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Comments and Quotes

- Sunfish species spawned in aquarium
- Aquarium displays with something to say

First Time Breeding

TO the best of our knowledge the report in this issue of PFM of a successful aquarium breeding of one of the sunfish, by Mr R. M. Whittington, is the first to be recorded in this country at least. North American sunfish, so like the tropical cichlids in much of their aquarium behaviour, unlike the majority of members of that tropical group have proved most reluctant to reproduce in aquaria. Accordingly many coldwater fishkeepers have for years set their sights on this achievement, and we know that Mr Ron Dudley, like Mr Whittington a member of the GSGB, came extremely close to success a season or so back. Congratulations from everyone who has ever been captivated by this most interesting and decorative coldwater aquarium group of fish will, we are sure, be joined with our own to Mr Whittington.

Displays with a Message

WHEN we wrote in a recent issue of PFM some notes about themes for aquarium societies planning displays at shows we suggested that serious topics could be chosen as well as those lending themselves to humorous or artistic treatment. Since then we have seen a couple of displays that have used the opportunity to give expression to feelings about matters of worldwide concern. At the Midlands Show this year Nuneston A.S. staged their aquaria in an oversized coffin to plug an anti-pollution line—"Last Year Pollution Killed..."
1 Million Fish—the entry gaining a fourth award in a generally strong competition. Last month the society display awarded first prize at the R.A.F. at Manchester, by Northwich A.S., was a realistic piece of ugly armament equipped with aquaria and bearing the Putting message "Tanks for Peace". Displays with serious themes in the background are not of themselves any more meritorious than other kinds of display, of course, but they have perhaps been too much in the minority in the past and certainly their presence at a show does a lot to create variety. Who knows, they could even alert a few more people to issues of moment— the mirror on the Hendon & D.A.S. tableau at last year's Aquarium Show, labelled 'You are now looking at the world's most dangerous animal', in a display entitled 'Our Dying Planet' must have made many people pause for thought. At the time of going to press we have not seen The AQUARIUM SHOW '71. The news that any new ingenuity that may be there displayed this year must go for now unmentioned.

LETTERS

Croaking Gourami Spawning

WITH regard to the item in 'Transatlantic Topics' (PFM September) about spawning the croaking gourami, I can't for the life of me see what 'side illumination' has to do with the spawning of this lovely little labyrinth. I myself have spawned this fish with no light at all in the aquarium and the usual heater and thermostat. That is much more reliable than two 7 watt bulbs, which is about the stupidest thing I have ever heard. The croaking gouramis that I spawned never at any time built a bubble nest. The plant I used for the purpose of spawning was Indian fern. This floated on the surface of the water. After the eggs hatched the tiny olive-coloured fry were seen to be hanging on to the outside diameter of the leaf, as though they had been carefully placed there. I disagree with the paragraph about no noise from this fish. The pair of fish I had during the spawning emitted a grating sound, audible some distance from the aquarium.

NORMAN G. GRANT
President, East Kilbride Aquarium Club

Plunder of Coral

MAY I bring to the attention of your readers what may become a serious problem. I refer to the coral reefs. To be precise, the reefs are being plundered and destroyed and shellfish are being killed. Of course, not all goes to aquarists, although the quantity must be large.

Consider how long it has taken for that piece of coral in your set-up to grow. Might I suggest a campaign to end this destruction of a remarkable work of Nature, which, if allowed to go on unabated, will mean that our great grandchildren will never see coral. This destruction is also affecting sea life itself.

Manufacturers could make really life-like plastic or fibreglass coral for aquaria in all the true colours and it would be easy to make it look like the real thing. In this case, the imitation would be better than the real thing and I will explain why. The differently coloured corals all (or nearly all) turn white some time after they leave the sea and although you may have different shapes of coral they are the same colour. Next, the weight. Dead coral is quite heavy and brittle. The imitation would not be so heavy and would be practically unbreakable. Lastly, and to some people the most important, the price. You could pay £2 for a piece of heavy, brittle coral when you would get the same, light, unbreakable coral for half the price, and coloured into the bargain. I have a spray of plastic coral, red, and it really looks like the real thing—and cost only 80p.

We all know how the sea is being polluted and fish species are becoming extinct. Now we realise the great coral reefs are fast disappearing. I did not realise the extent of the problem until I read a report in a magazine by the one and only Jacques Cousteau—so you will realise that what I have written is not just nonsense. This is in our hands and it is up to us now to do something before it is too late. I will not buy any more shells or coral, only imitations.

Lisburn, N. Ireland

J. MCMAHON

Open Show Discipline

IN the September edition of pfm Mr Roberts, secretary of MAAS, said they would be pleased to receive comments on open shows organised by its affiliated societies. My wife and I have just returned from such a show. This was our first visit to a Midland show and if this is a sample of the way a show is held in the Midlands, I am afraid it will be my last. I am not blaming the...
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Letters

continued from page 329

society—I am blaming MAAS as a body for this chaotic state of affairs.

After we had benched our fish my wife and I went to the town for a meal. We were away I suppose about 2 hours. When we got back to the hall we noticed it was full of people. I asked if the judging had been completed and was told it hadn’t started. When the two judges did commence, nobody was cleared from the hall. The judge just went up to a class of fish, judged the best (?) six fish and then went to another class. One of the judges was lucky to have a class where all the exhibits were in jars. I saw him pick up two jars, give them a good shake, turn round to one of the onlookers, say something and then have a good laugh. The same judge then piled the first four winning jars on top of each other, turned round and walked away. Supposing somebody had knocked those jars over and smashed them?

I have compiled a few questions. Perhaps Mr. Roberts would kindly answer them for me.

1. Why cannot all halls etc. be closed whilst judging is in progress? The judge has got a hard job as it is, without a lot of people talking to him.
2. Why must judges pick up show jars? It only frightens the fish and the owner loses points.
3. Why are judging sheets not on view to the public? At all FBAS shows every judging sheet is pinned up for all to see. This could also bring to light any errors in the adding up of points.

Well Mr. Roberts, I have had my say. If you can convince me all Midland shows are not the same, I would love to bring my fish up there again. I get a great thrill out of showing fish. I hope you don’t think I am one of those chaps who go around these shows finding fault and moaning. On the contrary, I am a very cheerful bloke who hates losing but doesn’t mind getting beaten by a better fish.

Ron Kerridge
Secretary, Harlow A.S.

Fighter Enthusiast

I find your magazine full of interesting and useful information to a comparative beginner in tropical fish keeping. The interest of my wife and self has heightened by watching the ritual of Betta splendens during their courtship. I feel that with experience gained so far I would like to specialise in this species and if you could put me in touch with an expert in this field I would be most grateful. My interest would be mainly in the red variety and the type known as the Cambodian. If you do not know of anyone personally, would it be asking too much to include my letter in your magazine in the hope that someone would answer it? I have tried locally to obtain the types mentioned above with no success.

Northfield, Aberdeen

W. S. S. Clarke

We have put Mr. Clarke in touch with a breeder in the south but we would be interested to hear of fighter experts in the north a little nearer Mr. Clarke’s home.—EDITOR.

Coldwater Classes at Shows

As a coldwater enthusiast for some three-score years, I have seen in the last 10 years or so in the north the number of sections in one-day open shows go down to one section only, namely, Any Variety Coldwater (I must add—with a few exceptions). Please, I would like to appeal to clubs to put on for a couple of years four classes—Goldfish, Shubunkins, Fancy Goldfish and A.o.v., which would mean only nine more cards that would not cost a lot in cash, and there is usually only one plaque for the section. I suggest a class for Shubunkins by themselves because they have become so popular. I would add that it will help any chap or lady to base their fish against the more experienced coldwater aquarist, with a chance of a third ticket at least. If this letter creates interest at the smaller shows I shall indeed be pleased.

And if anybody tells me that coldwater fishkeeping is on the decrease all I can say is that they do not get around the country much.

Shire Green, Sheffield

E. W. Eldon

Changing the Lighting

Many thanks to Arpee for his article in the July issue of FEM about lighting. I have never before thought of masking the overhead light in this way. I have used foil for this purpose and the effect in the tank is very attractive as a portion is now shaded—it looks very natural and I intend now to experiment with the coloured plastic as suggested. Underwater tank lighting is also a new idea to me and, although I have never seen this in use, it obviously has enormous decorative possibilities. Could Arpee tell us a little more about how to achieve underwater tank lighting and how best to use it for maximum effect? Also, does it affect the fish because I understood that lighting should come only from above?

London, S.E. 15

P. Howe
Malawi Cichlid Behaviour

THE mbuna, like most cichlids, demonstrate in their social and sexual behaviour a high degree of development. I have already described in preceding articles the general conditions required for their upkeep and have described three species in rather more detail. Now I intend to give a brief sketch of the behaviour of these fishes in relation to their own and to other species. Their sexual behaviour and reproduction will be discussed in the next article.

Rivalry, domination and aggression all show themselves clearly in these territorial fishes in a series of frequently remarkable movements that are really fascinating to watch. When a number of mbuna are introduced into a large stock tank where the furnishing provides adequate and numerous hiding places a kind of harmony and certainly a hierarchical order is established fairly swiftly. The strongest individuals, generally the males, pick the most comfortable hiding places, eventually arranging them to their own liking and establishing the frontiers of their territory some little way away; all intruders will be driven out of these boundaries.

By D. TERVER
Laboratory and Museum of Zoology
Aquarist Circle of Nancy, France

Photograph by the author

Before outlining some aspects of social behaviour I should like to mention a number of movements that the individual fish will execute.

Digging. This important activity of the mbuna is not always very pleasing to the aquarist. It is carried out on a variety of occasions according to techniques that vary with the nature of the bottom and the physiological state of the fish.

Most often the following can be observed: the fish inclines towards the ground, takes up a certain amount of gravel in its mouth and goes to spit it out again a little further away, either on to the level ground or on to a hillock. Such behaviour is very frequent when the granules in the medium do not exceed 2 or 3 mm. in size. But a piece of gravel 20 to 30 mm. in size can be moved provided there is a narrow portion or knob that can be
scissored in the fish's mouth. This piece of gravel will then be dragged backwards over the bottom, even across quite rocky terrain, to a point where it is no longer a source of irritation. Another method of digging is used by females incubating eggs in a small aquarium not provided with hiding places. As the mouth is otherwise engaged, digging is effected by brusque movements of the tail, which serves as a brush. This procedure is very much less effective then the other method and can damage the caudal fin. So it is best to prevent this taking place by providing a shelter for a female with eggs, such as a flower pot with the bottom broken off and split longitudinally so that it rests on the bottom to form a sort of tunnel. In an exhibition tank however, more permanent hiding places must be provided in sufficient numbers to prevent this banking up of gravel, so important to fishes seeking shelter, from taking place.

The fact that this natural tendency to dig is caused simply by the need to provide a refuge can easily be put to the test—in a small tank without furnishings or shelter with a thick bottom layer of quartzite. If the front glass is unobscured, the gravel is usually pushed up towards the front to form a definite embankment behind which the fish can take refuge. If a small board is placed outside the tank along the whole length of the glass, several centimetres higher than the bottom medium, gravel is carried towards the back of the aquarium and the depression made behind the board then serves as a shelter.

