitley Bay the 10-point Competition shield and Mr Mallion received a miniature shield for a previous competition. The club recently welcomed the wives of some of the members and entertained them with a slide show on fish photography, commentary by Mr D. Glenn of Tynemouth.

THE 1971 reports of the principal officers at the **BOURNEMOUTH A.S. A.G.M.** showed the Society to be in a very healthy state with satisfactory finances, a successful open show, varied programmes including slide shows, talks, quizzes with good member participation, social meetings with other societies and inter-society functions arranged in conjunction with the Association of Southern Aquarists Societies. Members had also enjoyed coach trips to Alexandra Palace and to The Aquarium Show 1971.

MR Brian Baker judged the table show at **ANSON A.C.** for characins, a.n.a. coldwater and minnows and daisies as well as giving a short talk on water. The Society look forward to the civic reception to which their president, the Lord Mayor of Brent, has invited them. Club winners for 1971 are: 1, Mr D. Riley; 2, Mr J. Howe; 3, Mr A. Wood.

ROTHERHAM & D. A.S. members were very distressed to hear of the death of Mr Albert Lindley shortly after they had enjoyed a most pleasant evening with him and Mrs Lindley when Mr Lindley judged Rotherham all-winners fish show; and members send their condolences to Mrs Lindley. The winners to whom Mr Lindley presented prizes were: 1, Master David Aitton; 2, Mr Derek Jones; 3, Mr D. Aitton. A.O.V.: 1, Mr Derek Jones; 2, Mr D. Jones; 3, Master Aitton. Mr Jones also won the breeders variety with over nine different species of fish.

SOCIETY award winners at **COVENTRY P. & A.S.** for 1971 are: Hogarth Cup, all classes, B. & F. Hirst; Stone Cup, tropical, not broods, Mr E. Shreeby; Bradbury Cup, coldwater, not broods, Mr D. Easingwood; Fassam Bowl, breeders egglayers, B. & F. Hirst; Society Cup, breeders livebearers, Mr T. Manning and B. & F. Hirst; Diamond Cup, garden pool, Mr B. Bromfield; Court plaque, tropical home aquaria, Mr and Mrs Halling; Society Cup, coldwater home aquaria, Mr B. Bromfield; Clarke plaque, best fish, Mr D. Easingwood, Mr H.

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PFM, 554 Garratt Lane, London SW17 0NY Phone 01-947 2865

Bertoni; Farren plaque, best member, Mr D. Easingwood, 100 points; Meyer Cup, juniors, P. Dewin. The Society's president for the last 19 years, Mr P. O. Smith, has now retired with the Society's thanks and best wishes for a happy retirement. Mr Bernard Bromfield is the new president.

... FINAL League positions for 1971 among **YORK & D. A.S.** members are: Mr A. S. Allison (133), Mr E. Leadley (76), Mr M. Donaldson (72). Leading positions for the Albert Simons trophy are: Mr I. Stephenson (251); Mr P. Carey (161), Mr P. Booth (130). Junior League results are: R. Swallow (44), P. Hoogh (32), J. Kirlew (19).

... **LEAMINGTON & D. A.S.** winners of the society competitions in 1971 are: home aquarium, Mr Bird; Member of the Year, Mr P. Thomas; table shows, Mr J. K. Smith; breeders, Mr C. Beard; junior member, J. & S. Bird; best in show, Mr E. Bird; pond competition, Mr C. Beard.

... FOR those particularly interested in native coldwater fishes, subscriptions to the **BRITISH ICHTHYOLOGICAL SOCIETY** are still only £1.00. Mr D. Marlborough, secretary, will be very pleased to send you details of the Society's activities (42 Scarborough Green, Welwyn Garden City, Herts.).

