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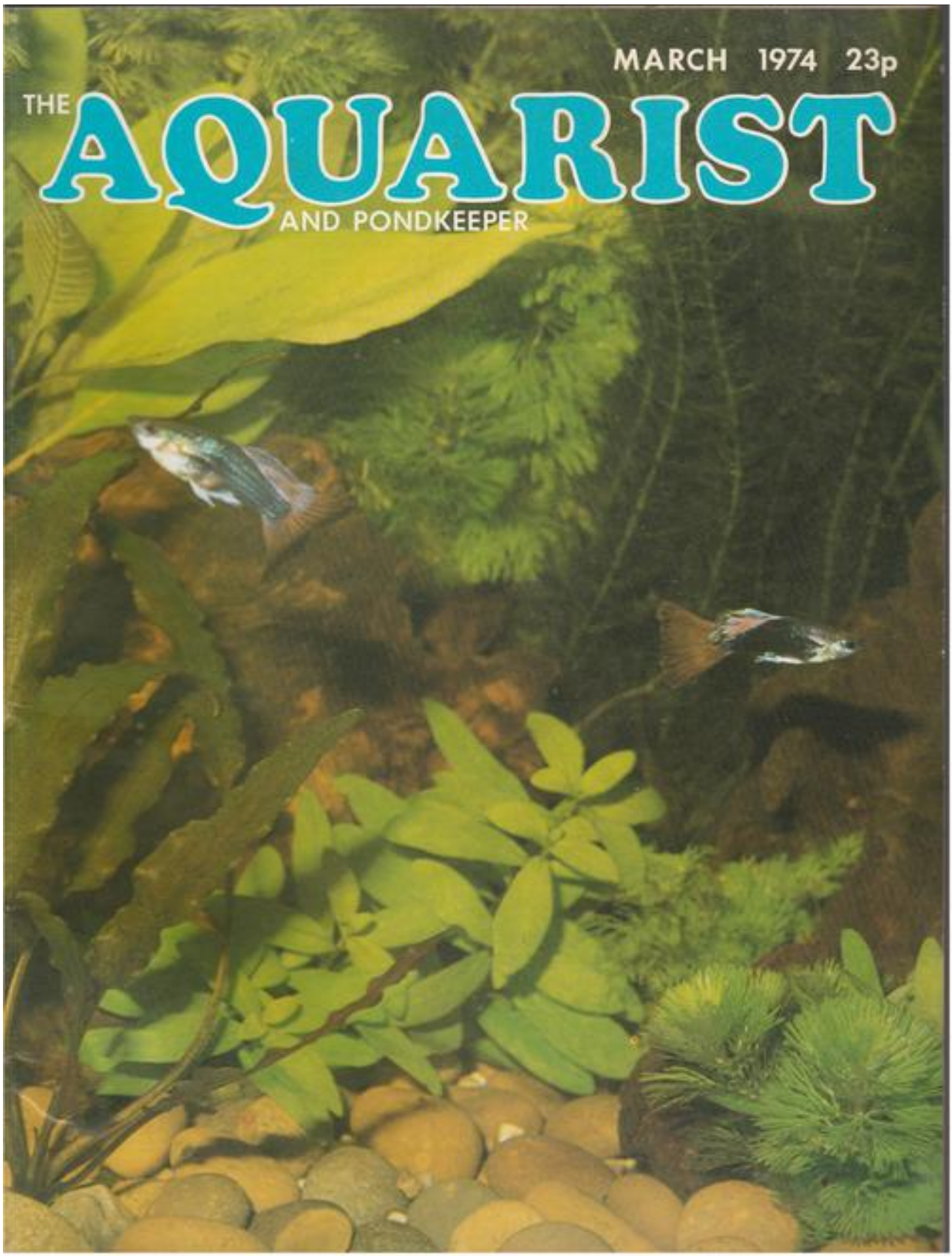
THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

The Aquatic Magazine with the Largest Circulation in Great Britain

Published Monthly 23p

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ABC

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KEEPING MALAWI CICHLIDS

Labeotropheus fuelleborni

by David J. Saphier

Physical Description and Behaviour

The male I had was about 4 in. in length and normally displayed a deep blue-grey coloration with 6-8 darker coloured stripes on this background. However, when displaying to a female, or when warding off marauding males, this coloration changed to a bright blue background with the same number of much darker stripes. The egg spots were of a bright yellow colour, and were to be found upwards of ½ in. away from the caudal end of the anal fin. At first there were three spots but as the fish grew older and longer, so the number of spots increased. These spots were always visible and they were 3-4 mm. in diameter, with one very small, rudimentary spot on the latter part of the dorsal fin.

The female was basically of the same colour except that she had a slightly greyer coloration than the male. The only time that her colour changed to any noticeable extent was when she let out her young. During these periods she took on the colours of the male, presumably as a natural defence mechanism to protect her young from would-be baby-fish-eaters. She also had egg-spots—like the male—but these were only ½-1 mm. in diameter. Her ventral fins were very dark and during spawning they became even darker. However, during spawning, the male's dorsal fin became bright yellow, unlike that of the female.

Generally speaking, these fish are well able to look after themselves, although they are not particularly aggressive, except to the occasional fish that they take a dislike to. This is most unlike a lot of the "Malawis," who tend, on the whole, to often be quite aggressive. Also, again unlike most of the fish of this type, they are not very prone to digging in the gravel, rather, they are likely to take over other fishes' old "dug-outs." They tend to frequent the tank but are not, as this seems to indicate, shy. They are solitary fish on the whole and it varies as to whether a pair can be kept unseparated or not. My first pair lived together quite happily but the second pair would, I think, have fought to the death had they been left together in the same tank. On the whole, however, they seem to live fairly well together in a reasonably large community tank with other fish, preferably cichlids, of the same nature and size.

This fish is fairly obviously an *algae*-eater in general, as is indicated by the overhanging upper lip used to scrape, tear or pull off *algae* from rocks and stones. This habit may be easily demonstrated in the home aquarium by placing a white, *algae*-covered stone in the tank. I find that white stones usually "work" best, as the green *algae* is not only shown-up to humans better but also, according to my experiments and consequent observations, to the fish! They are willing to accept, as part of their diet, many other foods such as dried commercial foods and most of the usually available live foods like *Daphnia*, *tubifex*, earth-worms and other worms. However, they refuse to take any notice of the often used frozen shrimps, dog foods or other "dead" meats, etc. They are fed, as are all my other fish, 3-4 times per day during the week but at weekends and during holidays, they are fed 7-8 times, or more, every day. I find that when I buy 3-4 oz. of dried commercial food, depending on the make, it is finished, by a total of 15-4 in. fish, in a matter of three weeks or thereabouts—they need a good amount of food! (This 3-4 oz. is, of course, supplemented with *algae* and live foods).

Tank Conditions and Breeding

The first pair of *L. fuelleborni* that I had, were kept

in a 48 x 15 x 12 in. tank along with a pair of *Pseudotropheus zebra*, a male *P. auratus*, two *P. novemfasciatus* and a male *Lamprologus petricola* from Lake Tanganyika; they all lived peacefully together until a pair of *L. trewavasae* were introduced which seemed to tilt the balance just too much. These new ones were continually picked upon, and were, in consequence, removed and placed on their own in an entirely different tank of smaller dimensions.

The tank that the *fuelleborni* were in had a pH of between 7·4 and 7·6 due to the addition of hardening calcium ions in the form of calcium sulphate ($CaSO_4$) which also caused the water to become much more alkaline. I also added a small quantity of common salt or sodium chloride (NaCl), due to the fishes liking for this substance which is found in quite high concentrations in Lake Malawi itself. Filtration was, most of the time, by means of an outside filter with a turn-over of approximately 25-30 gallons per hour. The temperature was about 80-82°F and I provided plenty of slate caves for the fish to set up home in. The gravel was of the lime-free type and the pieces were about 3-5 mm. in size.

The first time that these fish spawned was after they had been together for about four months and were about 4 in. in size. They spawned around 1 p.m. one day; actually on the 14th September (1972). The two fish described circles around one another, the male doing most of the moving about although the female was quite active, the male nudged the female in the side just above her ¼ in. ovipositor, whereupon she laid up to five oval yellow-coloured eggs. These she immediately spun round on in order to pick them up. After this, she mouthed the area of water around the violently trembling male's vent, who, presumably, at this time was releasing his milt, which the female took into her mouth in order to fertilise the eggs already in her mouth. During this spawning the female changed in colour very little although the male intensified his colours to an amazing extent, his whole head becoming almost black! Periodically they stopped spawning, only to resume again after a few moments, in order to allow the eggs to settle down in the female's buccopharyngeal cavity. They spawned on a roughly circular patch of gravel which was about 6 in. in diameter. The eggs were 2-3 mm. from pole to pole and were about 1-2 mm. across. When the female was releasing eggs, the male was to be seen at right-angles to her body in a "T"-shape. This same position was taken up by the female whilst the male released his milt. The fish releasing either eggs or milt always made up the top-part of the "T." They spun round to "activate" each other in clockwise and anticlockwise directions, although a preference to move in a clockwise direction was noticed.

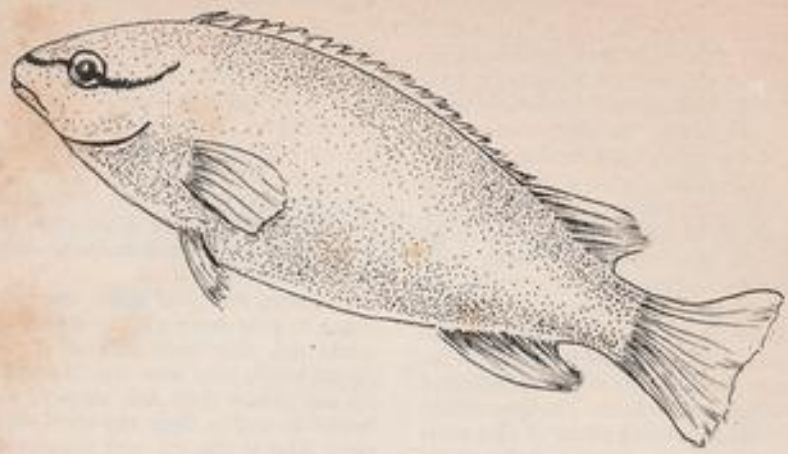
This first spawning was unsuccessful, the female "aborting" after only 18 days, on the 2nd October. However, she soon came back into condition and, on the 31st October, they spawned again. About 25 eggs were deposited, once more on gravel, and after two days, I moved her to a separate tank. On the 13th November, after just two weeks of incubation, she released, from her much distended mouth, her young—all two of them! These two were very large, being just over ½ in. in length. They displayed grey, vertical, lines on a lighter grey body. In two weeks they grew to ¾ in. after feeding them on brine-shrimps and *algae*, supplemented with powdered dried commercial foods and squashed, unsalted boiled peas. At this age of two weeks, they gradually went on to chopped *tubifex* and other, larger, foods.

However, after this initial spurt of growth, things began to slow down a bit so that, when they were 12 weeks old, they were only about 1¼ in. in length. At 12 weeks, they were also just beginning to colour up and obtain their first signs of blueness on their bodies as well as their egg spots—they looked like a pair! Also at this age their mouths began to become ventrally placed; previously the mouths had been much as many of the *Pseudotropheus* species mouths—in particular like *P. fuscus*—slightly inclined to the bottom of the tank or lake. They were "born," and thereafter kept, in an 18 x 10 x 10 in. tank and the water conditions were much the same as those in the spawning tank: 80°F pH 7·2-7·4 and very well aerated.

My second pair first spawned on the 22nd April (1973) but the female lost her eggs 18 days after spawning—on the 10th May. However, on the 17th June they spawned again, once more at about 1 p.m., and I quickly took the female out and placed her in a 24 x 12 x 12 in. all-glass tank. To my delight, after 18 days, on the 5th July, she released her young. There were about 40-50 and were just under ½ in. long; four days later, they were ¾ in. long—a good growth rate? At the time of writing, they are one week old and are coming up to ¾ in. in length!

This is a very interesting fish to keep and well worth the initial expense of £4-£5: but, one word of warning here: neither adults or young take very kindly to sudden water, temperature or oxygen concentration changes. Such changes often tend to cause sickness or even death in extreme cases—even when the change is one of as little as 3-4°F. This is also true of *L. trewavasae*, who are, if anything, even more sensitive to such changes. The sensitivity of *L. trewavasae* I found out to my cost (all £7 of it!) when I turned the amount of air going into the tank down one evening, only to find them both dead the next morning.

If you have, perhaps, been put off these lovely fish by all this—don't be! With a reasonable amount of care and attention, these fish may be kept by well-nigh anybody (with the possible exception of the very rawest of raw beginners) and with the greatest of ease. Good luck if you try!



THE BLUE REEF FISH

by H. G. B. Gilpin & Q. G. B. Gilpin

NATIVE to the Indian and Pacific Oceans and commonly known as the Blue Reef Fish, *Abudedu f umiocellata* makes a delightful inhabitant of the marine aquarium. Its ease of maintenance suggests it is a most suitable subject for the beginner and its beauty and the challenge it offers as a breeding proposition must appeal to the more experienced aquarist.

Our present stock consists of three, two inches long, specimens and one of four inches overall length, living in a well aerated two foot six inches aquarium, maintained at 70°F. To begin with they shared their accommodation with two three-inch Batfish, with which they lived in complete amity, but recently these have been transferred to another aquarium, leaving the Reef Fish in sole possession of their quarters.

The three smaller fish are predominately brilliant blue in colour with rather paler fins and a black line extending from above the mouth, through the eye, to the beginning of the lateral line. A narrow cream band, barely seen when viewed from the side, passes along the ventral surface. The small mouth is provided with rows of conical teeth.

These three fish continually swim, invariably as a trio, in the open part of the aquarium but the fourth and largest fish spends much of its time lurking in a corner, rarely joining the others except at such times as food is introduced, when it emerges, seeking its food with short darting movements. When satiated it returns to its chosen retreat, taking little or no part in the activities of its fellows. When in seclusion, this fish becomes very dark blue, almost black, in colour but when competing with the other fish for food it changes to a lighter hue and matches the colour of its companions. The three smaller fish, constantly seen in the open areas of the aquarium, have so far exhibited no change of colour.

If one of the smaller fish disturbs the privacy of the larger one it maintains its territorial rights by flashing

out with a show of aggression, heightened by an immediate lightening and brightening of its colour, to chase them away. Neither this demonstration of pugnacity not the occasional "spats" between the three smaller fish has ever resulted in any individual suffering actual damage.

The aquarium is heavily stocked with coral, bedded on a layer of coral sand. At night all four fish excavate depressions in the sand in which to pass at least part of their resting period, the largest one always in its own particular corner, the others frequently changing their sites. This habit does present some difficulty in keeping the aquarium in immaculate condition as the continual shifting of the sand disturbs all but the more solidly based objects.

We have found Reef Fish easy to adapt to a variety of foods, even including dry flaked marine foods. Frozen plankton, frozen adult brine shrimps, small live fish, white worms and chopped raw meat are all taken freely.

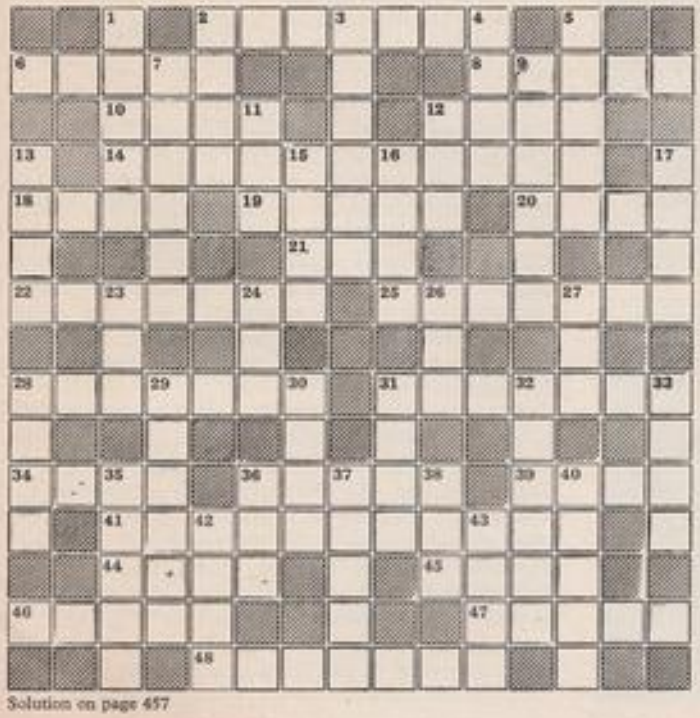
In their native habitat Reef Fish live in and around coral reefs. The young fish collect together and swim in shoals but the adults tend to live a solitary existence or, at most, keeping together in pairs. They grow to a maximum length of four inches.

A number of different species of these small Damselfish occur in shallow water in almost all tropical seas including the striking *Pomacentrus melanochir*, whose handsome yellow tail contrasts with the prevailing blue of the body. Several have spawned under artificial conditions and eggs have been hatched, but in the absence of natural plankton the young have declined to feed with the inevitable result.

Characteristically a male cleans a piece of rock and by "looping motions" attracts a succession of females, who having deposited their eggs on the prepared surface are chased away. The male fertilises the eggs and stands guard over them until they hatch, fanning them with his fins to keep them oxygenated. At this stage the male becomes even more territorially minded than usual and shows marked signs of pugnacity.

The AQUARIST Crossword

Compiled by A. C. Read



Solution on page 457

CLUES ACROSS

2. A yard of this goes a long way (7).
6. Leaf of *Aponogeton fenestralis* is this (5).
8. Custom (5).
10. Fin (4).
12. Identical (4).
14. *Hyphessobrycon pulchripinnis* (5, 6).
18. Southend-on-Sea has the longest (4).
19. To coil round, cleat and secure (5).
20. Vitality (4).
21. Badger's burrow (3).
22. This cat is a 40 down (7).
25. Kind of 28 down (7).
28. Family *Cobitidae* (7).
31. *Acipenser ruthenus* (7).
34. Game fish do this for flies (4).
36. Aggravation—modern slang (5).
39. Family *Scatophagidae* (4).
41. Family *Gasteropelecidae* (7, 4).
44. Leave out (4).
45. Thames fishing is this below Staines Stone (4).
46. To separate fibres (5).
47. Antarctic seal (5).
48. Citizen of the U.S.S.R. (7).

CLUES DOWN

1. Fish's body protection (5).
2. A Dutch cheese (4).
3. Sediment will, when air is off (6).
4. Cleaner ? with adipose (4).
5. Corpulent (5).
7. Vitality (6).
9. Swords for the aquarium (6).
11. Large worm (3).
12. Pig shelter (3).
13. Outstanding (4).
15. Floating home for fry (4).
16. Edibles (4).
17. —fish. *Amphirias rubens* (4).
23. Green vegetable soup (3).
24. Chop down (3).
26. Light tap (3).
27. No score (3).
28. Artificial bait (4).
29. Whisks (6).
30. Sound expressive of weariness (4).
31. Arrange in order (4).
32. Reddish-brown (6).
33. They come in red, yellow, silver, black, etc. (4).
35. Gathering of fishes (5).
36. Pretend (3).
37. Group, with common structural characteristics (5).
38. Simply not on (3).
40. Imposter (5).
42. Place one above the other (4).
43. Ore (4).

OUR READERS WRITE

Gloucester Fishkeeping and Social Club

A few weeks ago our Club organised an "Open Home Aquarium" competition which was sponsored by the "Barrier Reef," and I am enclosing photographs of the two winning tanks in the hope that they will be suitable for printing in *The Aquarist*.

The winning tank was entered by Mr. Alf Lamb, who won the Barrier Reef trophy which is pictured on his tank, and also a prize to the value of £15.

The winner of the junior section was Clive Dyke who received a £10 prize. Both these winners were members of our club, the Gloucester Fishkeeping and Social Club.

JOHN B. ADLAM,
Secretary.

The Disease Called Expertise

In the January issue of *The Aquarist & Pondkeeper*, Mr. D. J. Alden complains of the apparent lack of knowledge of fishkeeping by dealers in aquatics. It should be understood that many shops are Petfood shops mainly and the aquatic section is just an offshoot. Also some of the assistants may not know a lot about fishes. Again, the information often supplied by the enquirer is not full enough for even the expert to be able to diagnose the trouble. I get such letters as: "My goldfish was alive last week and now it is dead. Why did it die?"

Even experts are not always right and I will quote the following experience to prove this point: During last summer in a space of three weeks I had a spate of trouble; four attacks of sickness, fainting, followed by violent trembling. The first doctor diagnosed "Food poisoning." The second attack brought another doctor who said, "Chill." The third said "Heat stroke" and the fourth rushed me off by ambulance to hospital to have a wound in the back of my head stitched, caused by fainting and hitting the fridge as I fell. The fifth doctor in Casualty made numerous tests and asked many questions and then put me straight on a drip-feed and kept me in hospital. He said that the trouble was caused by me stopping taking cortisone tablets suddenly. They had been prescribed for my frozen shoulder. He added that it could have been fatal.

So much for the experts.

A. BOARDER.
Ruislip.

Undesirable Pumpkinseeds

I observed in the "Coldwater Queries" column of the January edition that Arthur Boarder, on replying to a question concerning the Pumpkinseed Sunfish, had made an error or accidental omission as to the location of this species. He stated that this fish comes from the lakes of Florida and Texas in the U.S.A. This is perfectly true as is the case of the American livebearers which are looked upon as tropical species. In effect, the Pumpkinseed is better associated with the more northerly regions of that country and Canada where it is more prolific.

It is of interest to note that the Pumpkinseed Sunfish is one of the least desirable species in its natural environment in view of its aggression and prolific breeding habits. To give an example an investigation was carried out by a fisheries research group to determine the reason why the population of a once excellent trout lake near the U.S.A. Canada border had declined. It already had been revealed that a small number of Pumpkinseeds had been introduced a few years before. A number of fish traps were laid, and when they were finally checked at the end of the day

Continued on p. 455

MARINE QUERIES

by Graham F. Cox

I have been an enthusiastic freshwater tropical hobbyist for many years but am about to succumb to the lure of the "marine world." For this purpose, I have purchased a 24 x 12 x 15 in. (approx. 16 gal.) tank. However, my query is as follows:

I am extremely keen on keeping one of the Dragon Fish (*P. volitans*), but one or two of the "locals" raise their eyebrows at this and say that this species will outgrow the average home marine aquaria and quickly become so big that it will have to be kept entirely on its own for fear that it may consume other tank inmates. Is this so? I was intending to populate the above-mentioned tank with one *P. volitans*, one *C. kleini* or *C. lunula* and one catfish or boxing-shrimp, thinking that three inmates such as these would be appropriate for a tank 24 x 12 x 15 in. What would be your learned opinion on this?

When I posed this question to my regular dealer, he merely shrugged his shoulders and said he had never had any scorpion fish returned to him as having grown too big and become a menace to smaller fishes.

As I have recently explained in these columns, your choice of tank size is not ideal for a beginner to the marine hobby. We have always found that unless a newcomer has an intuitive flair or "feel" for the marine aquarium (i.e. "salty fingers"), and precious few beginners have subsequently proved this to be the case, it is far wiser to choose a 20 Imperial gallon aquarium size as the basis for your first marisystem (marine biosystem) than a smaller tank. However, in your case there's not much that can be done about this now. Please do not misunderstand the point I'm trying to make here. I am not saying that it is *impossible* to keep marines in tanks of less than 20 gallons capacity!

On the 4th January 1974, I had a *Chaetodon kleinii* die in a *ten-gallon* all-plastic aquarium in which it had lived very happily since March of 1971. Had it lived another two months if would have successfully spent *three years* in that same aquarium (my staff are claiming that as a world record for butterfly fishes), so that what I *am* saying is that the smaller the capacity of the aquarium, the greater the problems the beginner usually experiences in achieving a biological balance!