'Tawning'. This is a movement that one can observe fairly often among fishes. It has been seen on numerous occasions amongst our three species. From time to time a fish swimming slowly in the aquarium will open its mouth wide by dropping the lower lip whilst spreading its dorsal and sometimes the pelvic fins.

Rubbing. This movement, occasionally made, is not, of course, specific to mbruna. The fish swims close to the bottom or near a sloping rock, and curves its body slightly so as to rub itself rapidly against the object. Too often these movements indicate the presence of external parasites and it is best to check the state of the fish's skin and if necessary apply suitable treatment.

Swimming backwards. The mbruna's aptitude in carrying out this manoeuvre is particularly striking and they are both skilful and swift in executing it; this enables them to escape more easily from an adversary or if they are frightened they can hide themselves 'in a wink'.

Movements of a social character. Territorial behaviour, domination, rivalry, aggression. In an aquarium newly inhabited by mbruna it is soon established. Their territorial behaviour shows itself in the way each one tries to find a hiding place or takes over a certain area in which it will most frequently be found. The limits of these natural or artificial boundaries are clearly delineated and intruders will be driven from them. A kind of hierarchy is established, particularly amongst the males. The strongest occupies the best, most sparsely and well-arranged hiding place. The dominant male's coloration is generally the most beautiful with its ornamental markings showing up in most contrast. However, several males of nearly equal strength will occupy neighbouring territory and this induces fights or simulated conflicts over boundaries, particularly during the sexual maturity of a female.

The antagonists face each other and alternatively describe the arcs of a circle to the limit of the neighbouring territory or even penetrate it slightly. They will equally simulate frontal attacks but without actually making contact. Sometimes this does happen though, and a mouth-tugging battle ensues. The combatants grip each other's jaws, pushing and pulling to try to dominate their adversary. These mouth fights can last several seconds—then they will slacken their hold and each one will return to its territory.

When a new individual, male or female, is introduced into a group tank it is immediately chased, the most violently by the representatives of its own species. Amongst mbruna, the most remarkable ceremony can clearly be seen. Individual fishes, head sideways, turn in a circle, sometimes one way sometimes in the other in a sort of tail chase. This behaviour has been observed by Fryer in Nature.

This tail-chasing procedure can happen spontaneously in a community tank between individuals of the same sex or of different sexes and even between different species. If it takes place between a female ready to lay eggs (genital papilla apparent) and a male, this behaviour rapidly becomes a nuptial display followed by the laying of the eggs.

Young mbruna in their first weeks already follow this curious behaviour. It can perhaps be interpreted as a display of young warriors.

In the case of an individual newly introduced into the aquarium this ceremonial rapidly turns into an attack, usually to the advantage of the original occupant. The attacked individual then adopts typical attitudes of submission. It will often rise to the surface at an angle or take up an oblique position in amongst the plants, sometimes almost vertical, sometimes horizontal but resting on one side, fins folded, tail closed up. Breathing is short and rapid and the fish loses its colour. At the slightest movement of flight across the tank it is immediately attacked by the fish whose territory is nearest, its tail fin and other fins are bitten and it is wounded in the belly. If the newcomer is not particularly resistant and able to find a safe hide-out rapidly it will receive a mortal wound.
So, the adoption of a new specimen by the members of its own species already present in the tank poses problems and requires great caution and watchfulness. Likewise, when a female has been separated after egglaying to enable her to rear the fry in peace, her re-introduction into the tank is often critical. If she has been away too long she is not recognised by her old companions and, as a stranger, she risks receiving the sort of treatment reserved for intruders. Even a period of adaptation in a net or in a protected area is not always enough to prevent ultimate havoc.

Territoriality undoubtedly plays a vital role in the behaviour patterns we have just described. It plays an even more important part in breeding as we shall see in the next article. This article first appeared in AQUARAMA (France) and is reproduced by permission.

What’s New?

**Booster Air Lift**

AN enterprising accessory by Windmill Products (244 Vauxhall Bridge Road, London, SW1) both increases the work done by the Windmill Undergravel Filter and provides a useful adjunct to other types of filters. This is the **Windmill Booster Air Lift**, available as either the single or double model. Made of opaque, unbreakable non-toxic plastic, the air chamber of the apparatus contains one or two inlet tubes and diffuser stones according to the model. Operating from the normal air supply, the manufacturers state that even with the lowest priced vibrator pump a 1-2 in. lift above water level is achieved, and used with an average air pump the double power lift will give a head of water from 4 to 6 in. above water level. The Booster Air Lift is 15 in. in length and can be used in both marine and freshwater aquaria.

**Magnetic Cleaning**

EVERY new labour-saving device is to be welcomed in our hobby. There are many fishkeepers, of course, who derive their pleasure from attending to their tanks, but for those who find it a time-consuming chore a novel product introduced by Inter-Pet of Dorking should be of special interest. Known as the **Algæe Magnet**, the device is designed to remove algae deposits from the inside tank glass with minimum disturbance to the fish. It consists of two powerful magnets, each magnetic block being non-rusting and non-toxic and measuring 1½ in. by 1 in. by ¼ in. The block placed inside the aquarium against the glass is faced with a coarse nylon pad and the block placed on the outside surface is faced with felt. The outside magnet is then moved across the face of the tank and its movements are faithfully followed by its inner partner. Depth of tank is no problem and once in position the magnets can be safely left in the aquarium on a side pane and only removed occasionally for cleaning the nylon scouring pad. Cost of the algae magnet is £1.44.

**Some Flakes Sink**

**KING BRITISH** Aquarium Accessories Co. Ltd (Cannon Mills, Union Road, Bradford BD7 3HW) have brought out a new flake food, **Vit-A-Min Every Day Flakes**, that has been prepared to a softer texture to allow some of the flakes to sink. This, the makers state, enables fish to feed naturally at all levels, in addition to being more readily acceptable to all varieties, large and small. The product has been prepared after intensive research by a team led by Mr Gordon Holmes, the Company’s technical director; it contains a high protein content for body building and vitality, and includes minerals for good bone structure and crude fats. Five sizes of food are provided, from 12 to 6 grams for 12p to 500 grams for £4.20. (Unfortunately, in the description of the King British Knockdown Woodcraft Aquarium Stands in What’s New? for September an incorrect price range was inadvertently given. The stands in fact range from £10.64 to £14.75 and we apologise to readers and manufacturers for any inconvenience caused).

**For Tidy Tank Stands**

THE Proops new **Aquarium Cable Tidy** (Proops Brothers Limited, The Hyde Industrial Estate, Edgware Road, Hendon, London, NW9 6JY) is about 6 in. by ½ in. by 1 in. high, and fitted to the back of the aquarium it provides a neat, safe mains distribution to pump, light, heater/thermostat and other accessories. All the old, unsightly cable tangles are eliminated and there is just the single cable from the ‘cable tidy’ to the mains. Two press switches are provided to give independent on/off control of pump and light. The four separate outlets in the ‘cable tidy’ link up with the leads through totally enclosed, insulated screw connectors. Recommended retail price is £1.10, complete with fixings and full instructions.

**Aquarist’s Diary 1972**

IN the enlarged section of aquatic information in *PetFish Aquarist’s Diary 1972* the new metric sizes used in the glass trade are shown for aquarium glasses. This is one of the changes made to bring the latest edition of this popular Diary up to date. As before, in addition to the wealth of fishkeeping facts and figures it includes general information that everyone likes to have in a pocket diary and 16 pages of maps of the world in colour. With pencil, price 40p post free from PF Publications, 354 Garratt Lane, London SW17 ONY.
A Successful Spawning of the Sunfish \textit{(Lepomis gibbosus)}

The colourful, temperamental North American sunfish of the family Centrarchidae have for a long while been of interest to me and although I have attempted to bring about a spawning on previous occasions I have not met with success, and in fact I have lost female fish through the aggressive attentions of the male.

A word here about the origin of these fish and the conditions under which they were kept prior to spawning taking place. Eight specimens commonly known as the pumpkinseed, sun bass or sunfish were purchased in the autumn of 1968 from a well-known East End dealer. The average body length was then 2.5 inches. Four of these were bought on behalf of a friend, who collected them shortly after. They were kept by him in a 24 in. by 13 in. by 12 in. tank out of doors winter and summer and I know his feeding comprised earthworms, tubificids, snails and frog tadpoles in season. My friend was unable to keep his fish during the spring of this year and offered them to me on a permanent loan basis.

All four fish were given a bath to cleanse them of any parasites and placed first in a small tank in the fish house and (after the death of one) in a 24 in. by 12 in. by 12 in. on the middle row of my set-up. The aquarium itself had the two ends and back painted dark green and consequently received around half the available light. A sub-gravel filter was installed with an average of 2 inches of 3/8 inch pea shingle; the tank was then planted thinly with \textit{Sagittaria nodosa}. At this time (April) the fish were about 2.5 inches in body length. Feeding comprised mainly earthworms, frog tadpoles as available and, from May onwards, a quantity of goldfish fry culled from my spawnings of the varieties in which I specialize. The fish made rapid progress and growth on this diet and, at the time pairing took place, were around the 4 inch mark. It was noticeable that the fish which proved to be the female was the largest and the most aggressive when it came to taking a share of the food.

Towards the end of June the tank had become filled with the soft algal type of blanket weed and the fish were removed, the water was changed and a few well-grown tadpoles were placed in for a week to clean up the plants. At this stage the fish were in a concrete tank on floor level, and when I came to return them to their usual quarters I noticed a pit had been dug in the gravel. I have previously observed that sunfish take a week or so to settle down in any new surroundings and recover their appetites, but on this occasion there was no such period and feeding was normal in quantity. Within a further week, a large pit had appeared in the gravel, with several plants uprooted and the fish that was responsible was in constant attendance on it.

Now the tide had turned, and it was the turn of the larger fish to be bullied. One of them was removed, leaving a pair only in the tank. There was no visible change in colour of the female, but in the male all the colours brightened: the gill 'spot', which is normally black with a touch of yellow, became completely black, the green spots on top of the head and mottling all over the facial area and gill covers were intense and the edge of the dorsal fin and caudal were fringed with silvery white. The sexing of a sunfish is most difficult until they are on the point of breeding. Previously I had thought that the difference was red gill spot for the male and yellow for the female, but I have the feeling now that this may merely indicate the sub-species, i.e. 'red-eared' and 'yellow-eared' sunfish. No doubt there are considerable local variations in a continent the size of North America.

'Digging' had commenced about Sunday 27th of June. The following Friday (and July) eggs were observed in the pit. The male was guarding them closely, fanning them in chilled fashion, and the female had been chased to the opposite end of the tank. I removed her. The male was aggressive when I peered into the tank and nearly had my nose on a number of occasions! The following day the eggs appeared to have fungus on them and there was an odour from the water. However, one egg at least appeared clear and I was vaguely hopeful. The following Monday evening (3rd of July) some eggs had hatched. The water temperature at that time was 73°F, as it had been when
spawning took place, and the air temperature fluctuated between 62° and 97°F. The weather was very humid and thundery.

