

JUNE 1972

15p

# Pet Fish

monthly

*The* PRACTICAL FISHKEEPING MAGAZINE



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## Comments and Quotes

### Are hobbyists being soaked?

SOMETIMES it seems that when aquarists question prices and costs in the hobby they are unable to keep a sense of proportion. Is this, we wonder, because so often fishkeeping is a sphere in which every man is his own trader? The ease with which he crowds his tanks with vallis makes him scornful of what the dealer asks him to pay for cryptocorynes flown to the U.K. (from thousands of miles away. Endless hordes of guppies or zebrafish obscure for him the costs of collecting and importing cichlids from African lakes.

This month we publish one of the letters we have received expressing the view that aquatic traders are making fortunes at the expense of the hapless public. Unlike many, our correspondent has voiced his complaint in a kindly and puzzled manner—more in sorrow than in anger—but it does seem necessary to provide a few comments on points that even such a reasoned letter appears to miss.

The cost of pastimes such as horse decorating, photography, television or football watching or going to the cinema, to say nothing of the cost of vices such as having the odd tot or pint and smoking, has increased greatly over the last decade. Few of us are prepared to attempt to make our own camera, television set or Scotch, so we pay up, albeit with a grimace but without too much railing about the profits reaped by the vast organisations usually involved in their manufacture. And yet the fact that in our hobby the cost of materials for a tank that John Smith makes at home, in time spared from leisure from his means of making his living, might be only one-third of what the finished product costs in his local shop is taken to support a charge of profiteering! Because Jack Jones can boast of throwing away masses of plant cuttings that the dealer charges 5p each for these is said to be clear evidence that the shopkeeper is quietly amassing a fortune.

Let's give a thought, too, to the background of the fishes that in the great majority can be bought for well under 50p each. Collected in rivers of distant climes, transported

to an airport for flight to the U.K., received (at the airport—not at the importer's door) at this end, delivered by road or rail to the retailer's shop for quarantine and special treatment to restore condition, the fish then reach the display tanks and remain there until sold. Costs of transport, wages, fuel and indeed of almost every aspect of the wholesaling and retailing operations have increased enormously in recent years, as we must all know, and if prices of aquarium fishes have moved significantly upwards it's because for far too long these little beauties were sadly underpriced.

The hard cold facts of the situation are that the capital required to set up an attractive and properly run aquatic business is these days a tidy sum and that overhead costs of keeping a presentable and comprehensive display involves not only heavy outlay but also very hard work. Only a well-bred philanthropist who was also rather soft in the head would attempt aquatic trading without return for his efforts. Profit is the trader's return; profit is not a rude word—after all, all things considered, for the average shopkeeper it's unlikely to represent more cash than his wage-earning customer collects from his boss.

In short, we see little evidence of 'profiteering' in this hobby, and although we would hate to see the hobby priced out of the pocket of anyone who wants to become a fishkeeper it is undeniable that in a world of rising prices our own interest can hardly remain untouched. In general, manufacturers and retailers have 'done us proud' in the way prices have been contained. At the Pet Trade Fair this year one manufacturer of internationally known aquatic equipment told us that his basic products have increased in price only from 30 to 45p in 25 years. And this is not unusual in the aquarium business world.

To return to the reader who wrote to us, we would question whether to pay £4 for 12 exotic pets, half of which at least have come to him from 'far corners', is really such bad value for money in this day and age?



# LETTERS

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

### Breeding in Bare Tanks

**I**N 'Breeding in Bare Tanks' (PFM, April) F. W. Coles suggests painting the tank base to darken it and reduce reflection. For some years I have used ordinary roofing slate for this purpose. It is easy to treat and can be purchased cheaply in a variety of suitable sizes and colours. For small tanks (up to 24 in.) one piece trimmed to fit is adequate. Larger tanks require two or more slates placed side by side. Edges and joints are silicone-sealed to prevent accumulation of debris between slate and tank base.

Slate has a number of advantages. (1) Its matt surface is less reflective than painted glass. (2) A secondary base ('... plywood ... will take care of any pinholes or brushmarks that may have been left in the paint') is unnecessary. (3) Hard and rough objects can be placed in the tank without 'scratching' or in other ways damaging the glass. (4) If desired, to speed up cleaning operations, the slate can be tilted by insertion of a supporting plastic strip along the back edge so that mulm collects conveniently at the front for siphoning.

Unlike Mr Coles I prefer natural shade. This is provided by luxuriant growths of floating Indian fern, which I feel must assist in keeping the water in a healthy condition. As a bonus, the long bushy roots are excellent for receiving spawn and protecting fry.

I can confirm Mr Coles' observation that 'pit-spawning' cichlids are not deterred from breeding by lack of gravel. In the early days of using bare tanks, as a concession to convention, a container of gravel was placed in the cichlid tanks. Pits were prepared occasionally in the normal manner, but I noticed that just as often some dark corner, or under the rounded base of the gravel tray, were favoured sites. The gravel was subsequently dispensed with altogether and as there were no observable disadvantages it has not been used since.

Farnon, Chester

J. L. BARRIE

### Plant Fertilisers

**I**AGREE entirely with Mr D. Broome's statement (PFM, April) that a pump should never allow more fish to be kept than a tank can hold when one is not used. However, many people do not know when this rather indiscernible limit is reached and

a pump allows a little latitude, a margin of error that can be corrected when they have gained some experience. I freely admit I break the rules in this respect in one or two tanks, but during the miners' strike I lost only one fish, a 30 cm. *Clarias batrachus* that foolishly left his cooling tank overnight.

On mollies, my source, Dr F. N. Ghadially in his *ADVANCED AQUARIST GUIDE*, disagrees with Mr S. Marley's—but I would prefer to let the experts argue it themselves.

My apologies to Mr P. Turner (PFM, April), but I had no idea it was a myth I was perpetuating in my letter. The point I was trying to make was that a sub-gravel filter reduced the amount of mulm that needed to be siphoned. I thought that aerobic and anaerobic bacteria convert the organic waste into nitrates, nitrites etc., which the plants utilised. Not all can be thus assimilated in such microcosmic conditions for the same reasons that we have to provide food for our fish. I never realised that the visible detritus played so little a part.

A point that may be of interest about plants is that recently all my individual ones have gone into troughs of 'John Innes no. 1', which has produced some quite spectacular results, especially with *Cryptocoryne*. My plants had never been much to boast about until I tried this, which certainly produces better results than plain gravel and fish urine.

Parley, Surrey

M. FURNISS

### Expense in the Hobby

**M**AY I comment on this hobby of ours—the home aquarium? Is it getting out of hand in terms of expense? I say it is! I do not want to go into great detail, but 8 years ago I ventured into keeping an aquarium in my home, the expense then being about half of what it would cost today. My ideals then were nothing too great—just to have a centrepiece for the home. Even today I have no great ambition to breed discus or any other kind of fish—just to have a nice community aquarium, furnished with plants. But I must admit that my pocket money does not run to the prices the dealers are asking for fish and plants. This, I think, is the real expense, not the equip-

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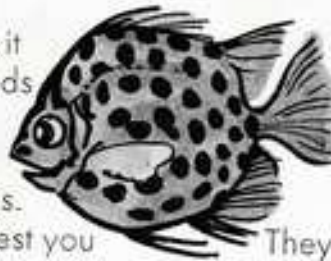
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## LETTERS

*continued from page 54*

ment such as heaters and 'stats, filters, lighting etc. Once you have bought these things you are set and ready to furnish the aquarium and this is where the real expense begins.

Two months ago I made my own all-glass aquarium, a three-cornered one fitted with mahogany hood. I shall not enter into full details of dimensions, just say it holds around 15 gallons. The cost for this aquarium was £5.50; if I had bought this from a dealer it would have cost me around £15 to £20. This I do know, but at this stage I want to get to the question of the expense of fish and plants. I have furnished my aquarium with valis and ruffled swords. This alone has cost me £4.50 and I still need more. I have also bought 12 fish ranging from sucking cats to rummynose tetras and guppies at a cost of around £4. So to date it has cost me £8.50, which is quite alarming when you think that the price of one male guppy ranges

from 35p to 40p and, let's be fair, you need around six to eight guppies to show their effectiveness in a community tank.

So one can't help wondering who is making a great big fat profit from people who do not know any better. I am afraid the aquatic hobby will go out as fast as it started with ordinary people who just want to set up a nice community aquarium for the kids and their own pleasure. I know for a fact that this hobby has been on the up-and-up for the last 4 years but I am sure, with the rising prices, it will be on the down-and-down, which is quite a shame. I have had some very pleasing memories from this hobby, and I think this great pastime could be one of our leading hobbies, if handled by the right people. I sincerely hope you print this letter to let people read for themselves and answer it in future issues of *PFM*. I have done my best to express my feelings that prices are getting right out of proportion.

Long Ashton, Bristol

G. L. ELVINS

*Many people believe that prices are generally becoming 'right out of proportion'—but is it true particularly for this hobby? Some thoughts on this matter appear in Comments and Quotes this month.—*  
EDITOR.

## The WATER GARDEN in June

FOR water garden nurserymen this is likely to be their busiest month. For reasons best known to themselves many gardeners suffer from what might be termed the 'June water bug'. Possibly through seeing neighbours happily seated alongside their own pools other garden-owners feel they are really missing something if they have no garden pool. How right they are!

There may be folk who still go in for all that mixing of concrete and fixing shuttering to make a pool, but this is something I haven't seen for years. The many garden pools constructed in my area over the last 10-15 years have all been made in the modern way, with liners.

I have butyl rubber, Plastolene, Flexilene and Juralene as liners in my four garden pools. Unless something untoward occurs I have the feeling that I shall have to wait for nigh on 50 years to come to any conclusion as to which proves best. The only possible trouble I can foresee is the rare chance of teenage vandals poking sticks into a liner and causing holes. I have therefore retained all the spare pieces I cut from the liners when the edges were tucked beneath the concrete surround.

I know that Juralene and Flexilene can be repaired with patches stuck on with Bostik no. 1 (clear) adhesive. I have no doubt that this works for butyl rubber and Plastolene, too.

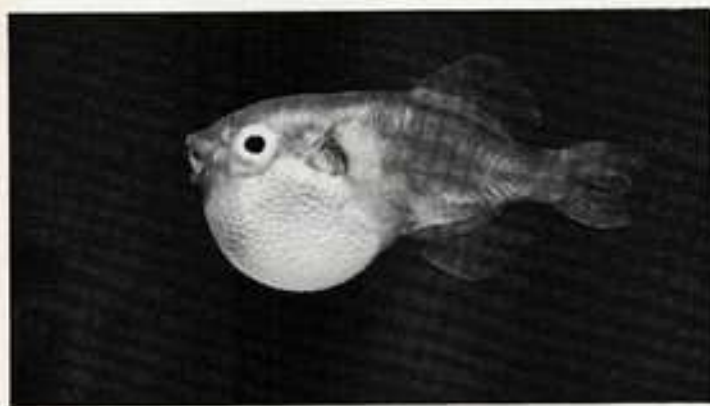
Be on your guard against any misleading advice about the cheapness of garden pool construction with a sheet of 500 gauge blue polythene. This material is excellent for a temporary breeding or quarantine pool; it is far too flimsy for ordinary garden pool work. After all, you don't want to go to all the trouble of making a fine-looking pool and then in a couple of years time have to do the job all over again because the liner has started to split.

### Confine rampant species

Because they have to be bought there is often the belief by the pool keeper that plastic planting baskets for water lilies and other aquatics are not really necessary and that flower pots can be used in lieu or the aquatics simply planted in soil at the bottom of the pool. If you plant water lilies and irises in soil in the pool not only will you have a mess and a horrid stench when you come to clean out the pool, but *Iris pseudacorus* (commonly sold for pond planting), for example, in these conditions will spread and take over the whole of a small pool within a year or so.

Brian Furner

## An Unusual Aquarium Puffer



By  
J. ELIAS  
and  
Dr S. FRANK

Young specimen of the unusual puffer fish described by the authors (? *Chonerhinus naritus*)

Photo:

J. ELIAS

PUFFER fishes (Tetraodontidae) are predominantly marine fishes but can occasionally be found in brackish or fresh water. The best known are those of the genera *Tetraodon*, *Carinotetraodon* and others such as *Colomesus*, *Chelonodon* and *Sphaeroides*; with these fishes the bases of the dorsal and anal fins are generally narrow, a ray count always being less than 15. Some of the puffer fishes most popularly found in aquaria are, amongst others, *Tetraodon lineatus*, *T. fluviatilis*, *T. schoutedeni*, *Carinotetraodon lineatus*.

Just occasionally the aquarist will come across a member of the genus *Chonerhinus*. We were fortunate in receiving in a consignment of other fishes three small specimens that at first sight appeared to belong to a new species of the family Tetraodontidae (several species of this genus have in fact been identified by earlier authors as belonging to the genera *Tetraodon* or *Neosipterus*), but on closer observation it was obvious that they belonged to the genus *Chonerhinus*.

*Chonerhinus* have between 25 and 38 rays in the dorsal fin and 22 to 32 in the anal. The belly and front part of the body is covered with small spines. A fish of this genus may vary in colour between golden yellow, golden green or grey-green, but its body carries just the one colour, always with a metallic sheen and without noticeable patterning. The darkest area is in the rear part of the tail below the dorsal and directly in front of the caudal. A small pit or nasal opening is found in front of each eye.

*Chonerhinus modestus*, known in Thailand as 'pla pak pao tong' or the golden puffer fish, has five or six hard and 20 soft rays in the dorsal fin and three or four hard and 19 or 20 soft in the anal. *Chonerhinus naritus*, which reaches a size of up to 12 in., has four or five hard and 31 or 32 soft rays on the dorsal and two or three hard and 26 soft rays in the anal. Our specimens, about 2 in. in size, had ray counts corresponding to the latter species though having a much larger eye than the adult fish do.

According to Day (THE FISHES OF INDIA) these puffer fishes were eaten in some parts of Burma but 'their bites are dreaded, and the Burmese assert that where they abound should anyone fall into the water they attack him in droves, and almost immediately cause death by biting pieces out of his body. They readily take a bait either of a piece of meat or a small fish'.

Breeding ground of the puffer fish of the genus *Chonerhinus* is Thailand, Malaya, Sumatra and Borneo. They live in brackish water in the tidal stretches of large rivers but they also ascend the river itself and can be found in places completely cut off from the sea. It is important to remember this fact when considering suitable conditions in which to keep them in captivity. Young specimens of *Chonerhinus naritus* can be kept in the aquarium without any problems. They do very well for a long

Continued on page 64



by  
ARPEE

## Personal COMMENT

THE gradual demise of my hatchet fish over quite a long period gave me plenty of opportunities of considering what might succeed them. Had I seen likely replacements amongst locally available importations I might well have repeated the mixture, but most batches I have seen have failed to impress, so I must wait for adequately acceptable specimens to arrive in the fullness of time. Whilst travelling recently, however, I came upon some very able substitutes, though precisely what some of them are I must leave as an open question. I finished up with three species of top-water-dwellers which can be used almost universally in the community pattern.