... **BETHNAL GREEN A.S.** held a most successful dinner and dance at the end of January. Mr Frank Tomkins of the F.B.A.S. presented the club trophies for the year to: Wilkins Memorial Bowl, Mrs S. Hedges; First Year Members Cup, Mrs S. Hedges; Points Cup: 1, Mr P. Arnould; 2, Mr B. Martin; 3, Mr D. Adams. Fish of the year: 1, Mr J. Conolly; 2, Mr P. Arnould; 3, Mrs S. Hedges; 4, Mr D. Bundy. Fish of the month: 1, Mr P. Arnould; 2, Mr B. Martin; 3, Mr J. Conolly.

... **EAST KILBRIDE A.C.** much enjoyed the slide show on freshwater

fishes presented to them by their president, Mr Norman Grant. Mr Grant also judged the table show of guppies and novelty class for a container furnished to an attractive or humorous design. Class winners were: guppies (male): Mr A. Lyons; juniors, T. South. Guppies (female): Mr J. Finlay; juniors, G. Grahame. Novelty: Mr J. Thomson; juniors, K. McKenae.

... 49 MEMBERS of **PLYMOUTH A.S.** at the Vivid Club, Richmond Walk, enjoyed talks given by Mr R. Lucas on breeding emperor tetras and Mr J. Rundle on breeding Siamese fighting fish. The best in the show award in the guppies class went to Mr Reed. Novice: 1 and 2, Mrs Hooking; 3, Mr Kendall. Advanced: 1, 2 and 3, Mr Chubb; Premier: 1, 2 and 3, Mr Reed.

... **CASTLEFORD & D. A.S.** have started the New Year in new accommodation at the Pontefract Carleton Community Centre because of difficulties in finding a venue in Castleford suitable for their junior members. Eight new members were among those who heard the talk by Mr F. Watton on tropical fish. Steven Clowes won first and third in the junior a.v. and the best in the show award.

... ATTENDANCE at the **HASTINGS & ST LEONARDS A.S.** auction night broke all club records when 90 people joined in the bidding. The table show for *Corydoras* was won by Mr G. Funnell. A talk by Mr D. Wilson, an experienced glazier, on glazing an aquarium was very well received by members who learnt some of the tricks of the trade. The table show for own breeding, livebearers, was won by Mrs A. Adams.

... CONGRATULATIONS to Mr J. Regan of the **SOUTH LONDON SECTION** of the FGA on attaining his silver badge. Evidence of the improving standard of guppy breeding is also made apparent by the three silver awards gained in the table show at the A.G.M.

Dates for Your Diary

4th March. **FRAS** Assembly. Conway Hall, Red Lion Square, London, W.C.1. 4.30 p.m.

27th March. **KEIGHLEY A.S.** Open Show, Victoria Hall, Keighley.

12th March. **BELLE VUE A.S.** Open Show. Opershaw Lads Club, Crossley House, Ashton Old Road, Opershaw, Manchester. Details: Mr R. Davies, 28 Wetherby Street, Higher Opershaw, Manchester 22.

18th March. **SOUTH PARK AQUATIC (STUDY) SOCIETY** second Invitation Show. Farnedown School, Bishops Road, Tooting, London, S.W.17. All friends invited. Details: Mrs M. Dudley, 182 South Park Road, Wembley, S.W.19 (phone 01-540 9762).

19th March. **TOP TEN A.S.** Open Show. Haddenfield Town Hall.

14th March. **BASS** Meeting. Fellows Lecture Hall, London Zoo, Regent Park, 2.0 p.m. All welcome. Tickets 4/0 from Mr F. Keen, Highfields, Old Hill, Woking, Surrey.

25th March. **EAST DULWICH A.S.** third Open Show. Territorial Army Hall, Highwood Barracks, Lonsdale Lane, London, S.E.23. Show secretary, Mr K. G. Quinell, 424 Camden Road, Peckham, SE14 3UB.

26th March. **NELSON A.S.** Open Show. The Civic Centre, Stanley St., Nelson. Details from Mr R. McKenna, 24 Bath Street, Nelson.