The newly hatched fry were lying in the pit occasionally moving about with a hopping motion. The male was still on guard and eager to take the pieces of worm I dropped to him, but did not seem so aggressive as earlier. I was in a quandary whether to leave him in with the alevis, and seeking the best advice I could, decided to chance it. By the following morning it was evident. I had a good hatch—there must have been anything upwards of 2,000 fry in the tank. It would be interesting to know whether the white eggs I had seen were in fact fertile ones; eggs of the next assume this colour from point of lay until the miniature tadpole can be seen. On the other hand, the 'good' eggs may have slipped between the individual stones of the pea gravel.

On the morning of 7th July I decided to remove the male in order to give my nerves a rest! I concluded that even if he appeared to do no harm, there was little good he could do either. The fish became free-swimming on the Friday and Saturday—4 days from hatching. They were a pale whitish grey colour when viewed from the top, the eyes being most obvious, and in size were marginally smaller than a newly free-swimming goldfish (of any variety). I always commence feeding goldfish at this stage with newly hatched brine shrimp, which they take at once, but for the smaller sunfish I thought that a few days on Infusoria, but with discretion. At this time (18th July) the weather had turned cooler, although still fine, and the water temperature by early morning had dropped as low as 57°F. During the following weeks all went smoothly although a few deaths continued to occur, I had made a further transfer of fish and the number of tanks occupied was now four. The weather improved and I increased the quantity of brine shrimp at each feed as the fish were growing well.

In the meantime, the fish spawned again!—down on the floor in the concrete tank previously mentioned. I was not until the fry had actually hatched that I knew for certain although more 'digging' had taken place and the male was on guard I had not been able to observe any eggs. What takes place hereafter may be the subject of a further article.
Personal COMMENT

by ARPEE

It is with complete fascination and devotion that I tune into 'Gardener's Question Time' each Sunday at 2 p.m. on Radio 4. If we aquarists think we have enough problems, it only takes a little of this programme to convince me, at any rate, that gardeners are in much the same sort of boat. Aquarists/gardeners are, of course, beset with life's supreme problems! A programme broadcast in July included a question from a lady who had a small pond in her garden containing most of the usual things and she asked for guidance on how to prevent it from going murky. Not unnaturally she wanted to get a glimpse of her fish from time to time.

The team were doing fine, I thought, in explaining that the cloudiness was undoubtedly due to the seasonal emergence of free-swimming algae, and when she confirmed that it got worse as the light of late spring and summer intensified there seemed little more to expect than the usual recommendation to buy an algicide and pour it in. Needless to say, it came, sad to say, but rather worse was to follow. It was a nice thought for Franklin Engelmann to ask Mrs Loads (wife of one of the panelists) from the audience to add her comments, because she knew a thing or two about fish and ponds. She straightaway asked what fish were in the pond and on learning that there were two tench she advised removing them because of their reputation for stirring things up.

I am unable to guess what the questioner actually did after the programme—I often speculate what percentage of advice is ever acted upon, but if she followed Mrs Loads' advice I can picture her with an even muddier pond than she started with, and if she managed to catch the tench at all I should love to know how.

In a situation like this one has to consider the practical measures one can take most simply, and at the same time some thought should be given to whether the action is likely to harm the pond's contents in any way. The simplest way is to pour some algicide. Potassium permanganate if you like—it is probably several hundred per cent cheaper than the bottled versions of it under trade names. But these algicide agents are really rather defeatist and only kill algae for a limited period, after which reproduction begins all over again.

There are two very simple natural ways, which avoid the use of chemicals. One is to rather over-stock with water lilies or water hawthorn, whose floating leaves will rapidly cover the water surface, reduce the amount of light reaching the depths of the water, and so depress the reproduction rate of the algae. At this stage a number of organisms which feed on algae will be on the increase and this will bring about clarity of the water from a point of slight improvement to that degree of crystalline perfection that is quite breathtaking. Perhaps simpler, and very certainly cheaper, is to put in a handful of common duckweed. This will rapidly form a green layer over the whole of the water, though this is often arrested because the carp family love to eat it. If it reproduces too rapidly it can be skimmed off with a fishing net and used to mulch the roses, but I back this method above all others of achieving clear water in the garden pool. It is the method favoured by Nature and it is totally without harm. It also enables your tench to go about their business in their quiet and mysterious way without being subjected to indignities on account of a crime which was never theirs.

The letter from 'Dealer' in the June FFM is a prime example of the sort of defensiveness in the face of bigger things which is a growing and regrettable characteristic of the times we live in. My comments on the sloppy naming of specimens for sale were reckoned to be rather below the belt simply because distributors are always in a hurry and many dealers are single-handed and haven't time to pay greater attention to this bit of detail. 'Dealer' asks me to supply the answers to his predicament.

Clearly the root cause of the correspondent's irritation over my remarks is his own single-handedness. Presumably if he employed an assistant he could get through his chores more quickly and would be able to fulfil his legal obligations better than at present. He has no assistant either because he cannot afford one or does not want to afford one. In the first instance he might find it worthwhile taking professional advice from organisation and methods experts as to how to run his business more efficiently, and in the latter instance he can scarcely expect his readers—or customers—to have much sympathy with him; it is, in that event, his own decision to stake his profits above his reputation, and if this suffers in the process he only has himself to blame.

It would be interesting to know precisely what happens if a dealer takes a strong line with a
distributor who consistently sends him wrongly named stock or too many substitutes. A professional dealer need never really worry about the former sort of mistake so far as his customers are concerned, as he always has the ability to put things right, though I imagine that the practice can lead to some awkwardnesses in book-keeping and settling accounts. The appearance of unnamed and over-numerous substitutes must indeed cause headaches and I trust that most dealers are capable of taking a strong line if they feel that they are being put upon. This hobby is, after all, one of those activities in which supply simply doesn't respond to demand because the suppliers are usually too remote to argue with, but there must be limits to one's tolerance when the tail is too often seen to be wagging the dog.

There has been almost an explosion during the past few years in the production and marketing of fish food, and very considerable progress has been made in the direction of providing a variety hitherto unequalled at prices which everyone can afford. Most of the products have proved safe, even when used by the most inept, and there are even tablets of food which can be dropped into tanks to support their inmates whilst the owner is on holiday. The latest is an apparently certain temptation for the finicky marine, and is claimed to start them feeding with an absolute minimum of delay. Any manufacturer who can market a fish food with this capability must be congratulated if his success is real, because the really significant state in the ownership of any new fish is that at which it takes its food in its new surroundings.

To the recent purchase of a pair of zebrae this may not sound very vital stuff, and fortunately there are many fishes which will flip from a net into new waters and a feeding routine without occasioning any anxieties whatever. Sometimes it is the species rather than individual fish that takes a while to settle. Angels and discus usually take a little longer, for example, than many of the tetras, though in the latter case individual fish can and do throw a fit of temperamen if it so suits them. There are few things more frustrating and time-consuming than trying to coax a fish to eat, and on the whole persuasion is really a waste of time. Perhaps the most favourable conditions are those of the dimly-lit quarantine tank in which there is available hiding space for the timid. Daphnia, white worm or a high quality flake food should induce feeding on the day after introduction, but if this fails the fish can be left safely for a day or so until hunger enables them to overcome their fears. Try to avoid peering at them during their initial sullies towards their food, if they are at all nervous, since tension seems somehow to communicate itself between human and animal, and in these circumstances they are best left to set their own pace.

When your fish have settled down in their final quarters and are feeding normally you can experiment, profitably, with as great a variety as you can afford, of the proprietary brands. If you look at the list of constituents on each packet you may well get ideas about using certain of them separately whenever you have them to hand. This is quite a good idea provided that only small quantities are tried as tasters. On the whole it is safer to experiment with dried or frozen food than with live food. Admittedly there are few dangers involved in using unpolluted earthworm or white worm, but you are taking some risks as soon as you introduce material from alien waters, and even Daphnia should be netted and washed under a running tap before they are fed to your fish.

A reference in a book I was reading recently stated that tadpoles make good fish food and owners of tropical aquaria would no doubt welcome such a cheap alternative food supply for their pets. What it did not state was that only frog tadpoles should be used. A local fishkeeper was telling me that he fed some tadpoles to two of his marine acropora fish (Pterois volitans), which ingested four apiece. They fairly rapidly rejected them and were both dead within the hour. It would seem that he had used common toad tadpoles, which, like the adult form, are either repellent or toxic to predators. The moral seems to be to leave tadpoles alone. It is extremely difficult for the layman to tell a toad tadpole from a frog tadpole, and since both of these creatures are getting scarcer and scarcer it might prove of common benefit to forego a cheap live food supply as insurance against what could be an extremely costly mistake.

Some years ago we were having a little trouble with the poor taste of certain suppliers in retailing preserved dead goldfish in plastic paperweights and ornaments. Strange to say, these wretched things originated in the Far East, which is usually associated with art in some of its most exquisite forms. I am glad to say that, from a little nearer to these shores, but only just, comes an example of most attractive ingenuity which I somehow associate with Hong Kong. From Bhutan, a kingdom to the north-east of India, comes a delightful set of three-dimensional postage stamps which depict scenes
quite familiar to most of us. One portrays some minnows (angels, I believe), another some freshwater angelfish, and the third a fancy goldfish. Philatelic experts amongst our ranks will no doubt regard my enthusiasm as misplaced because there are probably lots of similar sets produced as collectible propositions as stamps in themselves, but they are unquestionably most fascinating examples of how well 3-D miniatures can look. When I glance, easily, at one or two of my own tanks in particular I sometimes wonder if there isn't money to be made in producing full-size replicas of this sort which will fit neatly into the front panels of standard tanks. A different one for each day would go a long way to solving two of the problems with which the aquarist is most commonly beset—the need for constant change, coupled with a minimum of maintenance. No doubt they will become fashionable by Christmas.

Readers' Queries Answered

Tank Glazing
I have recently had a 36 in. by 12 in. by 12 in. tank glazed by the local glazier company and they tell me that it is necessary to keep a piece of plywood in the bottom of the tank in order to keep the front and back panels of glass pressed against the frame. Could you advise me whether this piece of wood could cause harm to a tropical freshwater community and, if so, is there any way in which I could make the wood safe for use?

Although it could be helpful to have the plywood strip in position whilst the tank is newly glazed and being transported, if it has been glazed correctly and the tank frame is 1 in. or 1 in. angle iron there is no need to leave the strip there when you set the tank up. The water's pressure effectively beds the glass panels against the party and the waterproof seal is obtained.

Output from Ozonisers
The instructions accompanying my new ozoniser state that the strength of ozone depends on the volume of air passing through. From this I assume that if I have it on the 10 mg. setting a more powerful pump will make a difference to the strength of the ozone. And will it make it stronger or weaker? I really can't come to a logical conclusion about this.

The calibration of your ozoniser is in terms of its hourly output of ozone in milligrams (i.e., a maximum of about 10 milligrams per hour for your instrument). The volume of air passing through the instrument does not alter its total output of ozone, but the number of delivery points will determine the distribution of the 10 milligrams of ozone carried per hour in the main air stream; for example, two tanks receiving half the air supply each are each going to get 5 mg. of ozone per hour. The greater the air flow the more dilute will the ozone in the air stream be—but with the typical outputs of aerators with which your ozoniser is intended to be used maximum air flows should not lead to loss of effect of the ozone in the aquarium.