I'm afraid that what your friends told you about *Pterois volitans* is largely true. In my last "career" educational appointment I installed a marine aquarium in my teaching laboratory in order to make my marine biology lectures more real and vital. As soon as I'd *chemically-matured* my synthetic seawater (my own formulation which I had begun work on whilst teaching in Africa) which took 24 hours, I purchased a lovely young specimen of *Pterois volitans* (Common Dragon, or Lion, or Scorpion-fish) with which to commence the *biochemical-maturation* or bacterial-maturation of the undergravel filter bed. During the next six months this little, originally 2 in. character rapidly grew, until I had to give him to Brighton Aquarium, *at* 10 *in. overall length*. This was admittedly due to chronic overfeeding on the part of doting young lady students who called him/her "Winston" after the great statesman. (When you've witnessed the grit and expression of determination on the face of your Lionfish as he relentlessly pursues his prey, you'll know why!)

Frankly, with a more sensible feeding regimen (say no more than three index finger-nail size pieces of prawn (*boiled*) per week, he should not have exceeded 4 in. in that period. However, I saw a specimen of this species off a Mozambique reef which was 18 in. long and had a pectoral fin tip-to-tip measurement which must have approached 24 in. when in the feeding posture. This particular brute had cornered a small school of young Mullet in a coral crevice and was picking them off one at a time as they panicked and fled for the crevice exit—a sight and sound of Africa's reefs indelibly printed on my memory.

Once more then, you are likely to find a *Pteoris*

volitans something of a handicap in a tank as small as yours. Even though you might attempt to dwarf your specimen by critical feeding and the tank's small dimensions, after each partial water change you'll find it starts growing again until, even in a tank your size, it might well reach 5-6 in. in 12 months. At that size it could certainly eat a Boxing Shrimp if it caught it out in the open, would have a good attempt at eating a Coral Catfish (*Plotosus anguillaris*) if the poisonous spines didn't first dissuade it from the attempt, and could eat a young (1-1½ in.) Sunburst Butterfly (*C. kleinii*) or Moon Butterfly (*C. lunula*) with consummate ease.

If I were you, I'd stick to the smaller member of the family—*Dendrocheirus brachypterus*—the Dwarf Lionfish. They are most endearing little fellows and come from the Philippines principally, although we've had them from Indonesia also. The species appears to be fully adult at 2 in. to 2½ in. long and would be a much wiser choice for your 15½ gallon aquarium (*gross* capacity). Feeding and general care are much the same as for *P. volitans* and the spectacular *Pterois radiata* (Regal Lionfish), although it may be necessary to persist with livefoods (such as young livebearers) a little longer than normal before going on to prawn-flesh, liver, etc. As with the keeping of all species of marine life which are essentially carnivorous predators (Groupers, Moray Eels, Sharks, Anemones, etc., etc.) feeding does *not* have to be daily. The feeding philosophy of this sort of animal in the wild state could perhaps be summed up in the phrase "make hay whilst the sun shines." That is to say that they gorge themselves to repletion when food is available, but will then spend several days in a very torpid state slowly digesting their kill. Whenever possible, I have pandered to their philosophy, feeding captive carnivores very well once every three to four days. I only vary this rule if, for instance, I am trying to grow a particular specimen very large very quickly, say for an exhibition. Always try to remember that the more heavily you feed your fishes the greater is the biological loading on your water management equipment and (inevitably) the quicker is the deterioration in quality of your seawater. Similarly, over-loading a marisystem with too many specimens will still lead to a total "overfeed" situation even if you only feed each individual specimen very lightly.

Try to stick to our golden stocking rule of 1 in. of fish to four gallons of seawater. When you've acquired lots of expensive—say after 18 months to two years—you can slowly increase this to 1 in. of fish to two gallons of seawater.

I am setting up a 48 x 20 x 20 in. tank for marine fishes only. I have an U/G filter with two airlifts of ¾ in. diameter run by an Esha pump; I also wish to have a further form of mechanical filtration but as power filters are expensive and appear to be unnecessary I wondered if you could recommend an external filter. Also could you tell me how to feed marine fish while on holiday, i.e., is there an artificial feeder as in freshwater tropicals?

Your new aquarium, having a total *gross* gallonage of 69·4 gallons is a wonderful "beginning" in the fast-growing marine hobby. All too often one sees beginners launching afloat on the "sea aquarium seas" in a 5- or 10-gallon tank and then wondering why they've "shipwrecked" within two or three weeks. For the benefit of other beginners, may I be excused again for repeating the advice which I gave in these pages in 1966, to the effect that no-one, other than the very, very lucky or clever, should make a first attempt at marine fishkeeping in a tank of less than 20 Imperial gallons capacity. This means a 36 x 12 x 15 in. tank, or a 30 x 15 x 15 in. tank or similar.

The question of mechanical filtration in a marisystem *other* than that afforded by conventional (and damned expensive) power filters is one that is often raised. Let me repeat again my honest opinion that a power filter is the *last* piece of equipment which a marine aquarist need consider buying, and even then only if he has £20 plus knocking about that he wouldn't particularly miss the use of. Our sales tanks at Longford have been praised most generously by visitors from all over the world—and yet the only forms of filtration which they ever receive are *continuous* high-powered undergravel filtration plus a small 25p plastic box filter filled with "Seacoal" (an ultra-high activity marine-grade charcoal activated *in excess of* 1,000 *square metres per gramme*). Although we have never found it to be necessary I know that many of our customers "top off" their charcoal mass with a thin layer of filter "wool." However, you must *certainly* not do this if you expect to successfully culture filter-feeding invertebrates, such as living corals, flame-scallops, *Tridacna* spp. (Clams), sponges, feather-duster worms (*Sabellastarte* spp.), etc., etc., for the obvious reason that if the filter is efficient you will remove a large proportion of the planktonic food for these creatures. If you are using a layer of filterwool simply to hold the marine-grade charcoal in the filter-box, try the simple alternative of pouring boiling tap water over the charcoal to de-gas it *before* putting it in the filter box.

You could, if you so desired, use an external box-filter for the purpose of phenol-removal and water-decolorisation, but I'd advise you against it for the following reasons:

1. By their very position they are a potential leakage hazard.
2. They're more expensive!
3. They're untidy-looking.
4. They usually necessitate hacking the aquarium-hood about in order to get the inlet and outlet

pipes fixed. Whilst on this subject I'd like to add that I am always being asked how to tell when the ultra-high-activity charcoal is de-activated. The answer is simply that the charcoal's ability to absorb "quasi-phenols," phenols, proteins, etc., gradually deteriorates and the water slowly but surely begins to take on that characteristically unhealthy, yellowish discolorisation again. The more delicate coral-fishes and invertebrates lose colour, tone and vitality, go off their food and eventually begin to die off.

Clearly a healthy algal growth within the marisystem *delays* this build-up of molecularly-huge organic compounds, but the only sure and continuous protection against it which is economically sensible, *not* unsightly, and simple to maintain is the box-filter idea outlined above. The only maintenance necessary apart from the periodic changing of the charcoal is the cleaning of salt out of the airlift tube from time to time.

With regard to feeding fish whilst on holiday, there is, to the best of my knowledge, no reliable and sensibly-priced fish-feeding device on the market at the moment. What I always do if I'm to be away for more than a few days, is to put that amount of freeze-dried foods and flake food which I would normally feed per day into small paper "screws" (i.e., like the Beecham's Pills of yore) and give a sensible relative or friend strict instructions that one, *and one only*, screw per day is to be added to the tank. In other words, I allocate a fixed list of different foods in carefully measured amounts for each of the days I shall be absent. This eradicates the possibility of returning from holiday or business to find six inches to a foot of foetid dried-food decorating the floor of my aquarium.

OUR READERS WRITE *(cont. from p. 452)*

it was found that each contained two to three hundred undersized three-inch sunfish of this type and little else. Thus it was realised that this aggressive species had completely decimated the game fishes and were now in the process of eating one another out of house and home. It is a pity that such a beautiful fish is looked upon as a villain but there you have it, a species very common throughout North America, particularly in the North, much to the chagrin of anglers and conservationalists.

V. B. HUNT,
"Caeglas," 120 London Road,
Widley, Nr. Portsmouth,
Hants, PO7 5EW.

Mr. Ten per cent

I cannot understand Mr. Hunt's letter, as he says I made an error and then follows this with the statement that what I wrote is perfectly true. Surely, I was not expected to name all the waters in which the fish could be found. If I were writing of the roach, would he expect me to name all the waters inhabited by this fish? If he wants to be pedantic, may I be allowed to be the same? He states that the game fishes had been completely decimated by the pumpkinseed. As this only means that a tenth of them had been destroyed, I see no cause for alarm.

A. BOARDER.

No Reply

Having just read J. Reeves complaint in your "Our Readers Write" column, I would like to say that you may remember I wrote to you some months ago requesting the name and address of a local aquarist society. You kindly sent me the address of the Secretary of Aquarist Societies. I have to date sent two letters and *stamped addressed* envelopes to that address and have received no reply. I realise he may be a busy man, but it does not put a lot of faith in societies, for a novice enthusiast.

While I am on the subject, I also sent a stamped addressed envelope to a well-known European firm requesting a leaflet on aquarium furniture. This too was taken from an advertisement, and again no reply.

I sent two letters to a firm requesting details of a water deioniser kit (nothing to do with your magazine), again no reply.

I have written letters to universities in my pursuit of knowledge in my hobby and received very substantial information, yet writing to companies requesting their products and receiving no reply just doesn't make sense.

B. EDGEWAY,
30 Half Mile Road,
Norwich,
Norfolk.

Calling Mr. N. Gray

Mr. N. Gray, where are you? The member clubs of the C.N.A.A. have mislaid your address and we have heard that you have left the Bristol area. You have, during the last year, supported us with large entries at our Open Shows, and at the same time, gone away with a large number of our Cups and Trophies. These, as you are aware, must be returned in time for the Open Shows this year. So please, Mr. Gray, if you read this, advise me as soon as possible. Your postage will be refunded. If you fail to see this, I hope some of your friends can advise me.

D. RICHARDS,
3 Sherwood Street,
Llwynypia, Rhondda.

THE LACE LEAF PLANT

by Eberhard Schulze

THE LACE LEAF plant is often called the 'Queen' of tropical fresh water plants; she is unique and should therefore get the attention from hobbyists that she rightly deserves. She is an ideal aquarium plant and every year many thousands of rhizomas are sent to Europe and America and it is said that within a very short time this very unusual plant will become extinct. Will future generations of hobbyists only know this plant from textbooks? Enthusiasts concerned with the possible extinction might want to try to raise this plant themselves and though not one of the easiest tasks, it can be achieved.

The plant, as the name implies,—*Aponogeton madagascariensis* (*fenestralis*)—is only found on the island of Madagascar. There it will mainly grow in still or sluggish shallow waters which are overgrown with foliage to reduce the intensity of the light. Plants which are sometimes found where they have received full sunlight are known to wither away very quickly once they are introduced into an aquarium.

The dark-green leaves of the lace leaf plant have a strong centre nervure and running parallel on either side are 3-4, sometimes 5, smaller nervures. These are linked by a great number of smaller transverse veins. What makes this plant so unusual is that in a fully grown specimen the leaf tissue—mesophyll—is completely missing, giving a dark brownish green gauze or lace-like appearance. This might give the impression that the leaves are very delicate, whereas they are quite strong and tough and well joined to the root stock. Nature might have had a reason for evolving such a plant, but as yet no scientific proof confirming any of the many theories put forward by experts has been established.

Aponogeton madagascariensis (*fenestralis*) will not thrive in all water conditions. The water must be crystal clear and soft (2°-5° dGH), acid (pH 6·0-6·9) and not too warm (64°F.-71°F.); normal room temperature would be quite adequate. The plant will never do well in what is often called seasoned water; a partial water change at least once a week must be carried out. A subdued overhead light is all that is needed. If the light is too strong, a thicket of floating plants on the surface of the water will reduce the intensity of the light. It is of great importance to keep the leaves free of *algae*. Plant eating or digging fish are also best not kept with the lace leaf plant.

There are no special demands regarding a planting medium. Well-washed coarse gravel and compressed peat plates is all that is needed for the plant to develop healthy and strong roots. The tuberous root-stock—rhizome—should be planted at a slight angle and should never be totally covered with gravel. After a few days the first shoots will appear and within 3-4 months many leaves will have developed. These will grow to a size of about 5-8 in. long and 2-4 in. wide and will require ample room. Instead of putting this plant close to other plants, it should be given an open position in a not too small tank and only then will this most unusual plant develop to its full beauty. A well established plant will grow from its rhizome a few side-shoots; these can be cut off once they are fairly strong and grow on to form new plants. During the winter months—January to March—the leaves will die away and the temperature should be lowered to around 60°F. This 'rest period' is an essential part of successful cultivation.

Like all other plants of the genus *Aponogeton*, the lace leaf plant will flower twice during a year; mostly during May-June and again during November-December. Young plants, though, must be prevented from flowering by removing the buds as soon as they appear. A flower would greatly stunt the young plant. The flowering shoot of the lace leaf plant is an inflorescence up to 19 in. long terminating in twin or triple spikes 2-3 in. long, which will rise above water level. These spikes are covered with numerous bisexual—hermaphrodite—blossoms. As soon as these open they should be pollinated using a small soft brush. A fruit will then develop and after about 2 months the seeds will be released. It is possible to raise a lace leaf plant from seed and then the same

cultivation conditions as were provided for the rhizome will be required.

If the water level is so high that the spike of the inflorescence cannot rise above it, the flowers will not open and fertilisation will take place within the unopened flower. The seeds will then develop and after they have been released and fallen into the gravel, germination will take place. The first leaves will become visible within a few days and the roots will start to develop at about the same time.

To raise a lace leaf plant from a seed is more difficult than from a rhizome; but once achieved, a hobbyist can compare this with any success he might have had with any of the more difficult of the so-called 'problem' fish.

Based upon an article entitled *Konigin der Wasserflora* by Kurt Paffrath, published in *Aquarien Magazin. Feb.* 1970

Crossword Solution

■	■	S	■	E	L	A	S	T	I	C	■	O	■	■
L	A	C	E	D	■	■	E	■	■	H	A	B	I	T
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E	■	L	E	M	O	N	T	E	T	R	A	S	■	S
P	I	E	R	■	B	E	L	A	Y	■	Z	E	S	T
I	■	■	G	■	■	S	E	T	■	■	O	■	■	A
C	O	P	Y	C	A	T	■	S	P	I	N	N	E	R
■	■	E	■	■	X	■	■	■	A	■	■	I	■	■
L	O	A	C	H	E	S	■	S	T	E	R	L	E	T
U	■	■	R	■	■	I	■	O	■	■	U	■	■	E
R	I	S	E	■	A	G	G	R	O	■	S	C	A	T
E	■	H	A	T	C	H	E	T	F	I	S	H	■	S
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T	E	A	S	E	■	■	U	■	■	O	T	A	R	Y
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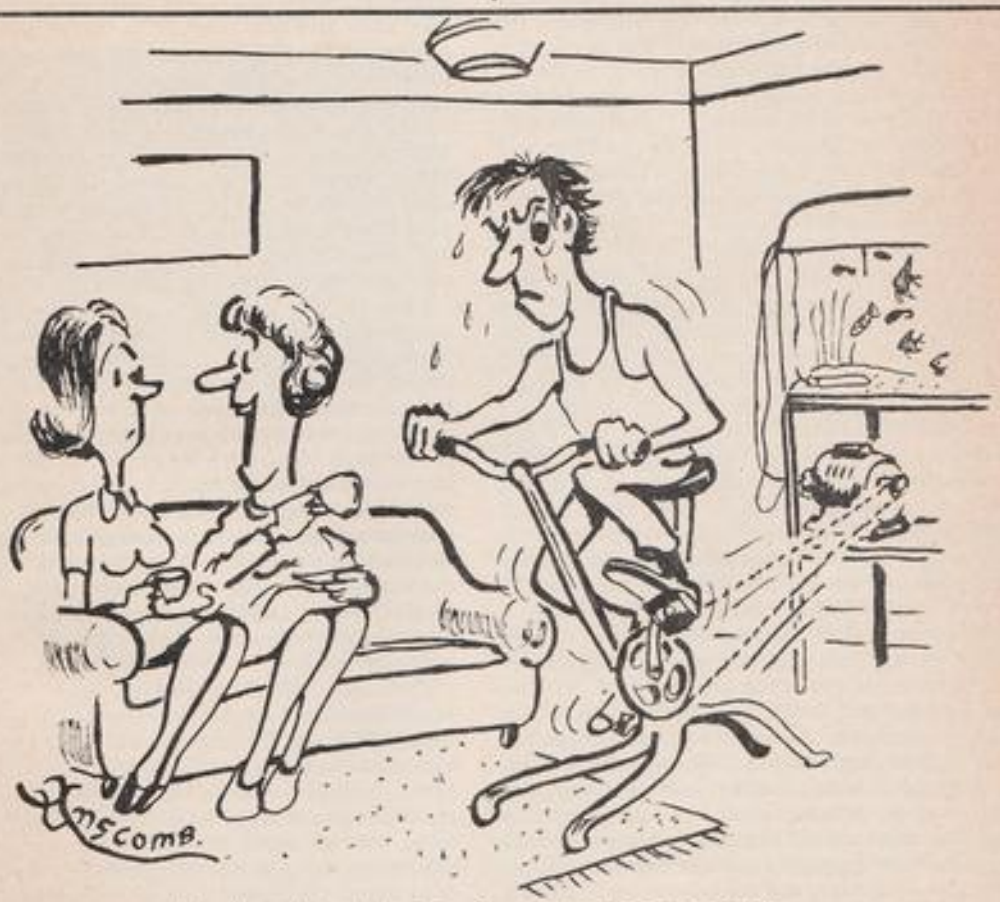


"Fred's getting in training for next year's power cuts"

WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author

MY RECENT COMMENTS on angelfish brought me several letters on the subject, the first one coming from Mr. E. Boughton, of 20 Brooklands Road, Albrighton, Wolverhampton, Staffs. Mr. Boughton writes: "Having bred a great many angelfish, on and off, during the last 25 years, and reading your request, I thought you would like to have a report of my experiences. I find that the first difficulty to be overcome is the finding of a true pair, and only behaviour and size can indicate this. The male is usually a little larger and more aggressive than the female as sexual maturity approaches. The best way to obtain a pair is to buy half a dozen and hope for the best. I once bought six and some six months later found that they were all females. Two females may spawn together without any males in the tank; and I have found the same thing with that intriguing fish the discus. Fortunately, on this occasion, I had a friend with one fish which I exchanged for a female, and it turned out to be a willing male.

"I rely on earthworm, cut up, for feeding, with water fleas and white worms as available. Some dry food is used but is kept to a minimum. To bring the angelfish to feed on earthworms, I first cut them up with white worms, and after a few days they are quite eager to take the former. Angelfish will spawn every 7 to 10 days for a month or so and then take a rest for a few weeks. To induce them to spawn, I take a bucketful of water from their tank and replace it with a bucket of water taken straight from the cold tap, forgetting about chlorine, hardness or temperature. It usually works! I used to have a narrow piece of slate for spawning but now use a piece of wooden lath carefully smoothed. At first I used giant *Sagittaria* but this did not suit my method of hatching—which is to remove the eggs, on the lath, and put them in a perfectly clean tank with one end of the lath resting on a stone. Under the eggs and lath I put an air stone which bubbles up all round. As far as is possible I take off all dead eggs as they go white. When the eggs hatch the young tend to bunch as their heads are sticky, and I like to keep the bunches small by using a glass dip stick to draw them up and let them float down—rather like the adults mouthing and spitting them out. When they are free-swimming, and not before, I start to feed micro worms, which they can easily manage. Brine shrimps are acceptable but there is no advantage in them so far as I can see. Next food is sieved *Daphnia* and then chopped white worms, gradually enlarging. All the young are reared in a clean tank, completely empty except for the water and some aeration.

"Often I read that worms should be cleaned but my fishes live and breed while eating 'dirty' food. Little is written about the age that angelfish live to, so perhaps that would be a guide. Usually mine live for about five years; and I had one old boy who managed over nine years and two 'wives.' In the last year fertility was rather poor! The cleaner the tank for angels, the better, particularly for young fish. They don't need any *infusoria* and I have noticed bad finnage in a dirty tank. The largest number of fish raised from one spawning was 440 plus. It was an isolated event and 150 is nearer my usual number. Incidentally, I had a peculiar experience in selling this lot. Two shops took 100 each and one took 50, leaving me, as I thought, with about 150. I rang a wholesaler in Birmingham who told me to take them to him. In the first place I asked for 10p. each but he would only give me 6p., and then insisted on his girl assistant counting them. There were 196 and he paid me for that number. Angels are one of my favourite fishes and I usually return to them after a year or so without. I think that the foregoing deals with your question from my angle." (It certainly does, Mr. Boughton. I find it a most interesting and useful account and hope it will assist me when my angels spawn again. My breeding pair, after spawning seven times in succession, now appear to be taking a rest. Do any readers add chemicals to the water, to help stop fungus forming on eggs, when they are being hatched away from the parents? If so, please let me know what, how much, how often it is added, etc.)

Once again, Mr. S. Fox, whose home is at 126 West Farm Avenue, Longbenton, Newcastle upon Tyne NE12 8RU, has sent another informative letter on a number of subjects. He writes: "With reference to Mr. L. Sandfield's use of the word 'zoogleal,' bacteria are sometimes referred to as Schizomycetes or fission fungi, or as slime bacteria. Though commonly unicellular, the cells may be aggregated into filaments, or as irregularly shaped groups of various dimensions. The bacterial cells are held together in mucilage—a

slimy sheath—and this is known as a 'zoogloea condition.' Normally they exist in any location in the aquarium, as well as being present on and under the gravel. If they did not live on the gravel the so-called 'biological action' of U/G filters would not be possible." Moving on to another point, Mr. Fox writes: "Many aquarists use pre-soaked bread as a food for white worms. If damp bread is allowed to remain too long in the worm culture box, a lower fungus will appear on the bread. Normally Mucor mucedo is the type most commonly encountered; therefore it is advisable to provide fresh bread at least every twenty-four hours. Farex baby food, mixed with water to a stiff paste, is a much superior food for white worms or other worm cultures. The risk of fungi making an appearance is greatly reduced when this food is used. It is not advisable to keep white worm cultures in an airing cupboard, as so many aquarists seem to do. It is possible for spores of fungi to get on to clothes despite the fact that worm boxes usually have a glass cover or lid. Although the risk to health may be fairly remote, I consider that it is important not to place worm

cultures in airing cupboards. It is equally important to prevent fungi from making their appearance in the white worm cultures."

No. 9 Dorset Avenue, Fulwell, Sunderland, Co. Durham, is the home address of 13-years-old Philip Darling, who has been keeping fishes for just over two years and has a 2 ft. and a 3 ft. tank. He states: "In the 2 ft. tank I have a pike cichlid of about 5 in. and I find it a tremendously interesting fish. It has gradually lost its shyness and got to know the hand that feeds it. It gets meal worms, earthworms, raw meat and the odd fish of about 1½ in. in length. In my 3 ft. tank I keep blue acaras. They are both interesting and easy to breed. I purchased four recently and they have laid eggs once and are preparing to do so again at the time of writing. I have also a pair of *Tilapia mozambica* that are coming into breeding condition." Philip continues: "In my tanks I use external and internal filters filled with glass wool. I find washable filter media less efficient. I think U/G filters are pathetic. They flatten out the hills in the gravel which add to a tank's attractiveness. They also reach a stage where they can take in no more dirt. They then clog up and the tank is perpetually dirty till it is changed. I have rarely used micro worms but when I did I removed the worms by using match sticks. I placed two parallel match sticks about an inch apart on the culture medium and then two more on top, the other way . . . the worms wriggled their way up to the top sticks and these were just washed into the tank. Regarding too clean tanks, I think that the odd decaying leaf makes a tank look more natural." Philip ends his letter by saying that he would like to have a pen-friend with an interest in fishes. Are any readers—possibly younger ones—interested? If so, please write directly to Philip.

