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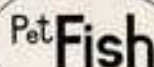
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Comments and Quotes

- Age of discretion in judging
- Chemicals in fish-catching
- The Aquarium Show '72

How Old to Judge?

AGE of fishes on the show bench is a topic that for breeders' classes at least has provoked much discussion over the years. At the last Assembly of the Federation of British Aquatic Societies, age was again the subject of debate but for a change it was the age of judges that held delegates' attention. To be explicit, the minimum age of 25 years that the Federation has laid down for its 'A class' judges was under attack as being an unnecessary restriction preventing experienced young judges from receiving 'A class' recognition. In the Federation's Judges and Standards Committee's new proposals the minimum age for some judges has been lowered to 23 years, but again the question came 'Why 23?'. It is never easy wholly to justify the choice of any special age as a qualifying one for any activity—judging fishes, judging men, voting at elections, driving a car or whatever. And sometimes restrictions by age perform remarkable about-faces, as when 'boys under 21' suddenly becomes 'men at 18' in times of war. What became clear at the Assembly's discussion was that the age selected had been arrived at after a great deal of careful consideration with past experiences providing the background. No-one would deny that there is any other way of making a good judge of fishes than by putting in hours in front of the show bench (and in front of exhibitors!). Despite the admirable, boundless, enthusiasm of really keen younger aquarists, from this latter aspect alone it is unlikely that the requisite experience will have been acquired until at least the early twenties in any but a few exceptional individuals. Should they be made

the subjects of special provisions? Unfortunately, the answer here has to be no, in their own interest as much as anything.

Deplorable Methods

LAST month in 'Personal Comments' our regular contributor Arpes drew attention to the reckless use of chemicals to catch marine fishes in coral reefs. In an editorial note we expressed astonishment that one chemical reported to be in use is sodium cyanide. Our note was not intended to throw doubt on the veracity of the report: anyone with experience of the use of this chemical industrially, or in any other way, would also, we think, be astonished that cyanide was being used in the expectation of making viable fish catches, however great the disregard also being shown for the preservation of marine fauna. We are opposed to the use of any fish-catching methods involving chemicals and any opposition to such techniques has our ready support.

The AQUARIUM SHOW '72

THIS month The AQUARIUM SHOW '72 opens in London. In its fifth year, the Show now has a great many 'regulars' by whom its annual advent is looked forward to with pleasure. We too are looking forward to renewing their acquaintance once again at the Show and any readers of PFM who have not yet visited the Show, we say 'Why not make it this year?'. Full details are given on page 267.



LETTERS

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

Danger in Bagged Gravel

I THINK the contributor to PFM who described his interesting large lounge aquarium (PFM, August) could find that his idea of using bagged gravel underwater to fill up gaps in rockwork might cause trouble, particularly if used in a smaller tank than his. A closed plastic bag of gravel is a stagnant region on the tank bottom in which water currents and plant roots cannot operate. The conditions described as anaerobic will surely develop inside the bags and there could be a gradual build-up and slow seepage outwards of harmful substances that are formed where oxygen is not readily available. I suppose really thick plastic might be all right to use in this way but ordinary thin plastic bags wouldn't be, in the long run. The risk is going to be there even if the gravel in the bags is washed.

Maidstone, Kent

M. CORNFORTH

'Lab-ee' or 'Lay-bee'?

CONGRATULATIONS on the feature called 'AquaGlossary' in the August issue of PFM. I hope you will be printing more of these word meanings as I have gone to some trouble trying to find meanings and how to say fish names without a lot of success. I was wondering, though, about the way the article said *Labeo* was to be pronounced as I have always heard it pronounced 'lab-ee-oh', not 'lay-bee-oh'.

Newcastle-on-Tyne

R. FORD

The pronunciations suggested are deliberately described as 'acceptable' rather than 'correct' because our expert assures us that universal agreement on how latinised Greek should be pronounced is unobtainable. Perhaps we should have given 'lab-ee-oh' as first alternative with 'lay-bee-oh' as second, but the influence of the way in which the medical zoological term 'labial' (of the lips) is usually pronounced was responsible for the choice. You will certainly satisfy the purists by saying 'lab-ee-oh' etc.—EDITOR

Standards for Goldfish

IN case any of your readers overlooked the advertisement in the June issue of PFM, we wish to draw attention to the fact that the newly revised

standard booklet published by the Goldfish Society of Great Britain to some extent supersedes the second edition published in 1962. Two further varieties, the broadtail moor and the comet, have been added. Only the metallic group of the latter variety is acceptable on the show bench. There are a number of small but significant changes in the pointings system and the type tests have been tightened. Judges should now be consulting this new edition, which should be the guide at future shows. It will definitely be used by the GSGB judge at the AQUARIUM SHOW at the Royal Horticultural Society's Old Hall on 27th-29th October. Inattention to the revised standards by exhibitors could conceivably lessen chances of gaining awards or even lead to disqualification. Copies of this new 40-page booklet can be obtained for 40p post paid from R. A. Dodkins, 107 Cobham Road, Sevenkings, Ilford, Essex.

M. D. CLUSE

Chairman, GSGB Standards Committee

All Marines

AS Public Relations Officer of the British Marine Aquarists' Association, I meet various and interesting people to discuss and exchange ideas to further the marine hobby in Great Britain. To my amazement there are a number of people who are under the impression that because our Association is named 'British' Marine Aquarists' Association we only deal in British or native marines. I would like to stress that the Association deals not only with native marines but with all aspects of the marine world.

Owing to unforeseen commitments, Mr J. Haynes, the Association's chairman of the Judging and Show Standards, has had to resign from this post. The new chairman of Judging and Show Standards is Mr L. H. Doubleday, and any aquarist society that wishes to run a marine class in their Show and requires an expert judge should contact Mr L. H. Doubleday, 69A Newton Road, Torquay TQ2 7BL. The Association's chairman, Mr D. Highfield, should be contacted for all queries about joining the Association. His address is: 119 Kent Road, Woods Estate, Wednesbury, Staffs.

Cardiff, S. Wales

M. STRONG



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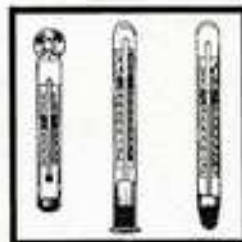
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A Review of Methods to Control Ichthyophthiriasis

By D. G. CROSS

Salmon and Freshwater Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food

ICHTHYOPHTHIRIASIS, or white-spot disease, of freshwater fishes of temperate and tropical waters is caused by the ciliate protozoan *Ichthyophthirius multifiliis*. The life cycle of the parasite has been described by a number of authors including Van Duijn,¹ Reschenbach-Klinke and Elkan² and Bauer.³ The adult parasite lives between the epidermis and cutis of the host fish and feeds on damaged host tissue and body fluids. A proliferation of the epidermal cells in the region of the infestation gives rise to the 'white-spot' by which the disease is recognised. The mature parasite leaves the host and sinks to the water bottom where it secretes a soft jellylike covering. The parasite then undergoes rapid division and can produce up to 2000 young. When reproduction is completed, the young parasites are liberated from the cyst and swim in search of a new host. The timing of the different stages in the life cycle is dependent on water temperature; for example, at 18° to 20°C the encysted stage lasts approximately 24 hours; the motile young parasite remains viable for 48 hours, and the stage within the host takes from 1 to 3 weeks to reach maturity.

The Salmon and Freshwater Fisheries Laboratory maintains small stocks of fish for experimental purposes. These fish have been periodically subjected to outbreaks of ichthyophthiriasis. The primary method of control has included the use of methylene blue for a 3-week period, but it must be started early. This treatment affects the feeding habits of the fish and results in poor quality fish. The search for an alternative method of treatment included an extensive review of the literature supplemented by personal experience.

Findings

Rotted turves. Many of the earlier treatment methods relate to uncontrolled conditions and must be considered as unreliable unless supported by tests conducted in controlled conditions. For example, Hervey and Hems⁴ cite a reported case of eradication of *Ichthyophthirius* using a layer of sieved rotted sod on the bottom of the aquarium,

but state that other workers had no success with this method.

Paraffin oil and sodium carbonate. The literature stresses the fact that few, if any, of the eradication techniques have a direct effect on the parasite while embedded in the host. This stage of the parasite is unaffected by externally applied reagents, and thus it is difficult to see how such treatments as wiping the surface of the fish with paraffin oil⁵ and slipping the infected fish in a saturated sodium carbonate solution¹⁰ can be effective. All of the efficacious treatments appear to act on the free-living stages of the parasite and thus have to be applied for a sufficient time for all of the parasites on the host to have passed to the free-living stage.

Separating the motile stage from the host. Various methods such as placing fish in cages in running water,^{7,12,16} moving fish to recently well-dried ponds at daily intervals,^{7,20} and simply spreading the fish among a number of ponds¹⁴ have been tried. Aquarium techniques using the same principle include the use of false mesh bottoms.^{24,28} These methods can only limit the incidence of reinfection. They also increase the chance of physical damage because of excessive handling and require extensive facilities to keep fish at low densities.

Temperature. Increasing the temperature to 30° to 33°C as a control technique²¹ is unsuitable for most coldwater fish; however, the periodic raising and lowering of water temperature can be beneficial. Caution should be used with this method since rapid temperature changes can cause mortality. Increasing the temperature within the tolerance range of the fish reduces the time required for a complete life cycle. This in turn reduces the treatment time required to eliminate the parasite.

Salt. The use of common salt is one of the recommended treatments. Butcher⁹ and Hickling¹⁶ recommended the gradual buildup to a concentration of 1.5 to 2%. Different Russian authors⁷ recommend concentrations of 0.6% sea salt, 0.7% sodium chloride, or a mixture of sodium chloride and magnesium chloride in the proportion 7:3 to give a 0.6% solution. Allen and Avault² report that brackish water may be used to eradicate

Ichthyophthirius from channel catfish. The use of salt in aquariums with mesh floors and no water flow^{23,24,28} is a unique control technique. A high salt concentration can be maintained under the false floor while the fish remain in a lower concentration. Parasites emerging from the host drop to the tank floor where they are killed by the salt concentration. Personal experience with the use of salt has shown that it is not the panacea that it has been considered to be. The treatment did not eradicate the parasite; however, it may be beneficial in reducing the osmotic stress imposed by the presence of open wounds.

Methylene blue. One of the most frequently recommended methods of treatment is the use of 5 milligrams per litre (5 p.p.m.) of methylene blue.^{8,14,15,31} The main advantages of this treatment are the low toxicity and cost. The fact that it is inactivated by organic detritus can be overcome by increasing the dosage without harming the fish. The disadvantages of this treatment include poor quality of the fish after treatment, difficulty in assessing progress of the treatment, and some strains of *I. multifiliis* seem to be more resistant than others.

Acriflavine. Hickling¹⁶ and Schäperclaus²⁸ recommend the use of acriflavine (trypaflavine) at a concentration of 10 mg/litre (10 p.p.m.). Personal experience indicates that this method is satisfactory for treating most outbreaks of the disease though occasionally some fish respond very poorly to the treatment. Van Duijn³¹ contends that acriflavine causes temporary sterility and possibly genetic aberrations in fish; therefore, it should be used with caution.