The first were some specimens of spotted copeina, which, with *Copeina arnoldi*, make both a shape and colour breakaway from many of the more usual fishes which we keep. The body configuration of long flowing lines and the most graceful of finnage makes the copeinas always worth having, and they are far from being expensive. If they show any inclination to spawn, the unusual method of so doing is fully deserving of a special tank dedicated to the occasion. In terms of the community tank the copeinas go well as single fish and give writers the rare opportunity of recommending a species which does not have to be bought in handfuls in order to make up a shoal.

My second purchase was of a quartet of small halfbeaks (*Dermogenys pusillus*) and I was very glad to have them, too, after a gap in reinforcements lasting some 2 years. Those which I have bear smart yellow dorsals and red ventral fins and seem more peaceful than their predecessors. I understand that there are lots of local variations in body size and shape in this fish, which has a wide distribution in the Far East. Many aquarists are disinclined to give them tank room on account of their pugnacious habits and it is true that young males often fight to the death and older ones often look prematurely past their best through constant warring. I think you have to look hard in the dealer's tank and see how the specimens on view are behaving. If squabbles break out every so often it is probably wiser to move on sadly. But if things look peaceful enough, take a chance and see how you get on with a couple.

I have gained immense pleasure from this fish since I first had a go several years ago, and I have been fortunate in the specimens I managed to secure. Although they are viviparous the young are not easy to rear, but I managed to bring a few to maturity in brackish water. They are not particularly robust, and therefore if you have any bullying individuals in your tank it is as well to provide some form of floating cover for them, and water lettuce is ideal if your conditions are right for it.

The third of my purchases remains something of an enigma. The dealer and I agreed that it could be fairly described as a danio laubuca or a laubuca danio. However, as I think that a *Laubuca laubuca*, sometimes referred to as *Chela momboti*, always looks as much a danio as a hatchet fish, I settled for chocolate laubuca to describe an inch-long miniature laubuca-type fish with which one of his tanks abounded. It has a broad purplish-blue stripe from eye to tail on which are superimposed three large dots of similar colour. For all the world this looks like a bit of Morse Code gone wrong and no doubt signalmen aquarists the world over will coin a nickname for it. I must say that this little fish appealed to me, not just on account of its lively shoaling habit (there we go again!), but because its colour was a really gleaming chocolate with that degree of pearliness that one associates automatically with the danio family.

All three of the fishes mentioned have undergone their quarantine without mishap and have joined the community tank. The spotted copeinas have taken up station and are very staid; the halfbeaks have also ranged themselves about the surface and peace reigns, but the miniature laubucas have hurled themselves around the place and are evidently thoroughly enjoying themselves. The physical contacts they make with each other are frequent and playful and there are no signs of any injury whatever. From their appearance one would rate them as being mature at about the size of a fully grown zebra fish, but if they confound all our experience and reach the proportions of those oscars you may rest assured that you will not have read the end of this particular episode.



Different though marine and freshwater techniques may be, I am heartily glad that on at least one count there is a marked similarity. I refer to the question of feeding, and am greatly relieved that the demands of marines are not so very complicated, though it is true to say that actual methods of distributing the food may sometimes call forth guile and ingenuity on the part of the aquarist.

Specifically, the willingness of so very many fishes to accept whiteworm or Grindal worm even within a few hours of their introduction to your

menage makes either of these, preferably both, essential long-term elements of your feeding routine. I have always strongly advocated their use with freshwater fishes, and there is little doubt that they often form the first food that marines will accept in those first few anxious days after their purchase. They have attracted much uncalculated-for criticism in the past from aquarists who have held them to be fattening agents, and so they probably are if fed exclusively or to excess, but many will agree with me that most excellent results can be obtained by regarding them as one major factor in an otherwise mixed diet. It is what goes into the worms themselves that calls for most criticism, and it is here that I feel we can perhaps bring about improvements.

The commonest food for these worms is bread and water, and it is said that brown bread gives better results than white. I suspect that this simply means that this brings about a higher reproduction rate, whereas what I should like to achieve is a good reproduction rate coupled with an optimum

nutritive content in the worms themselves, as potential fish food. The worms are, after all, merely carriers of elements to our fishes, and if we can pack them somehow with vitamins and trace elements, which I am sure are quite unobtainable from their customary prison diet, it seems reasonable to assume that the fish will benefit.

I am chary of introducing specific additives in any great quantity without further study, but have from time to time sprinkled Bemax or flake fish food on to the culture medium in the hope that it will be ingested and thus transmitted to the fishes. The results of these and like experiments have not been greatly encouraging, partly because the added substances seem to have been ignored by the worms; alternatively their presence seems to have hastened mildewing on the remaining food base, which has therefore demanded swift removal.

Perhaps readers have views on this. I should especially welcome accounts of any experiences from anybody who has specifically experimented with named vitamins or compounds.

## Unusual Puffer

*continued from page 62*

time in ordinary tap water to which has been added a little cooking salt (one or two coffeespoonsful in 2 gallons of water) at a temperature varying between 71.5° and 79°F (22-26°C). At first, it was not easy to get our three fishes to accept food; they were shy and panicked whenever anyone approached their tank. Even now, despite the careful treatment they have been given, they have still not completely lost their shyness. They do not damage each other and there is never a trace of injury on them even after they have been left to themselves for a long period.

Having had experience in keeping related fishes, especially *Tetraodon lineatus*, we began to supplement their usual diet of live foods with small snails but these were not necessarily such a fit-bit to our youngsters. It was only with the greatest difficulty that they took them into their tiny mouths, even when the morsel appeared to be of a suitable size. We overcame the problem of feeding with tubifex by putting clumps of the worms on floating *Riccia* (*R. fluitans*), from where, gradually, the worms would drop down. Only in this way could our fish eat their fill undisturbed and in their own time.

The growth of this puffer fish, in our case, was not rapid, but we were pleasantly surprised to find that they suffered no 'shock' from transportation

such as we know to be the case with other puffers, particularly with *T. lineatus*. Many of the latter suffer from shock to some extent; and they are particularly prone to fungus, not only on the fins but over the whole body. Furthermore, attempts to cure *T. lineatus* are not always successful—as we discovered with some other young specimens that disappeared one by one. However, we have had no problems with *Chonerhinus naris* and have never seen them in an unhappy state.

We expected these fishes to blow themselves up like a balloon when caught; some slight increase in body size did occur, but much more noticeable was the sound they emitted, which resembled an intermittent croaking. We have encountered the inflation and increase in size of the abdomen outlines, however, but only when it was quite unexpected. Once whilst the aquarium was being cleaned, a single specimen took fright and hid between two stones. As soon as he found himself alone in this depression in the ground the little fish inflated its stomach to three times its normal size. Naturally we hastened to help him escape from his unpleasant prison.

We had the opportunity only to observe quite young fish, so our knowledge of the species is incomplete. Probably with adults many other questions of environment and habits remain to be answered. Instances of behaviour changing with age are well known, but the understanding of even a relatively short portion of their life span can make a very useful contribution, particularly for those aquarists who may come across *Chonerhinus naris* in the future.

Wanted—a more regular supply of

## The Interesting BICHIRS

By CHRIS MATTISON

**B**ICHIRS are members of the Polypteridae, which is a little known family of fishes confined to the central and western parts of Africa. This very primitive family consists of several species, all of which share many unusual features, both in appearance and in behaviour.

All the fishes are elongated, although one (the reed-fish) is far more elongated and eel-like than any of the other fishes. A very conspicuous feature is the series of triangular 'finlets', usually carried erect, and numbering from five to 12 according to the species. The large pectoral fins are used to support the front of the fish when it is at rest as well as serving as the main propulsive organs. The head is large, and the mouth has a wide gape, extending almost to the gills. The scales are large, almost plates.

The swim bladder of the bichirs has evolved into a primitive lung and these fishes frequently make an excursion to the surface for air. This usually consists of a graceful glide to the surface, followed by a slight splash as the fish gulps air and then a mad dash back to the safety of the bottom.

This accessory breathing apparatus has probably evolved owing to the low oxygen content of their usual habitat of the swampy margins of the African lakes, and the quiet waters of the Congo, Nile etc. They are on the whole largely nocturnal but in captivity soon grow accustomed to feeding by day if food is given regularly. When trained in this way the fishes show very little fright-reaction; in other words you can watch them doing things which other fishes do when you're not watching! Their food should consist of earthworms, mealworms, chopped meat and fish etc. all in large portions.

None of the species, as far as I know, has been bred in captivity, but one interesting stage of development can be witnessed in the aquarium. When specimens of certain species are first procured the chances are that if they are young they will possess a pair of branching, external gills. At this stage they are still theoretically larvae, but care and feeding should be exactly the same as with adults. As the fish grows the gills will gradually recede into the gill-covers. This will take, according to the species and rate of growth, from a few weeks to a year or more. In this way the development is parallel to that of the urodeles, or tailed amphibians.

Sterba lists six species and illustrates a seventh, and of these five have been available to aquarists during recent years, although at infrequent intervals.

Possibly the best known species is the atypical *Callanetta calabaricus* (reed-fish), which has an eel-like form, attaining 3 feet. In colouring it varies from olive-green to brown on the back, and pale yellow or brown on the belly.

Less frequently available are the true bichirs, *Polypterus ornatipinnis*, *P. delhezi*, *P. weeki* and *P. palmat*.

*P. ornatipinnis* is basically dark in colouring with yellow reticulations along the back, on the finlets, and especially vivid on the pectoral fins.

*P. delhezi*, on the other hand, is coloured pure white below, with a soft grey back, on which are spaced about six jet-black irregular bars, outlined in white. Both *P. ornatipinnis* and *P. delhezi* have 10 or 11 dorsal finlets, and their maximum size is about 14 in.

The next species, *P. palmat*, is easily recognised as it has at the most nine dorsal finlets, usually six. It grows to 12 in. in length, and is grey-green dorsally, pale yellow underneath and has some more or less distinct light and dark reticulations towards the tail. This species appears to lose its external gills at a much smaller size than any other member of the genus. Even on specimens as small as 2 in. they will have been completely absorbed.

*P. weeki* grows to 16 in. in length, has nine or ten finlets, and is similar in coloration to *P. palmat*, apart from being creamy coloured underneath and having about a dozen dark bars along its back, which are, however, nowhere near as distinct as those of *P. delhezi*. This species appears to retain its gills longer than the other species, some individuals still displaying them when almost 12 in. long.

Other species, none of which I have seen offered for sale, include *P. bichir*, *P. senegalis* and *P. lapradei*.

All species are very undemanding in the aquarium and most types of water seem acceptable. Temperature should be between 75° and 85°F (24-20°C). Remember that these fishes must have atmospheric oxygen to survive, so some space should be left between the water surface and the cover glass.

If you want to see as much as possible of your fishes the lighting should not be too bright and the bottom should provide plenty of cover, such as rock caves, flowerpots and sunken wood. Plants should be restricted to strong rooting types such as Vallisneria, cryptocorynes and swordplants etc., as delicate species are likely to get damaged as the fishes dash to and from the surface. They do not, however, dig.

Although the fishes are said to be quarrelsome amongst themselves, I have never seen any evidence of this, possibly because I always establish enough hiding places for each individual fish. Fast-moving fishes are hardly, if ever, molested, owing to the bichirs' slow, stalking mode of feeding, which is better adapted to the taking of more economical aquarium foods! However, a fish with such a large mouth and hearty appetite

can hardly be expected to refuse an additional meal should it chance to come along, but I think this is limited to the occasional ailing fish. A word of warning, however. Any other fish with the habit of lying motionless on the bottom or sides of the aquarium is considered fair game if it is up to half the length of the bichir. Fishes in this category include the gobies and sleeper-gobies, and the crepuscular catfishes such as *Leiscassis* species.

Suitable tank-mates can be drawn from the following list: large and medium sized cichlids, large catfish, large anabantids, all surface-inhabiting fishes and many more.

Let us hope that the very fine examples of this family recently exhibited at shows will encourage more aquarists to pester their dealers for them, and thereby ensure a more regular supply of these extremely interesting fishes.

## Meetings and Changes of Officers

**BISHOPS CLEEVE A.S. New secretary:** Mr A. K. Viner (10 Epney Road, Lower Tuffrey, Gloucester). New members welcome to meetings at the Labour Club, Royal Crescent, Cheltenham, Glos.

**CAMBRIDGE & D. A.S. New secretary:** Mr F. J. Tarrington (10 St Matthews St, Cambridge CB1 1LT). New time and venue: first Wednesday in month, Hoplins Public House, Fair Street, Cambridge.

**CRAYDON A.S. Chairman, Mr A. G. Ferdinando; treasurer, Mr H. R. Smith. Meetings:** second and fourth Tuesday in month. New venue: Stowbridge Social Club, Emmer Road, South Norwood, London, S.E.25.

**EAST DULWICH A.S. Secretary:** Mr D. E. Sutton (511 Friars Road, London, SE22 8DJ); phone 01-603 9327; show secretary, Mr K. Quenell (42a Carden Road, London SE13 1UB). Meetings: second and fourth Monday in month, Dulwich Bath Reception Hall, Crystal Palace Road, London, SE22, 8.15 p.m.

**FEDERATION OF GUPPY BREEDERS' SOCIETIES, President, Mr A. Wilkinson (Three Counties Section); vice-president, Mr H. Gregory (Three Counties); general secretary, Mr J. E. Myers (Eastern Counties); treasurer, Mrs L. Myers (Eastern Counties); provincial secretary, Mr V. Ezz (Three Counties); P.R.O., Mr A. Baker (East Midlands); 201 Standon Road, Levensall; librarian, Mr J. Carter (East Midlands); show secretary, Mrs P. Burman (Three Counties).**

**GOSPORT & D. A.S. New Secretary:** Mr P. Hayward (225 Locks Road, Park Gate, Southampton).

**HASTINGS & ST LEONARDS A.S. Chairman, Mr G. Pryke; vice-chairman, Mr L. Riley; secretary, Mr P. Martin (10 Silverlands Road, St Leonards-on-Sea); assistant, Mrs C. Pollard; treasurer, Mr G. Chidlow; show secretary, Mr A. McCarrick; publicity officer, Mr D. Hunt; editor, Mr B. Farnell.**

**HORSFORTH A.S. Chairman, Mr S. Coote; treasurer, Mr M. Barker; show secretary, Miss J. Hahn; social secretary, Mrs J. Dickson; librarian, Mrs B. Helm; catering, Mrs J. Coote, Miss D. Midgley; secretary, Mr P. J. Smith (10 Woodhill Rise, Leeds 18, Yorks; Leeds 475714).**

**HOUSLOW & D. A.S. Secretary, Mr H. Parsh (18 The Barons, Twickenham, Middlesex). Meetings:** alternate Wednesdays, St Stephens Church Hall, Whitton Road, Houslow.