Feeding Blind Cave Fish
Can you tell me if I should take special precautions with regard to feeding blind cave fish. They are in quarantine by themselves at present where they seem to eat the food quite quickly but the fish in my community tank are rather eager feeders and I do not want to accidentally starve the cave tetras.

You need have no fear that because your blind cave fish cannot see they are likely to go without food. They have a very acute sense of smell and will arrive at the food as soon as any other fish. We ourselves have three very fine specimens, now about 5 years old, and the bustle and bustle they create when feeding time arrives usually means that the other tank occupants restrain themselves slightly until they can get at the food in peace. Dried food, tablet food or worms can be given. Daphnia is admittedly a more hit and miss affair for them. On the whole, with blind cave tetras in the tank it would be advisable to look to your more shy and nervous inhabitants to make certain that they are not put off by the fuss that goes on when food arrives!

Black Neon
I recently won a competition tank in the furnished aquarium class that contained a shoal of black neon. I was amazed at their colouration; they looked really beautiful and put my two to shame—they hardly look like the same fish. Are they being kept in the wrong conditions?

There may be an element of this to account for the difference. Yours are presumably in a community tank and while the conditions in a community tank must be suitable to support a reasonably wide range of species (and may in fact be ideal) for any one species it is unlikely that the conditions will be ideally suitable for them all. You must also remember that in a tank set up for competition everything has been chosen with the utmost care—the plants and rockwork placed just so to enhance the appearance of the fish etc. Also the appearance of a shoal of one species is in general vastly superior to the sight of the same fish seen singly or in pairs. The repetition of the same colouration in fish after fish as they pass before the eye gives an effect of deeper coloration over all. More specifically with black neon, their colouration is seen more clearly if tank lighting is subdued and the tank well planted with light green plants.

Further queries on page 283
A Singapore Marine Farm

A SMALL farm stands on high ground overlooking forest clad hills at Semabawang, Singapore. It is one of several such smallholdings which dot the hillside, and there is little in the exterior to suggest that it is any different from the others. But this is no ordinary farm. Far from the sea, it houses a wonderful collection of marine fishes, live corals and other invertebrates.

The owner is Bob Risley, an aquarist specialising in keeping marine according to the 'Natural System', about which he has recently written a book, TROPICAL MARINE AQUARIA. He first learnt the art in Djakarta many years ago. The fish farm is not open to the general public. Nevertheless it attracts a considerable number of visitors who are friends of the Risleys.

But the fishes are less remarkable than the many other creatures which abound in the same tanks. One alone has over 23 species of living hard corals. These range from the relatively easily kept types such as carouwheel and brain corals to the more difficult 'blue' coral (Heliozoa coruha); this coral is misnamed, however—only the skeleton is blue and in life it has attractive fuzzy brown polyps.

There are also several species of alyconian corals. These so-called soft corals have no hard skeleton and are usually considered to be difficult—if not impossible—to keep alive in a tank. Most are green or yellow or a pale brown. At the farm they are known by pretty descriptive names such as 'dandelion coral', 'cactus bush' and 'galaxy'.

Blue starfishes from Bali, red local ones and red and blue miniature sponges add welcome colour to the predominantly greenish brown effect natural to a reef. There are sea urchins, too. Vicious black long-spined ones from local reefs and the small blue or red pumpkin type from Indonesia. Tubeworms and colourful anemones also flourish. So do zoanthids and tunicates. Here and there twin horns of small sea squirts protrude among the rocks.

The effect on a sunny day is particularly spectacular. It recalls the reef when sunbeams dance among the shallows and corals extend long polyps with the movement of the water. In such idyllic surroundings the fishes play contentedly and chase each other through caves. Clown fish settle happily into their anemones, only coming out when food is offered or to defend their territory from some intruder. Wrasses burrow under the sand and chaetodons peck among the rocks. Truly a farm where many aquarists would like to be the farmer.

Below: in the stern of the farm's collecting launch recently gathered living corals and anemones are sorted out
THE BRACKISH SAGA

Target Fish—Not for the Community

READERS may recall my efforts last year to assemble a small community of brackish water tropica, in a small tank, for a small outlay. I did this in the hope that the beginner could be tempted to depart somewhat from the well-trodden paths in order to achieve a marine-like setting and minimal maintenance worries. An additional aim was to investigate the extent to which the common brackish spatoes such as scats, monos, archer fish and the like could be bought small and kept dwarf by stocking the tank to its uttermost safety limits. The stage at which I temporarily left the subject was when I had introduced two target fish (Therapon jarbua) to the company of scats, monos and bumblebees and rhinohorn gobies.

Mean-mouthed fish like the therapon usually spell trouble and aggression comes very soon after they begin to mix with more timid souls. Surprisingly therefore they ignored the gobies and made little enough of the scats. One of the monos looked a bit worried, but they, too, sustained no direct attack. What actually happened was that the target fish took a violent dislike to one another and as soon as the stronger gained the ascendancy life was virtually impossible for the other, which spent most of its time in the sanctuary of a coral. I left well alone for about 6 weeks, during which there was evidence of growing tensions: there were no torn fins, no dead bodies and no actual battles, but the ceaseless hounding of the one target by the other seemed to irradiate a tension that really upset the other inmates. The gobies alone seemed unperturbed. The monos huddled into corners and seemed to have lost their shine, whilst the scats just stuck their noses further down into the water and looked positively morose.

One evening I could stand it no longer. No doubt the weaker therapon would have wished my tolerance to have ebbed far sooner, but the aquarist is nothing if not an optimist, and I always hoped that peace might break out once territorial worries had been sorted out. It seemed, unfortunately, that these two would never come to terms. They were placed in fresh water (straight from the brackish tank), with no ill-effects. If anything they became even more active in the 18 in. tank, which I intended to act as a temporary home for them until I had set up a new 36 in. brackish tank. The 24 in. Metaframe stainless-steel tank was destined for my essay into marines and my brackish community was due to leave it in the spring of this year.

With the unruly element out of the way the scats and monos slipped back, quite quickly, to their former excellence and they looked the picture of health. The only disappointment at this time was the rather rapid demise of the rhinohorn gobies. From the start they had looked much less secure than the bumblebees, and certainly their delicately attractive appearance made one wonder whether they would last the pace. I was most sad to see them fail quite so soon, but they now occupy a high place on my shopping list and I shall hope to do better by them next time. They are quite charming creatures, have no bad habits that I could detect, and are modest to a degree. The way gobies disappear and then suddenly materialise as though from nowhere is a constant source of interest and amusement and makes them seem always to have something in reserve, which is an attribute possessed by so very few of our aquarium species.

Preparations were meantime going ahead for the new tank. I had to have this made, since it was destined for the floor level space underneath a two-tier standard 36 in. stand. I thus required a model rather less than 36 in., measuring 10 in. by 10 in. in the other two dimensions. I ordered a nylon-covered frame this time and was delighted with the product when, only a few weeks later, it arrived. Not only was it solidly constructed and well finished, but it also looked a quality article.

There was a quarter of an inch of putty between the glass and the frame at all points, and it was as clean as a new pan. Much credit due to the makers, Lee Reid, for meeting an odd-size order within a reasonable time and for the favourable impression given by their efforts.

I set up the tank in marine style, with plenty of coral, sea fern and sea tree. The tank had no filtration system, but there were two air stones, one at each end. The white compost contrasted well with a blue/green background and, since I don't like this type of tank too brightly lit, I gave
Gro-Lux a miss just for once and used a low-powered strip light over one end. The other, therefore dimmer, end gave the fish a choice of a dark spot if such was their inclination, and certainly the difference in intensity was an interesting variation on the more normal equal degree of illumination throughout the tank area. The salinity was quite low—about 2 tablespoonsful of sea salt per gallon were added, and I turned up the aeration and left things alone for about a week.

The therapon meanwhile fought it out in their temporary tank and the weaker fish retreated beneath a rock and gradually deteriorated in every way. One had to allow the dominant one to gorge itself before the other would emerge to take its ‘pecking line’ allowance: it then retreated once more, apologetically, beneath its sanctuary. One day it could take the indignities no longer. During this period I had experimented by confining the stronger one in a small floating container for a few days to try to establish whether this might cause it to lose face in any way, but it didn’t work. I have known this to restore the balance of power to awkward pairs of freshwater fish in individual cases, and in the circumstances anything seemed worth trying. Even variable feeding was resorted to, but as soon as the fish were put together again the hounding recommenced.

When the day arrived for the transfer of the fishes I decided to let the scats, monos and gobies have the run of the tank first, and then to introduce the remaining therapon. The hope was that it would be forced thus to take a pecking-line order lower than that to which it had been accustomed. One of the scats was certainly the boss if size counted for anything, but unfortunately, it didn’t. About a week after initial occupation the therapon was reintroduced to his old tank-mates and he set about rounding them up into the first available corners, rather like a sheep dog with his charges, though for a very different reason!

Within a few hours there was evidence of some nipped fins and most of the fish, therapon excepted, were looking jaundiced. I rather agreed with them and back went the therapon to his 18 in. tank. I later consigned him to a freshwater tank containing some catfish and loaches. There was never a cross word here and all concerned appeared to respect each other. At the stage when it seemed that a therapon-compatible community had been established—however ludicrous it may have seemed—the therapon died. Whether the change to permanent fresh water had made all the difference, or whether the saviour had gone from life when there was nothing to quarrel with, I shall never know, but thus ended an episode with a fish of great promise but such disastrous characteristics that I doubt that I shall ever keep one again unless I can provide separate quarters on a rather large and elaborate scale.

Book Review


After having read the first few chapters of this book I felt that I had passed this way before, such is its similarity to previous volumes by the same author. The familiar themes re-emerge and there are numerous references to the services offered by the author’s own fish tank business. Despite the writer’s antipathy to the pet shop dealer I feel that many of the latter would flinch at the mere thought that there is such a thing as ‘gates of fish laughter’ and many of them would know that ecology is not merely the study of water conditions. Mr Dutta has a racy style, though, and those with plenty of tolerance will find this entertaining and often instructive light reading.

But the beginner must assuredly beware. He will get really very little instruction from it since it is written from the sidelines rather than from the home clustered with fish tanks. This superficiality is carried into the illustrations, which are exasperatingly crude and rather purposeless. The more advanced aquarist will, however, pick up some tips here and there and it is only he who will know just what to ignore. The section on fishes is particularly amazing: Aphyosemion, Apistogramma, Betta, discus, mormyrid, penguin, pipe fish, Scatophagus, these jostle with a few of the more conventional recommendations. The breeding of the discus is discussed as though an everyday occurrence and the tyro would be forgiven for thinking that he could take it in his stride. This seeming lack of practical fishkeeping know-how is just the sort of advice that the beginner can do without.

For me the most interesting part of the book was that in which the author attempts to relate the physical appearance of fish with their temperaments and their environmental requirements. Although a beginner’s guide is hardly the place for this sort of excursion, it is a highly interesting pastime and might with advantage be developed elsewhere at greater length and scientifically. As it is the writer gets into some very deep water, as, for example, in describing the elephant mouth as ‘personally clean’. How any fish can be otherwise completely escapes me. At the end of this essay I was left with the feeling that the beginner would be in a mental whirl as to how he could possibly achieve the diversity of conditions outlined, in a mere 20 gallon tank.