Penicillin. This antibiotic has been reported to be effective against *I. multifiliis*.²⁰ However, it is known to act against Gram-negative bacteria through their distinctive cell wall structure, and it is difficult to imagine how it could combat a protozoan infection. It may be that the beneficial effect noted is due to the effect penicillin has on secondary bacterial infections although most of the bacteria pathogenic to fish are Gram-negative and resistant to penicillin.

Quinine. At a concentration of 10 mg/litre (10 p.p.m.) quinine has been proposed as a treatment for ichthyophthiriasis.¹⁸ The recommended treatment was raised to 30 mg/litre³¹; however, this concentration is toxic to some fish.²⁸ Van Duijn³¹ reports that the compound is more effective at pH 6.5 and recommends an adjustment of the pH to this value. Further, he advises that the concentration should be built up by the addition of three equal doses at 12-hour intervals. This reagent has one of the same defects as methylene blue in that it is inactivated by organic detritus, but unlike methylene blue, overdosing with quinine is dangerous because of the smaller differential

between its toxicity to the parasite and fish. Experience has shown that the treatment must be extended for at least 24 days to ensure complete eradication of the parasite. At the end of this treatment the fish tend to be in poor condition.

Mepacrine. Slater²⁹ used mepacrine hydrochloride (quinacrine hydrochloride) at a concentration of 3 mg/litre (3 p.p.m.) for the eradication of persistent cases of ichthyophthiriasis. This reagent is much more toxic than quinine; therefore, Van Duijn³¹ recommends that it should be used only for cases which do not respond to other treatments.

Malachite green. Avdos'ev⁶ reports that a minimum concentration of 0.5 mg/litre (0.5 p.p.m.) of malachite green oxalate is effective against *Ichthyophthirius*. Allison⁴ had success with concentrations of 0.05 to 0.10 mg/litre and this treatment is used by many in the United States. Alabaster¹ found that the toxicity threshold concentration to harlequins (*Rasbora heteromorpha*) is 0.11 mg/litre. Although the harlequin is sensitive to toxicants it is apparent that great care must be exercised if the oxalate formulation is used as an extended treatment. Alabaster¹ also reported that the threshold concentration of the zinc chloride formulation of malachite green to harlequins is 0.06 mg/litre. Therefore, if malachite green is used to control *Ichthyophthirius* it is essential to know the formulation. The difference in parasite and fish toxicity is much too small to recommend either formulation without qualification.

Mercury compounds. Butcher⁹ mentions the use of mercurochrome for controlling whitespot, but fails to state the concentration. Van Duijn³¹ describes the use of mercurochrome at a concentration of 1 mg/litre (1 p.p.m.), but advises against it because of delayed mortalities resulting from its use. Our experience is that 1 mg/litre is an effective concentration, but the fish require careful attention after the completion of the treatment to restore them to good condition. Two other mercury compounds have been used against *Ichthyophthirius*: pyridyl mercuric acetate by Clemens and Sneed¹¹ and mercurous chromate by Hervey and Hems.¹⁵ Van Horn and Katz³² showed that 0.14 mg/litre (0.14 p.p.m.) pyridyl mercuric acetate was beneficial to the health of fish but that a concentration of above 0.15 mg/litre was toxic to fish. Rodgers *et al.*²⁶ showed that concentrations tolerated by fish varied with species and size. The toxicity of most chromates varies widely with the species, pH and hardness of the water,²² and thus the use of mercuric chromate is not advised for the control of white-spot disease.

Formalin. Various authors^{19,13,25,33} refer to the use of formalin at concentrations between 100 and 250 millilitres/litre (100 to 250 p.p.m.) as a short-term bath, but these methods are not completely effective, as the higher concentrations cause some

Assessment of methods of eradicating ichthyophthiriasis

[The criteria of assessment are discussed in the text]

Method	Reference no.	Efficiency	Practicality	Therapeutic index	Remarks
Chloramine-T (sodium p-toluene sulphonylchloramide)	Cross and Hursey (in preparation)	good	good	moderate	A good method provided pH and water hardness are known
Methylene blue	31	good	moderate	good	A good method but fish condition may deteriorate; not effective against secondary infections
Formalin	3	good	good	moderate	Effective only against early stages; should not be used at low temperatures
Quinine	31	good	moderate	moderate	Fish in poor condition at end of treatment
Fish cage	16	moderate	poor	—	} Require good facilities for handling fish
Change of pond	7	moderate	poor	—	
TCP (trichlorinated phenols)	8	moderate	good	moderate	
Malachite green (oxalate formulation)	6	moderate	good	poor	Affects feeding of fish; carcinogenic
Mercuriochrome	31	moderate	moderate	poor	Long term mortality may result
Acriflavine (trypanflavine)	28	moderate	good	moderate	May cause temporary sterility
Mapracrine (quinacrine)	29	moderate	moderate	poor	To be used only in stubborn cases
Copper sulphate	23	moderate	good	poor	Requires knowledge of water quality
Penicillin	20	moderate	poor	good	Doubt as to effectiveness
Liquid paraffin	15	poor	poor	good	Not an effective treatment
Sodium carbonate	10	poor	poor	good	Not an effective treatment
Thinning out	16	poor	poor	—	Requires good facilities for handling fish
Heat	31	poor	moderate	—	Not effective as sole agent but may be used in conjunction with other remedies
pH	27	poor	moderate	good	Doubt as to effectiveness
Brackish water	3	poor	good	moderate	Not an effective treatment
Sea salt	7	poor	good	moderate	Not an effective treatment
Sodium chloride	9	poor	good	moderate	Not an effective treatment
Pyridyl mercuric acetate	11	poor	moderate	poor	Long term mortalities may result
Mercuric chromate	15	poor	moderate	poor	Long term mortalities may result
Rotted larvae	15	poor	moderate	—	Not an effective method

risk to heavily parasitised fish and require the handling of fish with the subsequent risk of mechanical damage. Allison³ reports that the application of 15 millilitres of formalin/litre every other day controls ichthyophthiriasis usually in 5 to 7 days. However, Hoffman¹⁷ warns that oxygen depletion may result during warm weather if the formalin kills algae, and Van Duijn²¹ advises against the use of formalin solutions below 18°C because of detrimental effects to the mucous coat.

Copper sulphate. It has been used to control external parasites of fish. Amlacher⁴ and Meyer²² report that 1.5 and 0.5 mg/litre respectively have been used successfully against ichthyophthiriasis

but care has to be taken especially in soft water since these concentrations are close to the maximum tolerated by many fish species.

Chloramine-T. It is reported to be effective against white-spot disease and is used by aquarists in a number of countries for this purpose.²¹ However, Van Duijn²¹ does not recommend its use because it is absorbed by organic detritus and forms toxic compounds with metals. Sterba²⁰ advises against its use because the toxicity varies with the hardness of the water. It has been shown by Cross and Hursey (in preparation) that contact with the metals commonly encountered in fisheries management does not adversely affect the toxicity

to fish and that, provided the hardness and—more important—the pH of water is known, it is possible to recommend a dosage efficacious in eradicating the parasite. Its general antiseptic properties make it efficient against many of the secondary infections encountered.

Trichlorinated phenols. Boarder⁸ states that a mixture of trichlorinated phenols, marketed in Britain under the trade name TCP, may be used against *I. multifiliis*. However, it seems that there are better remedies available from the consideration of both effectiveness and cost.

pH. Rychlicki²⁷ has shown that a pH value of 8.5 is detrimental to the survival of the free-living stages of the parasite and has proposed the application of quick-lime to a pond to attain such a pH value. Work in this laboratory has shown that the parasite is killed at a pH of 8.0 in soft water, but our water supply has a hardness of approximately 270 mg./litre (as calcium carbonate) and a pH of 7.9. The treatment is not successful under these conditions.

Mixtures of chemicals. While this paper has dealt with a number of remedies involving the administering of one chemical alone, no attempt will be made to discuss methods involving mixtures of chemicals. However, it should be noted that many mixtures have been proposed, but that with the possible exception of the mixture of formalin and malachite green proposed by Leteux and Meyer²¹ generally these methods are too expensive

for large-scale application and have met with failure due to the greatly increased toxicity of the resultant mixtures.

The table summarises the advantages and disadvantages of the different remedies for ichthyophthiriasis. The merits of the methods have been assessed on the following criteria:

1. The efficiency of the method. The method should eradicate the parasite, and at the end of the treatment the fish should be in good condition.
2. The practicability of the method. In this category is included the cost of the reagents, labour and equipment, and the facilities required.
3. An assessment of the degree of latitude between a concentration controlling the disease and a concentration causing fish mortality—the therapeutic index.

The choice of a method to control ichthyophthiriasis seems to lie between methylene blue, formalin, and chloramine-T (see table). Considering all of the factors discussed, chloramine-T seems to be the best treatment available, providing the water hardness and pH value are known. A full account of the treatment is reported by Cross and Horsey (in preparation). Chloramine-T has been used by this laboratory for 3 years and has proved effective against all but very advanced cases of white-spot disease.

This paper is reprinted from THE PROGRESSIVE FISH-CULTURIST, U.S.A.

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MUDSKIPPERS



By
J. LEE

Photograph by
BARRY
PENGILLEY

HOW can one describe these extraordinarily funny and amusing little creatures that can walk, run, jump and climb—certainly not as 'beautiful' or 'attractive'—'ugly' perhaps, 'bizarre' or even 'exciting'. Well, whichever description you pick, one thing is certain—these animals that look like a cross between an amphibian and a fish certainly create a great deal of interest for the aquarist.

In this country they have always been somewhat of a rarity but being an aquarist with a taste for rare and odd species I tried, on and off, to obtain some over a period of about 18 years. I only once ever saw them in a shop for sale and that was in Manchester a few years ago. My wife drew my attention to the shop window where, in a small tank, skipping and climbing around the rocks, were eight small mudskippers each about 1½ in. in length. They cost 25s each then and as we were in the midst of a hurry I had no fear of losing any of the four I purchased on the way home.

The mudskipper's natural habitat ranges over western Africa from Senegal to the Congo, east Africa, Madagascar and southern Asia to Australia. A typical habitat is Mtapa Creek, running into the Indian Ocean and fully tidal. There amongst the mangrove trees growing in the hot mud is the home of the mudskipper—and incidentally of the fiddler crab on which they have been seen to feed, and of thousands of insects which form an ideal food for them. There are a number of species such as *Periophthalmus boelrenteri* and *Periophthalmus*

popilio that go under the common names of springers and butterfly skippers.

Although they look so awkward out of water, they can move at an amazing speed, that is run, hop, jump and climb. The pectoral fins in the front are used as two muscular legs or limbs and it is this that enables them to travel so fast. Their sides are a faint greenish, brown colour with a touch of violet. Numerous dark spots appear on the flanks. They have a large, box-shaped head and mouth set right on top. Close together are two large bulbous eyes that blink at you like traffic beacons. The body is tapered towards the tail.

This tail they often dip in the water when the rest of their body is stretched out on a rock or bark. It has been said that by doing this they can breathe through it though whether this is true or not seems to be open to discussion. By rolling in mud or moisture it certainly seems possible that they can breathe through their skin as they can remain out of water for fairly long periods. One thing is for sure and that is that the mudskipper never allows its skin to dry out. When the mudskipper surfaces head on, it has a distinct frog-like appearance. The large eyes on the top of the head blink so often that it appears at times that they are covered with wipers that remove the water from the eye and thus give them better vision.