**ILFORD & D. A. & P.S. Meetings:** St Laurence Church Hall, Harehoun Avenue, Rushingale.

**INDEPENDENT A.S. Chairman, Mr F. Kelly; vice-chairman and P.R.O., Mr J. Kerley; secretary, Mr T. Langdon (12 Redway House, Cynthia Street, London, N.1); assistant, Mr R. Bousie; show secretary, Mr R. Mason; assistant, Mr T. Kinsey.**

**ISLE OF WIGHT A.S. Chairman, Mr J. Nolan; vice-chairman, Mr F. Whitehouse; treasurer, Mr W. Orms; secretary, Mr T. Davison (Shanklin Aquatics, High Street, Shanklin); show secretary, Mr R. W. Chapman; P.R.O., Mr R. E. Tolley (17 Carlisle Road, Newport, Is.W.).**

**KINGSTON & D. A.S. Chairman, Mr H. Towell (new address: 8 Hawthorn Road, Banford, Middlesex); vice-chairman, Mr R. Lefevre; treasurer, Mrs R. Greenhalf; secretary, Mrs H. Fairhurst (17 Woodstock Avenue, Sutton, Surrey; 01-544 8663); show secretary, Mr G. E. Greenhalf (59 Garth Close, Morden, Surrey; 01-337 4044); assistant, Mr J. Pollard. Meetings: second and fourth Thursday of month, 8.0 p.m., St Luke's C. of E. Primary School, Elm Road, Kingston-upon-Thames, Surrey.**

**LEAMINGTON & D. A.S. Chairman, Mrs J. K. Smith; treasurer, Mr F. N. Thomas; secretary, Mrs P. Stoodley (Norman Craig, 7 St Margaret Road, Leamington Spa); social secretary, Mr P. Stoodley; editor, Mr D. Haykin. Meetings: first and third Tuesday of month, Trinity Hall, Trinity Street, Leamington Spa, 7.45 p.m.**

**LEYTONSTONE & STRATFORD D. A.S. New Society. Chairman, Mr R. J. Lognani; secretary, Mr G. Biddle (207 New Road, Dagenham, Essex). Meetings: every Thursday, Harrow Green Baptist Church, Harrow Road, Leytonstone.**

**LITTLEHAMPTON & BOGNOR A.S. Meetings: first and third Thursday of month, 8.0 p.m. New venue: The Crown Hall, High Street, Littlehampton.**

**NOTTINGHAM & D. A.S. President, Mr J. Wood; chairman, Mr C. Hill; secretary, Mr P. Carlisle (9 Winchester Terrace, Winchester Street, Sherwood, Nottingham); treasurer, Mr S. B. Blean; show secretary, Mr N. Kenney (408 Mansfield Road, Sherwood, Nottingham); editor, Mrs J. Evans.**

**PORTSMOUTH A.S. New secretary:** Mrs T. Harvey (148 London Road, Waterlooville, Hants).

**RUNNYMEDE A.S. Meetings: second and fourth Tuesday of month at Ashford Community Centre, Chatterfield Road, Ashford, Middlesex. Information from Mr M. Clark (12 Ferndale Road, Ashford or Mr P. Cain, 1 Manchester Road, Ashford).**

**SMITHWICK & D. A.S. President, Mr L. Stokes; chairman, Mrs M. Scott; secretary, Mr E. Woodward (7 George Road, Smithwick, Walsley; phone 328 2251); treasurer, Mr J. Harris; show secretary, Mr R. Clarke; assistant, Mr A. Lorton. Meetings: first and third Wednesday of month, 8.0 p.m., Arden Road School, Smithwick, Walsley (near Council House).**

**SOUTH LEEDS A.S. New Secretary:** Mr T. Holdsworth (50 Abbott View, Armley, Leeds LS12 2JN); phone Leeds 635638. Meetings: first and third Wednesday in month, Cockburn High School, Burton Road, Leeds 11.

**SOUTHEND, LEIGH & D. A.S. Meetings: first and third Tuesday in month, 8.00 p.m., St Andrews Hall, Electric Avenue, Woodliff-on-Sea, Essex.**

**TONBRIDGE & D. A.S. New Secretary:** Mr R. Showbridge (17 London Road, Southborough, Kent). Meetings: new date, third Wednesday of month, The Guilden Arms, St Stephens Street, Tonbridge, Kent.

**TROWBRIDGE & D. A. & P.S. Secretary, Mrs S. Scaddamore (42 Trowbridge Road, Bradford-on-Avon, Wilts.). Meetings: second Tuesday of month, 7.45 p.m. New venue: The Bradford-on-Avon Rowing Club, Wilts.**

**WARWICK COUNTY FIRE BRIGADE A.S. Show secretary, Mr S. Trueman.**

**WEYMOUTH & D. A.S. New venue:** The Assembly Hall, The Waverley Arms, Abbotsbury Road, Weymouth.

**W.K.F.B. (CHELMSLEY WOOD) A.S. New Society. Meetings: last Thursday in month (10th June), Craig Hall, Area 6, Chelmsley Wood, Birmingham.**





R. C. ARMSTRONG introduces

## Bottom-Spawning and Peat-Diving KILLIES

THIS month's article introduces the two groups of killifishes differentiated by their breeding habits as bottom-spawners and peat-divers.

**Bottom-spawners.** Many bottom-spawners do not bury their eggs, as can be seen during their spawning on sand. The male forces the female down on to the surface of the bottom medium. The pair assume a side-by-side position with the male's dorsal fin cocked over the female. At the actual moment of egg disposition both fish become tense and tremble from head to caudal. The action of the fins on a loose surface, e.g. peat, tends to disturb the surface and makes a depression, in which the egg is laid. As the fishes move to another area the fine mud or peat will settle over the surface of the medium, covering the egg. This the fishes do many times until in some cases several hundred eggs are laid.

As killies lay one egg at a time, spawning takes from a few hours to a few weeks, in some cases until death, provided the fish are in good condition and the female is full of roe. I place a mossy type of plant in the breeding area, into which the female can retreat if the male becomes too demanding. If the female is depleted of eggs the male may well kill her or at least rip her fins to shreds. In some cases it is better to use two or three females to one male in a breeding set-up, or to remove the female if she is depleted or has been attacked by the male to another tank, where she may recover. The female can then be returned to the male after a few days when she is full of roe.

I find that fishes keep in good condition with regular water changes, plenty of live and dried food (I try to change about one-third of the aquarium water each week in the 12 in. by 8 in. by 8 in. breeding tanks and the same volume per month in the larger rearing tanks).

The breeding tanks are drained of

water and the peat is removed every 2 or 4 weeks. The peat is placed in a net over a bucket, where it will remain until dried to a texture not unlike that of pipe tobacco. It is then examined for eggs, placed double-wrapped in plastic bags with a label visible on the inner bag showing name of species, date of drying or date that eggs of the species should be ready for hatching. Hatching time varies from 4 weeks to as long as 6-9 months with some species.

Before removing the peat from the bag prepare the container or tank in which the peat or eggs are to be placed, with water similar to that of the original breeding tank, to about 2 inches in depth. Examine the eggs in the peat. Should they show the fry inside the egg with the eye of the small unhatched fry standing out very clearly (they are then said to be 'eyed-up'), submerge the peat containing the eggs in the water and, after only a few hours, minutes in some cases, fry will begin to hatch from the eggs. The young will need food at once in the form of freshly hatched brine shrimp, micro worm or, best of all, micro eel, or very fine dried food.

I always place an apple snail in the hatching container, not to produce Infusoria but to clear up any dead brine shrimp or dried food that the fry leave. If this is not done dead shrimp and uneaten food will decay and produce unwanted bacteria, which in turn will affect the health of the fry. I have never found that the snails eat eggs. I have often kept them in tanks containing nylon mops on which fish have laid their eggs, and as yet I always have had a very good crop of eggs despite the apple snails in these tanks.

The fry of bottom-spawners grow quicker than top-spawners and as a rule are themselves ready to spawn at only a few weeks old.

**Peat-divers.** A depth of at least 2 in. of peat, according to the

size of the breeders, is needed in the breeding tank for peat-divers. The male finds a suitable spot into which he and the female dive, disappearing completely, often for some considerable time, the loose peat settling back on the spot and not a fish in sight. This they continue to do, spawning until death, provided the female is full of roe and kept in good condition.

Eggs and peat are collected in a similar way to that described for the bottom spawners, and stored for the correct length of time. After several days the peat is then stored for another month and tried again. Many more fry may well emerge on this second occasion. Keep doing this for many months. It has been known for eggs not to be 'eyed-up' and ready for hatching until several years have elapsed. The reason for this is that they are true annuals and come from areas that suffer very long periods of drought. One area in Mexico normally has a 9 months cycle of drought. At one time this spell extended to 5 years and yet, when the rains came, within a few hours of pools forming fry were observed darting around looking for food. It is now a recognised fact that these fishes survive in these unstable conditions because of the resting eggs they lay, some ready to hatch, others ready at 'normal' hatching time and others at later intervals, maintaining the species regardless of irregularity of climatic conditions.

A later piece of information on these species is very interesting. In the areas that at odd occasions have suffered long periods of drought most flora and fauna take many years to be present in the same numbers after the drought as before. Killifish are one of the few animals that, in these periods of long drought, within one season are back to their original numbers. The explanation of this is quite simple. In a normal season the majority of fishes hatched will be males; with few females

the number of eggs is kept down to a reasonable number. If a long period of drought is observed these eggs that have been resting for, in some cases, several years, are nearly all female. Consequently when eventu-

ally the rains come and the eggs hatch there are then many many females to one male. By the end of the rainy season there are many eggs laid, in fact the same number of eggs as laid in a normal season.

When the rains come again the killifishes are up to full strength.

Next month: the *Ubatuba* Types of Killies

## Is it New to You?

Photographs by CLIFF HARRISON



Another one of the interesting and unusual cichlids from Lake Tanganyika—the thick-lipped cichlid *Lobochilichthys lobietzi*. The large lips of such fishes are considered to be highly sensitive and used for detecting the presence of insects etc. on surfaces or in sand. This is a large fish (it can reach 14 inches in length) although the imported specimens are only about a third of full adult size.

Fishes photographed in the fish houses of SCANCO, Colnbrook, Bucks

An African catfish (*Synodontis* sp.) of unusually dapper appearance and most attractive markings. This specimen is approximately 3 inches in length. Full size is unknown.



EXPANDED polystyrene is a very popular material for purposes of heat insulation, being inexpensive, rot-proof and easy to work with. For these reasons it has been used in many fish houses, either as the interior wall surface or for filling cavities in the structure. However, problems will be encountered if the surrounding woodwork has been recently treated with creosote. The

vapours from solvents in creosote will cause the expanded polystyrene to 'shrink' and become brittle, nullifying the intended insulation effect. In an experiment, creosote poured on to a section of expanded polystyrene dissolved it completely within a couple of hours; repeating the test with Cuprinol wood preservatives (Golden Brown and Clear) indicated that they had no noticeable

effect. So, if you are building a fish house, remember to use either an inert insulation material, such as fibreglass, or if you use expanded polystyrene choose a suitable preservative for the wood—and then test it first to be quite sure. If you already have a fish house and think this point might apply to you, check on it—you might just be losing more heat than you imagine.

## THE COLDWATER SCENE

# Revision of Standards for Fancy Goldfish Varieties

By M. D. CLUSE

President, Goldfish Society of Great Britain

THE fascinating challenge to the aquarist breeding and showing fancy goldfish is the problem caused by the variability of *Carrasius auratus*. There are, of course, the obvious differences between the varieties but also because of the genetical make-up there are differences between the various strains of each variety. Even offspring of the same parents will display considerable differences. The common goldfish might be accepted as the least variable, but take ten from different sources and a close examination will reveal differences—body length/depth ratio and quite a number of differences in the caudal fin as regards length, spread and contour.

Goldfish-keepers when selecting and reselecting their stock for breeding must have common ideals at which to aim when they show. They would have cause for complaint if their fish obtained different awards against similar competition according to who judges and where the show is held. Judges are human and there will always be aberrations; but the system to which they judge should help them to subdue their personal prejudices and preferences.

When any animal is domesticated, man tends to select and breed from mutations, hence the widely varying breeds. Usually practical ends have been in view. Maybe a fast horse is needed or alternatively an animal capable of pulling a heavy load. Some cows are bred for beef and other types for milk production. Utility and hardiness are the prime considerations. But when the Chinese, a thousand years ago, commenced to segregate their golden fish, only aesthetic considerations were in mind. Later when more mutations appeared in various parts of their great country, they were selected and bred because they were beautiful or bizarre. It appears that more extraordinary variations in shape have arisen in the goldfish than in any other animal.

The Goldfish Society of Great Britain endeavours to preserve all of these obvious mutations that have been noted amongst the fish arriving in this country. All kinds of goldfish can interbreed and mongrelise. Therefore it is imperative that each variety approved must be obviously distinct. To

exclude borderline cases, 'type tests' have been devised to help the judges. In the revised GSGB Standards booklet the illustrations of the varieties are in diagrammatic form so that it is easy to recognise the contours and the proportions between the parts. In case arguments arise, the text regarding the type test gives guidance: e.g. 'Pearlscale—depth of body, greater than two-thirds length of body'. To encourage the survival of the various genetical 'sports' each variety has a special characteristic for which 19 points out of 100 can be awarded. Generally speaking the pointing system is so itemised that any aquarist with a good knowledge of a variety should be able to judge a class for himself by referring to the Standards booklet, without allowing prejudice or overall effect to impair his judgement.

There are so many recognised genetical variations in shape, several of which may occur in one variety, that varieties would be uncountable if all permutations were allowed on the show bench. Therefore if a specimen shows obvious signs of a characteristic not proper to the standard for the variety, e.g. protruding eyes on a shubunkin or a fantail, it would lead to disqualification. The object of this fairly precise standardisation is so to improve the strains that a higher proportion of a spawning can approach the ideal.

After several years of careful reappraisal the Standards Committee of GSGB has produced a revised 40-page Standards booklet, which will be published this month. It should fulfil a need in the hobby, as no other set of goldfish standards is available and all hobbyists can breed and show to the same ideals. The varieties covered are as follows: Bristol type, Shubunkin and Goldfish, Veiltail, Globe-eye, Pearlscale, Bramblehead (lion-head), Celestial, Bubble-eye, Pompon, Oranda, Fantail, London Shubunkin and Common Goldfish, plus two additions—by popular demand, the Comet and the Broadtail Moor. The Standards provide for both metallic and calico (nacreous and matt) types, except that as regards the two last-named varieties, only the metallic types will be recognised on the show bench.

In a chapter from his new book 'Aquarium Fishes—their Beauty, History and Care', Dr J. W. ATZ gives an up-to-date review of the concept of

## The Balanced Aquarium



By  
Dr JAMES W. ATZ

*Curator and  
Dean Bibliographer,  
Department of  
Ichthyology, The  
American Museum of  
Natural History*

THE first idea of a balanced aquarium concerned the reciprocal relationship between the respiration or breathing of animals and the function of plants that is called photosynthesis. Animals take in oxygen and give off carbon dioxide when they breathe. In contrast, by using the energy from sunlight, or any bright light, plants can absorb carbon dioxide and combine it with water to make the food necessary for their own energy and growth, and then give off oxygen. In exchange for a toxic waste product, plants thus provide animals with essential oxygen, and most of the oxygen in the earth's atmosphere was put there by plants. If the respiration of animals and the photosynthesis of plants counteract each other on a global scale, it seems logical that they would do so in a standing aquarium containing aquatics and fishes. Indeed, these were the thoughts of the first proponents of the idea of the balanced aquarium, and they were convinced that the success they had in setting up aquaria with aquatic plants and animals was the result of an oxygen-carbon dioxide balance between them. Although these pioneer hobbyists were right in believing that plants in an aquarium photosynthesize, using up carbon dioxide and liberating oxygen, and that fishes breathe, consuming oxygen and producing carbon dioxide—just as plants and animals do everywhere on earth—they were wrong in believing that any balance between the two vital processes exists in an aquarium. The early aquarists

treated each aquarium as if it were a microcosm completely isolated from the rest of the world; they forgot about the atmosphere, which contains enough oxygen and carbon dioxide to supply not only all the world's aquaria but the oceans as well.