On now to a letter from Mr. D. Lambourne, who resides at 7 Wheeler Court, Plough Road, London SW11 2AX. Mr. Lambourne's subject is catfishes and he writes: "With reference to letters to you in the October and December issues by Mr. A. C. Young and Mr. L. McCourt about the naming of the shovelnose catfishes. I am sure that the letters have caused a lot of confusion amongst aquarists who read your column—which, incidentally, I find most interesting. Personally I think Mr. Young was right in letting you know that Mr. McCourt had named the tiger shovelnose wrongly, but I don't think he was right in running Mr. McCourt down as a judge, for if everyone knew all there is to know about fishes and fishkeeping then our hobby would cease to exist. The correct name of the tiger shovelnose is *Pseudoplatystoma fasciatum*. This fish has vertical stripes and blotches on a grey/brown background, and grows to a length of 30 in. The correct name for the lyretail shovelnose is *Sorubimichthys planiceps*. This fish has black spots on a grey background on the top of the head and along the back. Along the sides are two blue/black horizontal lines which are separated by a creamy white line. The white line runs into the caudal and the two blue/black lines run into the caudal and accentuate the shape of the lyre tail. This fish grows to 36 in.

"The *Sorubim lima*, which has no common name—and is the smallest of the three species named at 18 in. —has a blue/black horizontal line along the back and one along the side, which runs into the lower lobe of the caudal. The rest of the body is creamy white. Perhaps Mr. McCourt and your readers would be interested to know that the name of Pimelodidae is not valid now. The valid name is Pimelodontidae."

Photograph 1 shows one of my own catfishes, a *Corydoras aeneus*. As the "big cats" of the catfish world have been allowed a fair amount of space in this feature recently, I feel that the smaller catfishes should be allowed some space now. Please send me details of your experiences with the keeping and breeding of *Corydoras aeneus*—sometimes known as the bronze Corydoras.

I was pleased to hear again from Mr. G. C. Robinson, Editor of the British Marine Aquarists' Association's Journal, "Marinews," and to receive a copy of the December 1973 edition of the journal. Mr. Robinson, whose home is at 88 Cornhill Road, Aberdeen, Scotland, AB2 5DH, writes: "I thought I would drop you a line and enclose the December copy of the B.M.A.A. newsletter since it contains one of the suggestions you made in your W.Y.O.? feature. As you will be able to see we have now a cover done in red and black, featuring a fish along with the title. In the issue I am sending you the cover fish is a drawing but in the January edition I will be using the first photograph in the journal . . . " Mr. Robinson goes on to say that the B.M.A.A. is progressing—and judging by the interesting and instructive contents of the newsletter, which stretches to 16 pages, the Association certainly appears to be progressing. The newsletter contains several drawings, together with features such as Overseas News, Book Review, Discussion Page, Members' Letters, Group Reports, etc.; as well as an instructive article entitled "The Polyurethane Foam Filter." I was surprised to note than one B.M.A.A. member lives in Canada. Obviously membership of the B.M.A.A. would be of value to anyone interested in marines. I would be pleased to receive newsletters or journals from any other general or specialist group.

"I noticed in your November feature of last year that a reader in Eire was complaining that prices where he lived were very high compared to those in England. I take it that he didn't include Wales as part of England as the prices here are also high. I wish I could find a pair of zebras for less than 38p. I recently bought a snail-destroying compound, and after unsuccessfully using it four times I poured a whole dose on top of a single snail. That snail died, but the others in the tank lived on." This is the start of a letter from Mr. D. Hatherfield, of 39 Marlborough Road, Brynmill, Swansea SA2 OD2. (I suggest that you try another brand of snail killer. I have tried several and have found them to be reasonably effective. Do follow the maker's instructions to the letter!) Mr. Hatherfield continues: "Can any reader give me information about breeding the chocolate gourami? Being a beginner I have to rely on books—but none of the seven books I have has any information on breeding this species. I would welcome any from readers. I have just witnessed a pair of honey gouramies spawning on four consecutive mornings in four different nests. Unfortunately planarians were in the tank and no eggs survived."

Mrs. B. Mowbray's address is 28 Beach Road, Dovercourt, Essex CO12 3RP, and she has been a keen aquarist for two years. She writes: "I keep a family of Malayan live-bearing snails in each tank. I rarely have trouble with *algae* in my tanks, and the snails certainly keep the gravel loose and clean. I must have at least one hundred in each of my five tanks, and these all came from *three* original snails purchased from Tachbrook about eighteen months ago. I have just set up a small community tank for my son-in-law for Christmas, and my daughter is dismally forecasting tanks in every room before long! My own tastes run more to the larger fishes. I have Oscars, blue acaras, etc. I have also one tank containing a black shark and two *Cichlasoma erythaeum*. These two fish are not alike in colouring, one being brown mottled over buff, the other more of a salmon pink with black beginning to show on the fins. So far they show no sign of the viciousness about which I have been warned—but admittedly the fish are quite young. I'd very much like to hear from anyone keeping these fish; also from anyone who has successfully reared and bred *Geophagus*

juripari. During the past six months I have purchased nine of these fish, but only succeeded in keeping two. Fin rot seemed to be the main trouble, although the two I have now seem perfectly healthy. I have two U/G filters in every tank but I'm not really successful with plants—except for duckweed, which grows like fury in the Oscar tank. However, during the present power crisis I have been 'doing my bit' by having no lights on in the tanks except for a ten minute feeding time; and U/G filters have been on for only two hours per day. The difference is remarkable. The tanks are fast becoming filthy and, due to no light I expect, those plants that were surviving are now fast wilting. No doubt a U/G filter used properly is a distinct advantage . . . Here's hoping we get an even bigger feature from you for the extra money we have to pay for *The Aquarist* this year!" (When the power crisis is over you could try using stronger lights over your tanks to see if plant growth improves. If it doesn't, try leaving your U/G filters off for a test period—both with and without the stronger lights. If duckweed grows well in one tank then other plants should grow well too. However, it would be necessary to remove, regularly, excessive growths of duckweed so that light could reach the planted plants in the tank.)

Mr. E. Winter resides at 7 Macefield Road, Cirencester, Glos. GL7 1SN, and he writes: "After reading the December issue, I thought you might be interested to hear of my bad luck in spawning the dwarf pencilfish, *Nannostomus marginatus*. I had a ten gallon plastic tank, filled with rain water at 75°F, in my shed. I don't know about the pH or hardness, but into it I put four 'pencils.' I don't know how many were males or females and I just left them to it for one month. An occasional feeding of brine shrimp was all the conditioning they got. I had some *fontinalis* in the tank and I added some feathery stuff from the gravel pits where I work. I saw no signs of anything after the month and wanted the tank for some golden guppies; so I decided to put the pencils in an 18 x 10 in. tank. While tipping the water from one tank to the other, I saw what looked like babies. Carrying on gently, I found four ¼ in. babies and one of ½ in. In the sludge at the bottom I found two water beetle *larvae*, 2 in. long and lovely and fat. They had eaten two spawnings. The four small 'pencils' must have died or been eaten by the adults; but I still have the larger one. I have tried a few times since to spawn the adults, but with no success.

"I have spawned zebra danios once per fortnight until I didn't know what to do with the babies. Similarly with convict cichlids. I tried *Corydoras paleatus* with no luck. I think they were too small. I breed guppies like flies but they take so long to grow to any size that I feed most of them to my bigger fishes; but I pick out the best to keep or sell. I managed to obtain six snakeskins and a few bronze males, but that's all. I have nine tanks altogether; two are indoors and the others in my transparent roofed shed. I've painted everything black in the shed, except the tank fronts, to see if they will keep warmer: something to do with black body radiation. It's supposed to hold the heat from the sun—but we haven't had a sunny day since, so I'll have to wait and see. I haven't had much luck growing plants indoors. I've had a 4 ft. Wotan on for 10 hours daily on one of my 5 ft. tanks; later I added three light bulbs. The plants—*Cryptocoryne*, *Vallisneria* and *Nomaphila*—just survive and then gradually rot away from the leaves—despite putting the Cryptocorynes in bags of peat . . . In the other 5 ft. tank I had two 2 ft. Gro-Lux on for about ten hours daily. The plants died down as in the other 5 ft. tank—until I added 2 x 20 watt and 2 x 40 watt bulbs. The plants now seem to be starting to grow well—especially an Amazon sword that, under Gro-Lux for months, remained static at 4 in. When the bulbs were added it started to grow well and is now 9 in. tall. I had an *Anostomus anostomus* that died of a bacterial disease. (I lost a lot of nice fishes that time.) I decided to have a look inside the dead Anostomus and she was full of green eggs. The fish was 4 in. long. Having read that the breeding size was unknown, I decided that they must be ready at 4 in. I thus went out and bought four more from two different shops, put them all together, and sat back. Two went up to each other, like mollies, shimmying side by side. I thought I was going to be lucky so I removed the others; but I think they must have got frightened because they stopped and never started again. In the end I had to put one fish in one tank as there was always a bully; and one got so badly beaten up that it got fungus. I couldn't get it cleared up and the fish finally died. I sold another one and kept two. I'm going to try my luck again some time if they turn out to be a pair. One is considerably fatter than the other so they might be a pair. It might be the only way of sexing them.

I would like to pause here to remind readers who send me letters for this feature to PRINT their name and address—please! As one writes one's name and address more frequently than most other words or phrases, one is sometimes inclined to get rather careless; hence I find it difficult sometimes to read names and addresses on letters. So, to make my job a little easier and to ensure that the facts about you appear correctly, please PRINT your name and address—and, if you remember, date your letter. This latter information enables me to use letters in chronological order, where appropriate. One further point: a badly written name and address is better than none at all! Today I received a letter concerning the breeding of Siamese fighters; unfortunately, the letter bore neither name nor address; this means that I can neither use the letter nor send a reply. If the writer would care to write

again, including his or her name and address, I'll try to be of assistance.

A friend, Mr. S. Greenlees, today told me of an interesting experience with his pair of breeding angels. The male fish, in an attempt to encourage his mate to spawn, virtually turned his gills inside out—and at the same time emitted croaking noises. His efforts were successful as the pair spawned today. Have any other readers had similar experiences with breeding angels?

Photograph 2 shows one of the four *Rivulus magdalenae* (killies) that were kindly sent to me by Mr. Brian Leighton, whose home is in Kent. I would be pleased to hear of your experiences with the keeping and breeding of this species. (The day after I took this photograph the fish managed to jump out of its tank through a tiny hole which provides entry for a filter syphon. When I found the fish it was very dried up and very dead. However, I still have three others of the species which I hope may breed.)

Mark Hudson is 14 years old, and his home is at 10 Seaborough Road, Chadwell Street, Mary Grays, Essex RM16 4PA. (I hope I've got your address correct, Mark). Mark has twelve tanks—four indoors and eight in what used to be an outhouse. He keeps a lot of cichlids because he thinks they are very interesting fishes. They include convicts, jewels, angels, Oscars, *P. kribensis*, etc. Mark continues by telling us about his blue acaras spawning. He writes: "I came home from school one day, looked in a 3 ft. tank, and in a flowerpot I saw about 300 eggs. The female was inside looking after the eggs, while the male was digging up the gravel and chasing away other fishes. I partitioned the tank off. In a few days the eggs hatched out and the fry were moved to a pit in the gravel. In a few more days the fry were free swimming and the male and female were heading the fry round the tank. At night the fry were put to bed in one of the pits. The baby fish were fed on brine shrimp and fine dried food, but after a few days the babies started dying off. Then I put the remaining fry in a 2 ft. tank; but they all died. Then I put the male and female in a 2 ft. tank to spawn again. After a few weeks they spawned again. Well, out of 300 fry at the start, I saved 14 fish. Of these, seven died and I sold six. I kept the remaining one." Mark goes on to say that he got as far as he has with the hobby because of the help he received from the aquarists in the club of which he is a member—Thurrock (?) Aquarist Society—and from the people in the shops in his area.

No. 52 Celia Crescent, Ashford, Middlesex, is the address of Mr. R. Young. He writes: "At the moment I keep cichlids. They include a fine pair of *C. spilurum*, two pairs of firemouths, con pair of *P. kribensis*, a pair of Dempseys and two lovely individuals, both males—a 3 in. *festivum* and a 2½ in. *Herotilapia multispinosa*.

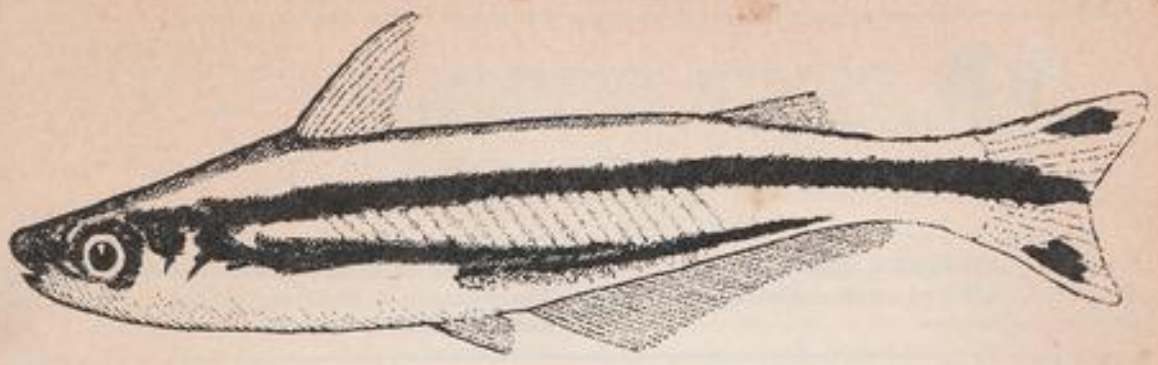
"I use just one corner filter, in each tank, containing gravel and wool. The tanks are always clear and the water good, if a little hard. Naturally, I siphon once a week. The spilurums—blue-eyed cichlids—are my favourites, and have a 36 in. x 12 in. x 15 in. tank to themselves. They have spawned twice and have at present a fine batch of ½ in. young—120 in all. I have raised the young with the parents, which are easily the kindest and most devoted cichlids I have yet come across. Their first brood numbered 47 and were not eaten. The diet for all the fishes is earthworms, *daphnia* and, occasionally, *tubifex*. They get their vegetables via 'everlasting spinach' which I grow, and from Tetramin vegetable flakes. I keep a *Corydoras* and a brittle-nose catfish in each tank to act as 'cleaner' and 'window cleaner,' and they do a fine job and are never attacked by their bigger co-tenants. Should any of your readers be interested—not in buying!—in spilurums, or have for sale or 'swaps' a female *festivum* of about 3 in. in length, I would be delighted to hear from them or welcome them to my home." (As Mr. Young's letter does not bear a date, I do not know if his offer still stands; however, his telephone number is Ashford 41372).

Flat Three, 76 London Road, Canterbury, Kent CT2 8LS, is the home address of Mr. J. Gilbert, who writes: "Regarding your query about air pumps—my favourite is the Montrose Minor. The one I have was purchased secondhand with my first tank some two years ago. At present it is operating a biological filter in an 18 in. x 12 in. x 12 in. tank, and a bottom corner filter in a 12 in. x 10 in. x 8 in. tank in which I keep three small goldfish. The larger tanks house assorted tetras and a few male guppies." Mr. Gilbert goes on to say that since he acquired six more tanks, he bought three more pumps. These newer pumps are a different brand—manufactured in Japan and bearing a British label. Of them he says: "I find them slightly noisy but not too good on power—nothing like the Minor—especially for a new item. I have never seen these excellent little (Minor) pumps for sale. They must be rather old now, judging by appearances, otherwise I would have some more.

"One thing that has shocked me recently is the fantastic price asked for petrified wood. No shaping or carving is done—the pieces are found in peat—and a piece I picked up, weighing 6 to 7 lb., was priced at £5! I don't know if other readers have had experience in these sorts of dealings but I'm afraid that such wood is right outside my scope. I'll just settle for Welsh slate! In reply to Mrs. V. G. Houps of Folkestone: If she will go to the dealer in Sea Street, Herne Bay, in Kent, she will find scats, puffers and many more unusual fishes."

Master R. Moore was 16 years old when I received his letter from his home at 130 Kestrel Avenue,

Continued on page 467



THE THREE-STRIPED GLASS CATFISH

by Bill Simms

NOT FAR from the mouth of the River Congo on the west coast of Africa, is an area near Brazzaville where can be found a small fish that is a delight in any aquarium. This is the Three-striped Glass Catfish, *Etropiella debauwi*, sometimes called the Congo Glass Catfish, which has a silver and white body, decorated by three black stripes running from head to tail.

Young specimens are not so clearly marked as the drawing, which is of a mature 3 in. long fish. If you are offered one that is not so clearly marked it is quite all right, provided that you can be sure it is young. Size will be some indication, for 1 to 2 in. fish are usually offered, and these do not show their real brightness until later.

For the aquarist who wants some catfish that are really different, this is the fish, for its manners in a tank are not like those of other catfishes. To start with it is a school fish, and will not last long if kept without the company of its own kind. Always have a minimum of three or four of this species; six are ideal.

Its swimming habits and posture are very restless, for this fish gives the impression that it has to swim hard to keep well up in the water. This might make you think that the fishes you have bought are ailing, but this is not necessarily so, for the new fishes have peculiar ways. This is a peaceful fish, and can be kept with other tropicals.

A soft, slightly acid water suits it best, so remember the old tip of keeping a few old oak leaves in the gravel. The temperature range of 75 to 80°F, which one often uses for other tropicals, is ideal for this one.

The recommended food for this glass catfish is live *Daphnia*, white worms and *tubifex*, but I have found that it takes almost anything. It thrives exceedingly well for it is quite hardy and long-lived—even on mainly dried food of good quality. Newly hatched and grown-on brine shrimps are taken avidly, so it is not difficult to keep healthy.

One of the main delights of this fish is its transparency, for the white and silver parts can be seen through—particularly in the younger, smaller fish. As it grows older the contrast between the white/silver and the black stripes becomes more marked, and it is at all times an interesting and exciting fish to keep. I have not heard of it being bred in captivity, but you may be lucky.

WHAT ARE WE?

By Hilary Maynard

My 1st is in POSTAGE but not in LETTER,
My 2nd is in POORER but not in BETTER.
My 3rd is in MAKING but not in MADE,
My 4th is in FOREST but not in GLADE.
My 5th is in TROPICAL and also in HEAT,
My 6th is in CUSHION but not in SEAT.
My 7th is in GREENSTUFF but not in NETTLE,
My 8th is in COOKER but not in KETTLE.
My 9th is in MARRIAGE and also in MATE,
My 10th is in MACKEREL but not in SKATE.
My 11th is in MEASURE and also in MILE,
My 12th is in SLATE but not in TILE.
My 13th is in STEEPLE but not in DOME,
My whole are quite small—they like a well-planted home!

Answer on page 479

OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE
All queries MUST be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.

COLDWATER QUERIES

by Arthur Boarder

I have a ten-gallon tank with a filter and aerator. I keep common goldfish, a moor, a comet, a veiltail, an oranda, a blue shubunkin and a red-cap. Each morning the top of the water is covered with bubbles and the fish appear unwell and have a coating of white slime on them. The temperature of the water is 70°F. I have added chlorine sea salt to the water and have two 30 watt frosted tube bulbs on all day. Why do my fish not thrive?

In my opinion your troubles are due to over-crowding or over-feeding, or both. The tank should not hold more than eight inches of fish, body length. The fact that bubbles are at the surface of the water each morning shows that the fish are not getting enough oxygen, especially when the pump is not working at night. Your temperature is too high for the coldwater fishes and, of course, this means that the water contains less oxygen than colder water. You should not add any form of sea salt to a tank; this should not be used except in a tank especially for ailing fishes. You may have too much heat from the lamps, a 40 watt lamp would be enough. By the many different types of food you use it would be easy to over-feed. Once this happens the water turns foul and the fishes cannot eat at all and any more given only adds to the trouble. Water snails will not help. Try with fewer fishes and do not feed for at least three days after setting up and then only offer a little to see if the fish are on the feed. A water temperature of 60-65°F is sufficient for your fishes.

One of my fantail goldfish was put in a tropical tank. The fish is half inch body length. Could I put it back in coldwater without it dying? Could I put the fish in a show with warm water in the show tank?

The fish is small and could suffer from a change in the temperature of the water. The best way would be to put the fish in a separate tank of water at the same temperature as that of the tropical tank. Then let the water cool gradually to that of the cold tank. However, if the fish has been reared under warm conditions it may not take kindly to the change. In any case, I suggest that the water in the cool tank is not below 60°F. As for showing the fish; it will have to get a two inch body length before you can show it. The usual classes are for coldwater fishes. However, I have been to shows where a heater is allowed in some fancy goldfish tanks. I fail to see though how such tanks can be classed as coldwater.

I have three tanks, each three feet long and would like to breed red scaled fantails and veiltails. However, I cannot find the fish I require up to a good standard. Can you help, please?

This is the second letter I have had in two days asking a similar question. There is no doubt that these fish are scarce. It is difficult to give certain information as to where such fish can be obtained. I will enclose an address where you can try to get the fish you require. From the many letters I have had with the same enquiries I feel sure that much of the trouble in obtaining the fish is that too high a standard is aimed at. It is not easy to obtain show specimens of many of the fancy varieties of goldfish and so if one wished to start a strain of any particular variety, I suggest that you get fish from a good source but not perfect specimens. Then you must breed from them and sort out the best and then breed from them. To get a really good strain of fish one must have plenty of patience. If one starts with medium fish and breeds for a few years it is certain that better fish can be obtained in time.

My own strain of red-scaled fantails came from Woolworths in 1937, and cost sixpence each. By giving

the girl assistant a bit of "blarney" I was allowed to take the pick of half a dozen from about three hundred fish. These were fair to medium fish and among them were the points I required. After several years of breeding and sorting I was able to establish a very good prize-winning strain. It took time, but the reward was much better than if I had paid high prices for best quality fish.

I have a tank with an aerator and filter and have six goldfish in it. They do not keep well and I lose one now and again. Each morning there are bubbles on the top of the water. Why is this, as I keep the aerator going for ten hours each day? I have water plants in the tank.

It would probably be much better if you only used the aerator at nights. During the daylight hours the water plants give off oxygen but do not do so at night, only giving off mostly carbon dioxide. If the aerator was on at night, providing the room was not filled with tobacco smoke, the fish should not have to mouth at the surface all night for air. I have kept fish in a living room for very many years without a filter or an aerator and I never lose a fish or have one ill. You may have too many fish for the size of your tank. Check up and have not more than an inch of body length of fish to each 24 square inches of surface area.

I have a goldfish which has a swollen body and it stays on the bottom of the tank. Its eyes appear to be protruding. What do you think is the matter with it?

The fact that it has a swollen body may just mean that it is a female fish and there are well developed eggs inside it. However, if it stays at the bottom and cannot swim well the trouble may be dropsy. I do not hold out much hope of a cure but you can try it in warm shallow water for a few days and see if it improves. Give no food and try to keep a temperature of about 70°F. If the fish shows no signs of improvement it should be destroyed as it will probably never be fit again and, of course, is useless for using for breeding purposes.

Is it possible to keep a pike in a tank 5 ft by 1 ft. by 1 ft., and if so where could I procure one?

It is quite possible to keep a pike in your tank providing the pike is a small one. One six to eight inches long would be suitable, but not much larger as you would have to allow for growth. Young pike are not difficult to keep and are one of the more handsome of the British fishes. I remember seeing a small one in a tank at the "Aquarist" Show at the Alexandra Palace a few years ago and I was struck by its fine colourings and alert appearance. You would have to feed it on live foods, and garden worms are one of the best for this purpose. As to where you can obtain such a fish, this is more difficult to answer as a dealer is not likely to have one for sale. The best idea is to contact an angling society in your area. A member may be able to help you to get the fish you want. These fish are not usually welcome in angling waters and assistance may be forthcoming to help catch you a young fish. One good method is to drag a fair sized net through the weeds at the water's edge. Young pike like to lie there in wait for their prey. If you try to catch one yourself see that you obtain permission from the renters of the water first.

TROPICAL QUERIES

by Jack Hems

Are convict fish easy to keep?

The convict fish (*Cichlasoma nigrofasciatum*) sometimes called the black-banded cichlid or zebra cichlid, is very easy to keep. About all it demands is a temperature in the lower to middle seventies (°F), a tank furnished with lime-free stones, to afford retiring places and a playground, and a high animal-protein diet. It is, however, an aggressive little fish and is totally unsuited to sharing a tank with other much smaller or timid species. In short, give it a tank to itself.

I have been told that a layer of peat under the sand provides nourishment for plants. Is this true?

It is not true. Peat provides no nourishment for plants. All it does is to provide an acid substrate and a good rooting medium. A mixture of well-soaked peat and non-fibrous loam (or pure clay) is much more rewarding.