Over the years I've read quite a bit on keeping mudskippers in captivity, mostly from American authors, giving details of how temperatures lower than 75°F (24°C) would be fatal, and of how they

must never be kept together without a glass partition because fights amongst them will eventually result in death.

However, during 5½ years' experience of keeping and watching them myself I have found some of this information very misleading. I started off by making a special tank, sized 2 ft. by 2 ft. by 10 in., of angle iron, and glazed it myself. Mudskippers need a large surface area, which is why I made the tank 2 ft. square. This tank I placed well up near the roof of the fish house so that it would get plenty of light and catch the sun and I could watch it through two sides. The 2 in. depth of water I used was made up with synthetic 'sea salt' that I had left over from keeping marine fishes and on the test I made when the water had settled it had a specific gravity of 1.016. The water filled just over half the area—the rest of the tank was filled with rocks and bark.

On the base I laid a ½ inch layer of boiled and well-washed coarse orange sand that I had collected from a seaside resort whilst away on holiday. One side of the tank was set out with ledges made from pieces of flat red rock that I had found in an old quarry in Derbyshire. Each piece was set back about 1 inch until there were ledges stretching up well above the water line, and in between the ledges I placed two or three very tall pointed rocks to act as high perches, since mudskippers love to climb.

I also made certain that there were plenty of little crevices and corners for shelter under the water as well. Along another side I placed a large piece of twisted bark with several branches that stretched out above the water and on these the fish would bask in the sun during the summer months. The temperature was boosted up to 80-85°F during the summer months and to 78-80°F during the winter with the aid of a small paraffin lamp, and since humid conditions are required I used ¼ in. plate glass on top of a plastic sheet to cover the tank top completely. The water itself was left clear, without plants, so that they could get out of it quickly as, in truth, they didn't seem to like the water too much.

I spent 2 years or more trying to tame them sufficiently to take food from my fingers. All I achieved was for them to snatch the food quickly and disappear from sight. (This contrasts with the four brown discus I have at present who within 3 months took food from the fingers and will allow me to stroke their heads and sides! Carp and other species I have also tamed in this manner.)

I found feeding my springers presented no problems once I had introduced them to a varied selection of food that included daphnia, glass worms, bloodworms, tubifex, white worms, cyclops, small earthworms, blue bottles, small maggots and, in summer, a wide variety of creatures that included spiders, daddy-long-legs and greenflies, as well as tadpoles, dragonfly larvae, ants 'eggs', dog meat, freshwater mussels and dead fish. In fact, they hardly

turned their nose up at anything I had to offer.

After 2 years I lost the two smallest mudskippers. This was not through bullying and fighting but owing to an accident. Somehow, through my neglect, the oil lamp caught fire and the temperature in the tank reached somewhere in the region of 110-120°F. The fish seemed to recover from the ordeal but the two smaller ones never really picked up and died some months later. I then parted with one to a friend, leaving the biggest one, now about 4½ in. long. In their native waters they can reach 6-7 in.

The theory about their requirements for a temperature not less than 75°F seemed to be disproved by yet another accident, when one winter night the lamp went out and the temperature dropped from 78°F to 68°F. The mudskipper took no harm from this except to appear to be a trifle sluggish during the next 2 weeks.

One interesting sight is to see two mudskippers showing up to each other—their extended fins show rather delicate rays. Their long caudal peduncle they can use with a catapult action to assist them when climbing, when they use both sets of fins. It has been said that these fish have a tissue in the mouth cavity through which they breathe and that their front teeth are pointed, though I have never seen them myself. Perhaps their most amusing feature is the way they depress their eyes right down into their heads in the same way that frogs do. It has been stated that mudskippers will fight to the death over territory but while they may well do this in their natural habitat I must say that I never witnessed anything like it in the aquarium, possibly because of good feeding.

I went on to keep my last mudskipper into the sixth year. Then last summer I received a small archer fish (*Toxotes jaculator*); this required the same water conditions and as there was plenty of room in the tank I put it in with the mudskipper. They lived together peacefully enough until one day in September I felt there was something wrong in the fish house and realised that there were no large bubble eyes watching me. Searching behind the bark and under the rocks I eventually discovered the skipper wedged tightly between two flat pieces of slate, dead. I found this very distressing but what actually happened I never did find out—perhaps it dislodged the slates so they formed a tight trap or perhaps it choked on something or was even attacked by the archer fish.

I'm still hoping to acquire some more mudskippers; I even ordered 20 from abroad but a rail strike in London left them stranded and they did not survive the journey. If anyone sees them for sale and likes to take a gamble on rare and odd fish that present a challenge to look after, then I guarantee you will be more than pleased with these fish and their antics will delight you.

CATFISHES FOR THE SPECIALIST

Plotosid Catfishes

By BRAZ WALKER

ANOTHER siluriforme or catfish family of which members occasionally find their way into the aquarium is the family Plotosidae. The most commonly seen plotosid is *Plotosus lineatus*, often referred to in literature as *Plotosus anguillaris*.

These strange, eel-like Indo-Pacific catfish have a deceptive beauty about them, for there are reports that the venomous dorsal and pectoral spines of *Plotosus* are capable of causing not only excruciating pain but even death upon occasion. Although most experienced catfish-keepers are aware of the usual sharpness of catfish spines and the discomfort which can be inflicted as a result of puncture, there are indications that plotosids should receive the same respect as scorpionfishes such as the breath-takingly beautiful but deadly lion fish, *Pterois*.

P. lineatus is streamlined, with a stout but relatively small dorsal and an eel-like confluence of the anal and caudal fins, and their dark-brown to blue-black bodies have brilliant yellow stripes running their sides. Although a length of 10-12 in. is more usual, 30 in. is recorded upon occasion from within its range.

Dr. George S. Myers, the famous American ichthyologist who has devoted so much time and effort to the aquarium hobby, suggests that *Plotosus lineatus* is a more likely candidate for the title 'humblebee catfish' than the fish (*Leiocassis nani*)—apparently having that distinction. As evidence, he cites not only the contrasting black with yellow

stripes (which run in the wrong direction), but the fact that they swarm like bees, they buzz like bees when removed from the water and they also 'sting' like bees with their venomous fins.

In Japan at least, *P. lineatus* spawns during July and August in the crevices of rocks found in shallow water. This possibly explains an account of an unusual experience reported from a more tropical area. Large coral heads sometimes are washed ashore by the surf or merely stranded when the tide goes out. Often there are fishes inside, and Dr. Herre, upon finding such a head one day, poured formalin into the crevices. He was amazed to hear a distinct buzzing noise followed a second or two later by a 'stream' of tiny *Plotosus* issuing from the coral. Several thousand are said to have come from the source before the 'well' seemed to run dry. Perhaps they had been deposited there as spawn and were still using it as their home.

Plotosids have a strange, tree-like structure at the ventral opening. A ligament attaches this to the vertebrae but the purpose of the appendage is not known.

The 'snake barbel', as *Plotosus* is known in South Africa, like members of the Arisidae is not for the average aquarist. The plotosids are nevertheless interesting and unusual fishes which may eventually become more available and find a permanent place in the hobby.

Guppy World

They say of those taking an arctic survival course: 'If you've survived, you've passed!' A dictum that could be well applied to that brood guppy fry.

Despite the fish's prolificacy, very few develop sufficiently to grace the show bench or size future broods. Why, if they all received the same genes and chromosomes from their common parents, don't they all make the same progress? They live in the same environment, receive the

same diet, enjoy the same conditions. Yet we all know that some not only grow faster than their brood brothers but even look different.

The answers to that question have caused many a battle and the theories proffered for this unequal development are as numerous as there were arrows at the battle of Agincourt.

'Late development' is something that educationalists have been arguing about for years. On one side of the coin there is the duffer at school who grows up to become a leading pillar of industry. Turn the coin over and we have the infant maths prodigy who on attaining majority finds even the household accounts difficult. The opposite of 'late development' ap-

pears to have its parallel in guppy breeding, as witness the number of letters I get on the subject of apparently good strains that fizzle out.

Have you ever had guppies that at the early age of from 4 to 6 months became show-stoppers? Usually these fish are the result of an out-cross and as you polish your trophies you get the feeling it is all coming your way. But this success is short-lived because what was a first-class specimen in its youth, rapidly degenerates in middle age. For 'middle age' read 8 months on—not all that old, even for a guppy.

PETER UNWIN

TROPICAL MARINE PROJECT—9

BUTTERFLIES of the Reefs

By ROY PINKS

FISHES selected so far for our novice community have consisted of species for which it is quite safe to buy small specimens of even only an inch long. When it comes to the larger fishes considerably more thought has to be given to the minimum size at which it is sensible to contemplate whether the deal is a good one or not. The reason for this is that the young of numerous species appear to subsist on plankton-type fare for much longer than one would suppose, and since brine shrimp, newly hatched, is the nearest most of us are going to manage by way of substitute, the prospect of successfully rearing the sucklings, so to speak, is not too bright.

As the butterfly fishes come into this category it was clear that the next group of fish I introduced would be in the 2-4 in. size range, and the impact on the economy of the tank would therefore need to be watched most carefully. The troubles which attended this phase have already been recorded in this series, but it is still possible to report objectively on some of the species which succumbed or survived. The available literature confused me horribly as regards the expectations of many of the quite common species, and in several cases the notes were completely contradictory. For this reason I must strongly advise the beginner to read as many books as possible before coming to firm conclusions about what fish is good for him to get and what will almost certainly die.

Wimple Fish

The wimple fish or banner fish (*Hemiochus acuminatus*) was the first excursion I made into the world of expensive fish. Its inclusion needs no justification. Its arrowhead body with black and white bars to the fore and a yellow rear is surmounted by a long white extended dorsal, proudly borne. I have had two specimens in a period of 9 months and without any doubt I have been as drawn to this great fish as to any other. It seems always to be on the go, yet not in a worrying way, nor aggressively. Feeding has never been much of a problem, given that the environment was

properly seasoned—this applies to all the butterflies in general terms, but the slightest build-up of nitrites created an immediate reaction of some sort, of greater or lesser degree. In better times the fish accepted a wide range of dried food, whiteworm, earthworm and oddments like hard herring roe, fish flesh etc. Not much growth was apparent, though condition improved as time went on.

The first specimen died after a severe nitrite 'incident', but the second, which is considerably smaller, has displayed the interesting tendency which other writers have noted, of attempting to 'clean' bigger fish in the tank. This rather indicates that it is still juvenile, but if this is so it has certainly grown away from its baby foods, as it takes everything in its stride. The disease factor has also been pretty much in its favour, and I have only noticed one minor attack of oodinium on finnage, which was coincident with a clown contracting the same disorder. The copper sulphate treatment removed the trouble within a few days.

Assuming that the inclusion of other fishes, like angels, is not contemplated (these will generally attack the 'banner' fin), *Hemiochus* seems very suitable for the novice with a little spare cash. I think that 2-3 in. specimens are advisable, rather than bigger fish, but care should be taken to reject any with withered or shrunken bodies.

Fanciers who have been ensnared by the sight of the Moorish idol, but who do not realise how wastefully foolish it is to attempt to keep this species in captivity, may consider the *Hemiochus* confidently as some form of substitute. It is not related in any way to this quite impossible fish, which, until we plumb the depths of its secrets, should not be regarded as a subject for the amateur.