27th March. **WORKSOP A. & Z.S.** Open Show. North Notts College of Further Education, Carlton Road, Worksop, Notts. Schedules available from Mr F. G. Sibson, 17 Clifton Street, Worksop.

1st April. **BUNNYMEDE A.S.** Open Show. Ertford School, Ashford, Middlesex. Details: Mr K. Smith, 11 St Ann's Avenue, Sturwell, Staines, Middlesex.

2nd-3rd April. **TOTTENHAM & D. A.S.** Silver Jubilee Open Show. Harringay Sports Council Drill Hall, High Road, Tottenham, London, N.17 (opposite Spurs Ground). Schedules: Mr K. Manser, 74 Westward Road, South Clapham, E.4 (01-827 7812).

3rd April. **SOUTHAMPTON & D. A.S.** Open Show. Avenue Hall, Southampton. Schedules: Mr M. Mascheridon, 25 Wakefield Road, Bitterne, Southampton.

4th April. **HOUGHTON & D. A.S.** Open Show. Philadelphia Welfare Hall, Herrington Burn, Co. Durham. Schedules: Mr C. A. Knight, 27 Longacre, Houghton-le-Spring, Co. Durham.

9th April. **SHEFFIELD & D. A.S.** Open Show. Grosvenor College, Grosvenor Road (nr. Railway Station), Sheffield 1.

9th April. **STOCKTON-ON-TEES** Open Show. St Peter's & Paul's School, 101 Durham Road (A177). Schedules: Mr M. Metfield, 11 York Crescent, Billingham, Teesside.

15th April. **G.A.G.B. A.G.M.** Conway Hall, Red Lion Square, Holborn, London, W.C.1.

15th April. **WARRINGTON A.S.** Open Show. Bell Hall, Orford Lane, Warrington, Lancs.

15th April. **MEDWAY A.S.** Open Show. St John Fisher School, Othman's Street, Chatham, Kent (1 mile, Chatham Station). Schedules: Mr J. Marshall, 57 Dargave Road, Chatham, Kent (phone Medway 61714).

22nd April. **INDEPENDENT A.S.** Open Show. The Public Hall, Islington Town Hall, Upper Street, Islington, London, N.4. Schedules: Mr S. 16hp, 324 Coleridge Lane, London, N.16.

22nd April. **THURROCK A.S.** Open Show. Park School, Bridge Road, Grays, Essex. Tropical, coldwater, furnished aquaria, pairs breeders classes. Schedules: Mr D. C. M. Durrant, 174 Trinity Road, Southend, Essex; phone Southend 610570.

23rd April. **FREELANCE A.S.** Open Show. St Stephens Hall, Surrey Square, London, S.E.17. Details: Mr J. Stamp, 72 Radnor House, Lamb Street, S.E.1; phone 407 4066.

29th April. **UXBRIDGE & D. A.S.** Open Show. G.P.O. Motor Repair Depot, Willow Tree Lane, Yeading Lane, Yeading, Herts, Middx. Schedules: Mr N. V. Lee, 45 Ainsdale Road, Ealing, London W14 5D.

29-30th April. **GSGB** Visit to Isle of Wight A.S. All friends and relations of members invited. Enquiries: Mrs M. Dudley, 161 South Park Road, Wembley, S.W.19 (phone 01-540 9762).

30th April. **BLAKEBOROUGH A.S.** Open Show. Carrons, J. Blakeborough & Sons Ltd., Blighouse. Details to follow.

30th April. **COVENTRY POOL & AQUARIUM SOCIETY.** Open Show. Foleshill Community Centre, Foleshill Road (A444), Coventry. Details to follow.

6th May. **AQUARIISTS FILM SHOW** (M. Caroll and M. Watts) organised by **HEMEL HEMPSTEAD A.S.** and Kodak Ltd. 7-10 p.m. at Kodak Ltd., Maybush Avenue, Hemel Hempstead, Herts. Tickets (50 p) from Mr A. Vells, 22 Fir Tree Close, Hemel Hempstead, Herts.