Whenever a shortage of oxygen develops in an aquarium, oxygen from the atmosphere enters through the water surface. Whenever an excess of dissolved oxygen occurs, it passes from the aquarium water into the atmosphere. The same holds for any excess or deficiency of dissolved carbon dioxide. How could there possibly be any balance within such an open system? Any hobbyist who is convinced that the fishes and plants in his aquarium balance each other can put the matter to the test. All he need do is remove all the plants. The fishes will show no respiratory distress whatsoever.

The fact that an aquarium has a cover, even a close-fitting one, does not isolate it from the atmosphere as many hobbyists believe. Unless the cover is actually sealed, there are plenty of small spaces through which an adequate exchange of gases can take place. Moreover, the air space above the water acts as a small reservoir of oxygen and carbon dioxide to offset any temporary deficiencies that might develop in the water.

With an unlimited supply of atmospheric oxygen and carbon dioxide to draw from, and a sink of unlimited capacity to absorb any excess of either gas, it might seem that no aquarium should ever have too much or too little of these

gases dissolved in its water. Nevertheless, aquarium fishes can be, and too often are, smothered to death—when their aquarium is overcrowded, for example. The reason that fishes can suffer from lack of oxygen with a whole ocean of it at their doorstep, so to speak, is that it takes time for this gas to become dissolved in water. If the rate at which the oxygen in the aquarium is used up is greater than the rate at which it becomes dissolved, an oxygen deficiency will develop, and the fishes will accordingly suffer. Similarly, a concentration of carbon dioxide will build up if it is produced at too fast a rate. Aeration increases the rate at which oxygen and carbon dioxide leave or enter the water of the aquarium. We usually think of aeration as helping oxygen to enter and carbon dioxide to leave, but it will do the reverse if there is an excess of oxygen or a deficiency of carbon dioxide in the tank.

The part that plants can play in the interrelationship of the oxygen and carbon dioxide in any particular aquarium is difficult to predict. If bright light is maintained both day and night, the plants will in effect act as aerators, continuously adding oxygen to the water and removing carbon dioxide. Under such unnatural conditions the presence of plants will significantly increase the fish-holding capacity of the tank. If there is a day-and-night cycle, however, the plants will not only cease photosynthesis in the dark but will consume oxygen and add carbon dioxide to the water because they respire just as animals do. (This vital function is often overlooked because under the influence of bright light the respiration of plants is far outweighed by their photosynthesis, and they produce only oxygen.) The fishes in a heavily planted tank are therefore in greater danger of smothering than those in a lightly planted one! But this is not the whole story, because in a heavily planted tank the plants will produce far more oxygen than the fishes can use while the tank is lighted; in fact they can supersaturate the water with oxygen. Although any excess oxygen immediately starts to diffuse out of the aquarium into the atmosphere, the plants may produce so much that there will still be a significant amount dissolved in the water when darkness comes. The fishes would then have some oxygen in the tank, so to speak, to help tide them over the night.

The net effect of plants, however, usually is to reduce the fish-holding capacity of an aquarium unless it is kept in bright light much of the time. To determine what will happen in this complicated, dynamic situation, at least five different rates must all be weighed one against the other: the rates of diffusion of oxygen in and out of aquarium water, the rates of oxygen consumption (respiration) by fishes (and other animals) and by plants, and the rate of oxygen production (photosynthesis).

To these may be added the effects of artificial aeration (including circulation)—that is, the rate at which the aeration adds oxygen to the water when a deficiency exists, or removes oxygen when there is an excess. Finally, the same considerations must be given to carbon dioxide. For any given moment, 14 different rates of gas production, consumption, solution, or diffusion require attention! I know of only four scientists (Dr A. L. Downing and Dr G. A. Truesdale of the Water Pollution Research Laboratory at Stevenage in England, and Dr Y. Deguchi and Dr S. Kokubo of Nihon University in Japan) who have had the courage to tackle the problem, and the conclusions that they finally were able to reach were tentative. Dr Downing and Dr Truesdale did, however, recommend continuous aeration of aquaria, and they warned against overcrowding tanks with either plants or fishes. They pointed out another reason for avoiding heavily planted tanks: in bright light their water may become so alkaline, from the continuous loss of carbon dioxide (which is actually carbonic acid when dissolved), that it can kill fishes.

If an aquarium was completely sealed, the plants and animals in it would be able to interact with each other with no intervention on the part of the atmosphere. Such an aquarium might be truly balanced in the original, 'classic' sense of the term. From time to time people have set up sealed glass containers with fishes and plants and have exposed them to the sun. No one has yet succeeded in establishing a permanent population, but fishes and plants have lived together for at least 15 months with absolutely nothing added to their microcosm except light and heat. With the imminence of extended space travel, experiments of this type have taken on new significance. Could a spaceship be furnished with enough tanks of algae to provide oxygen for the men on board? There would be no question of having enough sunlight, and the crew members would supply the carbon dioxide and fertilizer for algal photosynthesis and multiplication. To utilize the algae themselves, algae-eating fishes would be maintained, and these in turn would provide food for the men. How nearly self-sustaining a system like this could be is not yet known, and formidable technological problems will have to be solved, but the idea of a balanced-aquarium spaceship is intriguing, especially to the aquarist.

Although the animals and plants in an open aquarium do not balance each other as far as respiration and photosynthesis are concerned, the balanced aquarium does exist; in fact, the balance or stability of the freshwater aquarium is its outstanding characteristic. This constancy and ability to resist change is most strikingly shown in long-established aquaria. If a fish dies in such a

tank and is not removed, its body will rot so slowly that it will not cloud the water with bacteria nor distress the living fishes with an accumulation of the toxic products of putrefaction. Similarly, when the fishes in a long-established aquarium are overfed, the uneaten food does rot, but so slowly that bacteria do not cloud the water and the fishes show no distress—although continued over-feeding will eventually lead to definitely detrimental situations. Even under such bad conditions, however, with the fishes dying from long-term poisoning, the water will remain crystal-clear. Something in the aquarium must be controlling the growth of the bacteria.

The first scientist ever to work on this problem, Dr C. M. Breder, Jr., of the New York Aquarium, discovered bacteriophage in old aquarium water, and he believed that this was one controlling factor. Another scientist, Dr Seymour Hutner of the Haskins Laboratories, found that well-established aquaria had large populations of predatory protozoans—microscopic animals that feed on bacteria—and he thought that these kept the bacteria under control. Recently, Dr Ralph Mitchell of Harvard University has called attention to the role that predator micro-organisms must play in maintaining the balance of populations of microscopic aquatic life. It is also well known that laboratory cultures of bacteria multiply prodigiously when first set up, but that their rate of reproduction soon slows down, and indeed, the number of bacteria may decrease even with food present. Waste products that the bacteria have produced eventually inhibit their growth and reproductive processes. The bacteria in an aquarium may act as if they were part of a large, complicated culture and be self-inhibiting. Bacteriophage, predatory micro-organisms, and self-inhibition may all be influential in establishing some kind of microbial equilibrium, and there are probably other factors yet unknown. For instance, the nitrifying bacteria that play such a vital role in destroying the toxic ammonia must also take part of this microbial balance or equilibrium. The equilibrium must be a dynamic one, shifting here and there but always returning, at least most of the way, to its previous state. Only under catastrophic conditions, such as the death of many of the fishes from heat or cold, do microbes in old aquaria run wild. Even with such a disaster the bacteria will eventually attain some sort of new equilibrium, but one not compatible with living fishes or the noses of the hobbyist and his household!

Not all the checks and balances of a well-established aquarium are microbial, however, even though these are the most important ones as far as we can tell. Plants, for instance, use the nitrogenous waste products of animals in their growth and in so doing must use up some of the

nitrate in the water. The question is how much. Some aquatic plants need so little fertilising substance that ordinary tap water contains enough salts for them. Other plants, including algae, use up significant amounts of nitrate. (In order actually to get rid of the extra nitrogen, the plant life must be harvested, for if it dies in the tank, it will rot and the nitrogen will be returned to the water.) The growth-inhibiting and anti-reproductive substances that fishes introduce into the water around them should also be considered a balancing or self-regulating factor in aquaria, just as are the self-inhibiting substances of bacteria.

The number of factors that could influence the steady state attained by most freshwater aquaria must be large, and no one knows how many different species of micro-organisms may become established there, to say nothing of all the different combinations of fishes and leafy plants, algae, snails and so forth. No two aquaria have ever been exactly alike, and yet the vast majority achieve a very similar balance. Scientists ought to be interested in why this happens, but until they study the problem, hobbyists will have to be content with the satisfaction that for some as yet mysterious reasons many freshwater animals and plants are *pre-adapted* to the home aquarium. For some reason the life in Nature to which each one has become adapted by eons of evolution has fitted it for harmonious existence in a strange, new, artificial habitat, one that could scarcely have been predicted—even by man himself when he set up his first aquarium.

Nothing quite like an aquarium exists in Nature. There are potholes and backwaters and a few other very small bodies of freshwater, but none of them ever originates in any way remotely like the setting up of an aquarium: none has any of the aquarium's regimens of light, temperature and feeding, and none is inhabited by the peculiar aquarium population that is dominated by fishes and leafy plants and lacks the insects, crustaceans and worms that are practically omnipresent in warm freshwater habitats in Nature. The aquarium is most definitely not a bit of Nature transplanted indoors; it is an artificial, man-made habitat. This is a fact that scientists and hobbyists have both overlooked. Nevertheless, in developing the home aquarium, amateur aquarists and fish fanciers provided biologists with an invaluable tool with which to study aquatic life. The time for scientists to reciprocate and tell the layman how and why an aquarium functions the way it does is long overdue.

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## TROPICAL MARINE PROJECT—5

# A Mishap with Coral

By  
ROY PINKS

MY weakness for filling my tanks with coral I have already confessed. Fellow enthusiasts will no doubt share my liking for cup or chalice coral, which seems to come in sizes from a teacup to a dustbin. If you can get a piece of the right size and shape for your tank it instantly becomes the key to the whole situation. The wonderful curves and indentations can be turned to excellent purpose by the discriminating arranger: the only difficulty is in getting hold of the stuff.

A weekend visit to the House of Fishes not only gave me the usual thrills of this fascinating place, but also put me in possession of a superb large piece of mushroom coral and an immense and solid piece of sea tree coral, whose 'limbs' were really thick and black. The mushroom coral, used 'inside-out', can be used as a substitute for cup coral and looks especially attractive if the peripheral indentations are of the order of 2 in. or more. These two pieces were just what I had been seeking for the new tank, which had contained too many smallish pieces of coral and lacked a dominant feature. With the memory of polluted water not so far behind I subjected these acquisitions to really searing bleaching and boiling, and towards the end of the following week I rearranged the furnishing. I was particularly pleased with the overall effect and reclined in my chair imagining what further exotic creatures could be found to do justice to what was certainly not a bad sort of job. Ostensibly, that is.

It was perhaps unfortunate that within a few days an especially interesting selection of importations arrived and I was sorely tempted by an unidentified chaetodon of sombre brown and cream coloration which uncannily resembled a hedgehog. As country-dwellers, our resistance completely crumbled. There was also a most handsome *Chaetodon chrysurus*, with a glowing orange band before his tail. These fishes were earmarked for introduction the following week and I regretfully decided to return the *Chaetodon lunula* mentioned at the end of last month's article, because, frankly, it nearly drove me to distraction chasing its nose up and down the tank front. It was an altogether too lively fish for me, but otherwise its colouring and behaviour would seem to put it right in the front line as a beginner's fish. The exchange was then made. I returned the *lunula* and replaced it that afternoon with the 'hedgehog' butterfly. Again I made the transfer process last about

2 hours and the butterfly fed straightaway on whiteworm. I returned to collect the *chrysurus* butterfly and this underwent a similar acclimatisation process. Its reaction was totally dissimilar, however, and it shuddered its way to a cranny and disappeared from view for the night. I noticed before retiring that the *Hemichus* was breathing rather rapidly but I failed to take the hint.

The next day there were signs that things were amiss. The *chrysurus* and the *Hemichus* were both breathing too rapidly for comfort, and I added copper sulphate solution at the recommended strength, thinking that perhaps fluke (*Benedenia*) infestation may have been present. Things got rather worse, however, and it crossed my mind that the coral might in some way be at fault. The principal suspect was the 'sea tree' and I carefully examined the 'foot', on which there were numerous sizeable protuberances. I smashed these with a hammer and the stench that arose confirmed my worst fears that I was in for another round of pollution. I immediately took a nitrite reading of the water and to my horror a medium to light pink coloration developed well within the recommended waiting period of 45 seconds after addition of the test solutions. Hope springs eternal, I suppose, and that is why I decided to do nothing except reduce the level of feeding until things returned to normal.

On the following morning the *chrysurus* lay on its side breathing rapidly. I immediately removed it and transferred it to water from my seasoned tank, but if anything this only hastened the end. During the next 24 hours the nitrite level was reduced to apparently safe proportions because the test sample remained colourless after 45 seconds but darkened after a longer lapse of time. Meanwhile I was becoming increasingly worried about the *Hemichus*, which appeared both bemused and uninterested in food. Each day it appeared to become weaker and its breathing rate was truly alarming. In desperation I transferred it to the small tank, wherein it showed oodinium infestation within a few hours and died the following day.

The rationale of all this was not easy to establish, particularly as, it will be noted, the 'hedgehog' butterfly weathered the storm as though to the manner born. Certainly at times it appeared a bit flustered and jumpy and over-active for a fish of such staid and dignified temperament, but it continued to feed modestly and to retain control

of itself. The unexpected behaviour of the tank water under the influence of the uncured coral was particularly worrying.

From first principles we have a right to assume that as soon as the undergravel filter has assumed control of the aquarium environment it will normally only improve with age. Most of the commonplace excesses like overfeeding or overcrowding will be cancelled out as the bacterial colonies increase their capability of rectifying undesirable situations. I believe, however, as I mentioned in the first article of this series, that the undergravel filtration system can only be expected to function within certain limits and degrees of abuse, and any gross strain put upon it will result in disaster or serious loss of efficiency. In this particular sequence of events, (a) I had added a full dose of copper sulphate to the water, (b) the tank had suddenly acquired close to its full complement of fishes, and (c) the decomposing contents of the coral were also adding to the problem.