Moon Butterfly

Chaetodon lunula, or moon butterfly, was my second choice, and what a glorious thing it is. Its principal shades are yellow, olive green, black and white, and some in-betweens. It is a lively

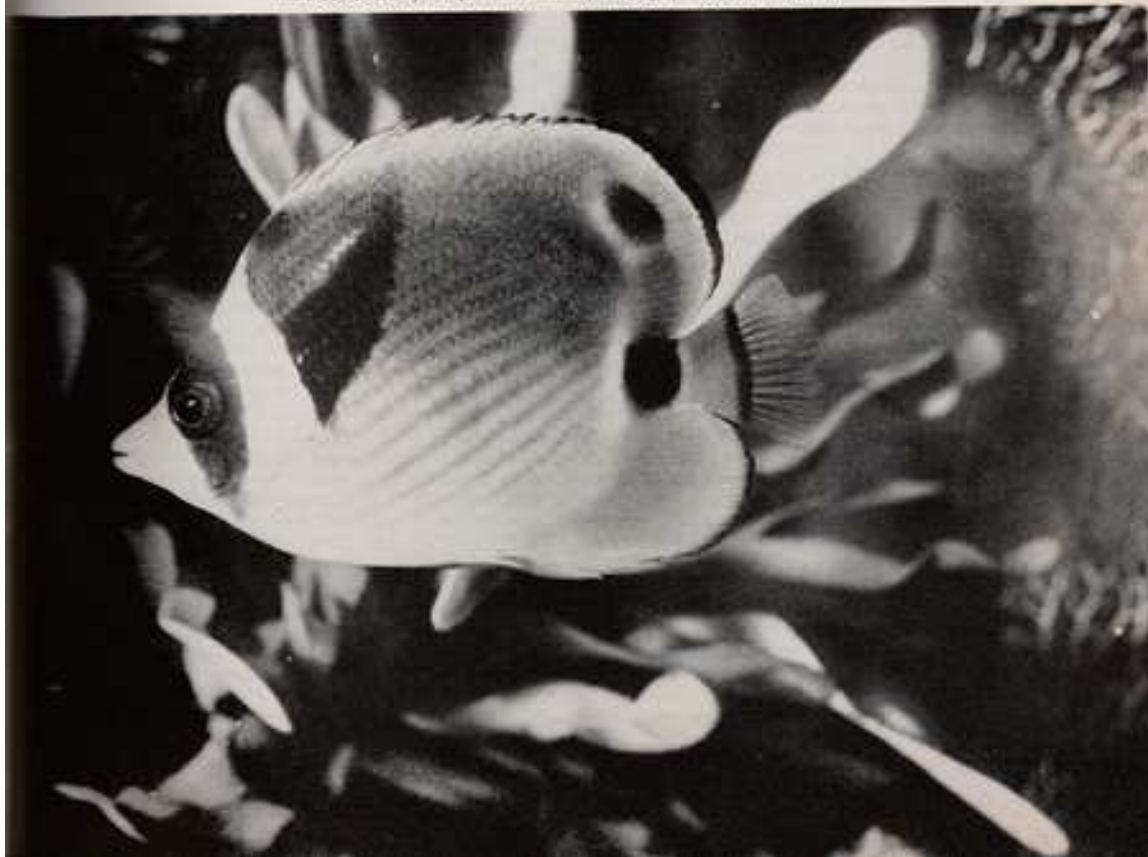
and voracious fish with loads of initiative and apparent intelligence. It took food of all sorts within a very short time of introduction and really never looked back. I made the mistake of buying too large a specimen, though, and it was also altogether too lively for the fairly peaceful and quiet community I hoped to establish, so it was with real regret that I returned him to the shop. An incident at this stage, which is not relevant in detail in this article, convinced me that this is indeed a hardy and reliable fish; it was nearly killed by a rather puzzling sequence of events, but made a marvellous recovery and is now delighting a local aquarist who has given it a splendid home. Both this and the *Hemiochus* can be classed as eye-catchers, particularly if lighting is juggled with to suit them to best advantage.

The *Chaetodon ocellatus*, a rather less spectacular silvery and yellow-bordered specimen with a prominent black eye bar, was also added, at about the same time, to the smaller of my two tanks. This was intended as the 'boss fish'. In practice most of the running is made by a lumbbug dascyllus, and the butterfly has led a fairly pedestrian

existence, hardly coming up to the initial expectations. For one thing it has been rather choosy over food and rarely accepts anything dried. It gorges on whiteworm and earthworm and has had its share of tubifex. At present we are running through a period where its existence seems to be in doubt, owing to the emergence of some ghastly looking eruptions which have displaced scales in several places and left quite deep pits in the body. Only copper sulphate medication has been applied so far, but antiseptics may be used if the condition of the fish deteriorates much more. It has kept its appetite throughout and I am hoping that Nature may bring about a cure. The healing capacity of tropical marines has to be seen to be believed, and I hope that the holes on this fish will close up as quickly as I have seen some quite horrible combat wounds disappear on other specimens.

Apart from all this the *ocellatus* seems to be a nice enough fish, but a marginal for the novice in view of its not very spectacular appearance and possible finicky attitude to food. The health troubles of the specimen I have now probably

The moon butterfly fish (*Chaetodon lunula*). Photograph by Barry Pengilly.



stem from feeding with tubifex, and this is being studied locally with some concern. In my experience, neither the outbreak nor the concern is in any way unusual, though no doubt some readers will, as usual, rush to the defence of this form of food which I think I shall henceforth reject absolutely.

Copperband Butterfly

Last of the big fish which I judged my tank could accommodate will surprise many, but for me the experiment was quite irresistible: the copperband butterfly (*Chelmon rostratus*). This copper and silver-banded beauty, with the touch of yellow in its pectoral fins and the absurdly long snout, made the sort of impact on me which a fine spring day does. Here is Nature at its best, and it is an immediate challenge to preserve what is offered. The spring day, alas, becomes just a memory, but in the other case we are presented with an opportunity to act as custodians for, we hope, very considerably longer.

The problem with the copperband is its initial conversion to the type of menu you can offer, and once it is feeding the matter of its welfare reputedly becomes comparatively simple. Particular care must be taken to accept only specimens which have plenty of 'meat' on them, and any suggestion of sunkenness in the body should be viewed with grave suspicion. I may have been fortunate. Certainly the fish was a splendid specimen, of the 3 in. category. It accepted whiteworm within an hour of transferring it to the tank, which was almost a domestic record. It has not proved to be a very intelligent or assertive fish and I have had to feed it individually by means of a long tube, down which I pass bundles of white worm or segments of garden worm. Although it knows how to extract these at the end of the tube when I place its opening in front of its 'beak', it usually chases the food on its way down and tries to secure it through the tube's transparent side even when it is within reach at the bottom! As a result, more imaginative specimens dart in beneath its very nose and sneak away with rather more than their fair share. The noise of a copperband taking its food is very reminiscent of the rattling of a bird's beak and can be quite loud at times.

The multiplicity of barriers within my tank—coral, sea fan, sea tree etc.—caused me to wonder whether this large fish would safely negotiate some of the tight corners and apertures, and I had considered creating wider thoroughways before I added it to the community. On balance I decided against it on the grounds that most of the other fish were settled and might react aggressively if their security disappeared concurrently

with the arrival of a not very assertive newcomer.

What actually happened was a real eye-opener. We all got a wonderful display of slow and graceful gymnastics on the part of the copperband, who soon showed us that he was as capable as any of getting through all those openings which I had rated as being quite beyond him. He found a small cave for himself and gains entry by turning on his side. Another exit sees him nearly upside down as he negotiates the slit entry. It is all very clever. This species has also the reputation for being a nervous fish, which will rush, panicking, for cover at the merest pretext. Here we have so far been fortunate in this respect, as not much fear is evident and movement has been conducted decorously and without mishap. It must be regarded as a risky fish for a beginner, and certainly not for inclusion during the seasoning period of the undergravel filter. Even when nitrite readings have reached the 'safe' category it is as well to leave matters so for a few weeks until a satisfactory consistency has been achieved. Its demand for live food will always make the copperband less of an easy fish than one might wish, and the possibility that it might miss vital trace elements on such a restricted diet may give rise to troubles later on. Certainly every effort must be made to interest it in prepared food, but I am having little success here so far, the nearest approach being (hard) herring roe.

The glowing orange bands of the foregoing will always enable a good specimen to feature as a showpiece in the average tank, and for a similar reason *Chaetodon chrysurus*, with a single broad orange band just to the fore of the tail, could be said to be comparable. This fish has a fawn and silver basketwork effect over the rest of its body and is a most attractive fish. I only had one specimen and it succumbed swiftly to a nitrite overdose—the same one that disposed of the first *Hemiochus*, in rather longer time.

The beginner who has not seen the copperband, or who feels that this supposedly temperamental fish is beyond him, may feel inclined to try out the *chrysurus* and may have better luck than I did. Certainly, had I bought my specimen several weeks later than I actually did, there is a good chance that I should have been reporting favourably about it, though there appear to be one or two initial difficulties. It seems to be a rather shy fish and hides away even more than does the copperband at first. It is equally difficult to persuade to feed, but whiteworm usually does the trick. Though a number of local marinists have succeeded with it, it seems to lack the dash and vigour of many of the other butterflies and is probably best left as a 'may be', rather than a 'must'.

The almost incredible laxity on the part of

importers in naming their fishes accurately, especially in respect of common names, makes it rather difficult to pinpoint my last butterfly as accurately as I should like. It comes from the Red Sea, is long-bodied rather than round, has the first third of its body silvery white and the rear two-thirds purplish brown with thin silvery white vertical stripes. The tail is purple-brown with a white and yellow arrowhead nearest the body. It is said to be called *Chaetodon mesoleucus* but I am not prepared to go further than that. It has a hedgehog-like appearance and, initially, at least, the general demeanour of the neatly attired clerical worker City-bound.

An air of respectability and good taste surrounds this creature and it offers itself as a fairly obvious foil to some of the more startling overtones of the remaining inhabitants of the community. At least, I bought one on this general assumption and I suppose that it has filled the bill pretty well. In terms of hardness I imagine there is hardly a butterfly likely to do better. The

nitrite resurgence which so set me back in the early period of the second tank merely passed this fish by, and it behaved almost normally, apart from appearing a bit flurried at times. It fed throughout, though I have not known it to accept dried food in any form. It is almost the greediest fish I have, and certainly one of the boldest, yet aggression seems not to out unless there is provocation.

Its gluttonous approach—almost frantic at times—makes me begin to wonder whether this is the best fish for a community in which one is trying to establish some of the quieter subjects, but in circumstances where the fish are much of the same size and outlook this species should be regarded quite seriously by the beginner, particularly as, if most of the available specimens behave as mine does, disease tends to have little significance; it has never really looked off colour and took food a few minutes after entering strange waters—surely a telling recommendation.

To be continued

Readers' Queries Answered



Big Oscars

Could you please give me a complete list for Oscars from 1½ in. upwards? All the books I've read give only a brief word or two, and I do want to give mine the best. Could you also give the surface area (sq. in. required per inch of fish)? I have a tank 60 in. by 24 in. by 18 in. deep and I want to grow six Oscars and one black shark to maturity. Is this adequate?