7th May. **DUKERIES A.S.** Open Show. The Windrod Portland Technical Grammar School, Sparkes Hill, Worksop. Schedules: Mr M. Woodley, 20 Park Street, Worksop, Notts.

7th May. **ROEHAMPTON A.S.** first Open Show. Alton Parish Hall, Alton Road, Roehampton, London, S.W.15. Details: Mr D. Lambourn, 7 Wheeler Court, Plough Road, London, SW11 2AN (phone 01-221 2500).

11th May. **SOUTHEND LEIGH & D. A.S.** Open Show. St Clements Hall, Leigh-on-Sea. Show secretary, Mr R. D. Orford, 3 Bishops Chase, Leigh-on-Sea, Essex.

The BRITISH MARINE AQUARISTS ASSOCIATION would find it very helpful in providing judges if they knew how many of this year's open shows will be including marine classes in their schedules. They would appreciate it very much if show secretaries of societies who propose to include marine entries could inform the chairman of the BMAA Judges and Standards Committee. The address is: Mr J. Haynes, 6 Cleveland Road, Paignton, Devon TQ 4 6EN. Alternatively, show secretaries could indicate this when sending entries for 1978's Dates for Your Diary.

15th May. **TROWBRIDGE & D. A.S.** P.S. Open Show. Nelson Hadley Grammar School, Trowbridge. Schedules: Mr W. A. Burton, 17 Poldons Road, Trowbridge, Wilt.

15th May. **BASS** Meeting. Fellows Lecture Hall, London Zoo, Regent Park, 2.0 p.m. All welcome. Tickets from Mr J. Keen, Highfields, Old Hill, Woking, Surrey.

14th May. **MERSEYSIDE A.S.** Open Show. The British Legion Club Ltd, Elm Tree Hall, 2 Cromwell Avenue, Liverpool L18. Details: Mr R. T. Hall, 144A Broughside Hey, Carris Farm, Liverpool L28 0RY (phone 021-489 8613).

14th May. **DERBY REGENT A.S.** Open Show. Sherwood Foresters Recreation Centre (Normanton Barracks), Cromwell Road (A5111), Derby (Bullion R.A.C. opposite). Show secretary, Mr R. G. Hartley, 26 Mansfield Road, Derby (phone 44222).

21st May. **NORTHWICH & D. A.S.** Open Show (AMMAS). Venue announced later. Details: Mrs D. J. Thorne, 21 Whinney Road, Winstead, Cheshire; phone Winstead 3380.

21st May. **YEovil & D. A.S.** Open Show. The School Hall, Church Street, Mottack, 105, Yeovil. Full details from Show Manager: Mr D. Phipps, 4 200 Terrace, Boveridge, Mottack, Somerset.

21st May. **CROYDON A.S.** Open Show. St Philip Gurus Reception Centre, Mansfield Avenue, Croydon, Surrey. Details: Mr A. J. H. Smith, 1 Hordhead Way, Wallington, Surrey.

27th-28th May. **FGA INTERNATIONAL GUPPY OPEN SHOW.** Gales Farm Community Centre, Gales Farm Road, Northford, Birmingham. Open 9 a.m. to 6 p.m. Sunday 28th, 7-9.30 p.m. Details: Mr D. R. Beacham, 17 Pedmore Close, Woodrose Street, Redditch, 12, Birmingham.

28th May. **BOSTON A.S.** Open Show. Bardonians Theatre, Sports Road, Boston, Lincs. Details: Mr S. Noble, 173 Wood Farm Road, Boston, Lincs.

28th May. **CORBY & D. A.S.** Open Show. Corby Civic Centre. Details to follow. Show secretary, Mr A. Shaw, 175 King Street, Kettering, Northants.