The few pages of ‘Useful Facts’ at the end states, inter alia, that if a fish dies, take it back to the aquarium dealer to do a post-mortem examination. It is just this sort of unworlihness that makes Mr Dutta’s writings less than credible. This collection of them, at the price, and for the beginner, are outpaced by several other clear expositions of the elements and I therefore cannot recommend this volume for the purpose expressed in its title.

ROY PINKS
Native Fishes for the Marine Aquarium

By H. J. VOSPER & G. J. VOSPER

Photographs by H. J. Vosper

Common blenny (Blennius pholis) resting on the pebbles and taking an interest in the world outside its tank.

In recent years the original family (Blenniidae) has been somewhat divided, so all those here mentioned are either true blennies or are very closely related.

Common blenny (Blennius pholis L.). Also known as the shanny, this fish grows to a length of around 130 mm, and is common, sometimes abundant, and widespread. At low tide it delights in finding narrow cracks, in or between rocks, where it can wait patiently until the tide returns. Yet on the other hand it will readily move about in the open: the rays of the pectoral fins are strongly elongated and the elongated fins are mobile, which features, together with the strength of the muscular body, enable the blenny to creep easily or wriggle powerfully and even 'flip' in order to avoid capture.

The teeth are powerful, capable of crushing some shellfish or barnacles; its normal food consists of crustaceans, medusae, worms and small fishes. A newly captured blenny may attempt to nip its captor but seldom, if ever, with success.

The colour normally is darkish green, with various lighter marbled blotchings in cream, yellow or white, but the colours are variable and the whole body can be a bright golden yellow. In the spring the males, particularly, become dark in colour and may be almost black, the thick lips being pale grey or white. Then the fish has a forbidding, even ferocious look, the mouth seeming larger than it actually is.

This blenny takes to aquarium life readily, liking a rock which reaches above the water surface as well as a cranny or two that it can explore. It will become quite tame and adopt habits such as coming to a feeding site when a spoon is tapped nearby. Substantial records of breeding in aquaria go back nearly 100 years, long before the advent of modern aquarium-keeping aids like mechanical filtration and aeration.
The 2 mm. diameter eggs, which like many other fish eggs are amber in colour, are often laid attached to the roof of a little rock overhang or under a boulder, but may be laid on a flat open surface. The male guards the eggs and fry, being willing to attack any animals that come near—including probing human fingers. Perhaps no fish is as well suited to aquarium life as this common blenny. It can tolerate a wide range of temperatures, it is hardy, and readily feeds on most animal flesh.

Other blennies that may prove useful are:

**Tompot blenny** (*B. gattorugine* L.). Growing to about 150 mm. in length (the largest British shore blenny), this fish is characterised by the normal blenny features but also has a fleshy fringed tentacle over each eye. The basic colour seems to be greenish grey but can be brown and it is blotched with darker colours. It is not common.

**Butterfly blenny** (*B. acutifrons* L.). Maximum of 180 mm. body length, characterised by the light-edged black ‘eye spot’ on the sail-like anterior dorsal fin. Two small fringed tentacles show above the eyes. Generally preferring deeper waters, this blenny likes a cave in which to breed; failing that it will use an empty common whelk shell, though it can be induced to lay eggs in a wide-mouthed bottle lying half-submerged in the sand. Locally distributed and is most frequent in the south-west of England.

**Yarrell’s blenny** (*Chirolophus acutus* (Wallbaum)). Growing to a maximum of 180 mm., this blenny is somewhat elongated and is perhaps not commonly found between the tides yet is worth looking for on more northern beaches. It is characterised by substantial fringed tentacles above the eyes and a much smaller pair just in front of them. Colouration is reddish brown.

**Butterfish** (*Holotilanus guineensis* L.). Also known as the gunnel or butter-gunnel, this eel-like species has a long (250 mm.), laterally compressed body that is coloured a darkish golden or brownish brown and is especially characterised by the 12 or so large, light-trimmed and very conspicuous dark spots along the back, at the base of the very long and narrow dorsal fin. In the spring these spots are black and are edged by pure white. The ‘scaleless’ body is very slippery. Unlike most other shore fishes the female aids in guarding the eggs and both take turns in lying curled around them. The species is common, sometimes abundant and widespread.

It is of some interest that there is a viviparous blenny, *Zoarces viviparus* L., the young emerging at between 8 and 12 weeks old, the body length being around 25 mm. This species breeds in the winter months along our northern shores, leaving British waters in the warmer weather. It may be that this winter activity is the reason why it is seldom found between the tide marks, but northern aquarists might like to look for it if they keep British animals. The maximum length of the elongated body (tapering to a point caudally) is 500 mm., but young females will protrude being situated towards the tip of the head so that in some species the eye sockets almost touch. Several species are useful in aquaria, being hardy, able to withstand fairly severe temperature changes though they are happier in colder water; their only failing is in the high mortality rate during transportation if the containers are small. It may be they need an above normal rate of gas exchange, because if the water is agitated frequently they seem to travel better. They should be provided with small meals at more frequent intervals, say three times each week or maybe more, than suits other fishes, and they are particularly partial to the flesh of molluscs (limpet, mussel). They move quickly in short dashes from cover to cover.

**Rock goby** (*Gobius paganellus* L.).

Growing to a maximum of around 150 mm., this species prefers relatively sheltered rocky shores, where it can be found in pools and under stones of the lower shore, yet it can also be found in brackish waters. The other shore fishes it is a poor swimmer but can jump out of a shallow tank; it is especially prone to nervousness if there is little cover available. This goby is a heavy eater, for an adult will eat half a mussel in one gulp, yet they can be reluctant to feed at first and it may be necessary to avoid suddenly presenting them with food, thereby titillating their appetites as other species feed.

Colours are darkish, in blacks and deep greys, but it is characterised by a light edging to the anterior dorsal fin, this band usually being a beautiful golden colour. It is
widespread and not uncommon, except in Scotland, although our readers suggest it is breeding much further north than has been thought.

**Spotted goby (G. fasciatus Fabricius).** This is a fish which swims well in the middle waters and is less "bottom heavy" than its relatives. It can be found in small shoals among seaweeds in rock pools of the lower shore. When disturbed, however, it retreats to shoal fish habitats by taking refuge on the bottom, where it may rest for long periods. This species is shy yet, like the preceding species, may move better if the water in the carrying jar is disturbed from time to time. The other common name of this fish is the two-spot goby, and the distinguishing spots are fairly large; one on the body near the pectoral fins and the other towards the end of the caudal peduncle. In the spring and early summer the spots are usually a deep and velvety black edged by light buff or whitish grey. At other times the spots may be comparatively insignificant and the light edging absent. Another characteristic is that the anterior dorsal fin has seven spines while that of the other gobies mentioned has only six. The species is widespread and quite common.

**Sand goby (Pomatoschistus minutus (Pallas)).** 75 mm long, this small goby is often abundant in shallow sandy bays, especially where the water is rather more than 500 mm (2 ft) deep; it is rarely found in rock pools or in areas of low salinity such as estuaries (see the following species). It is also known as the common goby as well as the freckled goby, the latter term being appropriate because of the variegated coloration. It is partly translucent, so aspects of the internal organs can be seen, while what little colour there is (blotted buff and/or grey) only serves to help it blend with the colours of the sand in the shallows, where it lies on the bottom, remaining so still as to be quite invisible to all but the keenest eyes. Disturbed by hand or net it shoots off a short distance and once again remains absolutely still. It is best caught with a shrimp net.

**Estuarine goby (P. microps (Kroyer).** This species, once reckoned to be a variety or race of the common or sand goby (above), is to be found in the shallows over the sands of estuaries. To some extent it is to be considered harder than the foregoing species because it will readily withstand brisk estuary conditions, while also being found in the warm waters of sandy pools and lagoons. Here, P. minutus is absent.

It is locally common, yet widespread, being found all down the western coast of Britain but its distribution on the east coast is unknown to the writers.

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**Readers’ Queries Answered**

**Feeding Pond Fish**

Can your advice if I should not be feeding up my goldfish in their outdoor pond? If I understand the rules correctly the pond is deep enough for them to winter outside but I want to give them every chance to come through the winter in a healthy condition. For the fish to winter comfortably out-of-doors there must be a reasonable area of the pond with a depth of water of at least 2 ft. (for the north where you live). The fish will have been feeding well during the summer months in their outside pond. Live foods available to them will most probably include mosquito larvae, blood worms and freshwater shrimps. Earthworms will have also found their way into the pond. While air temperatures remain fairly temperate it would be a good idea to feed extra supplies of chopped earthworm and such dried food as brown bread, hard-boiled egg yolk, cooked spinach and crumblier. This feeding, however, must be done with due care and attention because overfeeding at this time of year would result in feeding of the pond during the winter—a time of year when it could be most disastrous. If the fish have always been fed, as would have been very good practice, from one part of the pond and at regular times of day, it should be possible to see quite easily whether they are eating the food given to them. This feeding can be continued, though progressively smaller quantities will be required, until the first ice forms. Below 90°F the fish will stop eating. Remember too that there will be periods even during the winter months when the fish might appreciate a small amount of food—during warmer spells when they become more active again and willing to take food.

**Pond Life**

I made a small pond this spring of plastic tiling and it has been very successful but I am amazed at the number of small creatures that are now to be seen in it. Where on earth have they come from? Presumably they must need to live in water so they can't have flown there? Well, yes, many probably have. Many of the creatures you see in the water are living through an aquatic phase in their life cycle, which can include airborne adult forms. Bloodworms are the larval stage of the Chironomus midge, the black floating egg rafts of the Culicidae mosquito can be seen in many patches of water during the summer months, and the mayfly, whose adult life on the wing may last only a few hours, has an aquatic life as a nymph from 1 to 2 years. Water beetles are also capable of visiting new ponds on the wing from neighbouring waters. Some of the creatures may have been introduced in water plants. Even birds may help to bring in new pond inhabitants in traces of pond mud on their feet.

**Wintering Over**

My young goldfish are a months old now; no colour change has yet taken place. Will I be able to leave them to winter outside this year? The pond is large enough and deep enough.

These youngsters must have been born fairly early in the season but their ability to weather the winter out-of-doors will depend upon their body development and not merely upon their age. If they are not much less than about 2 in. in length and have been feeding well and have plum Little fish they may be left outside in a pond of the size you quote (20 ft by 15 ft).
Spawning the Diamond Tetra

*Moenkhausia pittieri* Eigenmann

I AM convinced that the list of really popular aquarium fishes would be very short. I often notice, in the aquatic business, how the same few varieties are always the ones most often purchased and asked for. It is difficult, of course, to say this is wrong—just as in my country wiener schnitzel is the most popular food, this choice is sensible in that the food is a most nourishing one. But with aquarium fish, popular choice seems to be made despite the fact that each fish has its own particular beauty or interesting and unusual habits.