What seems to have happened is that the copper killed off more millions of the 'good' bugs than was good for us and the enhanced pollution from the extra fishes and the corals overloaded the capability of the surviving billions. It was perhaps remarkable that the whole thing did not, even under these pressures, fold up completely, but it was, of course, equally regrettable that the most beautiful and costly specimens should have had to suffer the death penalty.

One may well ask why the butterflies died when the corals had been removed from the tank (after which stage the nitrite readings began to improve). The answer seems to be that nitrites in the water have a cumulatively debilitating effect on susceptible species, and even if such fishes are subsequently removed to unpolluted water, just a few hours' exposure to a high nitrite concentration will bring about their failure. In retrospect it would seem that I should have removed the *Chrysurus* and the *Hemiochus* to the matured tank as soon as I had noticed their increased respiratory rate. It is just possible that this point at least the *Hemiochus* might have been given a fighting chance, but in the event he was subjected to several days more of some exposure to nitrites, albeit at a slowly diminishing concentration.

The advice given with the SeAquariums test kit for nitrites in sea water appeared to be accurate enough during my trials, to the point where the corals in the second tank brought about the demise of the butterfly fish. At this stage none of the readings I took was immediately alarming in itself, but the consistent presence of a trace of nitrites appears to have caused the damage. The development of a colour reaction after the 45 second interval involved in the test must have some

significance and I referred the matter to the makers of this test kit for their comments. I thought that there was some danger that aquarists would read the instructions too literally and throw away the test solution after 45 seconds, while the mixture is still clear, or nearly so. It is natural that such proffered reassurance will not lightly be spurned! My impression is that reaction within the liquid after 45 seconds should be taken just as seriously, where delicate species are concerned, as any reaction within the stipulated period. At any rate no harm can be done by being a bit alarmist because one is erring on the safe side. I was told by the makers of the test kit that 'any nitrite reading is potentially dangerous'.

It must in any case be accepted that nearly all test kits have to be used with discrimination, and if the instructions say something and the evidence of your own eyes suggests some other interpretation, play safe. The behaviour and susceptibilities of the very numerous marine imports, which seem to be arriving in greater variety than ever, make precise prognostications unwise or dangerous or both. The other inference to be drawn from this is that a water test should be made before the introduction of every new fish, and if there is any sign of a perceptible nitrite concentration, the introduction of susceptible species should be deferred until the situation has been restored for, say, a week.

This catastrophic period naturally brought to a standstill any further progress and I decided to let the tank really get on its feet again before trying out any more fish. One might well at this stage have decided that keeping the butterflies and angels just isn't worth the expense, effort and concern, but as the causes had been isolated and substantiated there seemed to be no particular reason, other than on economy grounds, to do otherwise than take another run at the hurdle when the way seemed clear. One good thing perhaps, did emerge from all this. This was a firm resolution not to be tempted too readily to stock the tank to capacity but rather to wait for the right specimen of the right species to make itself available.

I think it is particularly important also to consider size of specimen, because some very large fishes find their way into dealers' tanks in many of those species where junior sizes would in the long term prove to have been a wiser choice. As with freshwater fishes, marines can take a certain amount of dwarfing, and if you are able to select smallish specimens, so much the better are the prospects for diversity within your collection.

The question of quarantine was one which did rather worry me during my trials, as I had made

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A beautiful tetra in the correct setting

## The X-Ray Fish



*Pristella riddlei*

By RUDOLPH ZUKAL

Photographs by the author

Translation by F. MARSH

AGAIN and again in articles and in almost all the aquarist literature stress is given to the fact that we must provide optimum conditions for our favourite pets. But this must include not only the composition of the water, its temperature and the lighting of the tank but also its planting and particularly the type of substrate used for the base. Often, even if the correct size of gravel is obtained and due care given to whether it is lime-free etc., the substrate will be too light in colour. And that's very bad when one wants to keep light-coloured tetras or similar species. This is particularly important for X-ray fish, as is often to be seen in the dealer's tanks. There, unless the fish interest us for some other particular reason often we wouldn't give them another glance. They look pale and their coloration does not stand out from the bottom or the tank surroundings. And yet these fish are ideal not only for the beginner but also for the experienced breeder.

The X-ray fish grows to about 1½ in. and was imported into Europe in 1924 from the northern part of South America, Guyana and the lower Amazon. The almost transparent body is slim and slightly depressed at the sides. The colour is tinged greeny-gold and when the light catches it the fish gleams silver. A dark fleck ornaments the dorsal and anal fins and this fleck is framed above and below with white and gold. There is another dark fleck behind the jaws. Fin-tips are white and the caudal is slightly reddish.



On page 75 the picture shows the spawning process about to start as the female (top fish) chooses the spawning site. The male has been displaying to the female, swimming around and beneath her, always keeping near to her, his body trembling slightly. The male becomes more and more confident and comes up close to the female, who is now keeping quite still.

X-ray fish can be kept in a medium-sized or even small tank in tapwater at a temperature as low as 65°F (18°C). The lower temperature range agrees with them but it must not fall below 65°F. Given a well-planted tank, dark substrate and subdued lighting—the aquarist will be astonished at the beauty revealed. These fish have the further advantage, which should not be under-rated, of being peace-loving and are ideal companions for small species or with their own kind. Nor are they choosy about food, though they are very pleased to

get live food of all kinds.

Their breeding procedure resembles that of the flame fish with the slight difference that they are not always quite so willing to spawn. A small all-glass tank of 2 gallons capacity can be used, without bottom medium and filled with tapwater raised to a temperature of 78°–80°F (26°C). Many breeders suggest that two males should be used to one female. I do not myself agree with this—the rivals get worried and jealous and it often results in eggs remaining unfertilised. Sex differences are easy



Side by side the fish swim round the chosen plant and here it is possible to see the male's caudal fin well spread out. Often the male will lay this tail fin over the female's body during the pre-spawning manoeuvres.

The last phase of the spawning. The partners have separated with a jerk and the eggs are expelled in a flash to be fertilised by the male. Each fish turns in its own axis and goes off in a different direction. The whole process occurs at such speed that it is hardly possible to capture the events on film. The white, not quite spherical eggs, fall from the female's belly (left). The eggs become crystal clear and take on their round form. As they are heavier than water they fall to the bottom or remain caught in the plants.



to distinguish in the adult fish—the male is somewhat smaller and slimmer.

I have found from experience that the addition of a small quantity of cooking salt to the water induces the fish to spawn more readily. Up to 300 eggs may be laid at one spawning and the fry

hatch after about 24 hours. The parent fish must be taken out of the tank when spawning has taken place or they will eat the eggs. The care of the fry in the first weeks is slightly complicated by the fact that they should be given only very small live foods.

## A Mishap with Coral

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no provision for it. I did this partly out of laziness and partly more accurately to simulate the actual conditions under which the average beginner works. Had I been asked before I undertook these experiments whether I regarded a quarantine tank as essential, I should have most emphatically recommended strict segregation and medication for anything up to a fortnight. In practice it would seem that if one only buys superb-looking fish, which have maintained this condition in a dealer's tank for at least a week, and are feeding, it is not unreasonable to assume that they will probably transfer without killing everything else in your community tank, provided that you add a dosage of copper sulphate to the tank when they join it. This medication does seem to clear up so many complaints of marines really effectively that its preventive qualities may also be taken advantage of, but great care must be exercised not to exceed the recommended dosage. Even at half strength it still seems effective.

The great drawback about the marine quarantine tank is that it is just as much a shock to the newcomer as is the tank of destination, and even if a fish undergoes a successful quarantine this is no guarantee that a further shift to the final tank will not bring about a change in its metabolism and thereby precipitate the onset of some ailment or another. I should hate to be dogmatic about this, but on the slim experience I have had I come down on the side of not quarantining marines, but of strictly quarantining freshwater fishes. With freshwater fishes white spot, especially some persistent strains, can really wreak havoc in a nicely established tank and the plants usually suffer as a consequence of treatments. With marines there are no plants to consider and one could almost regard each aquarium as being in reality a decorated quarantine tank with some precious bacteria living in the lower basement. What has to be done is to introduce no medication (ozonizing would be fatal) that would be inimical to the undergravel inhabitants en masse. Of course, if this happens, the whole environment immediately comes into jeopardy because of the return of the nitrites.

*To be continued*



WHEN ISLE OF WIGHT A.S. held their annual dinner-dance members of the GSGB who were honorary guests included both their president, Mr. Close, and chairman, Mr. O'Neill. The visit of the GSGB members continued on the Sunday with a lecture and slide show given by the guests. The weekend was greatly enjoyed by both hosts and guests and Isle of Wight members look forward to further such meetings between the two Societies. Annual trophies were awarded as follows: Champion of champions, Mr. R. W. Chapman; Points challenge, Mr. S. Stevens; best tropical, Mr. B. Shuttlewood; best coldwater, Mr. R. W. Chapman; Guppy Cup, Mr. S. Stevens; Characin Cup, Mr. J. Nolan; Novice tropical, Mr. J. Withers; Ladies Cup, E. Ford and J. Shuttlewood; Plant Cup and Horn shield, Mr. E. T. Davison; Ladies runner-up, Mrs. O. Davison; Achievements Cup, Mr. D. Crisp; medals for three or more firsts, Mr. S. Stevens, Mr. B. Shuttlewood and Mr. J. Nolan. A special presentation was made to retiring chairman, Mr. D. Crisp, now moving to the mainland, for the tremendous efforts he has made on behalf of the club.

AT a recent meeting of **HAVANT & D.A.S.**, one of its members, Mr. Stephen Crabtree, gave a talk on reptiles and amphibians and enthralled his audience by presenting them with a number of live specimens for view (including a particularly bad-tempered species of gecko that caused one lady member to retire hastily to the kitchen), a gecko from India and a bether skink. Show secretary Mr. V. B. Hunt continues his report: 'One of the stars of Mr Crabtree's talk was a magnificent box constrictor, which, despite its size, was not difficult to handle though the club secretary, Mr. N. Davis, was a little apprehensive when the snake seemingly shoved desires to firm an oversized reptilian turban round his head! Another big attraction was a huge marine toad from South America... Other animals for scrutiny included a very pretty specimen of sand boa, a slow worm, a number of different newts and frogs and many others... The grand finale took the form of a rather awesome demonstration on how to remove a large black scorpion from its container. Mr Crabtree... merely placed his hand underneath

this very much alive creature and lifted it out as if it were a piece of coal.'

**FBAS Basic Show Class Letters:** A, furnished aquaria and apparatus; B, birds; C, characin; D, cichlid; E, invertebrate; F, displaying tool-scapes; G, tropical cichlid; H, Corydoras and Danios; I, catfish; K, loach and W.C.M.M.; L, loach; M, a.s.s.; tropical angler; N, pairs of fish; O, guppy tank; P, guppy female; Q, swordtail; R, 1967; S, snail; T, a.s.s. (invertebrate); U, compressed goldfish; V, compressed goldfish; W, a.s.s. (coldwater); X, freshwater clam; Y, marine fish; Z, plants.

THE best fish in show award at the **FREELANCE A.S.** open show was won by Mr P. Coyle of Independent A.S. The Freelance trophy for the best club in show was won by Independent A.S. Detailed results are:

B: 1, Mr. R. Leslie (Borough Tropicals prize, 70); 2, Mr. J. Parker (74); 3, Mr. B. Bissone (76); C: 1, Mr. B. Coyle (McKenzie prize, 80); 2, Mr. D. Lambourne (70); Mr. P. W. Catts (78); Q: 1, Mr. R. J. Slack (Crested troglodyte, 81); 2, Mr. Kinser (81); 3, Mr. L. G. Dennis (77); D: (Glossy cichlid): 1, Mr. K. Bomas (Basson trophy, 70); 2 and 3, Mr. B. Bissone (78, 79); E: 1, Mr. P. Coyle (Phillips prize, 81); 2, Mrs. Hedges (80); 3, Mr. F. W. Hughes (77); F: 1, Mr. D. M. Durr (Cress trophy, 70); 2, Mr. and Mrs. Fagan (78); 3, Mr. C. Wood (77); G: 1, 2 and 3, Mr. G. Greenhall (Pacific Aquarists prize, 81, 82, 84); H: 1, Mr. B. Bomas (J. Stann trophy, 81); 2, Mr. W. Wright (80); 3, Mr. P. Moss (78); I: 1, and 2, Mr. W. Mason (1974 subscription, 78, 77); 3, Mr. D. King (77); K: 1, Mr. B. Bissone (Phillips prize, 78); 2, Mr. B. Bissone (77); 3, Mr. C. Wood (81); L: 1, Mr. B. Bissone (78); 2, Mr. H. Wright (77); M: 1, Mr. D. Lambourne (Ann Brewer trophy, 70); 2, Mr. D. B. Sals (78); 3, Mr. J. Monk (77); O: 1, Mr. R. Bomas (M. Stann trophy, 78); 2, Mr. P. W. Catts (77); 3, Mrs. M. Stann (77); P: 1, Mr. P. Moss (77); 2, Mr. D. M. Durr (76); 3, Mr. B. Greenhall (76); Q: 1, Mr. J. East (Allen Brewer trophy, 74); 2, Mr. J. W. Hughes (74); 3, Mr. D. Lyne (74); R: 1, Mr. M. E. Swann (79); 2, Mr. B. Bissone (78); 3, Mr. T. Harvey (74); S: 1, Mr. D. King (Annex Hall trophy, 76); 2, Mr. S. Martin (78); 3, Mr. P. Moss (77); T: 1, Mr. M. Strang (79); 2, Mr. C. Lamb (77); 3, Mr. Newman (74).

**SOUTHAMPTON A.S.** regret to announce the sudden death of their president Mr V. Fish, on 11st March. They have not only lost their president and founder member but also a real friend. Mr N. L. Jennings writes: 'Back in 1948, having become interested in tropical fish as well as his first love of fancy goldfish, Mr Fish adverted in the local paper to make contact with similarly interested people and Southampton & D.A.S. came into being. He served the Society as committee member, treasurer and vice-chairman before accepting the presidency, but it was his friendly advice and help, freely given, which induced him to do... To his family we extend our deepest and sincere sympathy. He has left his mark on the hobby and he will be sadly missed but not forgotten.'

U: 1 and 2, Mrs. K. Hedges (Phillips prize, 78, 77); 3, Mr. D. M. Durr (74); V: 1, 2 and 3, Mr. K. S. Kestell (Riverside Cup, Phillips prize, 77, 78, 79); W: 1 and 2, Mrs. S. Hedges (74, 73); 3, Mr. B. Parker (74); Fernhill aquaria; 1, Mr. F. G. Nelson; 2, Mr. W. F. Woodward; 3, Mr. Bissone; 4, A. Martin (P. Harrison and L. Peppers prize); 5 and 6, K. Bissone; X: 1, 2, Mr. B. Bissone (78, 77); 3, Mrs. O. Leslie (80); X: 1, 2, Mr. W. Mason (77); 3, Mr. M. Strang (76); 3, Mr. K. Bissone (78).

**RUNNYMEDE A.S.** held a very successful first full open show, receiving 577 entries. The best fish in the show was a *B. nigrofasciatus* entered by Mr. P. Bissone of Basingstoke and Basingstoke was the society with the highest number of points.