What can you tell me about the care and breeding habits of the golden gourami?

The golden gourami is merely a colour form or golden strain of *Trichogaster trichopterus*, so its life-style, breeding habits and care are the same as for other gouramis of this type, for example, the blue gourami or the opaline gourami.

I have a small community tank in which I keep a collection of guppies, swordtails and platies. Less than a week ago, I changed the water

because it looked murky, but since then the fish keep flicking their bodies and fins against the plants and sand. Do you think my fish have been invaded by flukes?

I doubt it. Lots of fishes, particularly the livebearers you mentioned, will rub their bodies and fins against the sand and plants and electrical apparatus in an aquarium after a complete change of water—especially warmed-up water from the coldwater tap. As the water matures (ages), so the flicking actions die down. It is believed in some quarters that new tapwater sets up an irritation in the skin of some fish.

I have recently acquired two *Heteropneustes fossilis* catfish. Could you please tell me what foods these species eat?

No-one can say that *H. fossilis* are epicurean in their dietary requirements. Earthworms, maggots, thin slivers of red meat and the well-balanced dried or freeze-dried foods are perfectly satisfactory, mixed up, of course, to keep the fish in good shape.

I should like to learn something about roundworms, which have turned up in my tank. Is there a reliable book I could turn to for information?

There is, and its name is *The Freshwater Life of the British Isles*. It was written by John Clegg, and is published by Frederick Warne.

My 36in. by 15in. by 15in. tank houses two small oscars and two small *Tilapia mossambica*. Will my tank provide sufficient swimming space to grow the four cichlids to full size?

As the oscar (*Astronotus ocellatus*) grows to about 9 in., and the Mozambique Cichlid some several inches more, there will soon come a time when you will have to move out two of the fish or go in for a tank about twice the size of the one you have at the present time. Even a couple of oscars deserve a tank at least four-feet long.

My tank is becoming infested with a thread- or hair-like green growth which is smothering my plants. My dealer has told me to pull out the threads by hand, but this only results in a temporary diminution of its smothering action. What should I do?

Take your dealer's advice, but when you have cleared away as much of the growth as you can, crowd your tank with higher plant life, for with the competition for space and light the higher plants will afford, the thread algae will be brought under control.

When I netted some *Daphnia* from a local pond, I found a number of creatures which looked like elongated splinters of glass, with a dark spot at the fore and rear ends of the body. Can these creatures be fed to my fish without danger?

The almost transparent creatures you netted are the *larvae* of the plumed gnat (*Chaoborus*). These larvae make a useful livefood for fish and are quite easy to come by in field ponds or water-retaining holes right through the winter.

Please give me some information on the care and breeding procedure of *Aphyosemion australe*.

A. australe or the lyretail flourishes best in old water that is neutral to slightly acid and not hard. A temperature range of 72°F (22°C) to 75°F (24°C) is about right. Recommended foods are Grindal worms, ordinary white worms (*Enchytraeus*), *Daphnia*, brine shrimps and gnat larvae. Plants with fine or feathery foliage are an essential requirement. The fish spawn in the plants and the eggs hatch in about ten days. The hungry fry do well on a diet of micro-eels, brine shrimps, and sifted (through fine mesh) *Daphnia*.

I was most interested to read the article on piranhas in your January issue. I wonder whether you could recommend a book by an informed author which covers the subject of piranhas at considerable length and depth?

I suggest you obtain a copy of *The Book of the Piranha*, by Dr. G. S. Myers. This book may be obtained for about £1·25 from several of our regular advertisers specialising in the better class of aquarium books.

I have just obtained two young Egyptian mouthbrooders. Please can you tell me how to tell the sexes apart?

I suppose you mean the pygmy mouthbrooder usually known under its formal name of *Haplochromis multicolor* though some students of fish prefer to call it *Hemihaplochromis multicolor*? Be this as it may, sexing this fish is not difficult. The female is more washed-out in appearance than the male, but her underparts show a lot of lemon-yellow. Her fins are clear. The male has a dorsal fin marked with bands of black, blue and yellow. His anal is marked with red and green spots and blotches. Then again, the male is the larger of the two sexes and a female ripe for spawning shows a distinct fullness in the sides. Moreover, at all times a mature male is more colourful than the female.

I have just bought a pair of American flag fish (*Jordanella floridae*), but the information given about this species in the books is quite contradictory. Some authorities say that the fish spawn in depressions fanned in the sand, whilst others say that the fish deposit their eggs in the plants. What should I believe?

The breeding habits of *J. floridae* do not always

follow the same pattern. Some pairs will spawn on pieces of stone or plants near or at the bottom but in some pairs the male makes a depression in the sand and the eggs are deposited in it. After spawning, the male mounts guard over the eggs and brutally drives the female into hiding.

I have a tank planted up with various species of *Cryptocoryne*. The water and the quality of light is just right for the *Cryptocorynes*, but I would like to grow some mossy- or feathery-foliaged plant to grow in the foreground. What do you suggest?

The plant most suited to your conditions is Java moss or *Vesicularia dubyana*. This interesting true aquatic moss spreads slowly horizontally and vertically and will survive and indeed prosper where other plants would die for lack of light. Not only is Java moss a very decorative plant, but it makes one of the best spawning mats for oviparous fishes.

WHAT IS YOUR OPINION?

Continued from page 462

Yardley, Birmingham B25 8QX. Master Moore writes: "Being a keen freshwater aquarist for three years now, I recently decided to try my hand at marine fishes. Not knowing much about them, I paid a visit to my local aquarium shop, which also deals in marine fishes, to ask their advice. I soon had the tank set up and ready for the fishes. My first fish was bought after saving up my pocket money to the vast amount of £1·50. (As I am only 16, I have a limited amount of pocket money). The fish was a quite large saffron blue damselfish. It was eating the day after it was bought and I was very pleased. A few weeks later I bought a small humbug damselfish; this also settled down quickly. Later still I was struck by the beauty of a Picasso triggerfish and on impulse bought it. It was very considerate to the fishes already in my tank and no fights occurred. Again, a little later, I saved some more money and bought two coral catfish. After acclimatising them I let them out into the main tank—and to my horror watched helplessly as he sucked the eye out of one catfish and bit the tail off the second. Both of the fish were removed but were dead within a week. I again sought the advice of my dealer who said that Picasso triggerfish could be 'funny like that' and suggested I buy either a grouper or a poisonous dragonfish. Not being able to afford either fish I went home. When I had acquired enough money, I returned to the shop and purchased a dragonfish on the understanding that if the triggerfish did try to eat it then they would accept the triggerfish as part payment for another fish. Again I came home and later introduced the two fishes. The triggerfish was wary of the dragonfish, but late on in the evening took a nibble at one of his spines. Immediately I took him out for his own sake and returned him to the shop next day in part exchange for a copper band butterfly fish. The dragonfish has since refused to eat and has died. Although the butterfly fish is eating well it has had white spot. Despite having these setbacks I am still a keen aquarist and have ordered another fish from the dealer. Have any other readers had similar experiences? In my freshwater tropical tanks I have also had trouble. My 36 in. x 12 in. x 15 in. tank had a pane of glass broken, and although the tank was completely re-puttied and siliconed, it still leaked. When the tank was stopped with more silicone it was filled with water, and since then I have for some unknown reason had one large angel, one pearl gourami and two thick-lipped gouramis die."

Well, once again the space has been used up before more than a few of the letters have been used up; however, I hope that those which have been used have contained some facts and views which have been of interest and use to you this month. For a future feature please send me your opinions on the following: (*a*) Do you know of any *natural* products that can be used to improve colours in fancy guppies? (*b*) What are the conditions under which you have obtained good growth of Java moss? (*c*) How successful have you been with the breeding of neons and/or cardinals? (*d*) According to many of this month's letters the larger cichlids are more interesting, and much easier to keep, than smaller fishes such as tetras. Do you agree? In your opinion what are the attractions of both the larger and smaller tropicals? (*e*) What have been the results of your cutting down on lighting and aeration to conserve fuel supplies during the recent crisis? (*f*) Which species of fish have you found to be the most intelligent—in the broadest sense of the word? (*g*) What are the advantages and disadvantages of aquarium shows? How, and at what age, were you introduced to the hobby of keeping tropical or cold-water fishes? I would be pleased to receive a letter from you, whether or not you have written to me before. Send your letters to me c/o *The Aquarist and Pondkeeper* and clearly identify your letters as being for W.Y.O.? to avoid confusion with other sections of the magazine.

MANDARINS

by

H. G. B. Gilpin

& Q. G. B. Gilpin

Synchiropus splendidus

OUR INTEREST in Dragonets and an appreciation of the fascinating shapes and vivid coloration of these marines, aroused by the acquisition of the Psychedelic Fish, described in a recent article, stimulated us into obtaining a pair of these gloriously hued fish, commonly known as Mandarins.

Judging from the literature, which states that Mandarins, natives of the Indo-Australian Archipelago, reach a maximum size of three inches when adult; our male, at present two and a half inches in total length, is not fully mature. He is, however, magnificently coloured. Irregular orange bands, bordered with black, weave erratically across his body, extending into the deep posterior dorsal fin, adding to the dramatic effect of the long, frontal dorsal spine. Two blue bars cross the front of the head and a third extends backwards on either side of the head, from the upper mandible to a point below and just behind the rather prominent, blue rimmed, reddish-orange eye. Below and slightly posteriorly to this point is an almost mauve area supporting a collection of bright yellow spots. The broad reddish-brown tail is edged with bright blue and this colour is repeated on the full anal and ventral fins. The constantly vibrating pectoral fins are also blue. The female, little more than one and a half inches long at the moment, closely resembles the male but her colours are generally more subdued, especially when she is lurking in some secluded corner.

Bearing in mind the belligerent behaviour of Mandarins when confronted by one of their own kind, on arrival the two fish were placed in separate three-foot aquariums, each with a floor covering of coral sand and an assortment of corals. The temperature in both cases was kept at 75°F.

The male fish quickly settled down in the company of a Butterfly fish and four Cardinals and the female soon made herself equally at home with two male Seahorses. Neither of the Mandarins interfered in any way with their companions nor were they themselves exposed to any aggression. Both were very, very nervous when they first arrived and they still retire behind a lump of coral or secrete themselves in some hidden spot if one moves rather too quickly when approaching their quarters. If one sits quietly in front of the aquarium however, they soon reappear and settle either on the sand or on top of a piece of coral exposing their full beauty, with their delicate blue pectoral fins in continual motion. They spend much of their time in this position moving occasionally to search for food, feeding both from the bottom and middle layers of the water. Whilst at rest their rather prominent eyes swivel in all directions, either to warn them of possible danger or to locate food.

Both Mandarins readily take Misa shrimps and will also eat Brine Shrimps and baby Guppies. As with their close relative the Psychelelc Fish they are said to take Tubifex but so far we have not offered them this form of live food.

An interesting response we have noticed with both the Mandarins is their reaction to light. At night if the illumination over their aquarium is switched off they appear to spend the hours of darkness resting on the white coral sand. When the strip lights go on again the following morning the colours of the fish are seen to have undergone a marked diminution in intensity and both fish have assumed a very pale appearance. Under the impact of light they rapidly recover their normal vivid hues.

We understand that unknown until comparatively recently, Mandarins are now available on the commercial market in reasonable numbers.

THE BLUE-FIN TOP MINNOW

Written and Illustrated by Bill Simms

Chriopeops goodei, the Florida Bluefin, or Blue-fin Top Minnow, is from Florida, and is one of those fishes that can hardly be classed as tropical. This is because it needs a temperature of 60 to 65°F., and cannot tolerate the temperatures in the 70s that we use for normal tropicals.

Because it is a colourful and well-marked species that attracts buyers of tropicals, beware of its special conditions. The base colour is greenish or brownish-yellow, marked with a black line along its middle, and usually along its back, also. The tail fin is red, and the other fins are blue, edged with black. The male is larger (about 2 in. long) and has brighter colours.

As well as the lower temperature required by this fish it should have a large aquarium, for it is most active, and spends most of its time on the move. Plenty of plants should be provided, preferably of the fine-leaved kinds, and here the lower temperature is a help, for many fine plants also like the cooler conditions. It is essential to provide mainly small-sized live foods, for these fish will rarely take dried food.

When installed in conditions like these the Blue-fin Top Minnow will spawn readily. The male puts on a fine display, and he and the female will move into and above the finely-leaved plants. The female then expels a few eggs each day for about five weeks—a most leisurely and prolonged act of love-making—and the eggs settle among the plants.

They hatch in about two weeks at 65°F, and if there are some infertile eggs it is usually because the water is too warm. When the eggs hatch and youngsters are seen they should be brought to the surface by placing a light over one part of the otherwise darkened tank. There they should be lifted out in a spoon or scoop—not a net—and transferred to another tank. This should have similar water, and is usually filled by extracting a little water from the parent's tank each day in readiness for the move. Because of the protracted egg-laying session the young will be hatching each day, and should be removed every few days.

Feed the tiny young with infusorians for a week or so, and then, as they develop, they can be given newly hatched brine shrimp, and eventually the same food as their parents. Their colours soon develop, and then they make a most colourful display.

KEEPING CRABS

by Bill Simms

Shore Crab

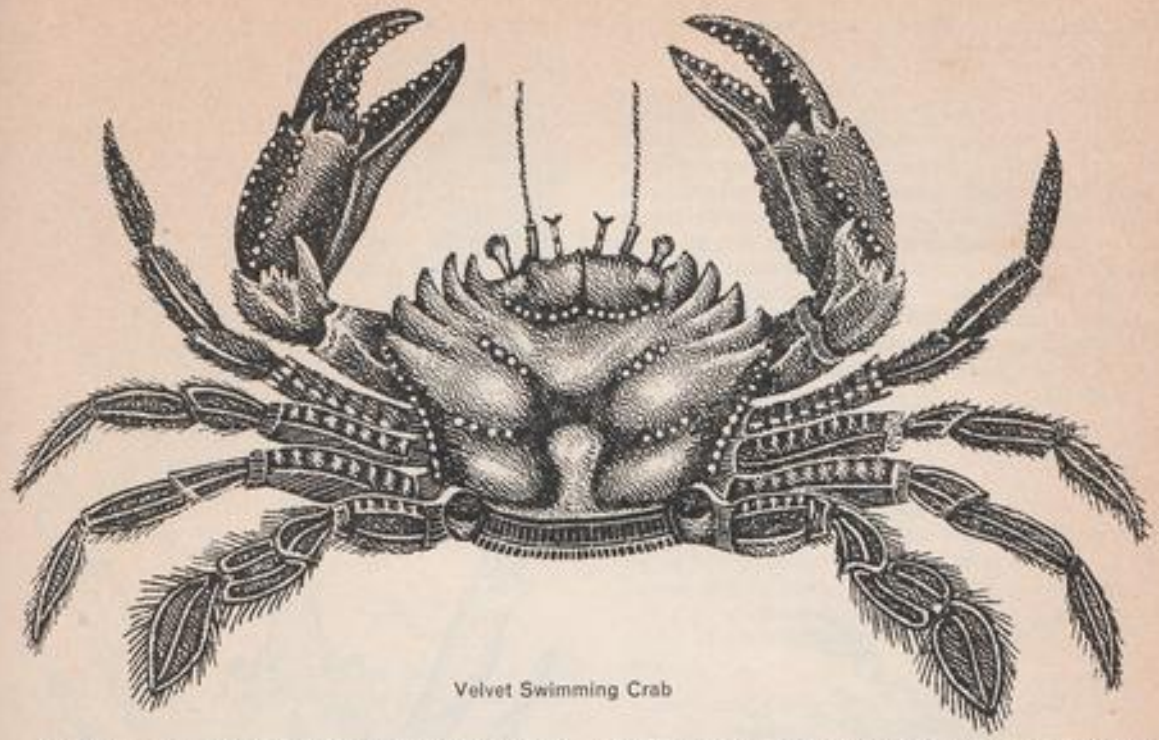
THE CRABS native to the British Isles are attractive to many coldwater marine aquarists, but they should remember that these creatures can climb a little, and need somewhat special conditions. Many of them like to move out of the water at times (though only into a damp atmosphere) and a few are not happy unless they have deep sand into which they can burrow. Also, they are very quarrelsome and not above attacking a smaller cousin with a view to varying their diet.

Enthusiasts will not be deterred by such minor matters, though, and there is little doubt that a great deal of satisfaction can be obtained from keeping some of the more difficult subjects. Having attempted on many occasions to keep various kinds of crabs alive and healthy, and having had to redesign the aquarium often into a vivarium, I have come to the conclusion that crabs are best kept in very large aquaria or in those that can have a division between some waterlogged sand and a deep water area in which there is a base of shallow sand and rocks. In addition it must be cited in a permanently cool position, have its sea water changed regularly, and have plenty of aeration.

Of course, there are some species, such as the Velvet Swimming Crab that will do well without the sand area, and can be kept in a smaller, more usual marine aquarium. But these must still have the regular water changes and aeration, for crabs are messy eaters and leave plenty of scraps to pollute the water. The provision of some anemones might be thought sufficient to deal with these floating scraps of food, but they would miss a lot and also, they are a great hazard to the small crabs, for they would use them as food if possible.

Feeding all kinds of crabs is easy for they are well satisfied with scraps of raw fish and any small marine creatures they can get their claws on. If you are close enough to the coast to visit it regularly, then a small net will scoop up plenty of small creatures from rock pools and these can be placed in the tank to provide a natural food—or to take evasive action, as their nature dictates.

Furrowed Crab



Velvet Swimming Crab

Of course, the easiest of all the small crabs to find is the Shore Crab, which can be seen almost everywhere around our coast and is so abundant that one can hardly miss it. This crab, however, is not so interesting as some of the others, and also is one of the worst offenders at climbing out of seemingly impossible aquariums. If you do keep it, then give it a divided aquarium, with a wet sandy area, and a top that is kept on whenever you are not watching it.

One of the most interesting crabs to keep is the Furrowed Crab, which at first glance looks like an Edible crab for it has a shell that is nearly twice as wide as it is long. The breadth and width of the shell (carapace) is a point to notice when you are trying to identify different species of crab, and is the main distinguishing feature between the Shore and Edible crabs.

The Shore crab is nearly as long as it is broad, while the Edible crab is nearly twice as broad as it is long. Apart from the obvious difference in shell shape, these two crabs are somewhat similar when small, though there are other differences that the expert will spot fairly quickly. One of these is the shape of the frontal edge of the shell. In the Edible crab this front edge is curved right down the sides, whereas in the Shore crab, with its narrower shell, the slightly curved front edge finishes abruptly at each end of the front edge.

With these differences in mind it is easier to identify the Furrowed Crab, *Xantho incisus*, for it differs from the Edible crab in having eight distinctly pointed projections along the front edge of the shell, instead of the serrated edge of the Edible crab. In addition the shell is deeply furrowed.

The Furrowed Crab is mainly reddish brown, but its claws are distinctly black, and this is a most noticeable feature. This crab is one of the easiest to keep, for it rarely grows bigger than about 2 in. across the back, with 4 in. long front claws, and usually the specimens we find are much smaller.

Normally it frequents our south and west coasts, and most of Ireland, but I have found specimens farther north in Britain, so its range can be considerable. Most of those I found were hiding under stones on the lower shore near the lower tide marks, but I have had some with the hoop net from fairly deep water. In the aquarium it does well, but is pugnacious, so be careful of smaller specimens placed with it.

A crab that is quite small when fully adult, for its shell is only half an inch long, is the hairy Porcelain Crab, *Porcellana platycheles*. This is one of the really interesting little crabs, for it is distinctly different in appearance. Its shell is almost a circle, being slightly longer than it is broad, and both legs and body are covered with hairs. The actual body colour is yellowish, but the hairs are brown, and the general effect is reddish brown. It has a peculiarity in its legs, for the rearmost pair are very thin, and look as

if undeveloped, giving the appearance of a crab with only four pairs of legs.

This small crab can be found all around our coast, but is erratic in distribution, for in some localities it is very numerous, while in others it is scarce. Usually it will be found under stones on the lower shore, and is often missed because of its small size. Be careful how you secure your specimen, for besides having strong front claws with a nip that is out of proportion to its size, it will cast its claws if handled roughly. It is best to scoop it up with a little sand and water in a container that can be closed fairly quickly. This small crab makes an ideal inmate for an aquarium, but should be given a sandy area to make it feel more comfortable.

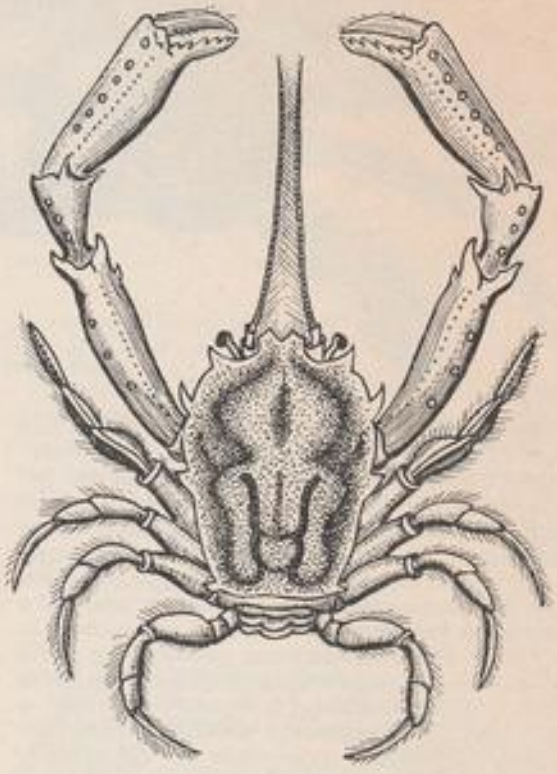
Long-legged Spider Crab

A small crab that is easy to recognise is the Long-legged Spider-crab. This has a very small triangular shell, front claws that are about twice the length of the body, and four more pairs that are three or four times the body length. Many fishermen around the coast think of it as an actual spider, but it really is a crab, and can be most amusing in an aquarium.

It is ungainly, timid, and slow-moving, and needs care to keep it entire, and in good health. It is best kept on its own, or with others of its own kind and size, for large fish will eat it readily as will any larger more active crabs. A peculiarity of this crab is that it often has pieces of sponge growing on it, possibly because it is so sluggish in its habits.

When catching and moving this crab make sure that it is kept in sea water all the time, for, unlike many other crabs, this one does not live long out of water. It can be found in estuaries, in rock pools at low tide, and in deep water. I have pulled two up from deep water, and had them die fairly quickly because I had no suitable water container for them.

Because of its totally different living habits, and its elongated shape, the Masked Crab, *Corystes cassivelaunus*, is a most appealing species. The shell,



Masked Crab

which has distinct marks, is longer than it is wide. The marks are supposed to represent a face, but I have never found one remotely like a face, even though there are considerable differences on various specimens. The colour is mainly a light reddish tint, passing to yellowish-white, but the claws and legs are a deeper reddish colour.

The greatest interest in this crab lies in its habits and structure. At its front end, between its elongated front claws, are two long feelers lined with hairs on their adjacent sides in such a way that when they are

Hairy Porcelain Crab

brought together (as in the drawing) they form a tube. Down this tube, which is kept free from sand, comes water. This arrangement is necessary because this crab spends a lot of time buried in water-covered sand with just the tips of its feeler-tubes at the sand surface. In this position it is invisible, for its front claws are kept just below the sand surface. There it lies in wait for any creature to approach close enough, being able to sense its prey with the aid of the water that is drawn down the tube. Then the two claws emerge and snap together in the water just above the tube, and the victim is caught.

A Masked Crab dropped into clear water over sand will almost at once start to sink into the sand. It does this by gripping with its hind legs, and pulling itself down. Within a few moments it will be out of sight, and ready for its next meal. It will be obvious from this that its aquarium must be quite deep, so that a sufficient depth of sand can be provided, as well as plenty of water above the sand.

When providing quarters for this crab I have always brought sand from below the lower tide marks, and made sure that it is always awash with sea water during transport. This method has sometimes produced surprises, for many other creatures live in such sand, and when the aquarium is finally set up they appear. Among these can be sand eels, and some of the marine worms, together with hosts of microscopic creatures that do a little towards keeping the water clean. However, the water should be changed fairly often, and the sand just occasionally, depending on the amount of debris allowed to remain on it.