Even in enthusiast's tanks, very rarely is this extraordinarily beautiful diamond-like fish seen. Why is this? Does the answer lie perhaps in its colouring? Perhaps it would be more popular if it were red only. Or are these fish presented by the dealers under unfavourable lighting conditions? I can't find any other explanation. I know that when I watch my specimens in my thickly planted community tank I can see their name 'diamond tetra' was justly chosen. The sides of their body are speckled with greenish, metallic-glistening spots. The fins are grey, transparent and white-bordered. The top of the iris of the eye is red. The male can be recognised by its powerfully developed fins, and particularly its elongated dorsal.

By R. ZUKAL

Photographs by the author

Translation by F. MARRS

Keeping the diamond tetra presents no special problems—a medium sized, well-planted tank, a temperature of 72°F (22°C) and slightly hard, slightly acid water is all that is required. The fish are peaceful and should be kept in company with their own kind or other tetras or they become rather timid. Their native habitat is in Venezuela in Lake Valencia and Rio Bue and Rio Tiquirita, from where they were imported to Europe in 1933. They grow to about 2½ inches, rather less in the aquarium. The males engage in fantastic, but quite harmless, fights with each other. They are not choosy in their diet, but this should be nourishing and where possible include live foods, and they must be fed in sufficient quantity.

Breeding this fish is usually stated to be not easy, but provided that there is a suitable pair
breeding presents few difficulties. For spawning I prepared a 3 gallons all-glass tank. The water I took from the holding tank provided a third of the total volume; a third was tapwater and a third was rainwater. When mixed, the water showed 80 D.H. and was pH 6.8. I raised the temperature to 82° F (28°C).

For several days previously I had noticed how a lovely young pair separated themselves from the others and concentrated on their own display. I put these two together in the evening into the glass tank. At first they were very timid and hid themselves in the Cabomba and Limnophila plants. After several days, I realized my big mistake and put the tank with the breeding pair into a place where there was only subdued light. It wasn’t long before the male, followed by the female, started to survey the tank. A further development was the male’s display, during which he spread his beautiful fins and enticed the female into the plants.

During this display period the female was increasingly hunted and chased, often quite violently. Then it came to the point where the female followed the male willingly into the plants. The fish pressed close to each other, then, with a lightning-quick twist, fell apart. What happened in that moment I should very much have liked to have seen—but it all takes place so quickly. Then, once more, peace is restored.

Next the male swam after the female, engaged in
a short display and the fish twisted themselves swiftly round each other as we often see with neon tetras. A short rest on the plants and the fish swam together and started twisting; a quick twist and somersault, and in this movement the eggs were ejected and at once fertilised. After the spawning act the pair part. During the spawning act about six to ten pale-gold eggs, some 15 mm in size, are released. The eggs either fall to the bottom or stay attached to the plants. Altogether about 100 eggs were expelled.

After the spawning, when I saw the eggs were being eaten, I removed the parent fish. The brood hatched in about 30 hours. When they became free-swimming, on the sixth day, they were given the finest live food. They are very timid little fish at first but they grow fairly quickly and are comparatively easy to rear.

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A Plea for the Fish House Owner

THE first thing that strikes one when viewing the average fish tank is the number of wires, tubes etc. feeding the necessary thermosstats, hoeters, airstones, filters and impediments needed to maintain the occupants. These we scarcely notice, being concerned only for the well-being of our fishes.

Some present-day manufacturers are at least taking this into account and are producing tanks housed in cabinets with a built-in harness of wiring etc. One manufacturer is making a new heater to clamp on to the outside of the aquarium, and so reduce the clutter inside, which is of advantage when fish need to be caught. Tanks built in cabinets with harnessed wiring etc. is all to the good for the man with one community tank, but the cost of these is prohibitive for the fish house owner. It should be possible, though, to produce a harness at a reasonable cost to enable him to tidy his tanks up. But cannot someone go one better than this, and produce an undergravel heater or a combined undergravel heater and undergravel filter and reduce the clutter in the tank still further?

Aquarium appliances seem to be merely a side line with most manufacturers, and do not seem to be given the research necessary for advancement of design. Some of them (piston pumps for instance) are merely adaptations of equipment made for very different purposes.

The popularity of the hobby at present, and the number of fish houses in operation, should surely encourage someone to devote the necessary time and money to enable really advanced equipment to be produced economically and, for once, in front of America. (My definition of a fish house is any place, whether a garden hut, converted back bedroom, attic or basement, housing a number of fish tanks.)

Most of the equipment in present supply seems to be produced to supply the consumer with one community tank only. It certainly seems like this if one surveys the fish food counters in most aquarist shops. People with fish houses and a reasonable number of tanks simply cannot afford to feed with a large number of these products, however much they would like to do so, and I think a market for dried food, of good quality in larger containers at a reasonable price, is there. The manufacturer who can produce a substitute for the messy, live foods used by fish house owners would certainly be on to a good thing. Collecting daphnia, breeding white worms, feeding with tubifex etc., all with their attendant risks of introducing disease, are the part of fishkeeping that many fanciers would willingly forgo, if a reasonably priced efficient substitute were available.

In my particular area in the north of England we are singularly fortunate in the number and type of aquarist shops around us, and they cater for all types of fishkeepers, so far as they can; it seems that this does not apply in all areas, because very long distances are travelled by people just to visit the shops in our area. We are frequently told that in some places only the commoner varieties of fishes are available, and that the specialist and the fish breeders are not catered for at all. Perhaps such shops are primarily pet shops with a tropical fish sideline, and I wonder if some of the societies could not persuade some of them to branch out a little more. Life must be hard for the fish house owner in these districts.

One further snag is experienced by fish breeders, and that is the sale of their surplus stock. The prices offered by shops are not usually very good, and do not pay for the food used in bringing them up to a saleable size. Whilst one can appreciate resistance to buying supplies from unknown sources, from the viewpoint of introducing disease etc., a little more encouragement could be offered to the known aquarists of an acceptable standard. The present case is that many breeders’ surplus stocks are passed on to people keeping predators, rather than risk rebuffs or accept very low prices.

From both manufacturers and aquarist shops, a little more encouragement to the fish house keeper could be offered.
Are we in these islands so anxious to foster our independence that we will go to such lengths to adopt the systems of others? No, I am not referring to our entry into the E.E.C., but to the rumour in fish circles that we may soon adopt a system of breeding currently used by both the New World and European breeders, that of allowing more marks for the caudal fin in guppies.

The present system of breeding, on which I am proud to say so many of the others are based, was first thought out and used here in Britain. Though not perfect, it was the best devised and has proved its worth when interpreted by our hard-working adjudicators.

The allocation of the same number of points for both the dorsal and caudal fins has kept our breeders on their toes. Trying to produce guppies that conform to such outlines isn't easy and the fact that British breeders succeeded in to their credit.

Change the system by all means if such changes are constructive but please don't let us be influenced by some whose main purpose seems to be to make it easier to win.

If they get their way then next will come the 'Alice in Wonderland' situation: 'Everybody has won and ALL must have prizes'.

Most members of the male sex are noted for their solicitous attitude towards members of the opposite sex, especially when the said females are pregnant.

The same holds good for the bulging female guppy. Even the newest recruit knows not to subject her to unnecessary movement or shock. So it came as a surprise to hear that a very good friend of mine and fellow enthusiast was actually advocating just the opposite treatment.

His answer to the pregnant guppy that seemed reluctant to part with its brood was to bottle her up, stick her in the boot of his car and find every second-class road in the district he could to drive over. The subsequent shaking up made her deliver her young.

Most of us have witnessed young being born in a show jar from fish having undergone somewhat similar treatment on their way to the show, so there seems a grain of truth in what he says. But it seems awfully hard on the poor guppy, to say nothing about the opportunity for cannibalism encouraged by the confines of a 3-ounce jar lacking any sort of cover.

Even if it costs me a friend I must say I still prefer the use of Epsom salts—just a pinch added to a gallon of aquarium water in which the pregnant female is placed.

Five new pence buys an awful lot of magnesium sulphate but precious little petrol!

Amongst all fish exhibitors it is difficult to know who show their fish just for the sheer competitive spirit and who merely chase that pot of gold.

One exception to this must surely be the specialist guppy breeder, whose regular four shows a month usually earn him no more than a simple prize card and a pat on the back from his peers.

To prove that they intend to keep things this way, two top Donas of the guppy world, Don Phillimore and Don Currie, have tabled a motion for their Judges' Conference: 'that the Experimental Class shall be a non-competitive class'. I wish them luck, though up against the hard-core post-hunters they may find they are emulating their namesake of the classics, Don Quixote.

The experimental class was instigated for the sole purpose of encouraging breeders who are trying to develop a new strain. It requires three fish per entry, either all males or all females. Before a new variety of guppy can be submitted to the Judges and Standards Committee for discussion it must have been exhibited a minimum of six times (with a monthly interval between each), in the Experimental Class.

A particular piece of 'tilting' I approve of.

Want to knock at least a month of your previous growth rate records? You can do it by keeping plenty of tiny live food constantly in front of the baby guppies. The presence of moving live food in front of them makes the fry burn up energy and feed continuously. Let them enjoy the chase for some 15 days then transfer them to a larger aquarium and feed with two feeds of powdered or liquid fry food plus two feeds of shrimp or daphnia daily.

Set them at 4 weeks.

Twenty-one years ago (according to the British Aquatic Manufacturers' Association) only 50,000 aerosol cans, mainly fly sprays, were produced. Last year this figure had risen to 250 million and now includes paint, furniture polish, oil, air fresheners and, for the motorist, a thousand aids to keeping his car on the road.

Moral of this story is that all aerosol sprays should be used with care in the vicinity of guppy tanks. The fine droplets that issue from these cans will find their way into the water and mostly are poisonous to our guppies.

When using aerosols indoors cover the aquarium with a plastic sheet or piece of newspaper and remember to switch off the hood lights temporarily. Disregard this advice and you may find yourself puzzling over unexpected and unaccountable deaths.
YEOVIL & D. A.S. recently held their sixteenth annual dinner and trophy presentation, when 44 members were present for this grand finish to the year in their final get-together before the A.G.M. Secretary Mr. C. Bushell gave a toast to the Society; the chairman toasted the ladies, thanking all present for their wonderful support during the past year. The trophies won by members in the annual club show were presented by Mrs S. Langdon, the president's wife, as follows: the Pinder Cup for barbs, Mr. M. Fischer; Hook Cup for characins.

Mr. Frank Lange of Yeoivil & D. A.S. receives five trophies he won, from Mrs Sheila Langdon, wife of the president, watched by (left to right) Mr. David Phillips (show manager), Mr. Cyril Bushell (secretary), Mr. Stan Langdon (president), Mr. Nigel Collins, Mr. Vince Collins and Mr. Max Fischer.

Sword and Plate shield, and Margaret Duff Cup for breeders egg-layers, Mr. F. Lange; Bushell Cup for ciclids, Mr. C. Bushell; Labyrinth shield, Mrs. J. Forward; Edith Aston Cup for catfish, Mr. T. Hunt; A.O.V. Egg-layer Shield, Mr. D. Baker; the Guppy Cup, Mr. R. Heather; Mollie shield, Miss B. Hulbert; Home Aquaria Cup, Mr. A. Rendell; Assurance Cup for goldfish, Master N. Collins; B. & B. Cup for London shubunkins, Mrs. M. Rickards; Bristol Shubunkin shield, and the Perry Cup for coldwater breeders, Mr S. Langdon; the Langdon Cup for fancy coldwater, Stokes Bowl for a.o.s. coldwater, and the Coldwater Plants Cup, Mr. V. Collins; Margaret Duff Cup for breeders livebearers, Mr. K. Forward; Tropical Plants Cup, Mr. D. Phinn.