Individual mini furnished aquaria: 1, Mr. J. Garrod (Bassonade); 2, Mr. P. Coyle (Bassonade); 3, Mr. R. Joyce (Bassonade); B: 1, Mr. P. Bissone (P. Grassman trophy, Basingstoke); 2, Mr. D. J. Mackay (Glasgow); 3, Mr. B. Funnell (Luton); B: (Large fish): 1 and 2, Mr. K. C. Bann (Bassonade); 3, Mr. P. A. Gossamer (Bassonade); C: 1, Mr. J. Batts (Galaxy); 2, Mr. D. Norman (Bassonade); 3, Mr. J. R. East (Proflera); C: 1, Mr. J. Pollard (Kingspan); 2, Mr. J. Richardson (Bassonade); 3, Mrs. J. Garrod; D: 1, Mr. J. Bann (Tropaeurina trophy); 2, Mr. M. Netherall (Bassonade); 3, Mr. H. Strang (Bassonade); D: 1, Mr. J. Bann; 2, Mr. J. Hooley (Galaxy); 3, Mr. M. Chapman (Bassonade); D: 1, Mr. L. W. Jackson (Bassonade); 2, Mr. P. Bissone; 3, Mr. G. Lamb (Bassonade); E: 1, Mr. G. Greenhall (Kingspan); 2, Mr. R. Wright (E. Durrish); 3, Mrs. C. Stafford (Kingspan); E: 1, Mr. L. J. Brann (Annex); 2, Mrs. H. Garrod; 3, Mr. P. Coyle; F: 1, Mr. D. A. Bennis (Bassonade); 2, Mr. M. Collins (Bassonade); 3, Mr. J. Mackay (Bassonade); G: 1, Mr. G. Greenhall (Lambourne trophy); 2, Mr. A. P. Taylor (Annex); 3, Mr. D. Lambourne (Bassonade); H: 1, Mr. F. G. Marsh (Galaxy); 2, Mr. K. Wright (E. Durrish); 3, Mr. B. Pratt (Bassonade); I: 1, Mr. D. J. Mackay (Kingspan); 2, Mr. F. G. Marsh; 3, Mr. R. Dale (Bassonade); K: 1, Mrs. M. Criss (Proflera); 2, Mr. D. Norman; 3, Mr. R. C. Smith (Bassonade); L: 1, Mr. P. Bissone; 2, Mrs. S. Parrish (Bassonade); 3, Mr. D. Lambourne; M: 1, Mr. R. Dale; 2, Mr. L. Monk (Bassonade); 3, Mr. P. Coyle; N: 1, Mr. R. Wright (K. Smith trophy); E. Durrish; 2, Mr. W. Mason (Bassonade); 3, Mr. L. J. Bissone (Annex); O: 1 and 2, Mr. A. Wood (Annex); 3, Mr. M. Netherall; P: 1, Gina Thomas (P.G.A.); 2, Mr. M. Netherall; 3, Mr. R. C. Smith; Q: 1, Mr. P. Moss (FBAS trophy, Basingstoke); 2, Mr. M. Aldridge (Bassonade); 3, Mr. A. P. Constantine (Bassonade); R: 1 and 2, Mr. D. Crutchbark; 3, Mr. L. J. Lamb; S: 1, Mr. D. Bailey (Annex); 2, Mr. K. C. Smith; 3, Mr. D. Lyne (High Wymondley); T: 1, Mr. A. Baker (Bassonade); 2, Mr. M. Strang; 3, Mr. R. Bagg; U: (Compressed goldfish, London subscription): 1 and 2, Mrs. K. Hedges (Borough Green); 3, Mr. A. Lovell (Bassonade); U: 1, 2, Mr. B. Pratt (Bassonade); 3, Mrs. S. Hedges; V: 1 and 2, Mr. R. Bissone; W: 1, Mr. V. Vowles; 2, Mrs. S. Hedges; 3, L. & B. Cook; X: 1, Mrs. S. Parrish (Bassonade); 2, Mr. P. A. Gossamer; 3, Mr. R. C. Peck (Bassonade); X: 1, Mr. D. Lyne; 2, Mr. L. G. Lamb; 3, Mr. S. Mason; Z: 1, Mr. J. Parker (B. Funnell trophy, Luton); 2, Mr. M. Chapman; 3, Mr. J. Parker (Luton);

**RESULTS of the INDEPENDENT A.S. (FBAS) open show are as follows:**

A: (amateur furnished) 1, Mr. D. Crutchbark; 2, Mr. D. Durr; 3, Mr. S. Collins; B: 1, Mr. B. Funnell; 2, Mr. B. Bissone;

1. Mrs B. Coyle, C. 1, Mr P. Coyle, 2, Mr D. Butler, 3, Mr S. Keith, C. 1, Mr M. Strang, 2, Mr T. Kinsey, 3, Mr R. Brown, D. 1 and 2, Mr D. Noble, 3, Mr J. Batts, D. 1, Mr J. Batts, 2, Mr D. Gars, 3, Mr R. Micholides, D. 1 (Apistogramma etc.), 2, Mr R. Brown, 2, Mr R. Watson, 3, Mr B. Brown, E. 1, Mrs S. Hodges, 2, Mrs Stanford, 3, Mr R. Piggins, E. 1, Mr R. Ott, 2, Mr P. Watson, 3, Mr T. Laughlin, F. 1 and 2, Mr Goodwin, 3, Mr E. Collins, G. 1 and 2, Mr T. Kinsey, 3, Mr D. Bandy, H. 1 and 2, Mr R. Brown, 3, Mr M. Strang, J. 1, Mr R. Brown, 2, Mr D. Mackay, 3, Mr D. Bandy, K. Mr R. Brown, 2, Mrs S. Hodges, 3, Mr T. Kinsey, L. 1, Mr R. Brown, 2, Mr R. Micholides, 3, Mr M. Strang, M. 1, Mr J. Pollard, 2, Mr D. Bandy, 3, Mrs S. Hodges, N. 1, Mr L. Brauer, 2, Mr D. Coyle, 3, Mr J. Howe.

O. 1 and 2, Mr R. Brown, 3, Mr P. Coyle, P. 1 and 2, Mr P. Coyle, 3, Mr R. Brown, Q. Mr A. Tuck, 1, Mr M. Adolph, 2, Mr D. Lane, R. 1, Mr D. Dowe, 3, Mr R. Poole, 3, Mr A. Wood, B. 1, Mr J. Igan, 2, Mr S. Harrison, 3, Mr D. Lane, T. 1, Mr T. Kinsey, 2, Mr M. Strang, 3, Mr R. Brown.

U. 1, Mr D. Bailey, 2 and 3, Mrs S. Hodges, W. 1 and 2, Mrs S. Hodges, 3, Mr D. Mackay, Xb-1, Mr R. Ott, Mr R. Newman, 3, Mr Piggins, Xc-1, 1, Mr D. Lane, 2 and 3, Mr R. Brown.

**FOUR HUNDRED** entries in the **UNBRIDGE & D.A.S. (FBAS)** open show were judged by Mr R. Eason, Mr F. Toskins, Mr H. Towell, Mr E. Nicholls, Mr D. Ellis and Mr C. Brown. Results were:

Ad (individual finished animals): 1, M. D. Bailey (Bass Fostler trophy, 241); 2, Mr D. Coyle (721); 3, Mr H. Thompson (761); R. 1, Mr R. Farnell (P. Guppy Cup, 531); 2 and 3, Mr C. Pike (81, 811); E. 1 and 2, Mr W. Bradford (81, 811); 3, Mr P. Coyle (81); B. 1, Mr J. Batts (81); 2 and 3, Mr D. Sargent (78, 781); D. 1 (Apistogramma, etc.): 1, Mr F. H. Vicker (Bass in Show, G. Farnell trophy, Gold Fish, 41); 2, Mr F. Cummer (84); 3, Mr L. Jordan (81); E. T. Coyle (N. Lee trophy, 81); 1, Mr F. H. Vicker (81); 2, Mr M. Chambers (761); F. 1 and 2, Mr M. Collins (75, 751); 3, Mr J. Hudson (71); G. 1, Mr E. Igan (61); 2, Mr J. Batts (61); 3, Mr A. Taylor (77); H. 1, Mr R. Brown (86); 2, Mr N. Paine (75); 3, Mr M. Strang (77); I. 1, Mr D. Bailey (FBAS Bracknell trophy, 75); 2, Mr R. Maynard (78); 3, Mr R. Brown (72); K. 1, Mr D. Bailey (78); 2, Mr R. Newman (72); 3, Mr W. Ordson (77); L. 1, Mr R. Brown (81); 2, Mr D. Arrows (74); 3, Mr E. Laury (74); M. 1 and 2, Mrs J. General (81, 78); 3, Mr S. Coyle (75).

Q. 1, Mr D. Coyle (78); 2, Mr K. L. Tuck (78); 3, Mr R. Newman (74); R. 1, Mr D. Coyle (P. Guppy trophy, 79); 2 and 3, Mr A. Wood (78, 72); S. 1, Mr T. Stanford (Arcade trophy, 81); 2, Mr R. Farnell (76); 3, Mr R. Bailey (78); T. 1, Mr R. Brown (81); 2, Mr J. Batts (76); 3, Mr A. Rinner (74); U. 1, Mr R. Dodson (B. Farnell trophy, 77); 2, Mr Paine (75); 3, Mr D. Bailey (74); V. 1, Mr W. Bradford (74); 2, Mr R. Dodson (77); 3, Mrs S. Baker (72); Xb (tropical angelfish breeds), 1, Mr R. Coe (80); 2, Mr E. Newman (79); 3, Mr F. Vicker (78); Xc (tropical freshwater breeds), 1, Mr J. Baker (H. Thompson trophy, 81); 2, Mr H. Wain (77); 3, Mr R. Nelson (74); E. 1 and 2, Mr J. Paine (Paine talent trophy, 78, 74); 3, H. Greenhalgh (78). Special class: 1, Mr B. Farnell (Committee trophy, 77); 2, Mr M. Coe (78); 3, Mr R. Brown (78).

The award for best fish over 9 in. long went to Mr P. Gouvenor (Runnymede) for his entry, a fire eel. Prizes were presented by the deputy Carnival Queen of Hillingdon.

# FEDERATION NEWS

## Championship Class Results: Fish for the 1972 Supreme Championship

**1972 Championship Class Results**

|                                                   |                                   |
|---------------------------------------------------|-----------------------------------|
| <b>Class Ba</b> Barbs (Medway A.S. Show)          | Mrs R. Cole (Independent A.S.)    |
| <b>Class D</b> Cichlid (Tortunham & D. A.S. Show) | Mr A. Kinsey (Independent A.S.)   |
| <b>Class Db</b> Cichlid (Stacton-on-Tees Show)    | Mr I. R. Heptinstall (Castleford) |
| <b>Class G</b> Catfish (Thurrock A.S. Show)       | Mr D. Lambourne (Rochampton)      |
| <b>Class Q</b> Swordtails (Runnymede Show)        | Mr S. Mason (Rochampton)          |
| <b>Class R</b> Platy (Runnymede A.S. Show)        | Mrs D. Cruckshank                 |

**Forthcoming Championship Class Shows**

|                  |                          |      |                                              |
|------------------|--------------------------|------|----------------------------------------------|
| 4th June         | Half Moon A.S.           | Xo-t | Breeders                                     |
| 14th June        | High Wycombe A.S.        | K*   | Danio & W.C.M.M. a.o.a. Livebearer           |
| 17th June        | Riverside A.S.           | T*   | Twintailed goldfish                          |
| 24th June        | Anson A.S.               | V*   | Fighters                                     |
| 25th June        | Gosport & D. A.S.        | Ea*  | Coldwater marine                             |
| 2nd July         | Exeter & D. A.S.         | Yb*  | Nannostomus & Poecilibrycon a.o.a. Coldwater |
| 8th July         | Basingstoke & D. A.S.    | Cb*  | Colisa etc.                                  |
| 22nd July        | Port Talbot & D. A.S.    | W*   |                                              |
| 30th-12th August | Porsmouth A.S.           | Eb*  |                                              |
| 6th August       | Tunbridge & D. A.S.      | L*   | Loach                                        |
| 12th August      | Bracknell A.S.           | J*   | Rubens                                       |
| 26th August      | Plymouth A.S.            | No-t | Pairs                                        |
| 1 September      | S.P.A.S.S.               | U*   | Singletailed goldfish                        |
| 2nd September    | Bethnal Green A.S.       | O*   | Guppy male                                   |
| 3rd September    | Wellingborough & D. A.S. | B*   | Barbs                                        |
| 10th September   | Weymouth & D. A.S.       | Xb-m | Breeders                                     |
| 16th September   | Hounslow & D. A.S.       | F*   | Egg laying toothcarps                        |
| 24th September   | Torbay A.S.              | Ca*  | Hypoclinobrycon etc.                         |
|                  | Washington A.S.          | Da*  | Angels                                       |

\* Winners of Federation Championship Trophies in classes for single fish automatically become eligible for the Supreme Championship Trophy Competition (to be staged at The AQUARIUM SHOW '72 at the Royal Horticultural Society's Old Hall, London, S.W.1, 27th-29th October). Six awards are made at this Competition.

MEMBERS of the SOUTHWESTERN GROUP of the BRITISH MARINE A.A. were entertained at the Palm Terrace Hotel, Torquay by a film and talk given by Mr Brian Fierwood of Dudley, thanks to the hospitality of Mr John Monks. The film showed different set-ups of Midland members' tanks and fish photographed by Mr Malcolm Morris, and an animated discussion ranging from

photography to fishkeeping raised. Further hospitality was afforded by Mr John Haynes at his Guest House when among the subjects raised was a description by Mr Colin Fideck on how he had wired his tanks. One of his inventions included a power filter pump guaranteed to clean out a tank if not actually solving the problem of how to get the water back!

OVER the last 6 months **BASING-STOKE & D.A.S.** have enjoyed a variety of activities. Lectures have included a talk by Mr R. Armstrong on killifish, by Mr Adrian Blake on show know-how, by Mr John Batts from Ealing A.S. on aquascapes by Mr Jack Stillwell on cichlids and Mr Gerry Greenhall of Kingston on catfish, with many examples of his own large fishes that he very kindly took along for members to see. An auction in aid of club funds has also been held.