The tank you are keeping your Oscars in is certainly a good-sized one, but if by 'maturity' you mean 'full-sized' then it is not big enough to achieve your purpose. Oscars do, however, reach 'maturity', that is become capable of breeding, from about 8 in. upwards and your tank will give you some fine, large specimens of fish even if they do not attain their maximum size of about 12 in. Oscars are amiable fish but with six specimens there may be some chivvying amongst them and the usual pattern, with a group of fish

all capable of reaching a good size is that a number of them will make better progress than the others so that there will be some disparity of size. The surface area rule that you are thinking of is to allow, for small tropicals, 12 sq. in. of water surface to 1 in. of fish body; but with the larger tropicals it is necessary to apply the same guide as is used for the larger-bodied coldwater fishes—24 sq. in. of water surface to 1 in. of fish body. Growth in the fish can be assisted by regular (about once every month) changing of a quarter of the tank's water and by frequent feeding of small quantities of food rather than the more usual two meals a day.

Oscars are extremely hearty eaters and their diet can and should be very varied. As they get bigger they will require their food in chunks of a size suitable for them to swallow. At a size of 1½ in. you can feed them on daphnia, scrapings of raw, skinned, lamb- or ox-heart, tubifex worms if you use this food, white worms,

pieces of shrimp or prawn or small pieces of cooked fish. Flaked dried food may also be taken. As the fish get bigger the tubifex and white worm can be replaced by small and then larger garden worms (chopped up if necessary to a suitable size), the size of the raw heart morsels can be increased, flaked dried food can be replaced by dried foods in tablet form and the occasional live guppy, or, ultimately, small goldfish can be given as food. Your black shark will also require vegetable matter—ideally algae scrapings, which will probably need to be supplemented with cooked lettuce or spinach; your Oscars may be interested in this as well, or in duckweed and floating plants. Oats soaked in water and rolled into small pellets may also be welcomed and some specimens relish breakfast cereals.

Vigorous aeration or water circulation is another device to use to achieve large size in a fish, the movement of water encouraging vigorous swimming and good appetites.

Acriflavine, Euflavine

In the August edition of 1971, under Readers' Queries Answered, you advised the use of neutral acriflavine from any pharmaceutical chemist. I have tried all our main chemists and have been advised that they cannot trace the chemical in question on any trade reference sheet.

We cannot understand the diffi-

culty you have experienced in obtaining neutral acriflavine tablets. Boots Pure Drug Co. Ltd market this preparation, which should also be known to any chemist as eufflavine BPC. We suggest that you try asking for the tablets under this other name.

Water-lily Beetles

Something very nasty has happened to my water lilies. The leaves are decaying and are being eaten by small brown and yellow slugs. Are these likely to be poisonous to the fish?

No, these are not likely to harm the fish. It sounds as though these small 'slugs' are the larvae of the water-lily beetle (*Galernucella*) and they are quite acceptable to fish—one method of controlling them is to forcibly dislodge them by spraying the affected leaves or pinning these down under water for a few days so that the fish can reach them easily. As the little dark-brown beetle involved hibernates during the winter in vegetation round the pond, it will help if you could cut down as much vegetation at the pondside as possible this autumn.

Yellowtail Rasbora

Is Rasbora dasonensis likely to be a suitable fish to add to a well-established community tank containing the fishes I started off fishkeeping with, like neons, harlequins, platys and mollies?

The most important consideration here is really the size of the tank itself. The yellowtail rasbora is likely to attain a size of at least 4 in. possibly a little more, and although it is a slim-bodied fish it is an extremely active one. It requires a good length of swimming space and a tank length of 30 in. or, preferably, 36 in. is required. It is peaceful enough in its intentions towards other fishes but your present community fishes, even though they may well be of a good size themselves by now, may find the exuberance of their new companion somewhat disturbing. In a large, well-set out tank of soft, slightly acid water, with companions of its own size, it is a very attractive addition with a silvery, violet-tinged body, gold and black longitudinal stripes and yellow and black tail. It is no problem to keep (provided that tank has a good cover to counteract its jumping ability) because as well as being quite peaceful it will accept any type of food.

AquaGLOSSARY

No. 3

A PFM guide to the meanings and accepted pronunciation of the scientific names of aquarium subjects, arranged by word-roots in alphabetical order

Arch (Greek): anus, rectum. Pronounced 'ark'. Used in names to refer to features associated with the anal fin of a species or in a group of fishes. For example, the Centrarchidae ('sent-rark-id-eye') is the family of sunfishes whose members characteristically have spiny anal fins (*centrotus*, Greek: thorned). Also the genus *Gymnarchus* ('güm-nark-uss'), in which the fishes are without an anal fin (*gymno*, Greek: naked).

Coryn(e, o) (Greek): club. Pronounced 'kor-rin-eh', 'kor-rin-oh'. For example, the genus name *Corynopoma* ('kor-rin-oh-poe-mah') is descriptive of the club-ended extension to the gill-cover, i.e. *coryno* combined with *pom* (Greek: cover). In the plant genus *Cryptocoryne* ('kript-oh-kor-rin-eh') the prefix *crypto* (Greek: hidden) describes how the club-like group of stamens of the inflorescence of these plants is concealed within a tube.

Poly (Greek): many. Pronounced 'polly'. For example, the generic name of the leaf fish, *Polycentrus schomburgki* ('polly-sent-russ shom-berg-kee'), is derived from the many spines on its fins (*centrotus*, Greek: thorned). Another leaf fish, *Monocirrhus polyacanthus* ('mon-no-sirrus polly-ah-kanth-uss'), with many-spined fins has this feature indicated in its trivial name, i.e. *poly* in combination with *acantho* (Greek: spiny). Also *Polypterus* ('polly-ter-uss: literally many fins), and the trivial name of the water plant *Hygrophila polysperma* ('hy-grof-fill-ah polly-sperm-ah': many seeds).

Tetra (Greek): four. Pronounced 'tet-rah'. Fishes commonly called 'tetras' are of the subfamily Tetragonopterinae (literally four-sided fin, i.e. square-fin); their dorsal fins are usually rectangular and held upright. The genus name of the puffer fishes, *Tetraodon* ('tet-rah-oh-don') refers to the formation of their jaws into four tooth-like cutting edges (*dontos*, Greek: tooth). Also, the trivial names of the Cuban cichlid, *Cichlasoma tetraacanthus* ('sick-lah-so-mah tet-rah-can-thuss' with four spines on the anal fin) and of the water lily *Nymphaea tetragona* ('nim-fie-ah tet-rah-gon-ah': four seed-chambers or ovaries).

Xantho (Greek): yellow. Pronounced 'zan-tho'. For example, the specific name of the bumblebee goby, *Brachygnathus xanthozona* ('brak-ee-go-bee-uss zan-tho-zone-ah') describes the yellow body zones (bands) of this fish. Also the marine yellow butterfly fish *Chaetodon xanthurus* ('kite-oh-don zan-thur-uss'), whose specific name means yellow-tail (*urus*, Latin: tail). The term xanthochroism ('zan-tho-crow-ism') is used to describe the presence of yellow colour in, for example, the goldfish, and xanthophyll ('zan-tho-fill') is a yellow (leaf) pigment of plants.



by
ARPEE

Personal COMMENT

ONE sees extraordinary statements published sometimes. In particular I saw it mentioned in a book on marines recently that earthworms are not to be recommended as food because they are rather unclean things and the effect of their contact on fish could not be predicted. I am sure that the author was not referring to the fact that they might have ingested grass containing selective weedkiller, although it is quite true that this could lead to serious trouble. It is very easily commented, though, by getting your worms from a source known not to have been polluted in this fashion. I can only assume that the writer was alluding to the fact that worms contain particles of earth and that these could cause trouble in the digestive tracts of fishes. If this is so I have yet to see them experience the outcome, and like many other fishkeepers have found the earthworm a singularly reliable means of persuading shy newcomers to take food, and of conditioning stock fish into show or breeding condition.

The process of cutting up worms is, admittedly, messy and inconvenient, and to the squeamish it is utterly abhorrent. Even the patent shredders available on the market fail to appease the latter, so perhaps for them the back-room boys in the fish food business will in due course produce a form of processed earthworm, if the costing can be reduced to the average pocket.

For many years I have regarded this food as occupying permanent first place in the league table, and I know of nothing to vary this view even now. Accordingly I have tried every means of ensuring that there is a readily available supply throughout the year. I still know of no way of ensuring for the flat-dweller or for those without ready access to worm-containing earth. It was at one time thought reliable to keep these creatures in tall glass jars filled with earth, and to store these in the coolest available places with maximum ventilation. The jar lids had to be perforated to admit air, and all the food provided was a minimum of vegetable waste from the kitchen. The earth had to be moist at all times, as under any conditions the worms thrive up or deteriorate, or both.

The great snag about this was that the earth itself tended to cake and to assume a mud-like texture, which ultimately led to the death of the worms mainly, I believe, because of a lack of oxygen: the air simply had no means of getting through a soil texture devoid of its customary interstices. I tried several other containers without great success, and in most cases the inhabitants simply removed themselves to more agreeable places overnight because I had allowed too much room for ventilation.

Last year a friend presented me with a startling variety of earthenware flower pots and seed pans after spring cleaning his potting shed, and I experimented with a number of the latter. These varied in size from 9 to 15 in. in diameter and were all about 5 in. deep. I kept earthworms in one of them and whiteworm in several others. So far as earthworms are concerned, I seem to have resolved my storage problems; the medium consists of soil from the garden with the addition of half its bulk in peat, and the top of the container is completely sealed with a sheet of glass. A few lettuce leaves or grass snippings are added as food once every 2 weeks or so, and the soil surface is given a light watering at the same sort of interval. The worms are added every time I dig over the garden, and they seem to take overcrowding quite kindly. This, incidentally, is in contrast with the results achieved with the enchytrae, which seem somehow to do rather better in plastic containers. I get the impression that the earthenware bowls dry out rather too quickly, and some of the cultures have been less than satisfactory.

One final point about feeding any sort of worm to fishes. It is often supposed that you simply cut a worm of whatever size into quarter-inch lengths and let the fish take their pick. Nothing could be more of a potential danger in overcrowded tanks, where the result of uneaten food rotting away unseen can prove cataclysmic. You must relate the size of the worm particle to the size of mouth of your fish, and if you have small fish you must patiently pare the worms down to size. This applies equally to whiteworm, which many simply feed whole. I have often seen reluctant feeders accept chopped worm when they have rejected both large and tiny unchopped worm. I suppose it is the instinct which makes the piranha attack wounded prey that comes into operation in the case of these other fish, but it is a factor worth remembering when acclimatizing some of those impossible or plain awkward specimens we come across throughout our experience.

The enthusiast is blind to most things other than

the subject of his particular fancy. This is a great pity where living things are concerned because very few indeed live as solitary purified objects buffered against all external maladies and parasites by some form of natural benevolence. It is not particularly difficult to establish whether your dog has fleas, nor, once their presence has been proven, is the extent of the infestation so very difficult to assess. With lesser creatures like fishes and their underwater companions such as snails it is vastly more of a problem to size up the situation in a way likely to be of practical use to the fishkeeper. It is well known that many creatures carry parasites or other passengers throughout their life cycles and the presence or otherwise of these strangers affects the performance of the host either favourably or otherwise. Changes of bodily function in the host like the increase or decrease of body secretions may bring about a diminution or multiplication of the passengers and their reactions will be either to the detriment or benefit of the host. The inter-relationship of these animals is, of course, in turn affected by the chemical and physical nature of the water in which they live and this is a study in itself.