Special awards were: highest pointed Junior Cup (tropical), Miss B. Hulbert; (coldwater), Master N. Collins; highest pointed Ladies Cup, Mrs S. Langdon; Stainer shield for best tropical in show, and the Snell Cup for most points gained in.

SOCIETIES wishing to join the MIDLAND AQUARIST LEAGUE in 1973 should contact the secretary, Mr. M. Doolan, 1 Green Hill Drive, Barnwell, Leicester LE9 8BU.
show, Mr. F. Langer; Roger should for best coldwater in show, and the Reeves Orfe Cup, Mr. V. Collins; Bryant Cup for best livebearer in show, Mr. R. Hubert; Chairman of the Year shield, Mr. M. Hubert.

THE exhibition which GRIMWOOD A.S. staged as part of the Skimmesdale Show got under way despite a rain-lashing mix-up about rooms. Those who volunteered to help worked very hard in the Frady night, erecting the framework for the lily pond which was the centrepiece of the exhibition, and had to be told to leave at 10.15 p.m. by the caretaker! Work resumed at 9 a.m. on Saturday, the day of the Show, and the rooms were opened and the public who had braved the rather unwelcome weather crowded in. A Society table show which also staged as part of the exhibition, included numerous fully furnished tanks. A selection of live plant and aquaria accessories was kindly lent to the Society by the Ormskirk Pet Centre and Mr. H. Butler who were well into club funds. A plaque was presented by Grimwood Heating Elements Ltd. for the fish gaining the Best in Show award which was won by the albino Claris owned by Mr. D. Fairclough of Arnold. Prints cards were presented by Mr. F. Wallwork, the firm's general manager, who praised the high quality of the exhibits and the efforts of the people involved in the staging of the exhibition. Winners of the table show were as follows. Pairs, eyeguards, I. Mr. P. Roberts, A.A.O.; 2. Mr. D. Fairclough (best in show), 3. Mr. M. Swan; Pairs livebearers, 1. Mr. J. Collin.

The exhibition and table show was seen by about 800 people and was a great success. The society hopes to hold a full autumn Open Show next year, when there will be more time available to organise the event.

BEST fish in the show at OLDHAM & D. A.S. annual Open Show was a Melanogramma entered by Mr. K. Parke of Merseyside. The show was well supported, and details of results are:

Guppy, 1, Mr. H. Baldwin (Trowbridge); 2, Mr. H. Baldwin (Trowbridge); 3, Mr. R. Wilson (Independant); Molly, 1, Mr. J. Roberts (Worcester); 2, Mr. G. Davison (Chichester); 3, Mr. R. Wilson (Independant); Molly, 1, Mr. J. Roberts (Worcester); 2, Mr. G. Davison (Chichester); 3, Mr. R. Wilson (Independant); A. D. A Watson (Glasgow); Amur Tetra, 1, Mr. F. E. Wright (Dulwich); 2, Mr. E. G. Wright (Dulwich); 3, Mr. F. E. Wright (Dulwich),

Individual: I. Mr. G. H. Baldwin (Trowbridge) 2, Mr. J. J. Jones (Chichester) 3, Mr. J. J. Jones (Chichester),

Tetra. 1, Mr. J. J. Jones (Chichester) 2, Mr. J. J. Jones (Chichester) 3, Mr. J. J. Jones (Chichester),

Tetra. 1, Mr. J. J. Jones (Chichester) 2, Mr. J. J. Jones (Chichester) 3, Mr. J. J. Jones (Chichester),

Goldfish, 1, Mr. J. J. Jones (Chichester) 2, Mr. J. J. Jones (Chichester) 3, Mr. J. J. Jones (Chichester),

ENTRIES at this year's YATE & D. A.S. fifth annual Open Show numbered 456, a marked increase on last year's total, which gives the popularity of this event. Full show results are:

Guppy, male, 1 and 3, Mr. W. Buxton (Birmingham); 2, Mr. W. Buxton (Birmingham); Guppy, female, 1, Mr. J. C. Holley (Glasgow); 2, Mr. A. S. Lewis (Bristol); 3, Mr. T. W. Haywood (Yate); 4, Mr. S. D. Davis (Bristol); 5, Mr. W. Buxton (Birmingham); 6, Mr. W. Buxton (Birmingham); 7, Mr. W. Buxton (Birmingham).

Tetra, 1, Mr. J. J. Jones (Chichester) 2, Mr. J. J. Jones (Chichester) 3, Mr. J. J. Jones (Chichester),

Goldfish, 1, Mr. J. J. Jones (Chichester) 2, Mr. J. J. Jones (Chichester) 3, Mr. J. J. Jones (Chichester),

At WEMYOUTH & D. A.S. Open Show the best fish in the show award was presented to club member Mr. P. Carter for his Corydoras luth.
which also won the awards for the best tropical and best catfish. Other special awards were: best coldwater, Mr V. Collins (Yevill); best breeders entry, Mr M. Strange (Basingstoke); best livebearer, Mr A. Blake (Basingstoke); best cichlid, Mrs I. Strange (Basingstoke); highest entered class, Mr M. Fischer (Yevill). Detailed results are:

Barbs: 1. Mr M. Fisher (Yevill); 2. Mr H. Fisher (Yevill); 3. Mr T. Atkin (Wymouth); 4. Mr. J. Atkin (Wymouth); 5. Mr R. Furzton (Wymouth); 6. Mr G. Carter (Basingstoke); 7. Mr P. Baker (Basingstoke); 8. Mr A. Moore (Plymouth); 9. Mr J. Collins (Yevill); 10. Mr R. Baker (Basingstoke); 11. Mr A. Moore (Basingstoke); 12. Mr A. Moore (Basingstoke); 13. Mr A. Moore (Basingstoke); 14. Mr A. Moore (Basingstoke); 15. Mr A. Moore (Basingstoke); 16. Mr A. Moore (Basingstoke); 17. Mr A. Moore (Basingstoke); 18. Mr A. Moore (Basingstoke); 19. Mr A. Moore (Basingstoke); 20. Mr A. Moore (Basingstoke); 21. Mr A. Moore (Basingstoke); 22. Mr A. Moore (Basingstoke); 23. Mr A. Moore (Basingstoke); 24. Mr A. Moore (Basingstoke); 25. Mr A. Moore (Basingstoke); 26. Mr A. Moore (Basingstoke); 27. Mr A. Moore (Basingstoke); 28. Mr A. Moore (Basingstoke); 29. Mr A. Moore (Basingstoke); 30. Mr A. Moore (Basingstoke); 31. Mr A. Moore (Basingstoke); 32. Mr A. Moore (Basingstoke); 33. Mr A. Moore (Basingstoke); 34. Mr A. Moore (Basingstoke); 35. Mr A. Moore (Basingstoke); 36. Mr A. Moore (Basingstoke); 37. Mr A. Moore (Basingstoke); 38. Mr A. Moore (Basingstoke); 39. Mr A. Moore (Basingstoke); 40. Mr A. Moore (Basingstoke).

INTERNAL competitions at EALING & D. A.S. have now reached the three-quarter stage and clear leaders are emerging. Mr J. Batts seems to be invincible in the Arlin trophy (total table points) and he is out in front, too, in the plant competition, the Mills trophy. Mr R. C. Mills reports: 'In the K.O. Cup the two finalists will be Jim Irvine and Ken Wakeford, and it looks as if it will be a black v red final with Jim's molly against Ken's red-eyed red arrowtail.' Ken also has a item claim staked on two other contests, the Novice trophy and the Batts trophy. The Batts trophy exceeded this year for elligating toolcups.' Forthcoming attractions at the club include a talk on plakats, Adrian Black's view on his favourite fish and a talk on angelfish, a trip to the B.A.F. and a social evening. One member whose absence will be noticed at these future events is Stephen Ankin, one of the Society's juniors, who have joined the Navy. Stephen was made an honorary member of the Society and presented with a wrist watch at his last appearance at the society in recognition of his services over the past four years—and he was the first member to achieve a clean sweep in a table show.

TELFORD A.S.'S annual show was held in September and while judging of the 100 entries took place a Breamon marine fish was shown. The best fish in the show was a tench barb belonging to Mr R. Rowley. Class winners were:

Breeders, Mr B. Jefferys, Mara; Mr R. Rowley, Mara; Mr D. Cundy, Breamon; Mr W. G. Jones, Breamon; Mr F. Pickup, tench barb.

MEMBERS of the SOUTH WESTERN GROUP of the BRITISH MARINE A.S. have agreed to erect a 4 ft tank at the headquarters of Breamon Divers to encourage visiting divers to extend their hobby to include hunting for unusual specimens and so become marine aquarists. A meeting held at the home of Mr and Mrs Davis of Dawlish was somewhat difficult to open as members were so reluctant to leave Mrs Davis's marine house, a collection of native marine aquaria.
Reptiles at Bingley Hall

As a practising all-round naturalist I find it most pleasing and encouraging to see reptile-keeping flourishing. Until recent years any concern with the world’s herpetofauna has remained in the hands of a very few specialists. Now, however, thanks to a few lectures with reptiles at aquarist society meetings, and the exhibition of a few reptiles at small aquarist society shows, a much greater interest in herpetology is evident.

This new awareness of reptiles and the interest in reptile-keeping was brought to the fore by the great success of the International Herpetological Society’s competitive exhibit at this year’s Midland Open Show, held at Bingley Hall, Birmingham, in August. Over the past 2 or 3 years only the occasional reptile has been shown here, but not until this year did a large, comprehensive competitive reptile exhibit successfully make an impact, not only on the Show as a whole, but on the public at large who came to see the Show.

This year’s reptile competition was split into four classes: best individual reptile, best individual venomous snake, best individual amphibian and best decorative vivarium. In the last-named class the winner showed an African habitat with a bush snake and an egg-eating snake. The overwhelming number of snakes exhibited was testimony to the greater interest in keeping these reptiles over others. Non-venomous species included several boa constrictors (C. constrictor), a small anaconda (Eunectes murinus), African python (Python sebae), Indian python (P. molurus) in light, dark and hybrid phases, reticulated python (P. reticulatus) and reticulated python (P. reticulatus). The lizards were therefore very well represented. Other non-venomous species shown included a beautiful king snake (Lampropeltis sp.) of the striped rather than the more usual mottled form, a red-sided garter snake (Thamnophis sirtalis parietalis), a bush snake from Africa (Phyllodoce rufataura) and, also from Africa, the remarkable egg-eating snake (Dasypeltis scaber), the pride and joy of them all being a most beautiful indigo snake (Drymarchon corais) from America (judged best individual reptile).

Venomous snakes were well represented, and these really stole the show from the general public's...
Meetings and Changes of Officers

ASHTON-UNDER-LYNE & D. A.S. New show secretary. Mr. J. Yeates (30 Greatmore Road, Ashton-under-Lyne, Lancs.).