**STOCKTON-ON-TEES A.S.** report that this year's open show, their seventh, was the best yet with excellent support from all local and some not-so-local societies. The best fish in show was entered by Mr K. Ross (Stockton), the best livebearer by Mr K. Greenley. Winning entries from among the 326 entered were benched by the following:

Furnished aquaria: Mr J. Bennett, Furnished jars: 2, Mr Robertson; 2, Mrs Handman; 2, Mr Simpson. L.V. fisher: 1 and 2, Mr and Mrs Walker; 2, E. W. & J. C. Robinson. A.S.V. livebirth: 1, Mrs Whitley; 2, Mr B. Fawcett; 3, E. W. & J. C. Robinson. Cichlids (large): 1, Mr H. Fawcett; 2, Mr and Mrs Gates; 3, Mr J. Lockwood. Barbs: 1, Mr Atwell; 2, Mr Harter; 3, Mr G. Leo. Characins: 1, Mr and Mrs Gates; 2, Mr and Mrs Patterson; 3, Mr Robertson. A.S.V. platy: 1, Mr Greenley; 2, Mr Ward; 3, Mrs Simpson. Swords: 1, Mr and Mrs Walker; 2, Mrs Butch; 3, Mr Johnson. Molies: 1, Mr Greenley; 2, Mr Milson; 3, Mr A. Wilson. A.S. scavenger: 1, Mr and Mrs Walker; 2, Mr Robson; 3, Mr and Mrs Patterson. Corydoras: 1, Mr and Mrs Wells; 2, Mr and Mrs Atwell; 3, Mr and Mrs Kiblington. Guppies: 1, E. W. & J. C. Robinson; 2, Mr Thomas; 3, Mr and Mrs Kiblington. Cichlids (small): 1 and 2, I. & R. Hepburn; 3, Mr J. Robertson. Rabbits: 1, Mr and Mrs Atwell; 2, Mr. C. Aspinall; 3, Mrs P. Hepburn. Egg-laying toothcarp: 1, Mr Hall; 2, I. & R. Hepburn; 3, Mr Johnson. A.S.V. 1, Mr Thomas; 2, Mr Johnson; 3, Mr and Mrs Gates. Pairs, egg-layers: 1, Mrs P. Hepburn; 2, Mr Thomas; 3, Mr Platt. Pairs, livebearers: 1, Mr Platt; 2, Mr and Mrs Kiblington; 3, Mr Andrews. Breeding, egg-layers: 1, Mr and Mrs Wells; 2, Mr M. Gillespie; 3, Mr and Mrs Walker. Breeding, livebearers: 1, Mr Whitley; 2 and 3, Mr Douglas. A.S. coldwater: 1, A. & C. Skinner; 2, Mr Whitley; 3, Mr Heckford. Mollies: 1, Mr Johnson; 2, Mr R. Steel; 3, Mr J. Garsdale. Janitors: 1, Master Milson; 2, Master Patterson; 3, I. Cooper. Sharks & loaches: 1, R. Ross; 2, Mr Douglas; 3, Mr Robson.

A **SIAMESE** tiger fish entered by Mr G. Fraser won the best in show award at the **BOUGHTON & D.A.S. Open Show**. The President's trophy for the competitor with most points went to Mr F. Sonley (Ind.). The Blue Riband trophy to Peterlee A.S. (35 points). There were 360 entries.

Furnished jars: 1, Mr B. Shanks (M. Pleasant); 2, Mr B. Appley (Houghton); 3, Mr A. Thompson (Priory), Guppies: 1, Mr B. Shanks; 2, Mr J. Laidler (Newcastle); 3, Mr A. Sowerby (Newcastle). Mollies: 1, Mr E. Smith (M. Pleasant);

*AN interesting comment from Mr Ross Patterson, editor of the COVENTRY POOL AND AQUARIUM SOCIETY Newsletter describes the impact an open show had on one member of the general public. He writes: 'It was a visit to the Open Show two years ago which fired my enthusiasm for the hobby. After casually picking up some books in the local library and browsing through some local dealers' tanks, my interest was sparked off. But the mostly young and immature fish in dealers tanks do not compare with carefully looked-after, full-size fish carefully nurtured in enthusiasts' tanks. It was after seeing these beautiful adult fish that I actually became hooked on the hobby and went out and bought a tank.'*

2, J. & A. Edgar (M. Ple.); 2, Mr B. Newworthy (Peterlee), Swords: 1, Mr and Mrs Sowerby (M. Ple.); 2, Mr H. Hubbard (Peterlee); 3, Mr and Mrs Sowerby. Platy: 1, Miss A. Cook (Ashington); 2, Mr A. Thompson (Priory); 3, Mr J. Robertson (Ashington). Small barbs: 1, Mr B. Smith (Peterlee); 2, Mr I. Gordon (Houghton); 3, Mr C. A. Enright (Houghton). Large barbs: 1, Mr I. Drummond (Houghton); 2, Mr M. S. Gray (M. Ple.); 3, Mr A. Hines (Horn). Characins, small: 1 and 2, Mr A. Richardson (Houghton); 3, Mr J. Hellen (Houghton). Large: 1 and 2, Mr F. Sonley (Ind.); 3, Mr B. Pickett (M. Ple.). Cichlids, small: 1, Mr G. Goodfield (Ind.); 2, Mr G. Nixon (Peterlee); 3, Mr J. Warren (Hartlepool). Large: 1, Mr B. Newworthy (Peterlee); 2, Mr C. A. Enright; 3, Mr I. Gordon (Houghton). A.S. righter: 1, Mr B. Newworthy; 2, Mr and Mrs Lova (Cleveland); 3, Mr B. Cooper. A.S.V. livebirth: 1 and 2, Mr B. Cooper; 3, Mr R. Neworthy.

Sharks: 1, Mr and Mrs Brown (H. M. Billingham); 2, Mr M. Turnbull (Horn); 3, Mr B. Shanks (M. Ple.). Rabbits: 1, Mr J. Walker; 2, Mr I. Garsdale; 3, Mr B. Newworthy. Toothcarps: 1, Mr J. Gardner; 2, Mr F. Sonley; 3, Mr B. Jones. Corydoras: 1 and 2, Mr H. Hubbard; 2, Mr and Mrs Cook. Catfish and loach: 2, Mr G. Lamborn (Priory); 4, Mr A. Biddington (Peterlee); 5, Mr B. Newworthy.

Breeding pairs (L.): 1, Mr I. R. Shanks (M. Ple.); 2, Mr H. Hubbard; 3, Mr N. Clew. Breeding pairs (E.): 1, Mr J. Morton (Houghton); 2 and 3, Mr D. Turnbull. Breeders (L): 1, Mr J. Laidler; 2 and 3, Mr G. P. Hare (Ashington). Breeders (E): 1, 2 and 3, Mr F. Sonley. A.S.V. fish: 1, Mr G. Fraser (Tyndale); 2, Mr L. Drummond; 3, Mr G. Burton (Borden). Coldwater: 1, Mr C. W. Gregory (Jarrow); 2 and 3, Mr A. Biddington.

**HASTINGS & ST LEONARDS A.S.** have made the club bulletin editor, Mr Barry Funnell, an honorary life member of the Society

*GOOD news for programme organisers? BRIGHTON & SOUTHERN AQUARISTS SOCIETY have available at a nominal fee three slide and tape lectures: the Society's 7th Annual Open Show (about 71 slides), Plants for the Aquarist (50 slides) and Fishes for the Community Aquarist (10). Please contact Mr Roy Brommington at Brighton 419911.*

to show their appreciation of the immense amount of time and seemingly inexhaustible supply of knowledge that Mr Funnell has contributed over a great number of years to the hobby in general and the club in particular. At the Society's A.G.M. in April Society awards and trophies were presented as follows:

Awards 1970-71 winners: Member of the Year Cup and two President medals, A. Reed; Champion Challenge Cup for highest points in table shows, Mr J. Gray; Home Aquaria competition, Mr A. L. McCormick; Junior Home Aquaria A. Reed; Best Plants in Home aquaria, Mr A. L. McCormick; A.S.V. table show, A. Reed.

Trophy winners 1971-72: Member of the Year Cup and two President medals, A. Reed; Champion Challenge Cup for highest points in table shows, Mr G. E. Chalcraft; Home Aquaria Cup, Mr G. R. Fryke; Christian Reed Cup for best junior home aquaria, A. Hennes; Singapore Bowl for best plants in home aquaria, Mr A. L. McCormick; A.S.V. table show trophy, Mr R. Stanton.

**BRISTOL T.F.C.** members have particularly enjoyed two recent lectures. The first one, given by Mr Bill Gorwell, accompanied by slides, dealt with his speciality, the Lake Malawi cichlids; their maintenance and breeding was dealt with in considerable detail. Appreciation of the talk was such that it was proposed that Mr Gorwell should be highly recommended to the Severnside Association for inclusion in their list of speakers. The second lecture was given by Mr Barry James of Cheltenham Aquatics on aquarium plants, illustrated with many exhibits, and it is hoped to persuade him to pay the Society a return visit soon. On 22nd-24th June, the Society plans for their annual 3-day Show come to fruition. It is pointed out that each entry is individually housed in a heated aquarium; benching can be arranged for entrants unable to attend the Wednesday evening benching and, as long as the show secretary knows in advance, entries can be received by rail. Each class is covered by a silver cup and retainable trophy plus many prizes. Schedules from Mr Bob Lawrence, 26 Stonebridge Park, Eastville, Bristol, BS5 6RR.

## In Brief . . .

. . . **SWILLINGTON A.S.** hold their seventh open show on 18th June at the John Smeaton's School off the Barwick Road, Leeds 14. Schedules are obtainable from the show secretary, Mr K. Storey, 26 Goodwood Avenue, Kippax, nr. Leeds.

. . . **HIGH** printing costs have led **AIREBOROUGH & D.A.S.** to purchase a brand new spirit duplicator, to be used for the Society's newsletter and any other printing that anyone may want doing.

... 'THE Portrait of a Guppy' by Stan Saebels of America proved a very enjoyable slide show for **KEIGHLEY A.S.** Table show classes for fish of the month, a.o.v., novice a.o.v. and junior a.v. were won by Mrs Taylor, Mrs Heap, Mr Hart and Master Murray respectively.

... AT the **BRISTOL A.S.** April meeting, member Miss A. Morgan, who joined the Society in 1955 and was celebrating her own 'special' birthday, was made a life member for her loyal and active service. Members presented her with a bouquet to celebrate the double event. Mr G. Churchill showed his slides of furnished aquaria and gave an excellent commentary to a capacity audience.

... MR D. W. DAVY's entry was again the winner in the **CROYDON A.S.** (FBAS) home furnished aquaria competition this year—junior member Adrian Haynes, who shows a great deal of talent in this type of exhibit, won second award. Members enjoyed a lecture by Mr Kettle on piranhas, which he has kept exclusively for 10 years.

... THE success of the last meeting of **TONBRIDGE & D.A.S.** fourth year was largely due to **HASTINGS & ST. LEONARDS A.S.**, who provided a panel, led by Mr P. Martin, to answer members' questions. Plans for the fifth year include an open show. Another great success was the annual dance and prize-giving. Mr P. Cottle, chairman of the Kent Association of Aquatic Societies, presented trophies to Mr Bill Rood (classes C, R), Mrs I. Bellingham (class D), Mr R. Baker (class N3-m), Mrs S. Soares (classes U, V, W), Mr K. Shoebridge (class N3-n), Mr I. Mathieson (classes H, K, N3-m, Club Championship), Mrs D. Mathieson (lady member with highest number of points) Mr J. Bellingham (Club Open Show championship).

... MEMBERS of **PORTSMOUTH A.S.** have been fortunate to hear three particularly interesting lectures lately: on FBAS standards by Mr Jack Stillwell, on killifish by Mr R. C. Armstrong, and on biological filtration by Mr John Lamboll. Livebearers had their first outing of the year at the table show judged by Mr Jack Jefferies.

... **LITTLEHAMPTON & BIGNOR A.S.** extend a warm welcome to holiday visitors to attend club meetings, 8.0 p.m. on the first and third Thursday of month at The Crown Hotel, High Street, Littlehampton. A special invitation, too, to their 2-day Tropical and Cold-water Fish Exhibition on 24th (from 10.00) and 25th June (from 2.0 p.m.) at the Western Pavilion, Sea Front,

Littlehampton. The hall is twice as large as last year's and there will be about 70 furnished aquaria on show. On the Sunday afternoon there will be an inter-club show; seven clubs have already accepted and nine classes of fish agreed upon.

... AWARDS presented to this year's winners of **HORSFORTH A.S.** table shows are: a.o.v., Mr C. Corns (26 points); specified, Mr C. Corns (22); Junior, Master I. Horrocks (19). The Society propose to hold an open show this year—details to be announced.

... A GOOD deal of ingenuity was expended by members of **PRIVATEERS A.S.** on the answers at their recent question-and-answer competition. Old and new members

AT this year's **MIDLAND OPEN SHOW** (Bingley Hall, 16th-19th August) a new cash award of £30 is being introduced for the society gaining the most points. The pointing system will be as follows: Class 50; 5 points for entering plus; 4 pts for 1st and £10 cash award; 3 pts for 2nd; 2 pts for 3rd; 1 pt for 4th. Society Decorated Aquaria class, coldwater and tropical; 3 pts for entering plus; 4 pts for 1st, etc. Each trophy wins an additional 2 pts. Best coldwater and Best Tropical fish, 5 pts each plus £10 cash award. Best fish in Show an additional 5 pts. Each show card, provided fish gain 70 points or over: 1st, 4 pts; 2nd, 3 pts; 3rd, 2 pts; 4th, 1 pt. Show secretary Mr J. Wills writes: 'So, if your society needs funds... why not encourage your members to have a go? A society entering class 50, both Decorative classes (and they could win them all) plus the overall points in the show, could collect for the society £50.' Also being introduced this year is a Marine Decorative Aquaria section (both Society and Individual)—tooth to be 24 x 15 x 12 and provided by the exhibitor.

turned up in force and thoroughly enjoyed the evening.

... INCREASED membership has resulted in a change of venue for **WEYMOUTH & D.A.S.** to the Assembly Hall, The Waverley Arms, Abbebury Road, Weymouth. At the first meeting there, members heard Mr R. Peel explain what to look for when buying fish and Mr K. Forrester lecture on garden pools. Senior members are so impressed with the juniors' enthusiasm that special classes are being arranged for them at the annual show in September.

... **BRACKNELL A.S.** (FBAS) enjoys a full programme. A table show is held at every meeting with both

senior and novice classes and there were 79 entries in the first closed show (won by a *P. thomasi* entered by Mr L. Jordan, judge Mr B. Baker, FBAS). The club were greatly entertained (and learned a lot) from 'The Hendon Boys' when Mr K. Purbeck spoke about characins. There has also been a debate on sub-gravel filters.

... **LEYTONSTONE & STRATFORD D.A.S.** is now 8 months old. There is a keen membership—table shows are held fortnightly, films or slide shows once a month. Prospective new members are very welcome at club meetings every Thursday evening at Harrow Green Baptist Church, Harrow Road, Leytonstone.

... **CASTLEFORD & D.A.S.** are very proud of the fact that junior member Ian Heptinstall, 16 years old, has been accepted by the AYAS to train as a judge. The Society believe he is the first school-boy in the country to be so accepted. Ian and his father are well known at Open Shows and have six best-in-show wins to their credit.

... **BRIGHTON & SOUTHERN A.S.** won their two-way Inter-Club competition with **MID-SUSSEX** by 12764 points to 12322. While Mr Brian Baker (FBAS) was judging guests were entertained by the monthly auction and one of the club's own tape and slide lectures on plants for the aquarium. The first issue of the club's magazine 'The Net' has appeared.

... MR D. JOHNSTONE of **SMETHWICK & D.A.S.** swept the board when president, Mr L. Stokes, presented annual trophies, receiving those for a.v. barbs, characins, anabantids, killies, livebearers, cichlids, catfish and the Glasgow Cup and Mandeville shield for the highest points at table shows. Mr E. Woodward received the a.o.v. award and Mr Stokes the Woodward Cup for best tropical fish.