4th June. **ACCRINGTON & D. A.S.** Open Show.

4th June. **GKN POND & AQUARIUM SOCIETY** inaugural Open Show. 144/5 Carlton, Salisbury Street, Darlington. South. Entertainment for all the family. Schedules: Mr K. Rowley, 195 Welverhampton Street, Darlington, Staffs.

4th June. **LOUGHBOROUGH & D. A.S.** Open Show. Loughborough Sports Centre, Grange Street, Loughborough. Details: Mr T. H. Parry, 447 New Ashde Road, Loughborough, Leics.

4th June. **BOURNEMOUTH A.S.** Open Show. Kinson Community Centre, Parkers Park, Bournemouth. Schedules (after 1st May): Mr J. V. Jeffery, 20 Broomfield Avenue, Southbourne, Bournemouth, BH10 4JF. No entries accepted at door.

4th June. **LINCOLN & D. A.S.** Open Show. Details: Mr H. Kuhn, 44 Keston Street, Lincoln.

22nd June. **LLANTWIT MAJOR A.S.** Open Show. Llanwit Major Town Hall. Details: Mr A. J. Roberts, 34 St Marys Avenue, Barry, Glam.

11th June. **BISHOPS CLEEVE A.S.** Open Show. Tythe Barn, Evedun Road, Bishop's Cleeve, Cheltenham, Glos. Further details: Mrs M. Bevis, 27 Warden Hill Road, Cheltenham, Glos.

Continued on page 122

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11th June. **HIGH WYCOMBE A.S.** Open Show. Lane End Hall, Lane End, High Wycombe, Bucks.

11th June. **THORNE A.S.** Open Show. The Grammar School. Details: Mr H. C. Newton, 64 Hawthorne Road, Thorne nr. Doncaster; phone 813041.

12th June. **W.K.F.B.A.S.** Open Show. The Town Hall, High Street, Colshill. Details (after 1st April): Mr R. J. Tromans, 27 Moxhall Road, Kingshurst, Birmingham; 221-750 7543.

17th June. **RIVERSIDE A.S.** Open Show. St Saviour's Church Hall, Cobbold Road, off Ayles Road, London, W.12. Schedules (later): Mr M. Goss, 3 Boalies Court, Plantation Road, Amersham, Bucks.

18th June. **GLOSSOP A.S.** Open Show. The Education Centre, Talbot Street, Glossop. Details: Mrs M. Beasley, 9 Waterside, Hatfield, Hyde, Cheshire.

22nd-24th June. **BRISTOL TROPICAL FISH CLUB.** Open Show. Congregational Church Hall, Newton Street (off Stapleton Road), Bristol 3. Schedules: Mr R. Lawman, 26 Stonebridge Park, Eastville, Bristol BS5 6RR.

24th June. **ANSON A.C.** Open Show. Details to follow.

24th June. **MID-HERTS A.S.** Open Show. Held in conjunction with Cell Barnes Fete. Cell Barnes Hospital, St Albans. Details: Mr C. S. A. Withers, 13 Charnmouth Road, St Albans, Herts.

24th June. **ALFRETON & D. A.S.** Open Show. Adult Education Centre, Alfreton Hall, Alfreton. Details: Mr B. Hickling, 15 Meadow Close, Eastwood, Notts. NG16 3DQ.

24th June. **GOSPORT & D. A.S.** Open Show. Crofton Community Association, Stubbington. Details: Mr P. Hayward, 225 Lacks Road, Park Gate, Southampton.

2nd July. **CASTLEFORD & D. A.S.** Open Show. Carleton Community Centre, Culeton, Pannofract, Yorks. Details: Mr B. Stevens, 72 Falcon Drive, Lova Lane, Castleford, Yorks (or phone Mrs Gates, Pannofract 3213).