DORCHESTER & D. A.S. New Society. Chairman, Mr. H. W. Coles; secretary, Miss B. L. Jefferys (35 Wensbear Road, Dorchester, Dorset). Meetings: first Tuesday of month, Dorset.

FREELANCE A.S. Change of officers: chairman, Mr. J. Stacey (7 Stacey Road, N. Ryde, Isle of Wight); secretary, Miss J. Mackenzie (14 Ightham Road, S.E. 12); show secretary, Mr. T. S. Crowe. New venue: meetings now held monthly (except for Christmas). Meetings: 12th November, 1971, at the Downham House, Addington Square, S.R. 17.

HOUGHTON & D. A.S. Chairman, Mr. T. H. Wright; secretary, Mr. A. Richardson; show secretary, Mr. R. Appleby (2 Burn Park Road, Sandhurst, Berks); show secretary, Mr. C. A. Ransome. Meetings: first Monday of month, 8.30 p.m., Burn Hall, Highfield, Surbiton.

LOUGHBOROUGH & D. A.S. President, Mr. D. K. Vaccari; chairman, Mr. J. Patte; secretary, Miss J. F. Blackmore (Glenmore Road, Glenmore, Leics.); show secretary, Mr. T. F. Ferry. Meetings: second Thursday of each month, 7.30 p.m., at the Loughborough North Social Club, Market Street, Loughborough.

RUSHDEN FISHERKEEPERS ASSOCIATION. New show secretary. Mr. C. M. Evans (3) Trowbridge Road, Rushden, Northants NN10 9TB. Meetings: first Wednesday of each month, 8.0 p.m.

SOUTH LEEDS A.S. Chairman, Mr. J. Sanderson; vice-chairman, Mr. J. Fearns; secretary, Mr. T. Holdsworth (39 Abades Close, Aymer, Leeds); show secretary, Mr. B. Johnson. Meetings: last Wednesday of each month.

TUNBRIDGE & D. A.S. Change of venue to sunny fields. Meetings: first Thursday of each month, at the Sunny Fields, Tunbridge Wells, Kent.

WEYMOUTH & D. A.S. New chairman. Mr. K. Parkman.
In Brief

BRACKNELL A.S. recently welcomed a visit from their old friend Mr Pete Ginger of Unbridge A.S., who gave them a most descriptive talk on barbs. The table show was for dory and minnows, and first place was won by Mrs. G. Carter; first place in the a.o.s. class went to Mr J. Ridley. At the second August meeting the club was hosts to the national member club of the Three Counties League. The services of Mr C. A. T. Brown, FIBA, A’ class judge, were much appreciated, and results were: Individual best fish in show: 1. Mr R. Hall (Basingstoke); Stenopterus aurantiacus; Candidas; 1. Mr. W. Ridley (Harington); 2. Mr J. Ridley (Harington); 3. Mr J. Ridley (Harington), Mr F. Hicks (Harington), Mr D. Ridley (Harington). Results: Baras, 1st, Mr. D. Ridley (Harington); 2nd, Mr J. Ridley (Harington); 3rd, Mr J. Ridley (Harington), Mr F. Hicks (Harington), Mr D. Ridley (Harington).

WHEN MR. R. Winburn lectured to BRADFORD & D.A.S. on cultivating plants for the aquarium, he passed on many tips for maintaining better plants, which members could adapt for use in their entries in the home aquarium competition. At the club’s discussion evening, members were given cuttings of a very quick-growing plant and live food cultures by Mr. D. Ridley, whose talk covered a large range of aquarium fish.

MR. N. SHORT of NERO Aquatics, Haywards Heath, and a Society committee member, lectured on the construction of garden ponds to members of MID-SUSSEX A.S.

This was accompanied by excellent slides, including some of the lecture’s own pond. During the evening a representative from Philips Fish Foods answered members’ questions on these products. Mr. C. A. T. Brown, FIBA, judged the table show for characins and catfish. Class winners were: Characins 1. Mr N. Ridley (Ammonite, 81 points, Star award); highest junior: P. R. Ridley (Tropical catfish); highest novice: Mrs Stringer, Tropical catfish (71); highest novice: Mrs Stringer, Tropical catfish (71). Junior Back awards: D. Ramsey (sexed pairs, livebearers, and live plants, female fry).

ILFORD & D. A. & P.S. recently enjoyed an evening devoted to a debate on three issues relating to the maintenance of conditions under which aquariums are kept. ’Filtration or not?’ causd a good deal of heated discussion before the vote decided that filters were necessary in the aquarium. Another interesting debate on light was followed by the members agreeing that a combination of tank lights (40 watts per foot of aquarium) plus a fluorescent tube (Grolux at 20 watts per foot of aquarium) was most desirable for the promotion of good plant growth and pleasant effect.

There was also a considerable difference of opinion on the third subject—’Live or die?’ A large number of members had reared some of their finest specimens on nothing but dry food and thought a disadvantage of using live foods was the possibility of introducing unwanted pests into the aquarium. The complete difference of individual preference prevented this debate from reaching a final decision.
. TONBRIDGE & D. A.S. are now holding an extra monthly meeting this autumn and winter to accommodate their busy programme. At one recent meeting Mr G. Greenhalph of Kingston illustrated points in his talk on catfish by using the table show entries. Another meeting took the form of a quiz, the two teams captained by Mr J. Bellingham and Mr I. Matheson. At the close of the evening only 15 points separated the teams. Mr Brian Clare, FRAS, judged the table show, and winners were: class C, Mr W. Rood (Chitala punctata); class Ca, Mr J. Bellingham (Hyphessobrycon rosaceus).

The first extra meeting was a G-class inter-club match against NORTH KENT A.S., who won 48 to 23. Members and visitors also enjoyed a slide show hired from Hendon A.S. FRAS judges Mr D. Nunn and Mr C. Kent. Assisted by Mr G. Corbin of Mid-Sussex A.S., awarded first place as follows: class Eh, Mrs D. Matheson (Tonbridge, bridg-tick gourami); class G: Mr P. Cottee (North Kent, Dianema eutropia); class H: Mr K. Suckby (N. Kent, Breeding); class L: Miss I. Bellingham (Tonbridge, Acantophodes nyeri), best in show; class N: Mr P. Cottee (N. Kent, pair P. umbrae); class O. B. S. F: Mr K. Suckby (N. Kent, red sword-tail).

MEMBERS OF KEIGHTLEY A.S. heard an interesting lecture by Mr G. Smith, of Oakbank Grammar School, on the school canning club, illustrated with slides and coloured films. Monthly table show class winners were: Fish of the month (trenchpipe): 1. Mrs George; Novice: 1. Mr and Mrs Liddimore; novice a.o.v. 1. Mr Mosley; junior a.o.v.: 1. Master Curtis.


In spite of the many difficulties which cropped up during the preparation of LEAMINGTON & D. A.S. annual exhibition, everyone came up smiling, and when it was officially opened by the Deputy Mayor, over 600 visitors came to see it. Grateful thanks go to those who put in so much hard work, making the exhibition such a great success, with considerable benefit to club funds.

. . . SPEAKERS at a recent meeting of HARRIERTONE & D. A.S. were committee members Mr Pendleton and Mr Stothard. Mr Pendleton spoke about Mahseer fishkeeping experiences, and Mr Stothard gave a talk on breeding labyrinths. Table show winners were: Sharks and foxes: 1. Mr B. Slater (red-tailed shark); 2.0.0.7: 1. Mr M. Levitt (short gourami), best fish in show. (Club meetings are held every second Tuesday of the month at the Conservative Rooms, 13 Park View, Harringay.)

CHROYDON A.S. once again thank Mr Pete Ginger for judging their annual table show. There were 128 entries and Mr Ginger carried out the mammoth task alone. The best fish in show was judged to be a moon tetra belonging to Mr H. H. Whittaker.

. . . ABERDEEN A.S. announce that Mr C. Cox of Aberdeen will give an illustrated talk 'Aquarium Plants' at their monthly meeting in the YMCA Rooms on Tuesday, 14th November at 7.30 p.m. Supporting the horticultural theme there will be special class in the table show for any single plant (no gravel). The other two classes will be pair eggplants and pair swordtails.

. . . THE resignation of Mr Chris Penny from all club and aquatic matters has come as a severe blow to TONBRIDGE & D. A. & P.S., whose show secretary he was until recently. Increasing demands upon his time has necessitated this move and the Society's chairman thanked Mr Penny on behalf of all members for the unstinting and selfless way in which he has always given of his time and energies to the club; and regretted the loss of such a stalwart and popular member of the Society.

. . . HAVE you any fishy problems? Then readers in the New Forest area are invited to have a chat with NEW FOREST A.S. members at their meetings on the third Monday of the month at Lymington Community Centre. On the occasion of the second leg of the three-way competition with Bournemouth and Salisbury the club could only muster 3 points to Salisbury's 12 and Bournemouth's 13 but the quiz team of Mr C. Knapp, Mr S. Bray, Mr D. Harding and Mr A. Williams had a fine though narrow win over Bournemouth by 68 points to 57.

Dates for Your Diary


5th November. MIKENDEN T.F.S. Open Show. Mikenden Community Centre, Church Lane, Wrotham, Halstead, Essex. Mr S. Linstead, 74 Church Lane, Wrotham.


4th December. F.R.A.S., Assembly, Croydon Hall, Red Lion Square, London, W.C.1. 7.30 p.m.

1972

5th March. KEIGHLEY A.S. Open Show, Victoria Hall, Keighley.

12th March. BELLE Vue A.S. Open Show. Open Show Lads Club, Moseley Road, Southside, Manchester. Details, Mr R. Darby, 31 Wellesley Street, Higher Openshaw, Manchester 11.

7th May. OSRAM A.S. Open Show. Recreation Hall, Refuge Street, Oldham, Lancs.

14th May. DEBBY REGENT A.S. Open Show. Northwood Forest Recreation Centre (Norwegian Bred) and Drama Studio, Rainbow Road (AS 113), Letchworth (Herts). Show secretary, Mr R. G. Harvey, 189 Mansfield Road, Darly (phone 943262).

21st May. SOUTHEND, LEIGH & D. A.S. Open Show. Show secretary, Mr B. S. Ewers, 586 Harwich Road, Leigh-on-Sea, Essex.

31st May. YEOVIL & D. A.S. Open Show. The School Hall, Church Street, Yeovil (Yeo). Full details later. Show secretary, Mr D. F. Patten, 3 Hill Terrace, Bowerhill, Yeovil, Somerset.

31st May. CHRODNY A.S. Open Show. (Provisional).

4th June. ACCINGTON & D. A.S. Open Show.

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<tr>
<td>Sword - 50p each</td>
<td>25p per bunch</td>
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<thead>
<tr>
<th>Broad Leaved Amazon Sword</th>
<th>Cryptocoryne Purpurea</th>
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<tbody>
<tr>
<td>Sword - 25p and 40p each</td>
<td>75p each</td>
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<tr>
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<th>Cryptocoryne Parva (The Smallest of the Cryptocorynes)</th>
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<td>75p each</td>
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