... **YEovil & D.A.S.** (FBAS) invited both new society **DORCHESTER & D.A.S.** and **WEYMOUTH A.S.** to their annual inter-club quiz with **TAUNTON** and **WESTON-super-MARE** so that local clubs could all get together socially. The quiz was a ding-dong battle to the finish between Yeovil (22 points) and Weston (21) with Taunton reaching 10 points.

... **RIVERSIDE A.S.** were hosts in the second round of the **NORTH-WEST LONDON GROUP** competition. Results were: Independent 33, Riverside 33, Hendon 23, Anson 21, Hampstead 2. Best fish of the show was a cichlid entered by Independent.

... WHEN ERITH & D. A.S. were hosts to NORTH KENT A.S. at an inter-club fish show, visitor Mr J. Martin received the fish of the show award with a *Brechia ovalis* as well as winning in the *Corydoras* and *Brechia* class. Overall points, however, brought Erith into the lead with 32 to 28. Other class winners were: harle, Mr P. Cottle (N.K.); characin, Mrs B. Scates (E.); cichlids, Mr B. Sylvester (N.K.); anabantids, Mrs D. Hunter (N.K.); eel fish, Mr K. Beadle (E.).

... SOUTHEND, LEIGH & D. A.S. are 4 years older than they thought they were! Editor Mr P. F. Capon has found an article in an old

WATER LIFE indicating that Southend had a thriving fish society in 1925. Trophy winners in 1971 were: Mr G. Coe, Halsey Memorial trophy (highest points in table shows), Brookes shield II (2nd, mini-tank); Jones Cup II (best coldwater); Mr T. Clark, Southchurch Cup (2nd, table shows); Willis Memorial Cup (best toothcarp); Jones Cup I (members best fish); Saunders cup (2nd, coldwater); P. Mepham and I. Finlayson won the Abbot Cup for highest points, Juniors. Mr D. Little the Brookes shield I (1st, mini-tank); Mr D. Durrant the Barnes-Oaks Cup (breeders egg-layers); Mr C. J.

Lyon, Coronation Cup (breeders livebearers); Mr B. Barlow, Dabson Cup (best characin); Mrs J. Norris, Giles Cup for home furnished.

... SHOW secretary of YORK & D. A.S., Mr P. Booth, has a waiting gun available to members at his shop that can be borrowed on deposit for a small sum. A talk by Mr T. Richardson on all-glass tanks went off very successfully in the Society's first Wednesday meeting and members also enjoyed slides presented by Mr P. Shephardson from Hull, showing Hull members' aquaria.

## Dates for Your Diary

Dates preceded by ★ are of shows to which FBAS Championship Classes are allocated.

4th June, PRIORY A.S. Open Show, Marston Lane Boys Club, Tyreness, Northumberland. Schedules: Mr E. McCrystal, 47 South Terrace, Willard, Northumberland.

4th June, ACCRINGTON & D. A.S. Open Show, 60 John Ambrose Dell Hall, Hill Road, Accrington. Schedules: Mr S. Walsh, 121 Lamnack Road, Rochdale, Lancs.

★4th June, HALF MOON A.S. Open Show. Details: Mr K. Grosley, 6 Bolton Street, Haslemar Hill, Billingham, Teesside.

4th June, GKN POND & AQUARIUM SOCIETY Inaugural Open Show, GKN Centre, Salisbury Street, Darlington, South. Entertainment for all the family. Schedules: Mr K. Rowley, 148 Wolverhampton Street, Darlington South.

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

4th June, BOURNEMOUTH A.S. Open Show, Kismet Community Centre, Pallards Park, Kismet, Bournemouth. Schedules (after 1st May): Mr J. V. Jeffrey, 30 Bonmar Avenue, Southbourne, Bournemouth, BH10 4JF. No entries accepted at date.

4th June, LINCOLN & D. A.S. Open Show. Details: Mr H. Kahn, 44 Sayer Street, Lincoln.

4th June, LLANEWY MAJOR, A.S. Open Show, Llanewy Major Town Hall. Details: Mr A. Robinson, 84 St Mary's Avenue, Barry, Glam.

11th June, BISHOPS CLEEVE A.S. Open Show, Tyde Barn, Evesham Road, Bishops Cleeve, Cheltenham, Glos. Further details: Mrs M. Sisson, 27 Warden Hill Road, Cheltenham, Glos.

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

11th June, HOVLAKE A.S. Open Show, Madhouse Hall, Selsbury Avenue, West Holford, Cheshire. Details: Mr E. Boscawen, 1 Haig Avenue, Macclesfield, Cheshire.

11th June, THORNE A.S. Open Show, The Grammar School, Details: Mr H. C. Jewson, 94 Hawthorn Road, Thorne nr. Doncaster; phone 813941.

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

18th June, F.G.A. LANCASTER SECTION Open Show, Georgian Institute, Moor Lane, Lancaster, Rushing 4.30 p.m. Details: Mr J. F. Peck, 4 Ridge Street, Bail, Lancaster.

18th June, (Change of Date), W.K.F.R.A.S. Open Show, The Town Hall, High Street, Colchester. Details: Mr R. J. Trueman, 27 Marshall Road, Kinghams, Birmingham; 421-789 5443.

18th June, SWILINGTON A.S. Open Show, John Bennett's School (off Barwick Road), Leeds 12. Schedules: Mr R. Storey, 25 Goodwood Avenue, Kippax, nr Leeds.

18th June, BILLINGHAM A.S. Open Show, Billingham Community Centre. Details: Mr J. Atwell, 74 Harfield Place, Peterlee, Co. Durham; phone Peterlee 4184.

18th June, SALISBURY A.S. Open Show.

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

22nd-24th June, BRISTOL TROPICAL FISH CLUB, Open Show, Congregational Church Hall, Newton Street (off Stapleton Road), Bristol 2. Schedules: Mr B. Lawrence, 29 Stonebridge Park, Karsville, Bristol BS4 5RL.

★24th June, ANSON A.C. Open Show, St Andrew's Hall, Willenden High Road, Willenden, London, N.W.10. Details: Mr

B. Bullock, 6 Walton, Clons, London N.W.4; phone 41-451 9307.

24th June, MID-HERTS A.S. Open Show, Held in conjunction with Cell Barrow Post-Cell Barrow Hospital, St Albans. Details: Mr C. S. A. Walker, 13 Chesham Road, St Albans, Herts.

24th-25th June, LITTLEHAMPTON & BOGNOR A.S. Exhibition, Western Pavilion, Southport, Littlehampton. Details: Mr B. Minger, 'Lanselot', Warrington Road, Littlehampton. Inter-club show on 25th.

24th June, ALFRETON & D. A.S. Open Show, Adult Education Centre, Alfreton Hall, Alfreton. Details: Mr S. Hickling, 29 Meadow Close, Eastwood, Notts, NG6 2JQ.

★24th June, GOSPORT & D. A.S. Open Show, Crofton Community Association, Southington. Details: Mr P. Hayward, 101 Larks Head, Park Gate, Southampton.

2nd July, CASTLEFORD & D. A.S. Open Show, Carlton Community Centre, Carlton, Pontefract, Yorks. Details: Mr S. Stevens, 32 Falcon Drive, Linn Lane, Castleford, Yorks (or phone Mrs Gann, Pontefract 2112).

★2nd July, EXETER & D. A.S. Free Open Show, Knowled Village Hall, Knowled, nr Exeter. Booking by 12 noon. Schedules: Mr W. F. Byre, 14 Broomway Close, Exeter EX2 6LD; phone 7842.

2nd July, NORTH WAHICKSHERE A.S. Open Show, The Settlement, Kingsstanding Road, Kingsstanding, Birmingham. Details: Mr T. Snow, 128 South Road, Edington, Birmingham.

2nd July, LYTHAM A.S. Open Show, Leather Gardens Pavilions, Lytham, Lancs. Details: Mr D. Wright, 13 Cambridge Road, Ansdell, Lancs.

Continued on page 54

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\*8th July. **BASINGSTOKE & D. A.S.** Open Show, Caravel Hall, Basingstoke. Schedules from Mr M. Strang, 28 London Court, Neville Close, Basingstoke, Hants.

26th-27th July. **ROMFORD & BEACON-TREE A.S.** Open Show (Dagenham Town Show), Central Park, Dagenham, Essex. Schedules (later) Mr D. G. Kerr, 74 Lyndon Road, Collier Row, Romford, RM5 4QT (phone 25-62804).

12th July. **WESTON-SUPER-MARE & D. T.F.C.** Open Show, St John's Hall, Oxford Street, Weston-super-Mare. Schedules: Mr J. Clarke, St John's, North Street, Cleddar, Somerset.

\*22nd July. **PORT TALBOT & D. A.S.** Open Show, V.M.L.A., Port Talbot. FBAS Rules, 11 Judges. Schedules (later) Mr M. Johns, 26 Golden Avenue, Sandfields, Port Talbot.

12th July. **SOUTH SHIELDS A.S.** 1971 Open Show. Details: Mr G. Fennison, 234

South Eldon Street, South Shields, Co. Durham NE33 3AL.

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

### Additions to complete list printed in PFM May

27th July. **LOYNE AQUARISTS LANCASTER** Open Show, Lancaster University, Lancaster. Schedules: Mrs M. Norra, 79 Wyresdale Road, Lancaster.

12th July. **RUNCORN A.S.** Open Show. All Saints Parish School, Runcorn, Wirral (12.00-1.00 p.m.). Schedules: Mr P. Hall, 48 Orrell Street, Runcorn, Cheshire, WAT 5AH.

\*26th August. **TONBRIDGE & D. A.S.** Open Show. Tonbridge School. Schedules: Mr J. T. Matthews, 31 Norton Way, Fox Oak Green, Tonbridge, Kent.

16th-19th August. **MIDLAND OPEN SHOW (M.A.P.S.)** Bagley Hall, Broad Street, Birmingham. Details: Mr J. Wynn, 148 Franklin Road, Kings Norton, Birmingham 20.

26th August. **SALFORD A.S.** Open Show. Broughton Liberal Club, Great Chews Street, Salford 7. Open 10.00 to 12.00. Great Chews St. Warehouse, Details: Mr J. Lomas, 27 Beech Street, L. Broughton, Salford, 7, Lancs.

2nd September. **REGGATE & REDHILL** Open Show, Coulsdon Youth Centre, Clarendon Valley Road, Coulsdon, Surrey. Details: Mr J. Wood, 22 Rickman Hill, Coulsdon, Surrey.

26th October. **NEWCASTLE GUPPY AND LIVEBEARER SOCIETY** Open Show Central Hall, Gosforth, Newcastle upon Tyne 3. (1) Livebearer classes, (2) guppies. Schedules: Mr J. A. Laidler, 29 Aln Avenue, Gosforth, Newcastle upon Tyne 3.

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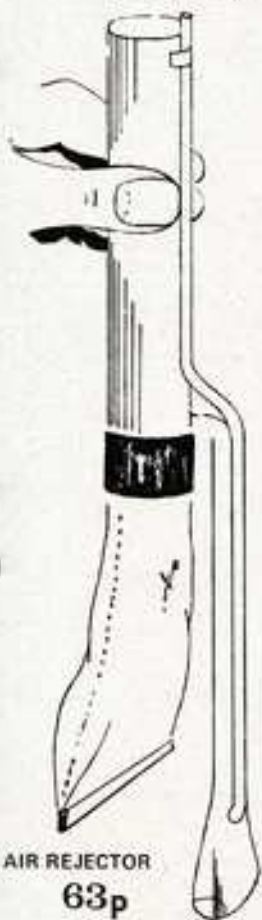
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Continued on page 86

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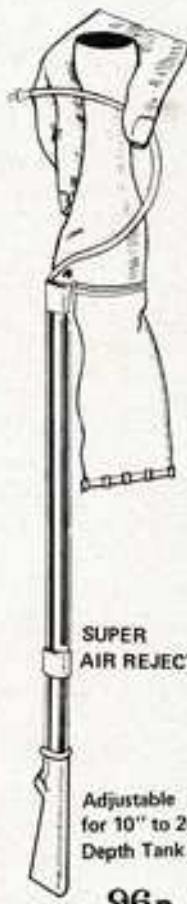
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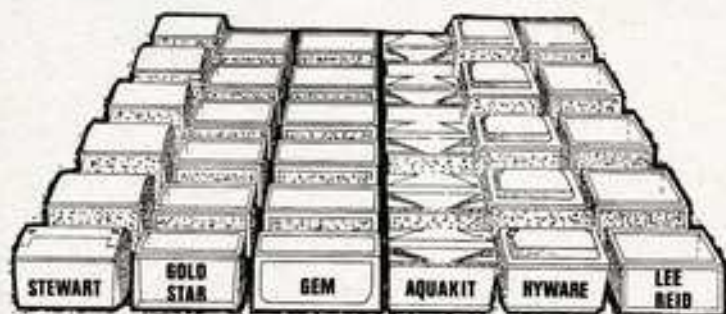
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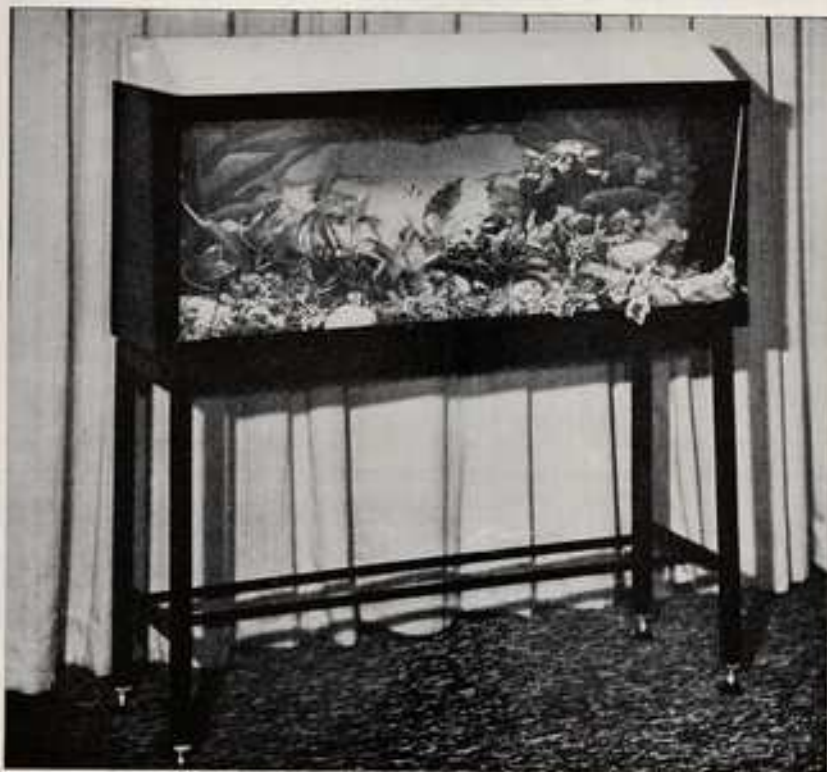
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