2nd July. **EXETER & D. A.S.** First Open Show. Kennford Village Hall, Kennford, nr. Exeter. Benching by 12 noon. Schedules: Mr W. F. Bye, 14 Beaworthy Close, Exeter EX2 9LB; phone 75926.

2nd July. **NORTH WARWICKSHIRE A.S.** Open Show. The Settlement, Kingstanding Road, Kingstanding, Birmingham. Details: Mr T. Stow, 108 South Road, Erdington, Birmingham.

2nd July. **LYTHAM A.S.** Open Show. Lither Gardens Pavilion, Lytham, Lancs. Details: Mr D. Wright, 11 Cambridge Road, Southell, Lancs.

8th July. **BASINGSTOKE & D. A.S.** Open Show. Carnival Hall, Basingstoke. Schedules from Mr M. Strange, 10 Loddon Court, Neville Close, Basingstoke, Hants.

8th-9th July. **ROMFORD & BEACON-TREE A.S.** Open Show (Dagenham Town Show). Central Park, Dagenham, Essex.

Schedules (later): Mr D. G. Kent, 74 Lynwood Drive, Collier Row, Romford, RM5 2QT (phone 70-67804).

22nd July. **PORT TALBOT & D. A.S.** Open Show. Y.M.C.A., Port Talbot. FBAS Rules, 11 judges. Schedules (later): Mr M. John, 35 Golden Avenue, Sandfields, Port Talbot.

29th July. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London, W.C.1.

5th-12th August. **PORTSMOUTH A.S.** Open Show. Portsmouth Community Centre, Teyford Avenue, Portsmouth. Fish entered 5th, judged 6th, public 7-12th. Schedules: Mr J. Stallwell, 34 Salcombe Avenue, Copnor, Portsmouth.

6th August. **TONBRIDGE & D. A.S.** first Open Show (provisional date).

12th August. **BRACKNELL & D. A.S.** Open Show. Priestwood Community Centre, Priestwood Court Road, Bracknell (opposite Admiral Cunningham Hotel). Schedules: Mr L. Jordan, 62 Fernbank Place, Ascot, Berks (phone: Winkfield Row 3406).

13th August. **NORTH STAFFS. A.S.** Open Show. Details later.

20th August. **BEDWORTH A. & P.S.** Open Show. Nicholas Chamberlaine School, Bulkington Road, Bedworth. Schedules: Mr T. Fagett, 74 Lister Street, Attleborough, Nuneaton.

20th August. **OLDHAM & D. A.S.** Open Show. Werneth Park, Oldham. Details: Mr E. Birchwood, 30 Inverness Avenue, Blackley, Manchester 9.

26th August. **PLYMOUTH D. A. & P.S.** Open Show. Plymouth Y.M.C.A. Details: Mr J. Randle, 50 Durham Avenue, Lipson, Plymouth, Devon.

2nd September. **BETHNAL GREEN A.S.** Open Show. Details to follow.

22nd September. **YATE & D. A.S.** Open Show. Newmans Canteen, Yate, Chipping Sodbury, Glos. Schedules: Mr M. Emery, 114 Sundridge Park, Yate, Bristol (phone: Chipping Sodbury 313648).

3rd September. **WHITLEY BAY A.S.** Open Show. Empress Ballroom, Whitley

Bay, Northumberland. Show schedules available later.

16th September. **HAVANT & D. A.S.** Open Show. Deverell Hall, Purbrook, Hants. Details: Mr V. B. Hunt, 120 London Road, Widley, nr. Portsmouth, Hants.

15th-16th September. **BRISTOL AQUARISTS SOCIETY** Open Show. St Michaels Parish Hall, Bishopston, Bristol. Details: Mr H. C. B. Thomas, 2 Grove Park, Bristol BS6 6PP.

16th September. **HOUNSLOW & D. A.S.** Open Show. Hounslow Youth Centre, Cecil Road, Hounslow.

23rd September. **G.S.G.B.** 1972 Convention. Venue to be decided.