The Velvet Swimming Crab, sometimes called the Fiddler Crab because of its habit of holding one claw slightly across the other, requires a totally different set-up. An ordinary marine aquarium with an inch or two of sand and some rock at the bottom will serve it well. Instead of crawling (though it does plenty of that, too) this crab can swim through the water, using its flattened rear legs fringed with hairs to do this. Its colour is mainly reddish brown, but this is picked out by markings of bright blue. It is an extremely handsome crab, for all over its body is a fine coat of velvet hair, except on some parts, where are the patches of bright blue.

This crab is extremely pugnacious and will assume a defence posture as soon as you approach it. Being also active, and able to run very well, it takes a bit of catching. It has a shell that is broader than it is long, and there are ten pointed projections along its front edge. Sometimes it will be found on the beach under stones near the lower tide marks, but the easiest way to catch it is with a hoop net. Have a container of sea water handy to tumble it into. It can be found all around Britain, but mainly in the south and west.

There are plenty more small crabs you may find, but do remember when catching them, that like lobsters, they can cast a claw very easily—and all of them can bite.

Edible Crab

Junior Aquarist

Gnathonemus petersi

by Christopher M. Hogg *(aged 15 yrs)*

About nine months ago, I was fortunate enough to see a long-nosed Elephant fish for sale in one of my fish-dealer's tanks. I enquired what kind of fish this was and on being told, I immediately decided to buy it. At £1-65 it was my most expensive fish to date, but his enchanting looks made up for his not-so-enchanting price!

On arriving home, I placed him in my three-foot tank along with an extremely large *Hypostomus* (Sucker-mouthed Catfish), two Harlequins, five medium-sized Cardinal Tetras, two Silver Hatchets and two Ghost Glassfish.

At first he wouldn't accept any food but after about three days he finally began to start eating. When *tubifex* worms are to be used for feeding this fish I would recommend that the ball of worms be placed in a saucer as *tubifex* worms, if placed in the gravel, will live there and foul the tank.

All went well until the summer holidays, when my fish were left in the supposedly-experienced hands of my father. On returning one and a half months later I found my large tank, which contained the elephant fish, in a dreadful state—three of the Cardinals had died, there were dead plants everywhere and the Elephant fish was very near to death. However, I transferred all the fish in the large tank to a two-foot tank, stripped down and set up the large tank again and transferred all its former inmates back into it. Fortunately, the Elephant fish survived. A warning to fellow aquarists about the penalties of relying on inexperienced fishkeeping fathers!

A few months ago I made the change to peaty water and this seems to have improved the general condition of the Elephant fish. The following points should help anyone who wishes to keep one of these fish.

Must be fed with *tubifex*, white worms or *Daphnia*. It is, however, possible to get these fish eating dried foods, but this takes a great deal of time.

Do not let the tank temperature fall below 75°.

Do not add fresh water suddenly—this kills the Elephant fish. Instead float the water to be added in polythene bags for a couple of hours in the tank and then slowly mix it with the water already in the tank.

This fish does not like strong light, so feed only at night.

Do not make any sudden noises as this fish is an extremely nervous fish and this will result in putting him off his food.

Keep the fish in peaty water preferably.

Do not keep with a Discus as the Elephant fish is an extremely active fish at night and will look upon the round shape of a Discus as something like a rock and since the Elephant fish is a very fast swimmer, this will upset the Discus even to the point of stopping feeding.

The Elephant fish is not an active fish during the day, so it is not for the tank which requires only daytime active fish.

Provide a flowerpot with the end knocked out and this will make a good hiding place for the Elephant fish during the day.

Even though this fish is quite expensive and rare it is a very peaceful fish and good training for more difficult types of fish. It is *not* a variety for a beginner!

Good luck, and good Elephant fish keeping!

N.B.—There is a photograph of this fish on page 81, "The Home Aquarium," by S. Makino.

DRAGONS

AND

DAMSELS

by David C. Wareham

For a great many years now there has been a surprising number of people who have held the belief that dragonflies are dangerous and equipped with powerful stings. Known locally as "horsestingers" and "Devil's darning needles," they are still looked upon by many with dislike and fear. Although dragonflies have strong jaws for devouring their insect prey, they are not poisonous, and do not sting horses, let alone human beings.

Dragonflies then are, as far as their history and development is concerned, rather primitive insects, having remained unchanged almost, since their first appearance on the Earth over 200 million years ago. They form the order Odonata and contain well over 3,500 species. They are distributed widely over the world, but are found in their largest numbers in the Tropics. The order is divided into two sub-orders, the lesser dragonflies or damselflies, Zygoptera, and the greater dragonflies, Anisoptera. Unlike the majority of insects which go through four stages of development, that is egg, *larva*, *pupa* and adult, the *larva* of the dragonfly simply becomes more and more like an adult by means of frequent moults.

In this brief account of their life histories I will, for the sake of simplicity, refer to the greater dragonflies as dragons and the lesser dragonflies as damsels. The dragons are the larger, stronger insects, and the most successful fliers that it is possible to imagine. The wingspan of present day species reaches something in the region of 10 to 11 centimetres, but it is well known that earlier species which lived many millions of years ago reached enormous dimensions. *Meganeura monyi*, for example, which lived way back in the Carboniferous and Permian periods had a wingspan of over two feet! It is thought to be the largest insect ever to inhabit the Earth. Their flight is strong, fast, and direct, and they can turn quickly, sometimes at right angles, hover and even fly upside down. When resting, their wings are held out flat on either side of their bodies.

The damsels are, in comparison, delicate and slender creatures. One can almost call them mini-dragons! Their flight is rather slow and butterfly-like and at rest their wings are folded together over their backs. Both the dragons and the damsels catch most of their prey, in the form of smaller flying insects, whilst on the wing, but occasionally stalk insects on the plants bordering the streams and ponds which they frequent.

Dragonflies are divided into five families and the damselflies into four. Each family can have anything from one to sixteen different species, so it would be impossible here to give even brief descriptions of each one. (For those who wish to learn more about these fascinating insects, there are two good books available: "Dragonflies," by Corbet, Longfield and Moore, and published by Collins, and "The Dragonflies of the British Isles," by Cynthia Longfield, and published by Warne.)

Essentially day-flying insects, dragonflies can be

seen on warm, sunny days throughout the summer months. Although they are sometimes seen quite a distance from water, they usually occur in the vicinity of ponds, canals and streams. They are perhaps most noticeable when patrolling these areas in their search for food or a mate, but they can often be found sunning themselves on waterside vegetation. The males seem to be particularly territorial, and should one trespass on that of another, quite vicious fighting can start, resulting in severe damage to either or both parties. The wings can get tattered and broken, and perhaps even a leg or two pulled off.

When a female flies over the water she is immediately approached by the nearest male of the same species, and he tries to mate with her. She indicates by her movements whether or not she is prepared to receive him, and if she is, then a very interesting sequence follows. The male swoops down on her from above and grasps her head in his bristly legs. Curling his abdomen round he seizes the back of her head with a pair of claspers at its tip, and in so doing he releases the hold with his legs. The pair are now said to be "in tandem" because their appearance is such that it looks as if one is towing the other. Besides the genital organs, situated near the tip of the abdomen, the male has what are called "accessory genitalia" on the underside of the body close to the thorax, and by curling his abdomen downwards and forwards he transfers his sperm to this organ. The female moves about so that she takes up a position upside down beneath the male and applies her genital opening (situated again near the tip of her abdomen) to his special accessory organ. This mating procedure can be done whilst the dragonflies are at rest or whilst they are in the air, and in the case of the latter can take on a rather curious and grotesque appearance.

The tandem formation just described is used also by some species for a more unusual purpose. Certain members of the damsel family lay their eggs under water, sometimes so deeply that the female has to go completely beneath the surface. To help her in doing so, the male adopts the tandem position so that after the eggs are laid he can pull her out and into the air again. With the exception of the Tiger Beetle, this midwifery by the male is found nowhere else in the insect world! Other dragonfly species lay their eggs just below the surface or on weeds just above it.

From the egg comes a wingless and legless creature called a pro-nymph, but after only a few minutes it moults into a nymph or *larva*. Fully grown nymphs differ in general appearance, mainly in the bulk of their bodies, and the length of their legs. Although they are wingless their wings are formed, and their position can be seen quite clearly on the backs of the cases in which they are enclosed. They are totally aquatic and breathe by means of gills, which may be either internal or external, depending on the species, situated at the end

Close-up of head showing mask retracted (upper) and extended (lower)

of the abdomen.

A structure characteristic of dragonfly nymphs is the "mask." This is a development of the lower lip and chin and is unique among insects. When in its normal position it is folded back under the head and then forward again so that it covers the underside of the mouth. The nymph, as in the adult, is completely predacious, and when it spots some small aquatic creature it shoots out the mask, opens and closes the pincers upon its victim, and hauls it back to the mouth where it is quickly broken down and chewed by the mandibles. The movement is extremely rapid and could almost be compared to that of a praying mantis. Almost any living creature of suitable size is caught and eaten, including beetles, worms and small fish. Some of them lie in wait for their prey, half buried in the mud or sand, whilst others stalk their victims among the water plants. Generally speaking those which live on the muddy bottom are brownish in colour, whilst those that dwell in the weeds are various shades of green. They are nearly all slow and clumsy walkers but when hunting they can jerk themselves forward over short distances by squirting water through their vents.

At the time of the final moult, which marks the change to adult, the nymph leaves the water and climbs a nearby plant stem. After a short time, the skin

at the head and neck splits open, and a perfect adult insect emerges to hang, for up to two or three hours, and expand and dry its wings in the warm sunshine. The whole process is similar to the emergence of a butterfly from its pupa. At first the newly-formed dragonfly is rather milky in tone and the bright, vivid colours of the dragonflies we all know do not develop for perhaps a day or two.

Dragonflies, particularly the larger varieties, have very large eyes, and can see the slightest movement at up to 40 feet away. This makes most of them difficult to observe at close quarters and because they are on the alert constantly, they quickly take flight when one approaches. A pair of binoculars of modest power usually enables one to make notes when focusing on objects ten to twelve feet away, and show the colouring and size of the insect. Collecting the nymphs and transferring them to an aquarium is the easiest way of studying the aquatic part of their lives. The bottom should be covered with a mixture of sand and gravel to a depth of about two inches, and one or two sticks, placed so that they are sticking at least a foot out of the water, should be stuck into the sand. Food in the form of worms, caddis-fly *larvae*, beetles, in fact, any form of water life can be provided with little trouble, care being taken to remove any dead or decaying matter as soon as it is noticed.

As with so many of our wild creatures, both large and small, the needs of industry and agriculture with their mechanical dredgers, their pollution and their pesticides, are increasing the already sad decline of the dragonflies and yet there surely cannot be a more impressive creature in our insect fauna.

PRODUCT REVIEW

Eheim Minifilter, manufactured by Gunther Eheim Ing., Western Germany, and distributed by John Allan Aquarium Ltd., Eastern Industrial Estate, Eastern Way, Bury St. Edmunds, Suffolk, IP32 7AB. Retail price £13·74, plus V.A.T.

This new Eheim Minifilter—Ref. Code 288—is a three chamber external power filter suitable for fresh or salt water aquaria up to 20 gallons. Like most other Eheim power filters this Minifilter is made of a rigid green type of perspex-like material; it is very compact in size, measuring only 9 in. by 7¼ in. by 2¾ in. It comes complete with all the bits and pieces, clear instructions in six languages, a different kind of filter media for each of the three compartments; Ehfifix, a filter cartridge and a bag of activated carbon; and it is also covered by a six months guarantee.

The first chamber serves as a mechanical pre-filter and the Ehfifix filter medium is used in this compartment. This will hold back any large suspended dirt particles and protect the more delicate filter materials in the other two compartments by keeping them cleaner for a longer period of time. It will also prevent the filter from becoming completely clogged with dirt. The second compartment is filled with the filter cartridge which blocks the smaller dirt particles and also arrests most of the bacteria. The filter materials used in the third compartment are the most important. They are the basic water conditioners of the filtering system. If the primary purpose is to remove regular fish wastes, such as urine, faeces and most organic substances which result from food decomposition, then activated carbon is still the best absorbent material and should be used. It is also effective for removing gases which would otherwise cause water discoloration, cloudiness and unpleasant odours.

The activated carbon is poured into a filter net bag and placed into a container of hot water. After a few minutes the bag is removed and rinsed under running water until the water is free from any carbon dust. It can then be inserted into the third compartment and is ready for use.

Instead of having activated carbon in the third compartment, it could also be filled with peat, a nitrite-removing resin or polymer wool.

Peat will enrich the water with biologically effective substances, it will reduce the hardness and acidify the water to the tropical conditions natural for most kinds of aquarium fish. A nitrite-removing resin like Ehfimarin SU-R-1 will prevent a dangerous build-up of nitrite of the water. The third compartment filled with polymer wool is only recommended when medical or chemical additives are used in the aquarium.

During use, the Minifilter is hung on the back or side of the aquarium and secured in a vertical position by using the suction cup and clip on the bottom of the filter container in any of the four possible positions. The suction strainer is attached to the long end of the suction tube, and the short end is introduced into the coarse filter compartment.

The filter strainer should be at least two inches above the top of the gravel to allow a free flow of water. Rapid pumping of the suction tube will start the water flowing into the filter container. This is possible because a special membrane is built into the suction strainer. Once the water is flowing freely the filter is closed with the filter cover. A thermometer in the cover makes the use of the usual thermometer in the tank unnecessary. This thermometer is calibrated in the Centigrade and Fahrenheit scales and proved to be very accurate.

Once the filter container is full of water the motor can be connected to an electrical socket. This small 8 watt motor has a remarkable maximum output of 150 l/h; the 78 inch long electrical lead should be long enough for most hobbyists; but the Continental type two-pin plug can only be used with an electric shaver adaptor to fit a standard 13 amp socket.

When connected to the power supply, the water will enter through the suction tube and while passing through the three different filter compartments is cleaned and purified. The water returns to the tank bringing in air and thereby supplying the necessary oxygen to the aquarium which is needed for the health and wellbeing of the fish. This Minifilter combines in one unit the functions of circulation, filtration and aeration.

When the flow of water back into the aquarium is noticeably reduced the filter has accumulated so much dirt that it needs to be cleaned. Depending on the number of fish kept in the aquarium this might happen after only a short while but as a general rule should only become necessary after the filter has been in operation for about two months. The filter media used in the Minifilter can easily be taken out, cleaned and changed. Both the filter media Ehfifix and the filter cartridge need only be cleaned under running water to be freed from the accumulated dirt and are then reinserted in their respective compartments. Activated carbon should be changed when it has become inactive. This, depending on the water condition, will be after one to two months. Peat can be used for about three to four weeks before it has to be replaced; and the nitrite-removing resin should be regenerated when it fails to hold back the nitrite from the incoming water. It should not, however, be used for more than three months. When the filter container has become noticeably dirty it should be taken apart and cleaned properly.

For my tests I have used this Minifilter for cleaning the water of a 20-gallon growing-on tank in which I kept about 30 small Discus. I was able to keep the water perfectly clean even though the fish were fed four times a day. I also tried the Minifilter on a 30-gallon tank with the same results. The only noticeable difference I found was that the filter materials collected dirt that much quicker and had to be cleaned and changed at shorter intervals. (Or it might have been that the original water was not as clean to start with). Although Eheim recommend that this Minifilter should be used for aquaria up to 20 gallons, I found that it was capable of keeping the water perfectly clean in a somewhat larger tank.

This new filter should be of interest to those hobbyists who like a good power filter without the usual and unsightly display of plastic tubing, bends and T-pieces; I would recommend this filter to any hobbyist who wants a power filter of good quality; it seems to be very reliable and completely silent in its operation; I would even go so far as to say that this new Eheim Minifilter will prove to have few equals.

EBERHARD SCHULZE.

Tetra Products, manufactured by Tetra Werke of West Germany, and distributed by TetraMin (U.K.) Ltd., Colley Lane Estate, Bridgwater, Somerset TA6 5LB.

In the November, 1973, edition I reviewed Tetra Aquasafe. I mentioned having received samples of a wide range of Tetra products and stated that I would review these in future editions.

Most readers will already know some of the Tetra range of fish foods; the foods are not among the cheapest fish foods available but they are among the best. The newest Tetra food that reached me was DoroFin Pond Fish Food—in a large 1 litre (8 oz.) drum. DoroFin is said to be ". . . a high-quality product with a versatile composition which was proved extremely successful as a nourishing diet for all pond fish." It is ". . . especially adapted to the nutritive requirements of pond fish." The information on the container also states that fish will appreciate this easily digestible food; and that anglers successfully use DoroFin to attract fishes! The food should be fed to fishes two to four times per day, only as much as will be eaten in a few minutes. The information supplied also states: "Feed less if the water temperature is below 57°F (14°C), and do not feed the fish at all if it is below 50°F (10°C). DoroFin does not cloud water." The guaranteed analysis is: Min. Crude Protein 23 per cent, Min. Crude Fat 2 per cent, and Max. Crude Fibre 8 per cent. The food is in flake form, the flakes being large enough to provide large fishes with something on which to "bite." As I do not have any pond fishes I was unable to test the food on the sort of fishes for which it is intended; however, I did try some samples on a friend's large cichlids and the food was greedily eaten—particularly by a very large Oscar. The information on the food carton states that aquarium goldfish should be fed on Tetra's TetraFin food.

The best known food in the range is TetraMin Staple Food for tropical fishes. It is available in both "normal-sized" flakes for average-sized fishes, and large flakes for hand-feeding large fishes. Guaranteed analysis: Min. Crude Protein 46 per cent, Min. Crude Fat 5 per cent, and Max. Crude Fibre 8 per cent. TetraMin Staple Tablet Food is intended for bottom feeders such as catfish and small barbs and many tetras, but I found that many fishes were keen to feed from these tablets on the base of an aquarium. The tablets are also appreciated by turtles. The guaranteed analysis is: 42 per cent, 5 per cent and 8 per cent respectively. TetraMenu 4-in-1 Food is for tropical fishes. It is supplied in a plastic drum with a lid that turns round to enable one to shake out one of

the four foods contained therein. The four foods are:

1. Brown Flakes—20 natural raw materials for a balanced food;
2. Green Flakes—a genuine plant food providing green vegetable;
3. Yellow Flakes—a growing and conditioning food for young fish;
4. Red Flakes—to promote colours and spawning condition.

The guaranteed analysis is: 42 per cent, 4 per cent and 9 per cent respectively.

TetraFin Basic Diet Goldfish Food needs little said about it as its name informs us of its purpose. Its guaranteed analysis is: 30 per cent, 3 per cent and 10 per cent. TetraMarin Staple Food is a basic diet for many marine fishes. It is available in both "normal" and large flakes and has a guaranteed analysis of: 45 per cent, 6 per cent and 6 per cent respectively.

Tetra FD-Menu Freeze-dried Tropical Fish Food 4-in-1 contains 50 per cent freeze-dried foods together with Tetra flakes. Each of the drum's four sections contains one of the following foods: FD beef liver; FD brine shrimps; FD mosquito larvae; and FD tubifex. The guaranteed analysis is: 47 per cent, 8 per cent and 6 per cent. TetraTips FD (freeze-dried) Food comes in tablet form, in packs of 24 tablets, and is suitable for tropicals, marines, lizards and turtles. A special tablet holder, made from plastic, is supplied with the tablet pack; it can be used to suspend tablets in the aquarium. TetraTips can be fed to fishes in several other ways. The guaranteed analysis is: Min. Crude Protein 46 per cent, Min. Crude Fat 5 per cent, Max. Crude Fibre 5 per cent, Max. Crude Ash 10 per cent and Max. Moisture 8 per cent.

Tetra Guppy Food is an excellent food for guppies as it is composed of very small flakes. Its guaranteed analysis is: 42 per cent, 6 per cent and 5 per cent. Tetra Growth Food is intended for the promotion of growth in young, tropical fishes. The flakes are of an appropriate size and the analysis is: 47 per cent, 7 per cent and 4 per cent. Tetra Conditioning Food is a vegetable diet for tropical fishes. It is particularly good for those fishes that need a large proportion of vegetable matter in their diets. Its analysis is: 38 per cent, 3 per cent and 9 per cent. TetraMin Baby Fish Foods come in two varieties: "E" for egglayers, and "L" for livebearers. The guaranteed analysis of the "E" type is: 45 per cent, 6 per cent and 5 per cent; and for the "L" type is: 42 per cent, 6 per cent and 5 per cent.

Tetra Tube Food 66 is original in that it is supplied in a tube, like toothpaste, and is squeezed out rather like a thin worm for feeding. It is described as being: ". . . a natural fish food made from frost-fresh aquatic animals and animal organs . . . it is a complete diet in itself for such fish as breeding stock, fastidious imports and marine fish . . ." It can also be used to bring variety to fishes fed on more conventional diets. The analysis is: 11 per cent, 3 per cent and 1 per cent respectively.

There are six items in the TetraCare Range of Remedies. Each comes in a handy, plastic bottle that is graduated for appropriate dosages. The range consists of General Tonic, Contra Ick, FungiStop, Florapride, Contra Chlorine and Blackwater Tonic.

I don't know the present prices of the items I have listed, nor do I know if this is the complete Tetra range of foods and remedies. What I do know is that each item is a leader in its own field. Do try some of the items—if you have not already done so. I doubt if you'll be disappointed!

B. Whiteside

ANSWER TO WHAT ARE WE?: APISTOGRAMMAS

HAIRGRASS

by P. J. Brown

THE GENIS *Eleocharis* or, as it is more popularly known, Hairgrass, well fits its common title and can provide in any aquarium a pleasant feature of fine green stems. It is a genus of bog plants belonging to the Sedge Family, *Cyperaceae*, of which *Eleocharis* is the only member used to any degree by aquarists.

These popular plants are very useful for decorating both the cold and tropical indoor aquarium. Their fine stems closely resemble grass and growing in thick mats or partly hidden behind rocks or ornaments they can look particularly attractive. In the breeding aquarium they can be used to provide a thick mat for the protection of eggs from the egg scattering species.

Eleocharis acicularis (L.) Roemer & Schultes

Like the other species of this genus, *Eleocharis acicularis* is a marsh plant that can be grown submerse in the aquarium. It is a common species found in many aquariums growing to a height of about eight inches. Its stems, when grown submerged, are long and straight. It likes a good light but too much sun will encourage *algae* and it can eventually be choked and look unsightly. It has a creeping rhizome which will grow beneath the gravel. New plants will form on this rhizome and left to itself it will form a thick mat of plants. The stems, it has no leaves, terminate in a brown spikelet. In a shallow marsh aquarium it will grow quite happily above the water.

This plant is not very particular in its temperature requirements. Room temperature is a good average guide but it is quite happy at temperatures higher or lower than this and it can be used in both the cold and tropical indoor aquarium. It seems to do best when grown in clumps and, once sited, it should not be disturbed more than is absolutely necessary. Loam can be used as a base but the food available in any established aquarium is usually sufficient.

This beautiful plant with its grass like stems comes from the America's, Asia, Australia and Europe.

Eleocharis parvula Roemer & Schultes Link.

From Africa, America, Europe and Japan this species is very small only growing to two and a half inches in height. It is best kept in a cool rather than tropical aquarium but can produce a rather beautiful carpet effect once properly established. It can be a delicate plant and die off after a while. Not commonly seen, the stems rather resemble those of *E. acicularis* but greatly reduced in height.

Eleocharis vivipara Link.
(Sometimes seen as *E. prolifera* Torrey.)

This, probably the most common species of Hairgrass, comes from the southern states of North America and can grow to a height of three feet or more. In favourable conditions it can grow out of the aquarium. However, its slender stems can look beautiful at the back or sides of an aquarium. The stems end in buds which can produce adventitious plantlets with tiny roots. These plantlets may be detached and will then grow. It is generally undemanding and will grow within a temperature range up to about 78°F. It will grow up towards the light, but if this is too strong the long slender stems will become choked with *algae*. Generally it is easy to grow in the aquarium and propagation is by a creeping rhizome from which new plants will grow. The adventitious plantlets can also be grown but some care must be taken as these are quite small. The plantlets come from terminal whorls of short bract leaves that form on mature plants. Again a loam base will help it to grow but is not usually necessary.