It is clearly evident that more fishkeepers than not probably regard their fish more as separate entities than complex little communities of millions of little bugs plus one large one. It accounts for the question so often asked of the dealer as to whether this or that particular specimen will do well in one of the several hundred thousand tanks which exist in this country. Often he is also expected to hazard a guess as to whether or not specimen A will live for x or y years in that same tank, and whether, if paired with specimen B the offspring will reach saleable size within 3 months. Admittedly, some dealers do try to answer such questions categorically, but they are most unwise in the attempt. Virtually anything verging on the dogmatic at this stage is likely to be remembered long after events have proved diametrically otherwise, and dented images tend to assert themselves.

The dealer may well consider how to encourage his customers towards greater understanding of what fishes really are, and it has always struck me that if only he carried a range of microscopes on his shelves he would have made a few steps along the

right road at the very least. I wonder how many aquarists have ever stood aside from their routine interests and taken time off to study their hobby under high magnification? I would hazard a guess that not one in ten of us has taken the thought seriously. What a store of knowledge and fascination may be tapped by this simple means! It is possible that some of us may be seduced from the mainstream of the hobby by venturing into this almost endless alternative pursuit, but I doubt whether many will be when it comes to it as there isn't time enough in the day for the majority of us. The possession of a microscope, however simple and inexpensive the instrument, will nevertheless give us an opportunity of seeing a fish or a water flea as it really is, and not as we see them on the pages of a glossy textbook. If you look at a scale or at a minute drop of tank water the impact is absolutely staggering, and the better the microscope the greater is the insight one gathers. Illustrations of microscopic sections always look most dreary in books on the subject, but when you see the real thing in 3D you will share my enthusiasm, I feel sure.

At some future date I may well take this subject further, but the intervening time may allow readers who are languishing in the wilderness of partial ignorance to equip themselves with the means of getting close up to their hobby. I would hope to see aquatic dealers in this period cashing in on my suggestion to carry some suitable stock. It makes me sad to see purveyors of radios and binoculars stealing a march on those who could talk intelligently about the application of the instruments they sell. I wonder who will take me up on this?

Incidentally, for those with a little more money to spend on a microscope than the £5-£10 needed for a basic sort of model, there are some glorious old brass instruments round and about the country in antique shops, and they can be had for £25 or 30, upwards. They are not only the almost perfect means of carrying out operations, but in themselves they are examples of engineering and optical craftsmanship at their very best, and even if you never look through them, are likely to become much sought-after reminders of the past in a form unlikely ever to be repeated.



Royal Horticultural Society
Old Hall, Vincent Square, London

The AQUARIUM SHOW '72

27th-29th
October

SCHEDULES for entries in the competitive classes have been sent to societies and are also available from 1932. Closing date for completed entry forms, which should be returned to show secretary Ron Kerridge (75 Glebelands, Harlow, Essex), is 16th October. Benching is from 5.00 p.m. on Thursday, 26th October.

AMONG the new perpetual trophies to be awarded at this year's Show are the ES-ES Trophy, the Hykrol Peterama Trophy and the Phillips Trophy, and in the marine classes three trophies presented by the British Marine Aquarists' Association: the President's Trophy for the best marine, the South-Western Group trophy for best native marine and the Midland Group trophy for the best tropical marine.

KEN BARRATT finds few problems in

Breeding the Dwarf Corydoras

Reported by CLIFF HARRISON

MOST hobbyists at some time or another succumb to the appeal of a small furnished tank usually containing a pair or so of a single variety of fish, whose offspring (those avoiding the hungry mouths of the parents anyway) reach maturity in the same aquarium, and are then used to replenish displays elsewhere, or are passed on to newcomers to hobbykeeping.

Guppies are perhaps the most common example of this, along with other livebearers, and some of us have even been successful with zebras or White Cloud Mountain minnows. But how does the idea of a similar technique with the dwarf corydoras (*Corydoras hastatus*) appeal to you? The fortunate owner of such a prolific strain of this popular catfish is Mr Ken Barratt of New Malden, Surrey, who has now spawned them regularly for some 4 years.

The original pair of *C. hastatus* owned by Mr Barratt were acting as 'housemaids' in a tank containing a small pair of mouthbreeders, and when these latter spawned it appeared to trigger off the catfish too. Clusters of eggs appeared on the glass, and for a time there were fry from the two sets of parents in the same aquarium. The mouthbreeders were then removed, and the *Corydoras* left to themselves in a set-up that has been faithfully copied ever since.

The aquarium is 16 in. by 8 in. by 8 in., with a shallow layer of gravel on the base. A small, artificial stone wall curves around one corner, a large sliver of slate covers most of the gravel in the centre foreground, and a sparse row of *Vallisneria* along the back glass provides just a little cover for the fry. Temperature is maintained around 76°F (24°C). At present there are nearly 30 catfish in there, in a range of sizes and ages, and the procedure to get them to spawn is quite simple: every few weeks, as the tank becomes dirty, half the water is siphoned out and replaced with fresh tap water of a similar

temperature. Within a couple of days the eggs usually appear on the glasses, deposited by any or many of the adult fish, and these subsequently hatch out.

The other mature fish appear to take no notice of the eggs, but they are certainly responsible for the very low survival rate of the young (as must be expected with this method of raising fish). The fry are fed on micro worm and brine shrimp, together with the white worm, spinach and proprietary flake food given to the adults: Mr Barratt also adds a small piece of chalk to the aquarium to help the development of the bones and the armour-plating in the young. In the 4 years, more than 50 *hastatus* have achieved maturity, starting with that original pair, and although many have been passed to other hobbyists, they have not shown the same interest in spawning away from that minuscule 16 in. by 8 in. by 8 in. tank that has now seen three generations of this catfish.

Mr Barratt has also raised small numbers of two other varieties of *Corydoras*—the very popular bronze catfish, *C. aeneus*, and the attractively marked *C. spilargenteus*—but in each case the parents insisted on spawning in a 36 in. community aquarium, and the eggs had to be carefully scraped off and hatched out elsewhere. Despite repeated attempts neither set of *Corydoras* would perform as required in a specially prepared breeding tank, and many variables such as type of water, presence of rocks and plants, temperature and lighting were tried and discounted.

Whilst the method of breeding fish described here is not unique by any means, it is the regularity of success with a difficult *Corydoras* species that merits attention. Perhaps other readers of *PFM* are having similar success with difficult species—if so we would like to hear about it, particularly where it involves methods not previously described.

Aqua Tip

An idea that was new to us was seen at the new premises of St John's Aquaria in Wandsworth,

London. The fluorescent light tubes in use over the tanks are fitted into lengths of plastic roof guttering, which is then placed upside down directly on to the aquarium glass covers. The inside of the guttering has been painted gloss white to

provide a reflective surface. It is, of course, easy to drill this material to take small bolts by which the clips for the fluorescent tubes can be fixed. The arrangement certainly provides a neat and practical housing for overhead lighting.

Golden Malawis in a CICHLID COMMUNITY TANK



The author's community tank of mixed cichlid species

THESE days so much is heard about the viciousness of the African cichlids that it is nice to be able to write about a Lake cichlid which I have found to be very peaceful—namely *Pseudotropheus trophops*. I wouldn't like to generalise and say that each and every *trophops* is peaceful for, as all aquarists know, fish vary from individual to individual.

Purchasing four of these fish when they were about 3 months old, I placed them in a 30 in. by 15 in. by 12 in. tank by themselves, feeding them on tubifex, daphnia and flake food; in fact these fish were never fussy what they ate, as they also enjoyed cooked cabbage, chicken and scraped frozen liver. At the age of 6 months they were 4 in. long. It was at this time I introduced them to my cichlid community tank, which I may add is fully planted and scaped, as I like a really lushly planted aquarium.

By JAMES DUNBAR

Photographs by the author

Amongst the cichlids I have in my collection are: *Primatochromis kiribensis*, *Nannochromis nudiiceps*, *Pelmatochromis thomasi*, *Cichlasoma spiliurum*, *Herotilapia multispinosa* and a few other species of dwarf cichlids.

The *trophops* were very amusing fish as they had some very odd habits; well—they were odd habits to me, as these were the first African cichlids I had kept, and amusing to the extent that one could watch them for hours at their antics. They would chase each other up and down the tank, or form a circle of about 8 inches diameter, in which nose to tail they would spiral up and down from the water's surface to the gravel, ending up side by side, quivering vigorously.

Golden Malawi cichlids (*Pseudotropheus tropheops*) in the author's tank have not eaten water plants and left the gravel almost undisturbed. In company with other African cichlids they have not been quarrelsome.



With these antics taking place regularly I thought that this was their pre-mating ritual and that I had been fortunate in that at least I had one pair. This wasn't to be the case, as things never developed any further. All four fish were very deep in the body, which led me to surmise that my four fish were females and the above-mentioned antics were their way of having fun.

The colour of *Pseudotropheus tropheops* is a golden yellow, which I imagine leads to the fish being sometimes called the golden Malawi cichlid. The dorsal fin has a black bar going from front to back, tipped with gold; where the black bar ends there is a number of gold spots. The pectoral fins are also golden, with the anal and pectoral fins gold with heavy black bars. On two of my fish the anal fin also had gold spots.

The water in my tank was not treated in any way, being used straight from the tap; about one-third of the water was changed every 4 weeks. Filtration was by two undergravel filters and a small outside power filter, which was operated for about 4 hours each day.

During the time I have kept the *tropheops* they never excavated holes or chewed the plants, and concerning the plants this amazed me, owing to their liking of cooked cabbage. All fins were intact, as was all the finnage of the other cichlids in the tank. I think that owing to the heavy planting the fishes have plenty of hiding places if and when they are being pursued.

For anyone contemplating setting up a tank to house the African cichlids the *tropheops* deserves consideration.