24th September. **NORTHAMPTON & D. A.S.** Open Show. Details to follow.

24th September. **OSRAM A.S.** Open Show. Recreation Hall, Refuge Street, Oldham, Lancs. Details: Mr J. E. Shore, 53 Refuge St, Shaw, Oldham, Lancs.

24th September. **TORBAY A.S.** Open Show. Turquay Town Hall. Details to follow.

1st October. **EALING & D. A.S.** Open Show. Northfields Community Centre, Northcroft Road, London, W.11.

7th October. **BASS Meeting.** Fellows Lecture Hall, London Zoo, Regents Park, 2.0 p.m. All welcome. Tickets from Mr F. Keens, Highcliff, Old Hill, Woking, Surrey.

14th-15th October. **B.A.F.**, Belle Vue, Manchester.

22nd October. **SHERWOOD A.S.** Open Show. Details to follow. Show secretary: Mr J. Egan, 25 Marples Avenue, Mansfield-Woodhouse, Notts.

27th-29th October. **THE AQUARIUM SHOW '72.** Royal Horticultural Society Old Hall, Vincent Square, London S.W.1. All details from the Organiser, 554 Garratt Lane, London SW17 6NY (01-947 2895).

11th November. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London, W.C.1.



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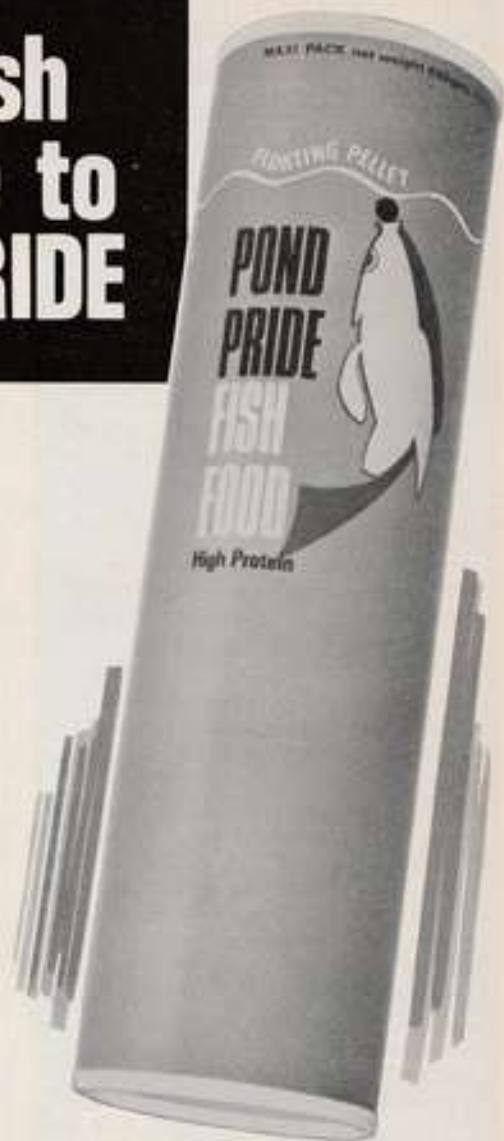
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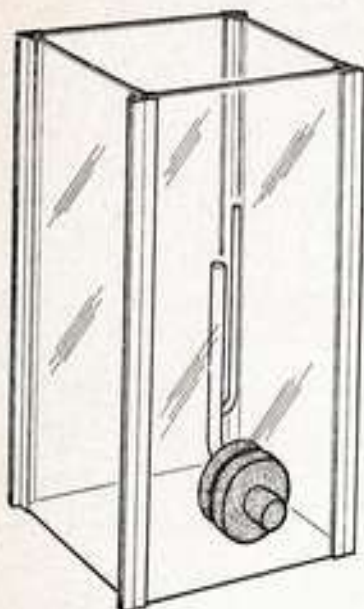
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