The genus *Eleocharis*, then, is a particularly attractive and decorative one for the aquarium, providing scenery and helping to hide such things as heaters and thermostats.

Species are generally undemanding and will grow well providing that the light, especially sunlight, is not too bright. It is a fairly cheap plant best grown in clumps. Once settled it will soon reproduce and expand and allowance should be made for this in any aquarium that is to be established for any length of time.

FURTHER IDEAS FOR HOME AQUARIA

by G. Page

READING Mr. Stevens' most interesting article in October's *The Aquarist* suggested to me that readers may be interested to hear about my experiences in setting up my first two tanks.

They were secondhand 36 x 12 x 12 in. tanks, in reasonable condition apart from the fact that they both leaked. This problem was finally overcome, but not without a good deal of messing about.

It had already been decided that the tanks would be built flush into the wall, since a large new room was in the process of being built on the side of the house, and the tanks could be accommodated in the cavity wall, previously the exterior wall of the house, running as a division between the two rooms. The width of the cavity wall was exactly 12 in., so the tanks fitted perfectly—and the stand was already made, of brick! The hole was knocked out, and by the time this job was finished, there was a 7 ft. 6 in. slot in the wall. This allowed for an 18 in. space to be left between the ends of the two tanks, where all the electrical appliances could be housed.

To gain access to the tanks for maintenance, etc., small doors were put on one side of the wall, thus leaving the tanks to be viewed from the lounge. By painting the inside of these doors with a sea-green matt paint, a suitable background was made. However, I think I may try an idea similar to that of Mr. Stevenson, to obtain a better effect. I, too, used magnetic catches to close the doors firmly, and I have since found them to be quite satisfactory.

As regards the equipment and accessories I used: two fluorescent light fittings, complete with Gro-lux attached directly above the tanks, all concealed behind the doors. I use Hykro under-gravel filters in both tanks, and the best pump I have used for this job is the Orion Deluxe, which is a twin-nozzled model, and this easily copes with the six stems. I find it to be quiet, but it is enclosed in the wall, which may reduce any noise. However, at the dealer's shop where I work, this is one of the most popular pumps, and several customers have returned for a second model.

Both tanks are heated by Uno heaters, and controlled by submersible thermostats.

Neither tank has a hood, but sheets of 32 oz. glass permanently cover the tanks, reducing the condensation loss, and protecting the electrical fittings from splashing water. They also stop the fish jumping out, particularly the Hatchets.

Finally, before actually filling the tanks, the lounge wall was re-papered with a deep green paper which highlights the tanks, particularly in the evenings when the room is darker.

Now both tanks contain the usual small community fishes, and the end result has proved itself well worth all the trouble.

A LOOK INTO THE PAST

by A. Boarder

I have been looking through the annual circular of the Surrey Trout Farm and United Fisheries, and it has been interesting to note the prices quoted for various fishes. When one compares the present prices of fishes with these old ones, it makes one wonder if the old days were not good ones after all. I will quote from the list for October, 1910, which should prove interesting.

Goldfish (per 100): 2-4 in., 20s.; 3-5 in., 40s.; 6 in., 60s.
Golden Orfe (per 100): 2-4 in., £3; 4-6 in., £5.
Golden Tench (per 100): 2-4 in., £4; 4-6 in., £8.
Great Japanese Gold Carp (per dozen): 5-7 in., 30s.
Dace (per 100): 6-8 in., 25s.
Roach (per 100): 4-6 in., 10s.; 5-8 in., 18s.; 6-9 in., 22s.
Rudd (per 100): 4-6 in., 20s.
Common Carp (per 100): 2-4 in., 15s.; 3-5 in., 25s.
King Carp (per 100): 2-4 in., 20s.; 3-5 in., 40s.
Prussian Carp (per 100): 2-4 in., 15s.; 4-6 in., 30s.
Perch (per 100): 2-4 in., 20s.; 3-6 in., 25s.; 4-7 in., 30s.
Tench (per 100): 2-4 in., 20s.; 3-6 in., 25s.; 4-7 in., 30s.
Pike (per 100): About 5 in., £2; 9-18 in., £7 10s.
Burbot (each): 6-16 in., 1s.
Crayfish (per 100): Average size, 20s.
Minnows: 25s. per 1,000; £5 per 5,000.
Eels (per 100): About 9-18 in., 30s.
Perfection Mixed Trout Food (per cwt.): 27s.

News from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists societies' for inclusion on this page should reach the Editor by 5th of the month preceding the month of publication.

ONCE again, the F.G.A. International Open Show will be held at the Glebe Farm Community Centre, Glebe Farm Road, Stetchford, Birmingham, on Saturday 25th and Sunday 26th May, 1974. This Show of Shows attracts entries from America, Singapore and other countries, but is still open to any member of the general public who has an interest in the breeding and showing of Guppies. Any member of the general public who wishes to take part in the show should send a S.A.E. to the association show secretary, D. R. Beacham, 17 Pedmore Close, Woodrow South, Redditch, Worcs., as soon as possible. The special class to decide the F.G.A. World Guppy Champion, 1974, will take place and if an entry form for this class is required, this should be stated when writing to the show secretary as notification of the number of entries for this class is required at least one month prior to the show in order to ascertain the number of tanks that will be required. The show will be open for viewing to the public (non-participating) on Sunday, 26th May, 1974, at 3.15 p.m.

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THE two meetings of the **Welwyn Garden City A.S.** in January were very well attended, and all who came found their time well spent. At the first meeting, R. Mills gave a talk on "Egglayers I have Bred." The society are looking forward to another visit from this lecturer on 4th May, when he will talk on "Angels." A feature of the second meeting in January was a visit by some friends from Hemel Hempstead, when A. Tuffs judged the "Fish of the Year." A discussion about a group of slides showing Cichlids made a very interesting evening. The younger members, namely Ian Pitts, Dave Collis and Andy Margrove, are obviously developing into experts in the Cichlid field. The "Fish of the Year" was won by a Nannacara anomala, owned by P. Sweet. The society meetings are held in the Scout Hut, Great Dell, Welwyn Garden City, and they meet on the first and third Mondays of each month at 8 p.m. Guests and intending new members will be very welcome. Further information can be obtained from M. Graham, tel: Welwyn Garden City 31823.

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THE **Suffolk Aquarist and Pondkeepers Association** met for their January meeting and discussed the previous E.F.F.A. show. After the break, the members listened to a tape lecture on the breeding of Black Mollies and Livebearers.

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OFFICERS elected at the annual general meeting of the **Kidderminster and District A.S.** were as follow: Chairman, J. Jones; secretary, B. Evans; treasurer/librarian, J. Barefoot (temporary); show secretary, G. Lawrence. Meetings held alternate Tuesdays, at the "Alma" Public House, Habberley Street, Kidderminster. New members and visitors welcome. All enquiries to B. Evans, 121 Bewdley Road, Kidderminster, Worcs.

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MEMBERS elected for the committee of the **Walthamstow and District A.S.** for this year were as follow: Chairman, D. Goodbody; vice-chairman, T. Twine; treasurer, B. Baulsom; secretary, G. Smith, 22 Ardleigh Road, Walthamstow, E.17; show secretary, A. Chandler, 233 Forest Road, Leytonstone, E.11; committee members, G. Hall and C. Woodley. New members are always welcome at the twice-monthly meetings. Please phone for details: 527 6303.

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THERE was a good attendance at the January meeting of the **Tonbridge and District A.S.** and a bring-and-buy stall was most successful. Table Show results were: Cichlids: 1, J. Bullingham; 2 and 4, R. Baker; 3, G. Burchell. Loaches: 1, S. Feast; 2, Mrs. D. Furnell.

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THE **Fancy Guppy Association for South London** held their annual general meeting in January, and elected their new committee for the coming year. These are as follow: Chairman, H. Vinall; vice-chairman, P. Knevett; secretary, H. Brock; treasurer, Miss G. Brock; show secretary, A. Willis; assistant show secretary, K. Haynes; entertainments officer, Miss L. Knevett; P.R.O., A. Willis; show stewards, P. Knevett and R. Fowler. Anyone wishing to join this small but very keen section should write to A. Willis at 80 Middle Park Avenue, Eltham, London, S.E.9 or the secretary, H. Brock, 20 Barnsford Crescent, West End, Woking, Surrey. The Association meet on the third Sunday in every month at the Bede Centre, Abbeyfield Road, Bermondsey, S.E.23, near Surrey Docks Station.

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FOUR members of the **Newcastle Guppy and Live Bearer Society**, judges of the F.B.A.S., judged a selection of fish brought by members, and then answered questions about methods of judging. New members of the Society found this helpful as they were told how to recognise good quality fish. The second meeting in January proved to be very interesting. Although the speaker, Mr. McCourt, was unable to attend because of business reasons. A discussion on the causes of mixed colour broods from a Velifera Molly took up most of the evening. Results of Show: Male Guppy: 1, Mrs. Cawton; 2, Mr. Laidler. Male Swordtail: 1, Mr. Gallon. Plants: 1, Mr. Kerr.

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THE **Goole and District A.S.** held their annual general meeting early in January and officers for the coming year were elected as follow: Chairman, J. Scarll; secretary, Miss M. Coates; treasurer, P. Walker; show secretary, P. Shipley. This year meetings are to be held monthly, and in addition a series of Inter-Club Competitions has been arranged between York, Hull, Bridlington and Goole.

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DETAILS of the annual general meeting of the **Havant and District A.S.** held in December were: Chairman, H. Armitage; secretary, K. Forder; treasurer, L. Wadingham; A.S.A.S. representative, T. Ford; F.B.A.S. representative, V. Hunt; show secretary, V. Hunt; show manager, K. Taylor. The annual presentation of cups this year was made by John Taylor. Winners were: Barbs: Master K. Helmes; Characins: P. Hinton; Catfish: J. Dickinson; Rasboras: A. Layton; Loach: S. Crabtree; A.O.S. Tropical: D. Hinton; Livebearers: N. Davis; Coldwater: V. Hunt; Breeders: F. Willis. Highest Points from Table Shows: S. Crabtree; Highest Pointed Juniors: 1, Master P. Watt; 2 and 4, Miss S. Blowfield; 3, Master M. Hinton. The Best Fish of the Year trophy was won by S. Crabtree. The chairman said that the club had done very well this year, and had made six Club trips to open shows, and the members of the Club had patronised every open show held by A.S.A.S. members.

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MEMBERS elected by **Billingham A.S.** at the annual general meeting were: Chairman, D. Sudron; assistant chairman, A. Crossley; secretary, J. Ryan; assistant secretary, B. Unwin; treasurer, Mrs. J. Turner; assistant treasurer, Mrs. B. Unwin; show secretary, J. Attwell; committee: T. Richardson, B. Steele, Mrs. Attwell, R. Roper, D. Alderson, A. Harrison.

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IN December **Gainsborough A.S.** held their Christmas party at which a number of guests from local aquarist societies were present. The evening commenced with the presentation of the annual trophies by Mrs. Wright, chairman of the Gainsborough Rural District Council. The trophy winners were: Premier Award, "The Bacon Trophy": 1, Mr. and Mrs. W. D. Gilding; 2, Mr. and Mrs. R. Harris; 3, Mr. and Mrs. P. Dixon. Furnished Aquarium Trophy: 1, Mr. and Mrs. W. D. Gilding; 2, Mr. and Mrs. R. Harris; 3, Mr. and Mrs. K. Shaw. Breeders Trophy (Livebearers): 1, Mr. and Mrs. W. D. Gilding; 2, Mr. and Mrs. R. Harris. Breeders Trophy (Egglayers): 1 and 2, Mr. and Mrs. W. D. Gilding; 3, Mr. and Mrs. K. Shaw. Novices Trophy: 1, Greg Gilding; 2, Nigel Cowan; 3, Pat O'Halloran. Results of the December table show which was for Best Single Fish: 1, S. Withers; 2 and 3, Mr. and Mrs. P. Dixon. After the presentation of trophies the party were entertained by a country and western group, "The Saddlers" and some of the braver members took part in some hilarious party games. During the evening a group from the local round table paid a visit and sang a selection of carols during which a collection was taken for the local senior citizens fund.

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EARLY in January the annual general meeting of the **Manchester Section, F.G.A.,** was held. The proceedings consisted of the election of officers for the coming year, the formulation of the schedule for the meetings of the year and the monthly table show, which was followed by an auction of breeding stock and accessories.

The major awards in the table show were as follow: Best Male and Best in Show was the Topsword bred by A. Charlton. Best Female and Best Breeders were Natural Tailed females bred by J. Hutchins from the Lancaster Section.

The officers elected for the coming year were as follow: chairman, R. Young; treasurer, A. Charlton; show secretary, J. Hesketh, assistant show secretary, F. Campbell; publi; relations officer, T. Hallett; hon. secretary, D. Glen, 16 Nuttall Avenue, Whitefield, Manchester M25 6QA.

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OFFICERS elected at the annual general meeting of the **Bishops Cleeve A.S.** were as follow: chairman, T. Viner; vice-chairman and show manager, P. Greenwood; secretary, Mrs. M. Scriven; treasurer, C. F. Scriven; show secretary, Mrs. D. Rossi, 22 Selborne Road, Bishops Cleeve, nr. Cheltenham. Tel.: Bishops Cleeve 64 4368.

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THE annual general meeting of the **Salisbury and District A.S.** was held in January. Annual trophies for the 1973 table shows were awarded to A. Tull in the adult section, and to Master Ian Maidment in the junior section. M. Glowop, who is leaving for a new life in New Zealand shortly, donated a very nice silver cup, to be awarded each year to the best club members exhibit in the annual open show. After the election of officers and committee for this year A. Tull took over as chairman from T. Blanchard, and R. F. Adams took over as secretary from F. Grant. Among items of business for this year, it was confirmed that Sunday, 16th June was the date of the annual open show and

that the City Hall had been booked again. It was unanimously decided that only by maintaining the high level of open show facilities could the quantity and quality of exhibits be expected in this crisis year of 1974.

The Society meets at the Activity Centre, Salisbury, on the second Monday of each month at 8 p.m. and new members are sure of a welcome, as are members from other societies who happen to be in the district. All correspondence to the Society should be sent to the hon. secretary at 26 Empire Road, Salisbury, Wilts. SP2 9DF, with a stamped and addressed envelope please, if a reply is required.

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OFFICERS and committee elected at the **Loughborough and District A.S.** annual general meeting were as follow: chairman, T. Parry; secretary, A. Onslow, 8 Garfield Road, Hugglescote, Leics, LE6 2HU, tel.: Coalville 51606; treasurer, C. Jennings; show secretary, I. Purdy; show manager, G. Taylor; news editor, R. Hancock; P.R.O., S. Purdy; librarian, D. Tyler; committee, G. Howe.

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ON Wednesday, 3rd April, the **Yeovil and District A.S.** is holding a film show at its normal meeting place of "The Moose Centre," St. Michaels Avenue, Yeovil. There will be a selection of films on fish and fishkeeping, the meeting will be thrown open to anybody who is interested, a small charge of five or ten pence will be levied to help cover some of the costs.

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ON the first Monday in January the **Bournemouth A.S.** meeting was treated as the annual general meeting. A new chairman and committee were elected as follow: chairman, W. Walker (for two years); treasurer, R. L. James; hon. secretary, R. Motley; committee members, Messrs. Earl, Hoskins, Coombes, J. Jeffery (for two years). J. Jeffrey, a committee member of the society has recently been up-graded to "A" class judge by the F.B.A.S. The annual points trophy was won by Mr. Chatsfield, a prominent member of the society, who travels from Wareham, and is a very consistent exhibitor.

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THE **Evesham Fishkeepers Society** held their first annual general meeting recently and the officers elected were: chairman, J. R. Goll; vice-chairman, C. A. Summerscales; treasurer, I. D. Cooke; joint secretaries, R. and J. Slater; show organiser, G. V. Ludlow; assistant show organiser, M. Rogers; committee members, K. R. Baker, R. Metcalfe, N. N. Wing and T. Orchard. The society meets on the first Tuesday of each month, at 8 p.m. in the Church Rooms, Market Place, Evesham, Worcs. New members and visitors are welcomed. Aside from table shows, raffles, etc., several competitions will be held throughout the year, e.g., aquarist of the year, fish of the year and miniature aquarium. If other societies are interested, the society will be pleased to supply details, and receive information on activities carried out in their societies. Please write to: C. A. Summerscales, "Celandine Cottage," 54 Newlands, Pershore, Worcs, WR10 1ER.

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OFFICERS elected at the **Runnymede A.S.** annual general meeting were as follow: chairman, L. Duke; vice-chairman, J. Garrad; secretary, J. Shepherd, 6 Guildford Street, Staines, Middlesex, Tel.: Staines 54560; assistant secretary, Carol Butler; treasurer, T. Butler; assistant treasurer, D. Ripley; show secretary, Joyce Garrad; assistant show secretary, Linda Garrad; P.R.O., D. Joyce, committee members, P. Herbert and D. Parrott. New members and visitors welcome at meetings held on the second and fourth Tuesday of the month at Ashford Community Association, Chesterfield Road, Ashford, Middlesex.

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AT the B.M.A.A. South Western Group's January meeting, among items discussed was the request by the **Torbay A.S.** for the B.M.A.A. to supply a centre piece for their annual show at Torquay Town Hall, and this venture was agreed upon.

John Haynes is venturing into a field which to the Group's knowledge has not been attempted yet, i.e., a rock pool in the grounds of his residence, completely Marine. If any members of the B.M.A.A. have any knowledge or ideas about this project, he would like to hear from them. The Secretary of the Group—L. Doubleday suggested it may be possible to arrange a visit to the I.C.I. Marine Laboratories.

A considerable amount of interest was shown over a member's experiment of acclimatising native fish to tropical conditions. His main indoor tank with a temperature of 72—75 had amongst its occupants Syngathus acus and Blennius gattorugine and they had become thoroughly acclimatised with other inmates, i.e., Percula clowns and target fish, also he had managed to induce the acus to accept dried food.

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OFFICERS for 1974 of the **Peterlee A.S.** are as follow: Chairman: R. Nesworthy; Vice-Chairman: H. Hubbard; Secretary: A. Bebbington, 40 Marlborough Road, Hastings Hill, Sunderland. Treasurer: R. Crombie.

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CHANGES of Officers for **Roehampton A.S.** are as follow: Chairman: N. E. Sawford; Secretary: Mrs. P. Lambourne, 7 Wheeler Court, Plough Road, S.W.11, telephone: 223 2630; Treasurer: J. Hughes; Show Secretary: D. Lambourne.

The Society held their annual presentation dinner dance in December with a good gathering of members and guests. Mr. R. Esson was guest of honour, and presented the trophies to club members for the year's activities. The members would like to take this opportunity to thank everyone who participated in the activity, with a very special mention of thanks to Mrs. Joan Mason (Social Secretary), for all her efforts in making the evening possible. It is with regret that due to the uncertain current national situation the members of Roehampton have arrived at the decision not to hold an Open Show in 1974. However, every effort to cover other Society's Shows, will be made, as has been the policy in the past.

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OPEN SHOW results of the **Horsforth & District A.S.** were as follow: Livebearers A.V.: 1, Mr. and Mrs. Daines (Doncaster); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, J. S. Hall (Aireborough). Guppies: 1, Mrs. C. Asquith (Castleford); 2, P. Smith (Sheffield); 3, D. and N. Laycock (Sheaf Valley). Mollies: 1, Mrs. C. Asquith (Castleford); 2, J. S. Hall (Aireborough); 3, Master Jameson (Castleford). Swordtails: 1, Miss S. Clark (Aireborough); 2, G. Ibbotson (Keighley); 3, P. Smith (Horsforth). Platies: 1, Mrs. Furness (Castleford); Master A. Barret (Castleford); 3, L. Smith (Castleford). Anabantids (Large): 1, Mr. White (Independent); 2, Mr. and Mrs. Cohen (Pontefract); 3, Mr. and Mrs. Fletcher (Doncaster). Anabantids (Small): 1, L. Smith (Castleford); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Lodge (Castleford). Fighters: 1, Mr. and Mrs. Cohen (Pontefract); 2, A. Curchin (Castleford); 3, Mr. Gillespie (Castleford). Corydoras: 1, Mr. and Mrs. Fletcher (Doncaster); 2, L. Smith (Castleford); 3, G. Ibbotson (Keighley). A.O.V. Catfish: 1, Mr. and Mrs. Copley (Doncaster); 2, P. Smith (Horsforth); 3, Mr. and Mrs. Fletcher (Doncaster). Loach A.V.: Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, Mrs. C. Asquith (Castleford). Barbs (Small): 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. King (Doncaster); 3, Mr. and Mrs. Dickinson (Pontefract). Barbs (Large): 1, Mr. and Mrs. Cohen (Pontefract); 2, T. Smith (Sheffield); 3, J. Dunn (Horsforth). Characins (Small): 1, D. and M. Laycock (Sheaf Valley); 2, M. Hall (Swillington); 3, P. Kennedy (Keighley). Characins (Large): 1, Mr. and Mrs. Daines (Doncaster); 2, G. Twidale (York and District); 3, K. Smith (Middleton). Breeders (Egglayers): 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. Furness (Castleford); 3, Unique (Wakefield). Breeders (Livebearers): 1, Mr. and Mrs. Cohen (Pontefract); 2, Mr. Abbot (Swillington); 3, Mr. and Mrs. Toyne (Sheaf Valley). Dwarf Cichlids: 1, G. Thickbroom (Castleford); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, Mr. and Mrs. Copley (Doncaster). Cichlids (Large): 1, Mrs. B. Clark (Aireborough); 2, Mr. Abbott (Swillington); 3, Miss S. Clark (Aireborough). Angels: 1, J. Dunn (Horsforth); 2, J. Wood (Horsforth); 3, Mr. and Mrs. Toyne (Sheaf Valley). Pairs (Egglayers): 1, and 2, Mr. and Mrs. Wells (Doncaster); 3, D. and M. Laycock (Sheaf Valley). Pairs (Livebearers): 1, 2 and 3, Mr. and Mrs. Parkes (Sheffield). A.O.V.: 1, Master A. Barrett (Castleford); 2, Unique (Wakefield); 3, Mr. and Mrs. Cohen (Pontefract). Ladies A.V.: Mrs. P. D. Copley (Doncaster); 2, Mrs. Hall (Aireborough); 3, Mrs. C. Asquith (Castleford). Sharks and Flying Fox: 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. Cohen (Pontefract); 3, T. Smith (Sheffield). Rasbora and Danio: 1, Master A. Barrett (Castleford); 2 and 3, T. Smith (Sheffield). Toothcarps: 1, T. Smith (Sheffield); 2, L. Smith (Castleford); 3, Mr. and Mrs. Kilvington (Doncaster). Carps and Minnows: 1, Miss S. Clark (Aireborough); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Toyne (Sheaf Valley). Coldwater A.V.: 1, 2 and 3, J. S. Hall (Aireborough). Fancy Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). Juniors A.V.: 1, Master A. Furness (Castleford); 2, K. and N. Parkes (Sheffield); 3, Master A. Barrett (Castleford). Novice A.V.: 1 and 3, B. Runnacales (Horsforth); 2, P. Hayes (Castleford). Marine A.V.: 1 and 2, W. Stuart (Aireborough). Best in Show: Master A. Barrett (Castleford) with a Leaf fish which gained 78 points. Ladies' Trophy: Mrs. D. P. Copley (Doncaster). Top Society: Castleford.

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AT the **Wednesbury and District A.S.** January meeting, once again the M.A.A.S. judge did not make an appearance. E. Hyde, one of the founder members, acted as judge at short notice for the second time in three months. The entertainment for the evening was provided by J. Reeves with a slide lecture on fish and their foods. The results of the Table Show were as follow: Catfish, Class A: 1 and 2, A. Shenton; 3, R. Farmer. Catfish, Class B: 1, 2 and 3, R. Law. Characins, Class A: 1, 2 and 3, J. Reeves. Characins, Class B: 1, Mrs. Smith; 2, P. Baugh; 3, R. Hughes. Novice A.V.: 1, 2 and 3, Mr. Smith. Best Fish in Show was entered by J. Reeves.

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MEMBERS and guests of the **Hounslow and District A.S.** enjoyed a very pleasant evening on the occasion of the Society's annual dinner and dance. The chairman, Ron Allun, spoke of the success of the Society's activities during the past year and high praise was given to the committee members for the many hours they had put in organising the various activities of the Society. Particular mention was made of Bob Nelhams the retiring social secretary who had for many years worked extremely hard on all the social occasions.