Meetings and Changes of Officers

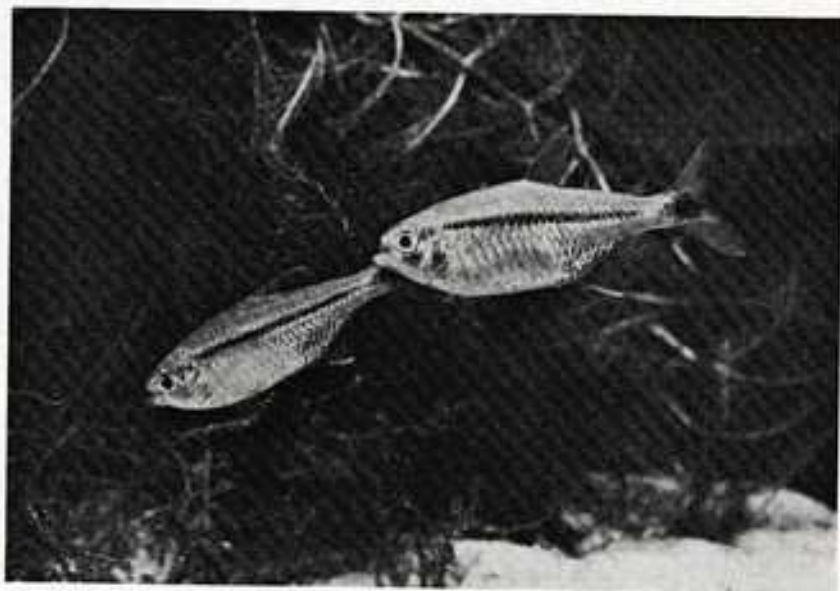
NEBSON AC. Change of officers. Chairman, Mrs Ruby Howe; secretary, Mr Derek Baggott; treasurer, Mr Jack Howe; show secretary, Mr Brian Sharp.
BELLINGHAM AS. New secretary, Mr D. Young (16 The Causeway, Billingham, Cleveland).
BISHOPS CLEEVE AS. Show secretary, Mr 2873, Mrs J. Hawkins (44 Burton Street, Cheltenham, Glou.); show manager, Mr P. J. Greenwood (18 Russell Place, Cheltenham).
BLITH TFS. Meetings: fortnightly, The Recreation Club, Wrayle Street, Blith.
BRITISH KOI KEEPERS' SOCIETY. President, Mr K. D. Farvatt; vice-chairman, Mr E. A. Allen; secretary, Mrs H. M. Miles (14 Anchery Close, Peterborough, PE2 2XU; phone 0233 679077); treasurer,

Mrs C. J. Holley (42 Fallow Court Avenue, London, N12 0BB); newsletter editor, Mr M. Waunsley; committee members, Mr H. de Bruijn, Mr B. Chapman, Mr E. A. Gobara, Mr A. A. Lawrence, Mr W. R. Seal, Mr M. Shaw.
INDEPENDENT AS. Meetings: Holloway Institute, Brunsbury Secondary School, Eden Grove, Islington, London, N7. Details: Mr J. A. Kettle, 105 Essex Road, Islington, N1 8LU.
EAST KILBRIDE AC. President, Mr N. G. Grant; secretary, Mr A. R. Watson (18 Wynard Green, Westwood 6, East Kilbride, Glasgow, G75 8EW); treasurer, Mr J. Thompson; minute secretary, Mr A. Hynda.
ILFORD DA & PS. Meetings: second Monday of month, 8.00 p.m., St Lawrence Church Hall, Hamilton Avenue, Barking-side.

LLANTWIT MAJOR AS. Chairman, Mr R. W. Wigg; vice-chairman, Mr J. Edwards; show secretary, Mr J. Edwards; assistant, Mr J. Thomson; secretary and treasurer, Mr S. Nelson (48 Vere Street, Cadocion, Barry, Glam.).
NELSON AS. New secretary, Mr R. McKenna (32 Bath Street, Nelson, Lancs.).
ROTHERHAM & DAS. New secretary, Mrs J. Atton (9 Best Lathes Avenue, Rotherham, Yorks. S60 4BL; phone Rotherham 3518).
SOUTHEND, LEIGH & DAS. New show secretary, Mr D. C. M. Durrant (172 Trinity Road, Southend-on-Sea, Essex; phone Southend 610476).
SUFFOLK A & PA. Secretary, Mr F. Auliffe (4 Prospect Street, Ipswich). Meetings: The Central Conservative Club, Ipswich.
THURROCK AS. New show secretary, Mr A. Riddles (2 Pym Place, Grays, Essex).
WELBECK AS, CASTLEFORD. Meetings: third Wednesday of month, 7.30 p.m., The British Legion Club, Welbeck Street, Castleford. New members very welcome.

Care with Lighting is Needed for the Best from the

Black-line Tetra



Hyphessobrycon scholzei E. Ahl

WHEN one is asked to recommend an undemanding, peace-loving fish suitable for most tanks, *Hyphessobrycon scholzei* can be suggested without further thought. The black-line tetra, which comes from the waters of the lower Amazon around Pará, reaches a maximum size of only about 2 in. and it is perfectly suitable for keeping in the company of its own kind and of other non-belligerent fishes. It was first imported into Europe in 1936 and because of the ease with which it breeds it can be found pretty regularly in aquarists' shops although, unfortunately, not so often in the hobbyists' tanks. For this is one of those fishes that require very careful display if it is not to become an unsaleable remainder in the shopkeeper's tank.

It requires housing in a well-planted aquarium carefully placed or lit so that a good light falls diagonally into it from above. And for perfect display black-line tetras require companions such as *Hyphessobrycon flammeus* or *Hyphessobrycon griemi*. These last two species thrive under the same conditions and are similar in temperament to the black-line tetra, but it is their 'counter-stripping' that truly sets off the horizontal black streak of our *scholzei*. A well set-up tank with a shoal of black-line tetras and flame tetras is a beautiful sight. In fact, when kept alone the black line of our tetra tends to pale and the fish appears pallid; then, of course, it fails to be of interest to the customer. It's quite a different story when the fish have been carefully chosen to create a picture in the tank.

By RUDOLPH ZUKAL

Photographs by the author

Translation by F. MARSH

There are lots of other examples, of course, of the value of careful planning of tank companions to give this sort of effect; for instance, black mollies and red platys make a wonderful sight when kept together.

The black-line tetra has a slender body, compressed at the sides. Its back is a light olive-green to brown with bluish silver sides. When the light falls correctly the fish has a brassy gleam. The belly is silvery, the gill covers gleam gold and the iris of the eye is yellow. From the gills to the end of the tail runs the characteristic black horizontal stripe ending in an angular fleck or blotch; narrow metallic-glinting stripes parallel the black line above. The pectoral fins are colourless but the other fins have a pinkish flush so delicate that it can be easily missed by the unheeding eye. Sex differences are distinguishable in the body size of the adult fish—the male is the slimmer of the two, but in any case his caudal fin is the more serrated.

A normal temperature as low as 64°F (18°C) is



In the picture on the opposite page the male black-line tetra is easily distinguishable because of his much slimmer outline



Left: the male has temporarily lost his black line as he makes a tentative effort to ram the female early in the spawning

Above and below: the chase of the female through the plants made use of the whole of the available space as can be seen in the photograph where the tops of the plant leaves are visible. As the pair come together and the fish twist around each other, the eggs scatter through the water (top picture)

sufficient and even a further drop in temperature over a short period will not harm this tetra. Breeding takes place at a temperature of 75°F (24°C). A small glass tank can be used for spawning—gravel is not essential but a quantity of fine-leaved plants should be included. Special water is not needed but water with a neutral reaction is best—tapwater that has stood for several days and subsequently well aerated will be adequate. The propagation of the fish is similar to that for *Hyphessobrycon flammeus*—the male is placed in the tank a day before the female but once the female joins him spawning will usually take place within a very few hours. Afterwards both parents, who are egg-eaters, must be removed. The number of eggs laid is fairly high, often over a hundred, and the brood are free-swimming after about 6 days. The first 3-4 weeks of their life they spend close to the bottom of the tank and require the finest dry food. They reach maturity within 6 months and are then ready for further breeding.

When I took the photographs of this particular spawning I left the sand in the tank as I didn't want



What's New?

Broad Spectrum Remedy

WARDLEY's new **Promethyasul** (distributed by TFH (Great Britain) Ltd., 13 Nutley Lane, Reigate, Surrey, RH2 9HR) is a 'broad spectrum' remedy that the manufacturers state will deal with most disorders, either in their mild or severe forms, of tropical fishes. The 40p plastic bottle contains enough liquid to treat up to 120 gallons of water. One teaspoonful per 20 gallons of water, it is suggested, should be used once weekly as a disease preventive; to treat a mild infection one teaspoon per 10 gallons of aquarium water is recommended or for a moderate to severe infection one teaspoon per 5 gallons, repeated as necessary. A major advantage pointed out is that filtration and aeration may be maintained and water temperature kept at a normal 75-80°F. Newly acquired fishes, it is stated, will be cleared of parasites if kept in a solution of one teaspoon of Promethyasul per 5 gallons for 24 hours before introduction into the aquarium. A caution is printed on the bottle that the medicament must be kept out of the reach of children and away from clothing.

Filter Aid

INCREASED efficiency of operation for the undergravel filter is the aim of **Brosiam's Sub-Gravel Filter Blanket** (Brosiam Ltd., 825B High Road, London, N12 8PR). The blanket, made of Cortelle, a translucent plastic foam about $\frac{1}{2}$ in. thick, is placed between filter and gravel to prevent fine particles from blocking filter holes. Where it is required to use peat under the gravel in the aquarium the new filter blanket finds a further use. The manufacturers point out that the blanket makes a perfect anchorage for the roots of aquarium plants and suggest that the use of two blankets with a layer of Brosiam fertiliser or aquarium peat between them will promote plant growth. Individually packed in polythene, the blankets can be bought in stock sizes to fit 18 in., 24 in. and 36 in. by 12 in. tanks, but can also readily be cut to fit tanks of any size or shape.

Fish Vitamins

AN interesting new addition for the aquarium menu has been developed and marketed by Phillips Yeast Products Ltd. (Park Royal Road, London, N.W.10). This is

Aquavite, designed to provide nine essential vitamins (A, D₂, E, B₁, B₂, nicotinic acid, choline, calcium pantothenate and B₆) in such a form that they are absorbed by the fish even when they are not actively feeding. This new development is based on research in the field of fish farming into the nutritional requirements of fish, which, as the manufacturers' explain in an informative leaflet that is supplied with the bottles of tablets, has led to the interesting finding that, compared with some other animal species, fish can have a much higher requirement for almost all known vitamins. For instance, the work showed a requirement of four times more vitamin B₂ than man, five times more nicotinic acid and 10 times more vitamin B₁. Since this vitamin preparation yields vitamins in forms soluble in water the substances can be absorbed across the gill and other membranes of a fish and it is not necessary for them to be ingested with food.

The tablets are supplied in bottles of 50 (30p), one tablet being sufficient for 25 gallons of water. The manufacturers suggest that Aquavite should be given twice a week to freshwater tropicals and every other day to marines to promote health, fertility and colour brilliance, and claim that the tablets are of particular value for fish that are not feeding well, such as newly acquired marines or the more temperamental of the freshwater tropicals.

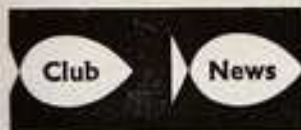
Mr R. E. Dudley

IT is with great regret that we announce the sudden death of Mr R. E. Dudley at the end of August.

Ron Dudley, known and respected by aquarists from almost every part of the country, was never happier than when in the midst of a lively discussion, whether at a show, his local society, or in his own sitting room. His forthright views were legend, but were well founded on his many years of practical experience and painstaking study of the subjects. As founder and chairman of the South Park Aquatic (Study) Society, and PRO for the Goldfish Society of Great Britain, he pursued fishkeeping with an almost youthful enthusiasm; coldwater fishes were always his first love, and his unstinting efforts as spokesman and unofficial

ambassador for that side of the hobby brought him into frequent communication with this magazine. His achievements are well known to the scores of hobbyists who were welcome visitors to his Wimbledon home, and Ron took a particular pleasure in passing on his own observations and tips to less experienced aquarists. He was, in recent months, involved in making plans for the GSGB display at The Aquarium Show this year, his enthusiastic support for the Show having been readily given each year. A week to the day before his death he had been active at his club's annual show.

To his wife Marguerite and son David, both well known to share Ron's involvement in the hobby, we extend our sincere condolences; that the coldwater fraternity of aquarium-keepers will with them be feeling a deep sense of personal loss there can be no doubt.