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THE opening meeting of the **Llantwit Major A.S.** in their 21st Anniversary Year, took the form of a Table Show, the third in the current year, where the points total towards the Miles Thomas Cup, awarded annually to the member with most points. The great interest in this competition was reflected in the large number of entries benched on what was weatherwise an extremely poor night. Results: Class C: A.V. Characin: 1 and 2, H. Chick; 3, S. Nelson; 4, A. Ibbertson. While the judging was in progress members were entertained to the finest showing in Wales of Keith Barraclough's interesting film of his recent Far Eastern journey in search of tropical fish.

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CHANGES in officers were made at the annual general meeting of the **Harwich and District A.S.** Chairman, Mrs. B. Mowbray; secretary, P. Smy, 61 Harbour Crescent, Harwich, Essex;

vice-chairman, F. Cheeseman; Treasurer, Mr. Neal; librarian, Mrs. R. Mulder; committee, A. Mulder and A. Green; junior committee member, T. Marvan. The Society meets every first and third Monday in the month, at the Alma Inn, Harwich, starting at 8 p.m. The club caters for Tropical, Marine and Coldwater fishkeepers' interests and new members are always welcome.

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GUEST speaker at the January meeting of the **Brighton and Southern A.S.** was Andy Dawes. He showed numerous slides and accompanied these with an informal chat on general fishkeeping, which gave members the opportunity to ask questions and sort out their aquatic problems. Members were reminded by the chairman, B. Rice, that the next meeting would be the annual general meeting and that Dr. Neville Carrington (Inter-Pet) would be presenting the annual awards.

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IN 1973 the **Coventry Pool and A.S.** celebrated its 25th anniversary and a dinner dance was held in November to celebrate this event. The average attendance at monthly meetings was 45 people. The Open Show in April proved very successful and in October members filled a forty-seater coach to visit the B.A.F. in Manchester. The committee hope that 1974 will see an increase in membership, and anyone interested is invited to attend meetings which are held at the Biggin Hall Hotel, Binley Road on the second Tuesday every month. At the annual general meeting the president, Bernard Bromfield presented awards to the following members: R. and F. Hirst—Hogarth and Stone Cups and Essam Bowl. D. B. Easingwood—Bradbury and Society Cups. J. Wileman—Dymond Cup. D. Ketchell—Court Plaque. R. Patterson and J. Bailey—Clark Plaque. F. Watts—E. Herson Cup. A. Simmons—Farran Plaque and Mayer Cup. Officers elected at the annual general meeting to serve for this year are as follow: President, B. Bromfield; vice-presidents, Mr. and Mrs. R. Fox and W. T. Oliver; chairman, A. Nash; secretary, D. B. Easingwood; assistant secretary, A. Simmons; treasurer, F. Watts; newsletter editor, P. and C. Hinde; show secretary, S. Wooldridge; public relations officer, F. Hirst; social secretary, R. Peers; librarian, K. Foster; committee members, Mrs. J. Halling and E. Sheehy.

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AT the January meeting of the **Association of Goldfish Breeders,** Mr. Cluse gave an interesting talk on judging, after which there was a general discussion on the subject. The result of the monthly Table Show was as follows: 1 and 4, I. Fleming; 2, H. Beance; 3, L. Clements.

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THE **Tyne Tees Area Association of the F.B.A.S.** presents a Sunday of Fishy Topics at the Bay Hotel, Seabury, Sunderland, on the 24th March. Films, Lectures, Slides. Tickets are £1, including Buffet and are obtainable from G. T. Liddle, 2 Cromer Avenue, Low Fell, Gateshead, NE9 6UJ; R. Applebey, 5 Barns Park Road, Sunderland; and K. Low, 2 Farm Bank Road, North Ormsby, Middlesbrough (phone Middlesbrough 34433).

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THE December Club Night of the **G.K.N.P. A.S.** was held in the form of Christmas Party and Presentation evening. The presenting was done by S. Dangerfield, helped by A. Harris, both of whom have long connections with the G.K.N. Club. Many of the members and their children had a very enjoyable evening and Father Christmas in the form of D. Penwright gave many presents to the children.

THE **Amersham and District A.S.** are coming to the end of a successful year of programmes. These have included F.B.A.S. speakers, matches with other local aquarist clubs, Christmas social, and a home furnished aquaria. Fifteen tanks were entered, the winner being the secretary, S. Thompson. The March programme is as follows: 5th March: Away match with Dunstable. 6th March: Speaker, plus Table Show: Cichlids and Corydoras. 20th March: Annual general meeting. Election of new committee. 21st March: Away match with Hemel Hempstead.

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OFFICIALS for **Hendon and District A.S.** this year are: Chairman, H. G. J. White; vice-chairman, K. L. Purbrick; secretary, Miss Y. Longuet, 2 Marsh Drive, Hendon, London, N.W.9; assistant secretary, Mrs. H. C. Thompson; treasurer, J. Packham; show secretary, H. Watts, 49 Selbourne Gardens, London N.W.4.

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AT the **Wellingborough and District A.S.** January meeting an F.B.A.S. slide and tape show on catfish by C. A. T. Brown was presented and found to be most instructive and entertaining. The table show which was judged by A. Robinson was for tropical catfish (G), Danios and W.C.M.M. (K). Meetings are held on the second Tuesday of every month at 7.45 p.m. Visitors and new members are welcome.

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MEMBERS of the **Cotswold A.S.** greatly enjoyed a talk and display of tank making and glass cutting which was given by T. Collier of Gloucester at the January meeting and are looking forward to another talk from Mr. Collier in the future.

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AT the **Bethnal Green A.S.** meeting in January, F. C. Temkins, chairman of the F.B.A.S. and resident lecturer at Bethnal Green, presented trophies awarded annually for competitions run during the last year. Results: Points Cup: 1, S. Adams; 2, J. Connolly; 3, Trudy Hedges; 4, D. Bundy. Fish of the Month Cup: 1, S. Adams; 2, J. Connolly; 3, Sybil Hedges; 4, D. Bundy. Fish of the Year Cup: 1, J. Connolly; 2, Trudy Hedges; 3, B. Martin; 4, Francis Rogers. First Year Members Cup: Trudy Hedges. Wilkins Memorial Bowl for most points gained by a member at the Society's own open show: J. Connolly. Bethnal Green Institute Cup for most points gained by a member at all open shows: Sybil Hedges.

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THE January meeting of the **Gloucester Fishkeeping and Social Club** was chaired by the club president, John Wyatt who very reluctantly accepted the resignation of the secretary and chairman, Mr. and Mrs. J. Adlam. Mr. Wyatt spoke very highly of all the work and special efforts made on behalf of the club by Mr. Adlam, and his participation will be greatly missed. A new chairman and secretary were then elected, and a discussion followed regarding future social events for the forthcoming year.

The table show for Livebearers pairs was judged by F. J. Scrivens, and the prize cards were awarded to 1 and 2, M. Burke; 3 and 4, E. G. Bartlett. The award for coldwater fish went to M. Barratt. The evening was concluded by a talk by T. Collier, the club's treasurer, on water composition and the varying hardness of different types of water.

New members and visitors are always welcome at the meetings, which are held on the last Thursday of each month at 7.30 p.m. at the Hucclecote Community Centre.

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OFFICERS elected at the annual general meeting of the **North Kent A.S.** were as follow: chairman, P. Cottle; secretary, J. Parker, 6 Moore Road, Swanscombe, Kent DA10 0DS; treasurer, M. Hills; show secretary, K. Saxby. The other committee members are R. Parker, C. Green, K. Barrett.

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FOLLOWING the resignations of both the chairman and secretary because of business commitments a new committee was voted in at the annual general meeting of the **Grimwood A.S.** Skelmersdale. The new committee is as follows: secretary, R. Millinger; chairman, R. Alexander; treasurer, H. Sephton; committee, R. Atherton, J. Pritchard, Mrs. Millinger, Mrs. Maginess, B. Handford. Meetings are held on the first Sunday in the month at the Quarry Bank Community Centre, Skelmersdale, starting at 7 p.m. A warm welcome will be extended to anyone wishing to attend.

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THE new committee of the **Cymru National Aquarists Association** is as follows: chairman, J. Edwards (Llantwit Major A.S.); vice-chairman, G. Best (Swansea A.S.); secretary, D. Richards (Rhondda A.S.); treasurer, D. Richards (Rhondda A.S.); committee, C. Harding (Cardiff A.S.) and A. Wallace (Barry A.S.). The new committee of Rhondda A.S. is as follows: chairman, G. Mason; secretary, D. Richards; minute secretary, T. Click; treasurer, A. Cryer; show secretaries, M. Williams and E. Oakley; assistant show secretary, G. Harry. The new meeting place of the Rhondda A.S. is the Ynyshir Hotel, Ynyshir, and the new meeting times are 7.30 p.m. on the first and third Wednesday in each month.

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THE annual general meeting of the **South Park Aquatic Study Society** was held in January, and the following were elected to the committee: chairman, G. E. Herring; secretary, Mrs. M. Dudley; treasurer, R. Trim; show secretary, D. Pearson; and D. Herman and P. Bienacki. New members are very welcome. Next meeting, Tuesday evening, 8 p.m., 19th March, at Wimbledon Community Centre, St. Georges Road, London, S.W.19. Enquiries please contact Mrs. M. Dudley, 163 South Park Road, London, S.W.19. Tel.: 01-540 5662.

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ALL members of the **Goldfish Society of Great Britain** who attended the January meeting found the illustrated talk given by Mr. Hardy very interesting. He spoke at great length on fish diseases and on the experiences he had gained whilst importing fancy goldfish and koi from Italy and Japan.

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MEMBERSHIP of the **British Marine Aquarists Association** almost exceeded the 500 mark at the end of the Association's third year of activities. Besides the Nationwide British Membership, members live as far away as Australia and Hawaii. The Association's monthly journal "Marinews" has steadily improved in quality and content. In addition to the present articles, letters and line drawings, it is hoped to include photographs in the very near future. During 1973 the Association published a booklet "Tropical Marine Aquaria" with an introduction by the London and S.E. Group. This has been a conspicuous success in initiating newcomers to the marine hobby. Local groups of the B.M.A.A. have staged displays at some of the larger fishkeeping shows. The Cheshire and North Wales Group staged a particularly impressive exhibit at the B.A.P., Belle Vue and recruited many new members. The Overseas Correspondent has established a two-way flow of information and ideas between the B.M.A.A. and marine clubs and institutions abroad. It is now possible to join the B.M.A.A. at any time in the year for a full twelve months. Marine aquarists interested in joining this very progressive Association should write to the Secretary, J. Vickery, 26 Rosalind Avenue, Bramford Estate, Woodsetton, Dudley, Worcs. S.A.E. please.

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AT the annual general meeting of the **Brighton and Southern A.S.,** the following proposal was agreed and passed by the meeting: "Members of other societies would be able to become Associate members of Brighton and Southern A.S. for one-third the current full membership rate. Associate members would have no voting powers and would not be able to show fish in Table Shows. The application for Associate membership would have to be endorsed by the Secretary of the Society to which the applicant is a full member." Mid-Sussex A.S. also passed this proposal at their annual general meeting.

It is hoped to build up many associate members from various aquarist societies so that there is a better relationship between

clubs and also many people can cross-reference their experiences with fishes.

The following officers were voted on to the committee of the Society: Chairman: B. Rice; Secretary: S. Feek; Treasurer: M. Rooney; Show Secretary: Mrs. B. Feek. Any further information on the Society may be obtained from the Secretary, S. Feek, 55 Newmarket Road, Brighton.

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ON the first meeting of the month the **Hastings and St. Leonards A.S.** met at the Conservative Club to see a slide show by the Hendon A.S., with a taped commentary about Catfish.

About 50 varieties were shown out of about 200 species. The table show was Livebearers (pairs) judged by G. Chalcraft.

The placings were: 1 and 2, Mrs. M. Grieg; 3, Miss H. French. On the second meeting of the month about fifty members met, when the society held its annual auction. The table show was Miniature aquarium, judged by Mrs. M. Grieg. The winners being, 1, J. Mann; 2, B. Reed, 3, Mrs. Carey.

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THE **Slough and District A.S.** committee for the year 1974 is: Chairman: K. Ferris; Vice-Chairman: R. Winter; Secretary: Edith Knight; Treasurer: B. Withers; Show Secretary: R. Knight. Committee: Angela Ferris, Mary Winter Shirley Withers, A. Kerr, A. Kitley, D. Roberts. At the meeting on 20th March there will be a talk on Coldwater Fish by R. Esson. New members are welcome at the meetings which are held at the Friends' Meeting House, Ragstone Road, Slough.

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THE annual general meeting of the Birmingham Section of the **Fancy Guppy Association** was held in January, when the following officers were elected. Chairman: G. Steadman: Vice-Chairman: S. Croft; Secretary: G. Beacham; Treasurer: Mrs. J. Croft; Show Secretary: D. Beacham; Assistant Show Secretary: Mr. Newitt; P.R.O.: A. C. and I. Truman. Other committee members: M. Delingpole, D. Cartlidge, P. Jinks, G. Fletcher. Broadsheet editors: G. and D. Beacham. Catering officers: Meg Steadman and Joy Johnson.

A very full programme is being arranged for the year and many of the newer members are coming along well with their Guppy breeding. Mr. and Mrs. R. Jones have attained their silver pin and A. C. and I. Truman their gold. New members and visitors are very welcome on the fourth Sunday afternoon of each month at the Glebe Farm Community Centre, Stetchford, Birmingham. All enquiries should be addressed to the secretary, Mr. G. Beacham, 35 Frankton Close Manchborough, Redditch. Telephone: Ryknild 4697.

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MAIN attraction at the **Ilford and District Aquarist's and Pondkeepers' Society** was the presentation of the annual cups and trophies. The Festival Cup, which is given for the efforts and work done for the Society during the past year, was won by: 1, D. Seaman; 2, M. Shadrack; 3, M. Berger; 4, W. Rowe. The Table Show Cup, points for this are given for placings in our monthly table shows during the year. The winners being: 1, W. Rowe; 2, H. Berger; 3, D. Seaman; 4, M. Shadrack. The Home Aquaria Cup, was won by: 1, D. Seaman; 2, Mrs. P. Reade; 3, R. Ruth; 4, M. Shadrack and J. Rendol.

The table show this month was a furnished four inch square show jar. The winners were: 1 and 2, D. Seaman; 3 and 4, M. Shadrack.

A new competition this year is for snails. Heats will be run during the year for size, speed, colour, etc. This month we held the speed trials, and after many disputes and disqualifications, the winners were declared as follows: 1, C. Hackshall.

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RESULTS of the **Blackburn Aquarist and Waterlife Society** annual open show held in November were as follow:—Best Fish in Show: Mr. and Mrs. Marshallsea of Blackburn, out of an entry of 338 from 15 different societies. Guppies: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, Mrs. L. C. Heap (Keighley); 3, K. Smith (Middleton). Platties: 1, Mr. and Mrs. Muckle (Ind.); 2, B. and C. White (Leigh); 3, Mr. Norton (Sandgrounders). Swordtails: 1, Mr. and Mrs. Muckle (Ind.); 2, T. Aspin (Blackburn); 3, J. S. Hall (Aireborough). Mollies: 1 and 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. Marshallsea (Blackburn). A.O.V. Livebearer: 1 and 2, A. Weedon (Merseyside); 3, S. Clarke (Aireborough). Small Characins: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, D. Richardson (Ind.); 3, W. Bamber (Sandgrounders). Large Characins: 1, J. S. Hall (Aireborough); 2 and 3, P. Whelan (Blackburn). Dwarf Cichlids: 1, P. Whelan (Blackburn); 2 and 3, Miss A. Gregory (Nelson). Large Cichlids: 1 and 3, S. Hooton (Sandgrounders); 2, R. Atherton (Grimwood). Angels: 1, Mr. Watkins (Grimwood); 2, N. Ratcliffe (Leigh); 3, Mrs. L. C. Heap (Keighley). Small Barbs: 1, W. Bamber (Sandgrounders); 2, K. Wright (Sandgrounders); 3, P. and H. Batchelor (Loyne). Toothcarps: 1 and 3, Mr. and Mrs. Marshallsea (Blackburn); 2, B. W. Carter (Merseyside). Minnows: 1, S. Clarke (Aireborough); 2, P. Whelan (Blackburn); 3, T. Tasker (Sandgrounders). Danios: 1, Mr. and Mrs. Gilding (Gainsborough); 2, B. and C. White (Leigh); 3, C. Holden (Loyne). Rasboras: 1, P. Whelan (Blackburn); 2, Mr. and Mrs. Gilding (Gainsborough); 3, B. W. Carter (Merseyside). Fighters: 1, S. Clarke (Aireborough); 2, Mr. Birdsall (Aireborough); 3, N. Ratcliffe (Leigh). Anabantids: 1 and 2, S. Clarke (Aireborough); 3, Mr. and Mrs. Muckle (Ind.). A.O.V. Anabantids: 1, Miss A. Gregory (Nelson); 2, H. and A. Waring (Loyne); 3, G. Holden (Loyne). Sharks: 1, J. S. Hall (Aireborough); 2, Mr. Melling (Ind.); 3, Mr. Leigh (Accrington) Foxes: 1, S. Clarke (Airborough); 2, D. Gardiner (Blackburn); 3, Mr. and Mrs. Muckle (Ind.). Livebearers (Pairs): 1, Mr. and Mrs. Marshallsea (Blackburn); 2, K. Norton (Sandgrounders); 3, J. S. Hall (Aireborough). Egglayers (Pairs): 1, B. W. Carter (Merseyside); 2, Mr. and Mrs. Gilding (Gainsborough); 3, B. and C. White (Leigh). Breeders (Livebearers): 1, Mr. and Mrs. Marshallsea (Blackburn); 2, Mr. Birdsall (Aireborough); 3, T. Tasker (Sandgrounders). Breeders (Egglayers): 1, 2 and 3, Mr. and Mrs. Gilding (Gainsborough). Loaches: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, B. and C. White (Leigh); 3, J. S. Hall (Aireborough). Corydoras: 1, B. and C. White (Leigh); 2, B. W. Carter (Merseyside); 3, Mr. Birdsall (Aireborough). Catfish: 1, J. S. Hall (Aireborough); 2, P. Whelan (Blackburn); 3, P. and H. Batchelor (Loyne). Juniors A.O.V.: 1, D. Harvey (Merseyside); 2, Master Birdsall (Aireborough); 3, S. Foot (Accrington). A.O.V. Tropical: 1, Mrs. Hall (Aireborough); 2, A. Weedon (Merseyside); 3, J. S. Hall (Aireborough). Common Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). Fancy Goldfish: 1 and 2, J. S. Hall (Aireborough); 3, S. Walsh (Accrington). A.O.V. Coldwater: 1, J. S. Hall (Aireborough) 2 and 3, S. Walsh (Accrington).

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THE January meeting of the **Bristol A.S.** was held as the annual general meeting. The outgoing officers were thanked most heartily for their past year's service. Officers elected for this year were: president, S. Lloyd; vice-president, G. Bell; treasurer, W. Ham; secretary, H. C. B. Thomas; registrar, Miss H. Morgan; show secretary, E. Bowden.

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AT the annual general meeting of the **Aireborough and District A.S.** the president, A. D. Lawson presented awards for most points in table shows throughout the year. Advanced Class: J. S. Hall. Novice, W. Stuart. Junior: Simon Cox. The Members Champion of Champions Award was won by W. Stuart with a Marine Fish. The president went on to congratulate the showing members on their success at open shows, winning the highest pointed society award at most of the open shows and to J. S. Hall on gaining two Best Fish in Shows and Mr. and Mrs. Whiteley on gaining the Best Fish in Show Award. Results of open show 1973: Best Fish in Show was a Molly exhibited by P. Ibbrill (Hyde). Highest Pointed Society Castleford. Furnished Aquaria: 1, C. Freeman (Swillington); 2, B. Hanbury (Swillington); Mr. Fryes (Halifax). Mini Jars: 1, J. C. Robertson (Mt. Pleasant); 2, Mr. and Mrs. Wells (Doncaster); 3, W. Stuart (Aireborough). Novice Livebearer: 1, Mr. Jackson (Keighley); 2, J. Emerson (Castleford); 3, Mrs. C. Asquith (Castleford). Novice Barbs: 1, K. Maskill (Castleford); 2, C. Tivydale (York); 3, M. B. and H. Nock (Pontefract). Novice Characin: 1, C. Tivydale (York); 2, Mrs. C. Asquith (Castleford); 3, K. Maskill (Castleford). Novice Cichlid: 1, Mr. McArdle (Castleford); 2 and 3, Mr. and Mrs. Foster (Sheaf Valley). Novice Anabantid: 1, 2 and 3, Mrs. C. Asquith (Castleford). Novice Carp and Minnow: 1, A. Clark (Castleford); 2, Mr. and Mrs. Foster (Sheaf Valley); 3, Mrs. C. Asquith (Castleford) Novice Catfish and Loach: 1, Mr. and Mrs. Lodge (Castleford); 2, Mrs. C. Asquith (Castleford); 3, Mrs. J. Johnson (Blackburn). Novice A.O.V.: 1, M. B. and H. Nock (Pontefract); 2, Mr. and Mrs. Hepworth (Castleford); 3, Mrs. J. Johnson (Blackburn). Breeders (Guppies): 1, G. Thickbroom (Castleford); 2, Mr. and Mrs. Daines (Doncaster). Breeders (Platies): 1, A. Barrett (Castleford); 2, G. Andrews (Hull); 3, Mr. and Mrs Cohen (Pontefract). Breeders (Swordtail); 1, Mr. and Mrs. Cohen (Pontefract); 2, G. Andrews (Hull). Breeders (Mollies): 1, Mr. and Mrs. Birdsall (Aireborough); 2, Mr. D. Johnson (Blackburn). Breeders (A.O.V. Livebearer): 1, E. Leadbeater (Fleetwood). Breeders (Barb): 1 and 2, Mr. and Mrs. Blades (Cresswell). Breeders (Cichlids): 1, J. W. Furness (Castleford); 2, Mr. and Mrs. Blades (Castleford); 3, L. Staniforth (Sheaf Valley). Breeders Anabantid: 1, Mr. and Mrs. Wheeler (Harrogate); 2, L. Staniforth (Sheaf Valley). Breeders Carps and Minnows: 1, S. Sonley (B.K.A.); 2, A. Barrett; 3, J. W. Furness. Breeders Catfish and Loach: 1, Mr. and Mrs. Wells (Doncaster). Guppies: 1, L. Smith (Castleford); 2 and 3, D. and M. Laycock (Sheaf Valley). Platies: 1, D. and M. Laycock (Sheaf Valley); 2, Mr. and Mrs. Hepworth (Castleford); 3, A. Barrett. Swordtails: 1, G. Ibbotson (Keighley); 2, Mrs. Hislop (Swillington); 3, G. Andrews (Hull). Mollies: 1, P. Ebbrill (Hyde); 2, Mrs. C. Asquith (Castleford); 3, E. Leadbetter (Fleetwood). A.O.V. Livebearer: 1, Mr. and Mrs. Daines (Doncaster); 2, Mr. and Mrs. Snowdon (York); 3, Mr. and Mrs. Cohen (Pontefract). Fighters: 1, Mr. and Mrs. Cohen (Pontefract); 2, L. Staniforth; 3, D. and M. Laycock (Sheaf Valley). Small Anabantids: 1, W. Blundell (Doncaster); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Gates (Pontefract). A.O.V. Anabantids: 1, Mr. and Mrs. Cohen (Pontefract); 2, Mr. and Mrs. Fletcher (Doncaster); 3, P. Ebbrill (Hyde). Dwarf Cichlids: 1, Mr. and Mrs. Blades (Cresswell); (Mt. Pleasant); 3, G. Thickbroom (Castleford). Large Cichlids: 1, Mr. and Mrs. Blades (Cresswell); 2, P. Smith (Horsforth); 3, Mr. and Mrs. Snowdon. Angels: 1 and 3, I. Dunne (Horsforth); 2, E. Leadbetter (Fleetwood). Small Barbs: 1, Mr. and Mrs. King (Doncaster); 2, Mr. and Mrs. Birdsall (Aireborough); 3, Mr. and Mrs. Daines (Doncaster). Large Barbs: 1, Mr. and Mrs. Cohen (Pontefract); 2, Mr. and Mrs. Gates (Pontefract); 3, I. Dunne. Small Characins: 1, D. and M. Laycock (Sheaf Valley); 2, J. W. Furness (Castleford); 3, M. E. Hall (Swillington). Large Characins: 1, Mr. and Mrs. Daines (Doncaster); 2, P. Whelan (Blackburn); 3, Mr. Kennedy (Keighley). Corydoras: 1, Mr. and Mrs. Fletcher (Doncaster); 2, L. Smith; 3, Mr. and Mrs. Wells (Doncaster. A.O.V. Catfish: 1, Mr. and Mrs. Gates (Pontefract); 2, Mr. and Mrs. Fletcher (Doncaster); 3, Mr. and Mrs. Copley (Doncaster). Loach: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, Mr. and Mrs. Wells (Doncaster); 3, P. Whelan. Sharks and Foxes: 1, G. Thickbroom (Castleford); 2, J. C. Roberison; 3, Mr. and Mrs. Cohen (Pontefract). Toothcarps: 1 and 2, S. Sonley (B.K.A.); 3, Mr. and Mrs. Marshallsea (Blackburn). Rasboras and Minnows: 1, M. E. Hall; 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Copley (Doncaster). A.O.V.: 1, Mr. and Mrs. Cohen (Pontefract); 2, A. Barrett; 3, A. E. Heap (Keighley). Marine: 1, 2 and 3, W. Stuart. Female Livebearer: 1 and 3, Mr. and Mrs. Wells (Doncaster); 2, Mr. Gillespie (Castleford). Female Egglayer: 1, Mr. and Mrs. Fletcher

(Doncaster); 2, Mr. and Mrs. Daines (Doncaster); 3, A. Feasey (Doncaster). Livebearer Pairs: 1, W. Blundell (Doncaster); 2, Mr. and Mrs. Copley (Doncaster); 3, Mr. and Mrs. Wells (Doncaster). Egglayer Pairs: 1, Mr. and Mrs. Copley (Doncaster); 2, D. and M. Laycock (Sheaf Valley); 3, Mr. and Mrs. Lodge. Com. Goldfish: 1, S. Walsh (Accrington); 2, S. Koote (Accrington); 3, C. H. Whitsey (Accrington). Shubunkins: 1, S. Walsh; 2 and 3, S. Koote. Twintails: 1, S. Walsh; 2 and 3, C. H. Whitsey, A.O.V. Coldwater: 1 and 2, S. Walsh; 3, Mr. and Mrs. Blades (Castleford).

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AT the **Weymouth A.S.** annual general meeting the following officers were re-elected: chairman, D. Rogers; vice-chairman and F.B.A.S. delegate, J. Fancy; committee member, L. Brooks. New officers elected: secretary, M. Cleall; treasurer, Mrs. Manels; committee members, Mrs. H. Cleall, B. Dalley, B. Manels and C. Taylor; press and P.R.O., D. P. Mullen.

A very varied and interesting programme of events is planned and in addition to the numerous table shows, inter-club competition with Dorchester, Yeovil and Bournemouth, it is intended to arrange an exhibition of fish at the "Big Affair" show in Weymouth. New members and visitors are assured of a friendly welcome at the meetings which are held on the second Tuesday of the month at 7.30 p.m. at the Ratcliff Hall, Queens Road, Radipole Spa, Weymouth.

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THE following officers were elected at the annual general meeting of the **Basingstoke and District A.S.** for this year: Chairman, G. Clewer; vice-chairman, G. Dixon; secretary, B. Bissoon; treasurer, M. Strange; show manager, R. Onslow; show secretary, R. Rich; programme secretary, A. G. Harmsworth; projects officer, A. S. Cripps; raffle secretary, W. Turner. The president for the past three years, D. Walls, retired and was presented with an Honorary Life Membership in recognition of his invaluable service to the club over many years. Mrs. D. Mears was also officially thanked for her fund-raising efforts. Results of the annual closed show were: Class B: 1, B. Bissoon; 2, A. Blake; 3, J. Jackson. Class Ca: 1, L. Strange; 2, L. Jones; 3, J. Jackson. Class C: 1, G. Clewer; 2, L. Strange; 3, A. Marshall. Class Db: 1, M. Strange; 2 and 3, B. Bissoon. Class D: 1, M. Strange; 2, G. Dixon; 3, A. Cripps. Class E: 1, J. Jackson; 2 and 3, W. Turner. Class F: 1, A. Blake; 2, M. Strange; 3, J. Jackson. Class G: 1 and 2, B. Jones; 3, B. Bissoon. Class H: 1, B. Bissoon; 2 and 3, A. Blake. Class J: 1, B. Bissoon; 2, R. Canning; 3, J. Jackson. Class K: 1 and 2, B. Bissoon; 3, J. Jackson. Class L: 1, D. and S. Jackson; 2, A. Blake. Class M: 1, A. Harmsworth; 2, G. Clewer; 3, H. Mears. Class N: 1, R. Onslow; 2, H. Mears; 3, A. Blake. Classes O and P: 1, A. Blake; 2, A. Cripps; 3, M. Strange. Class Q: 1, M. Strange; 2, B. Bissoon; 3, W. Turner. Class R: 1, A. Blake; 2 and 3, B. Bissoon. Class S: 1, 2 and 3, W. Turner. Class T: 1, M. Strange; 2, B. Bissoon; 3, R. Canning. Class U: 1, R. Onslow; 2, A. Marshall; 3, Master A. Marshall. Class V: 1, A. Marshall; 2 and 3, R. Rich. Class W: 1, B. Bissoon. Class X b-m: 1, M. Strange; 2 and 3, G. Dixon. Class X o-t: 1, M. Strange; 2, R. Onslow; 3, Master A. Marshall. Class Y: 1, D. Mears (Best Fish in Show); 2, J. Mears; 3, A. Harmsworth. Individual Points: 1, B. Bissoon (28 pts.); 2, M. Strange (27 pts.); 3, A. Blake (15 pts.).

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THE New Year started well at the January meeting of the **Bristol Tropical Fish Club**, with a slide show being given by B. Evans on "Killie Fish of Africa," which was very entertaining. Prospective members please note that meetings are held at the Black Horse, Old Market Bristol, on the third Thursday in the month. Visitors very welcome.

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RETIREMENT

AT the annual general meeting of the **Osram A.S.** J. E. (Teddy) Shore retired as secretary after 22 years. He was presented with an engraved tankard and was made an honorary life member in appreciation of all the hard work and service that he has given to the Society and the hobby in general. We feel sure his many friends will join us in wishing him many more happy years in the hobby and the Society.

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SECRETARY CHANGES

Stockton A.S.: Mrs. M. Saunders 29 Thoenley Avenue, Billingham-on-Tees, Teesside. Tel: Stockton 561977.

Border A.S.: G. Burton, 12 Eden Mount, Penrith.

Anson Aquatic Club: Mrs. M. Smith, 15 Athelstan Gardens, Willesden Lane, N.W.6. Tel: 01-3287407.

Grimwood A.S.: R. Millinger, 110 Beechtrees, Little Digmoor, Skelmersdale, Lancs.

Sheffield and District A.S.: T. Smith, 176 Woodbourn Road, Attercliffe, Sheffield, 9.

Gloucester Fishkeeping and Social Club: Mrs. M. J. Mitchell, 31 Porchester Road, Hucclecote, Gloucester.

Cambridge and District A.S.: B. J. Morgan, 6 Foster Road, Trumpington, Cambridge.

Aireborough and District A.S.: J. Kitson, 22 Westbourne Drive, Guiseley.

Tottenham and District A.S.: R. Toull, 1 Argyle Mansions, 105 Seven Sisters Road, Holloway, London, N7 7QS.

Weymouth A.S.: M. Cleall, 36 Colliton Street, Dorcester, Dorset.

British Cichlid Association: T. B. Acott, 18 Rosary Close, Hounslow West, Middlesex, TW3 4NJ.

Blackburn Aquarist Waterlife Society: D. P. Gardiner, 95 Audley Lane, Blackburn, Lancs.

Bedworth A. and P.S.: F. R. Shakespeare, 9 Rugby Road, Bulkington, Nuneaton.

Scunthorpe and District A.S.: A. Binns, 67 Mill Lane, Brigg, Lincs., DN20 8ND. Tel: Brigg 2014.

Newport A.S.: C. A. Short, 6 Arthur Street, Caerleon, Newport, Mon., NP6 1BJ.

Goole and District A.S.: Miss M. Coates, 8 Hull Road, Howden, Goole. Tel: Howden 329.

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CHANGES of officers of the **Tottenham and District A.S.** are as follow: chairman, G. Boyall; secretary, R. Toull. Meetings are held on the second and fourth Thursday of each month at the T.L. & R. Club, Tottenham High Road, London, N.17. New members are most welcome to attend meetings or contact the hon. secretary.

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SHOW SECRETARY CHANGES

South Derbyshire and District A.S.: New Show Secretary is now M. Simpson, 23 Raeleigh Crescent, Newhall, B.O.T.

Newport A.S.: W. Gibbon, 65 Dunstable Road, Newport, Mon. Tel.: 74103.

Scunthorpe and District A.S.: G. White, 26 Audearn Road, Scunthorpe, Lincs. 'Phone: Scunthrope 60697.

South Humberside A.S.: D. Norton, 58 Cartergate, Grimsby, Lincs, DN31 1RT.

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SHOW CHANGES AND CANCELLATIONS

Riverside A.S.: New date 27th April.

Rotherham and District A.S.: Show postponed until further notice.

Worksop Aquarists and Zoological Society: Owing to present power crisis, the venue has been changed to St. Paul's Church Hall, Manton, Worksop (next to Greyhound Hotel, Pelham Street). The date has also been changed to 31st March.

Nelson A.S.: Show scheduled for 7th April has been cancelled owing to current situation.

Ilfracombe & District A.S.: Postponed from 28th April. New details later.

Ebbw Vale A.S.: Postponed.

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VENUE CHANGES

Cambridge and District A.S.: Meetings are now held on the fourth Wednesday of each month at the East Barnwell Community Centre, Newmarket Road, Cambridge.

Bedworth A. and P.S.: Bedworth Working Men's Club, King Street. Second Friday in the month.

AQUARIST CALENDAR, 1974

3rd March: Keighley A.S. 6th Annual Show, at the Leisure Centre, Victoria Park, Keighley. Benching 12-2 p.m.

9th March: Catfish Association (G.B.) are holding their Open Show which consists of eighteen classes of Catfish (G. and H.). Venue to be announced later, Show secretary, Mr. D. Lambourne, 7 Wheeler Court, Plough Road, London, SW11 2AX. Tel: 01-223 2630.

9th March: Midland Association of Aquarists Societies Delegates Annual General Meeting at Digbeth Civic Hall, Room 3, at 7.30 p.m.

10th March: Gainsborough A.S. Second Open Show, Town Hall, Gainsborough. Schedules from Show Secretary, W. D. Gilding, 28 Retford Road, Woodbeck, Nr. Retford, Notts.

23rd March: Goldfish Society of Great Britain (annual general meeting).

6th April: Bath A.S. Open Show: Saturday, at St. Peter's Hall, Dorset Street, Bath.

6th April: Thurrock A.S. Open Show. Schedules from Show Secretary, A. L. Riddles, 2 Pym Place, Grays, Essex.

7th April: Scunthorpe Museum Society Aquarist Group fourth open show at the Drill Hall, Cottage Beck Road, Scunthorpe. F.N.A.S. and Y.A.A.S. rules. Secretary: V. Hardie, 26 Baysdale Road, Ashby, Scunthorpe.

7th April: S.A.S.S. 5th Open Show at William Clark School, Primley Avenue, Walsall. Further details from Show Secretary, George Charwood, 161 West Bromwich Road, Walsall WS1 3HP or phone Walsall 35138.

7th April: Sheffield and District A.S. 14th Open Show. Grandville Polage, Grandville Road, Sheffield. Further details from Mrs. H. Buxton, 240 Marbrough Avenue Manor, Sheffield, or phone Sheffield 392515.

14th April: Hyde A.S. Open Show will be held at The Community Centre, Hattersley Road East, Hattersley, Hyde.

14th April: Stockton-on-Tees A.S. Annual Open Show at St. Peter and Paul School, Durham Road, Stockton (adjacent to Mile House Hotel). Details and schedules from C. W. Buck, 22 Danby Grove, Thornaby, Tesside TS17 8BX. Tel.: Stockton 65284.

14th April: Mid-Kent A.S. first Open Show, at Medway and Maidstone College of Technology, Tonbridge Road, Maidstone, Kent.

15th April (Easter Monday): Southampton A.S. Open Show at the Avenue Hall, Southampton. Show secretary, P. Brown, 215 Spring Road, Shirling, Southampton.

20th April: Yate D.A.S. 8th Open Show at St. John's Hall, Lodge Causeway, Fishponds, Bristol. Show Manager: Mr. R. A. Bennett, 22 Kents Green, Kingswood, Bristol.

20th April: The S.P.A.S.S. Fourth Invitation Show at the Wimbledon Community Centre, St. Georges Road, London, S.W.19. Refreshments available. Free entry forms from: Mrs. M. Dudley, 163 South Park Road, London, S.W.19. Tel.: 01-540 5662.

21st April: Heywood and District A.S. Open Show, at St. Joseph's Small Hall, Hind Hill Street, Heywood.

23rd April.—Aireborough and District A.S. Inter-Society Show. Venue, Greenacre Hall, Rawdon, Nr. Leeds.

27th April: Bristol Tropical Fish Club. Open Show was fixed as a One Day Show at the Congregational Church Hall, Stapleton Road, Bristol. Schedules to be obtained from Mr. T. Cogland Show Secretary.

27th April: Corringham and District A.S. first annual Open Show at East Thurrock Community Centre, Corringham Road, Stanford le Hope, Essex.

27th April; Riverside A.S.

28th April: Coventry Pool and Aquarium Society, Open Show. Further details (s.a.e. please) from show secretary, S. Wooldridge, 32 Ridgeway Avenue, Coventry, CV3 5BP.

28th April: Blakeborough A.S. Third Open Show in Canteen of J. Blakeborough & Sons, River Street, Birds Royde Lane, Brighouse.

Show secretary, T. Barker, 41-43 Camm Street, Brighouse, Yorks.

28th April: Warrington A.S. 6th Open Show. F.N.A.S. rules. To be held at a new venue. The Parr Hall, Palmyra Square, Warrington. Show Secretary: J. Higham, 42 Hood Lane, Sankey, Warrington, Lancs. Phone: Warr. 36939.

5th May: Oxram A.S. Open Show, at the Recreation Hall, Refuge Street, Shaw, Near Oldham, Lancs.

5th May: Bournemouth A.S. annual Open Show to be held at Kinson Community Centre, Pelhams Park, Kinson, Bournemouth. Show Secretary, J. V. Jeffery, 30 Braemar Avenue, Southbourne, Bournemouth, BH6 4JF.

11th May: Port Talbot A.S. Open Show at the Y.M.C.A. Buildings, Port Talbot.

11th May: Southend, Leigh and District A.S. Open Show, to be held at St. Clements Hall, Leigh-on-Sea. Club furnished, individual furnished, aquascapes and marine classes included. Show schedules from Derek Durrant, 172 Trinity Road, Southend-on-Sea, Essex. Tel: Southend 610576.

12th May: Gloucester A.S. third Open Show will be held at The Education and Leisure Centre, Painswick Road, Gloucester. Schedules Feb. onwards from B. Walker, 41 Hailes Road, Gloucester.

12th May: Worsley and District A.S. first Open Show will be held in the British Legion Club, Wilfred Road, Walkden, nr. Manchester. Further details (S.A.E. please) to the Show Secretary, C. Carl, 16 Tennyson Road, Farnworth, Bolton, Lancs.

18th May: Trowbridge and District A.S. Open Show will be held at the Nelson Haden Boys School, Frome Road, Trowbridge, Wilts. Schedules available from the Show Secretary, S. S. Huntley, 49 Marsh Road, Hilperton, Trowbridge, Wilts.

19th May: Merseyside A.S. Open Show. Venue to be announced later.

19th May Yeovil and District A.S. Open Show, School Hall, Martock, Somerset. Schedules from P. New, 8 Mayfield Road, Yeovil, Somerset. Yeovil 24225.

19th May: Goole and District A.S. second annual Open Show in Goole High School.

25th-26th May: F.G.A. International Open Show, at Glebe Farm Community Centre, Glebe Farm Road, Stetchford, Birmingham. Full details from Show Secretary, D. R. Beacham, 17 Pedmore Close, Woodrow South, Redditch, Worcs.

26th May: Corby and District A.S. Open Show at the Corby Civic Centre. F.B.A.S. rules. More details later.

26th May: Bridlington and District A.S. proposes to hold its First Annual Open Show at the Alexandra Hotel, Bridlington, E. Yorks. Details of show schedules, etc., later.

26th May. The Loyne Aquarist 4th Open Show. Schedules available from the Show Secretary, Mrs. H. Batchelor, 52 Lythefell Avenue, Halton-on-Lune, Lancaster. Tel.: Halton-on-Lune 625.

26th-27th May: The Fifth Annual Fish Exhibition of the Mid-Sussex A.S., incorporating the world famous Crab Derby and many other attractions will be open to the public on Sunday, 26th May, 10.30-8 and Monday, 27th May, 9.30-5. With a wide range of side shows this will be everyone's idea of a family outing. All local roads will be signposted to make it easy to find The Park Centre, Burgess Hill, Sussex (only 12 miles from Brighton and the sea).

1st June: Goldfish Society of Great Britain (meeting).

2nd June: British Cichlid Association (Northern Area) Show for Cichlids only. Further details later.

2nd June: Loughborough and District A.S. Open Show. Schedules from I. Purdy, 10 Cleveland Road, Loughborough, Leics., LE11 2SP. Tel: 61715.

8th June Havant and District A.S. fourth Open Show. The venue will be St. George's Hall, Waterlooville. Show schedules are available from V. B. Hunt, "Caeglas", 120 London Road, Widley, nr. Portsmouth, Hants. PO7 5EW.

8th June: Llantwit Major A.S. 21st Anniversary Open Show to be held at the Town Hall, Llantwit Major. Superior celebration awards for all classes. Further information and show schedules, etc., from Show Secretary, J. J. Edwards, "Glanafon", Mill Park, Llanblethian, Cowbridge, Glamorgan CF7 7BG.

9th June: G.K.N.P.A.S. Open Show, G.K.N. Restaurant, Salisbury Street, Darlaston, Staffs. Further details from K. Hall, 38 Richard Street, Darlaston Staffs.

9th June: Brighton and Southern A.S. Open Show and Exhibition at St. Barnabus Church Halls, Sackville Road, Hove, where there will be plenty of trade stands.

9th June: Ashington and Blyth Open Show. Details later. Correspondence to: Mrs. R. Moorhead, Secretary, 59 Monkseaton Terrace, Ashington, Northumberland.

16th June: Swillington A.S. Open Showat John Smeaton School, Barwick Road, Seacroft, Leeds. Details from C. Townsend, 16 Firtree Gardens, Moortown, Leeds 17.

16th June: Salisbury and District A.S. 10th Annual Open Show will be held at The City Hall, Fisherton Street, Salisbury. Further information later.

16th June: Bishops Cleeve A.S. Open Show. Further details available later.

23rd June: Alfreton and District A.S. Annual Open Show at the Adult Education Centre, Alfreton Hall, Alfreton. Details from the Show Secretary, B. Hickling, "Parkview," 13 Coppice Drive, Eastwood, Notts., phone: Langley Mill 5104.

30th June: High Wycombe A.S. Open Show, Lane End Hall, nr. High Wycombe. Details from Show Secretary, R. Leslie, 29 Meadow Walk, Tylers Green, Bucks HP10 8DG. Penn 4386.

30th June: Lincoln and District A.S. Open Show. Show Secretary S. Hill, 14 Hartley Street, Lincoln. City Sports Centre, Skellingthorpe Road, Lincoln.

6th July: Basingstoke and District A.S. Open Show, at the Carnival Hall, Basingstoke. Details and Schedules from Show Secretary, R. Rich, 93 Pinkerton Road, Basingstoke, Hants.

21st July: Sandgrounders' A.S. Open Show. Meol's Cop Secondary School, Southport.

27th July: Goldfish Society of Great Britain (meeting).

28th July, 1974: Aireborough and District A.S. Open Show, Menston Community Centre, Main Street, Menston. Half-mile off A-65 Leeds to Ilkley Road. Show Secretary, Mr. W. Clarke, 20 New Street, Staincross, Nr. Barnsley, S75 6EJ or phone: Pudsey 74609. (Note new date and venue from last year).

4th August: Tonbridge and District A.S. Open Show. Show Secretary: I. T. Mathieson, 33 Nortons Way, Five Oak Green, Tonbridge, Kent.

10th August: Newport (Mon.) A.S. Open Show, St. John's Hall, Victoria Avenue, Maindee, Newport, Mon. Schedules from Show Secretary, W. Gibbon, 65 Dunstable Road, Newport, Mon. Tel.: 74103.

11 August: Grimsby and Cleethorpes A.S. third Annual Open Show will be held at the Memorial Hall, Cleethorpes. Schedules later.

18th August: Stroud and District A.S. will be holding their Open Show at Stroud Subscription Rooms, as last year. Further details to be announced later.

18th August: Bedworth A. and P.S. Open Show at Nicholas Chamberlains School, Bulkington Lane, Bedworth. Schedules from Mr. J. Salisbury, 261 Gadsby Street, Nuneaton.

25th August: Castleford A.S. Open Show, Civic Centre, Castleford.

September: Goldfish Society of Great Britain Open Show. Date and venue to be announced later.

1st September: Wellingborough and District A.S. (F.B.A.S.) annual Open Show at the Queensway Hall, Goldsmith Road, Wellingborough, Northants. Show schedules are obtainable from P. Wallis, 12 Cherry Walk, Raunds, Northants.

1st September: Peterlee and District A.S. 13th annual Open Show. Schedules available later from A. Bebbington, 40 Marlborough Road, Hastings Hill, Sunderland.

1st September: Bethnal Green A.S. 25th Open Show at The Institute, 229 Bethnal Green Road, E.2. Schedules from Show Secretary, Sybil Hedges, "Koi Kornor," 150 Ashburton Avenue, Ilford, Essex. F.B.A.S. Championship class to be announced. New members made welcome.

8th September: Harlow A.S. Annual Open Show, Moot Hall, The Stow, Harlow.

15th September: Grimwood A.S. third Open Show, to be held at the Quarry Bank Community Centre, Skelmersdale, Lancs. Details later.

22nd September: Torbay A.S. proposes to hold its sixth Annual Open Show at the Torquay Town Hall; details of show schedules, etc., later.

29th September: Hucknall and Bulwell A.S. Annual Open Show. Details later.

5th October: Annual Open Breeders Show for the East London Aquarist and Pondkeepers' Association, will be held at Ripple Road School, Ripple Road, Barking, Essex. Show schedules are obtainable from Show Secretary, Mrs. J. Arrow, of 48 Church Street, Dagenham, Essex.

6th October: Hinckley and District A.S. Open Show at Heathfield High School, Belle Vue Road, Earl-Shilton. More information from Secretary, K. Bates, 6 Merevale Close, Hinckley, Leics. LE10 0PZ.

20th October: Scunthorpe and District A.S. will be holding their first Open Show at St. Paul's Church Hall, Ashby High Street, Scunthorpe.

27th October: Doncaster and District A.S. Open Show at Brodsworth Miners Welfare, Welfare Road, Woodlands.

2nd November: Goldfish Society of Great Britain (meeting).

10th November: Blackburn Aquarist Waterlife Society Open Show. Venue will be the "Windsor Hall," Blackburn. Details may be had from Show Secretary: B. Marshallsea, 10 Hawthorn Crescent, Oldham, Lancs.

10th November: Halifax A.S. Open Show at the Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Individual Furnished Aquaria, Plant and Marina classes included. Schedules from David Shields, "Cobblestones," Gainest, King Cross, Halifax. Phone Halifax 60116.

10th November: Walthamstow and District A.S. Open Show.