FRAS Basic Show Class Letters: A, furnished aquaria and aquascapes; B, barb; C, characin; D, cichlid; E, labyrinth; F, egg-laying tooth-carp; G, tropical rattfish; H, Corydoras and Brochis; J, rasbora; K, danio and W.C.M.M.; L, loach; M, a.o.s. tropical egg-layer; N, pairs of fish; O, guppy male; P, guppy female; Q, swordtail; R, platy; S, mollie; T, a.o.s. livebearer; U, singletailed goldfish; V, twintailed goldfish; W, a.o.s. coldwater; X, breeders classes; Y, marine fish; Z, plants.

THIS both Open Show and Exhibition staged by **PORTSMOUTH AS** attracted over 400 entries, each hatched in aquaria, and over 100 reptiles, amphibians and water life specimens. Mrs Marion Tees' 25 l in *Ophiocottus guarami*, a large marine scorpion fish and a 12 ft. python were of great interest to the thousands of visitors to the Show during the week that it was open. Although the tropical entries were slightly down on last year, the 13 coldwater classes attracted a record entry. Judges Mr B. Baker, Mr C. A. T. Brown, Mr R. Eason and Mr P. Ganger (FBAS) awarded best in show to a fine specimen of a glow-light tetra owned by Mr S. Crabtree, who received the Harris-Lesvy Cup and PAS Diploma. Mr Crabtree also won the Taylor trophy for highest total points, tropical. Mrs M. Tee of Mid-Sussex won the FBAS Championship shield for class E with the *Ophiocottus guarami*. The Taylor trophy for highest total points, coldwater, went to Mr V. Hunt of Portsmouth, who also received the Henry Luff trophy for best coldwater, club member.

(See in clubs: Bn, Basinstoke; Br, Brighton; C, Caversham; Gs, Gosport; Gr, Guildford Society; H, Havant; MS, Mid-Kent; P, Portsmouth; Sa, Salisbury; Ss, Southampton.)

Aq. inter-club tropical furnished: 1, Portsmouth AS (Taylor Challenge Cup); 2, Gosport AS, An. inter-club coldwater furnished; 1, Caversham (Richardson Cup); 2, GSHB; 3, Portsmouth, Ad. individual tropical furnished; 1, Mr D. Haines (Gs, Linnæus Wilson Cup); Ac. individual coldwater furnished; 1, Mrs P. Whittington (Gr, E. Knight Cup); 2, Miss L. Howard (Br); 3, Miss W. Ryder (Ps, Ac. individual warm furnished); 1 & 2, Mr J. Lamboll (P), Ac. individual tropical furnished, junior; 1, Master P. Watt (H, C. & A. South Cup); Ac. individual coldwater furnished, junior; 1, Miss J. Lamboll (P, C. & A. South Cup); 2, Master S. Gifford (Ps).

B. barb: 1, Mr B. Basson (Ba, Stoodley Cup); 2, Mr D. Emery (MS); 3, Mrs T.

Harvey (P, C), *Hypoclinemus* etc.; 1, Mr S. Crabtree (H, best in show and J. & V. Mason shield); 2, Mr B. Basson; 3, Mr L. Penn (P), A.o.s. characin; 1 & 2, Mr P. Spenshaw (H); 3, Mr L. Penn (P), Ds. anguila; 1, Mr A. Tracey (Go); 1, Mr N. Davis (H); 2, Mr K. Clough (Go), Ds. *Apistogramma* etc.; 1 & 2, Mr F. Wills (P, J. & M. Mann shield); 3, Mr M. Strang (Ba), D. a.o.s. cichlid; 1, Mr M. Strang (Ba); 2, Mr L. Penn (P); 3, Mr D. Haines (Go), Ea. *Betta splendens*; 1, Mr K. Ross (Go, Scott-Morgan Cup); 1 & 2, Mr K. Clough (Go), E. a.o.s. labyrinth; 1, Mrs M. Tee (MS, FBAS shield & Nunn Foster trophy); 2, Mr N. Davis (H); 1, Mr A. Tull (Sa), F. egg-laying tooth-carp; 1, Mr A. Houghton (Go, Howard Cup); 2, Miss J. Lamboll (P); 3, Mr D. Haines (Go).

G. a.o.s. catfish: 1, Mr D. Emery (MS, J. G. trophy); 2, Mr M. Strang; 3, Mr E. Basson (H), *Corydoras*, *Brochis*; Miss F. Etheridge (Go); 2, Mr B. Adams (Sa); 2, Mrs J. Stillwell (P), J. rasbora; 1, Mr P. Spenshaw (H, Stoodley Cup); 2 & 3, Mr D. Tucker (Sa), K. danio & minnow; 1, Master P. Watt (H, Furnidge trophy);

CALLING all marine enthusiasts! Mr M. Strong, PRO of the Association reminds all marine fishkeepers and BMAA members that the Association is organising a stand at this year's **AQUARIUM SHOW** on which will be displayed native and tropical marine species and where members of the BMAA will be on hand to supply information about membership, badges, and the monthly 'Marinara' that members receive on joining. BMAA members are asked to support the Association's efforts at the SHOW. Support is also urgently required for Brian and Joan Wilcox (London) who are trying to form a BMAA London group. Mr D. Highfield, 319 Kent Road, Woods Estate, Weybridge, Staffs, will answer queries by post; but a warm welcome is extended to marine fishkeepers to come along to **THE AQUARIUM SHOW** to meet the members of the Association personally.

2 & 3, Mr S. Crabtree (H), L. loach; 1 & 2, Mr K. Crosson (H); 2, Mr N. Davis (H), M. a.o.s. egg-layer; 1, Mr A. Denton (P, Fosse Cup and Wm. Taylor & Son trophy); 1, Mr K. Ross (Go); 2, Mr K. Clough (Go); 1, O. male guppy; 1 & 2, Mr D. Riley (H, McDonald trophy); 2, Mr D. Tucker (Sa), P. female guppy; 1, Mr M. Mansbridge (Sa); 2, Mr D. Riley (H); 3, Mr D. Tucker (Sa); Q. swordtail; 1, Mr D. Haines (Go); 2, Mr D. Riley (H); 3, Mr D. Tucker (Sa), R. platy; 1, Mr D. Tucker (Sa); 2 & 3, Mr A. Mepham (H), Mollie; 1, Mr N. Davis (H, Sutgrass Cup); 2, Mr A. Mepham (H); 3, Mr D. Tucker (Sa), T. a.o.s. livebearer; 1, Mr B. Basson (Ba); 2, Mr M. Mansbridge (Sa); 3, Mr M. Bostock (Ba).

Ua, common goldfish: 1, Mr B. Adams (Sa); 2, Miss W. Ryder (P); 3, Miss F. Leach (Gr), Ur. London shubunkin; 1, 2 & 3, Mrs P. Whittington (Gr), Us. singletail; 1 & 2, Mr R. Whittington (Gr); 3, Mr W. Leach (Gr), Ua, com.; 1, Mr V. Hunt (P); 2, Miss W. Ryder, Va. veiltail; 1, Mr J. Bursell (P, Veiltail trophy); 2, Mr K. Johnson (H), Vc. fawn; 1 & 2, Miss J. Leach; 3, Mr V. Hunt, Vc. globe eye; 1, Mr J. Lamboll (P); 2, Mr W. Leach (Gr); 3, Mr D. Stokes (P), Vc. a.o.s. fancy goldfish; 1 & 2, Mr W. Leach (Gr); 3, Mr J. Lamboll, Wac. barbs, mirror carp, rudd, tench, zebra

1, Mrs J. Stillwell (P); 2 & 3, Mr W. Ryder (P), Wa/2, hot carp; 1, Mr E. Bunsell (PITB trophy); 2, Mr R. Johnson (H); 1, Mrs J. Stillwell, Ws. Contraband; 1 & 2, Mr E. Basson (Hart Cup); 3, Mr V. Hunt, W. a.o.s. coldwater; 1 & 2, Mr V. Hunt; 3, Mrs J. Lane.

Xb-m, breeders tropical egg-layer: 1, Mr P. Wills (P, Taylor trophy); 2, Mr M. Strang (Ba); 3, Mr S. Crabtree, Xc-p, breeders livebearer; 1, Mr S. Crabtree (H, Fosse Cup); 2, Mr M. Strang (Ba); 3, Mr B. Basson (Ba), Xc-p, breeders guppy; 1, Mrs J. Stillwell, Xc-p, breeders coldwater; 1, Mrs P. Whittington (Gr, Taylor trophy); 2, Mr R. Whittington (Gr); 3, Mr D. Stokes (P), Za, rooted plant; 1, Mr K. Clough (Go); 2, Mr W. Ryder (P); 3, Mr T. Blanchard (Sa), Zb, plant coverings; 1 & 2, Mrs J. Stillwell (Emma Bastard Cup); 3, Mr T. Blanchard (Sa), Zc, floating plants; 1 & 2, Mr T. Blanchard (Sa); 3, Mr M. Strang.

MR J. KNOTT has won the Pond Competition held by **ILFORD & DA & PS**. Mr H. Berger was second and Mr W. Rowe third. A lecture given by Mr D. L. Seaman on tropical fish mutations proved extremely popular and many of the questions put to the lecturer revealed the interest that members felt in this complex side of the hobby. Members enjoyed a number of successes at the Dagenham Town Show, where the Society failed by only a single point to collect the Inter-club Trophy. Successful club members were: Mr Stanley, first with a *T. mariae*; Mr Rowe, third with green tench, fourth with jewel cichlid, second with hornwort, Mr Berger, two firsts (furnished aquaria, singletail pond-fish), second with singletail goldfish, fourth with sarsie, third with twintail celestials, fourth with same.

AN *Apistogramma ramirezi* won the best fish in show award at the Open Show held by **GRIMSBY & CLEETHORPES AS**. This had been entered by J. & H. Dennis of Dukeries who received the trophy donated by Mr & Mrs A. M. Watson of Humberston. Mr & Mrs Dawson of Gainsborough AS won the Best Angel trophy donated by the Society chairman and husband, Mr & Mrs Jennings, Gainsborough AS won the Fowler trophy for the visiting society receiving most points (2, Cresswell; 3, Scunthorpe).

Livebearers, Guppies: 1 & 2, E. Kirk & Son (Grimsby); 3, Mr G. Andrews (Hull), Platys; 1 & 2, E. Kirk & Son; 3, Mr & Mrs Stevenson (Barnwood), Swordtails; 1, Mr G. Andrews (Hull); 2, Holmes & Whitehead (Grimsby); 3, E. Kirk & Son, Mollies; 1, Holmes & Whitehead, A.o.s.; 1, Mr J. E. Whiteley (Aireborough); 2, Mr & Mrs Dawson (Gainsborough); 3, Mr & Mrs Toyn (Sheffield).

Characins, Bwals: 1 & 3, Mr & Mrs Pogson (Scunthorpe); 2, Mr & Mrs Hodges (Cresswell), Large; 1, Mr J. A. Whiteley; 2, Mr B. Palford (Grimsby), Mr T. Walker (Grimsby), Cichlids, Dwarf; 1 & 2, J. & H. Dennis (Dukeries); 3, Mr W. D. Gilding (Gainsborough), Large; 1, Mr J. A. Whiteley; 2, Mr R. Jennings (Grimsby); 3, Mr & Mrs Stevenson (Barnwood), Angels; 1, Mr & Mrs Dawson; 2, Mr & Mrs Toyn; 3, E. Kirk & Son, Barbs, Small; 1, Mr D. Norton (Grimsby); 2, Mr K. Swadlow

(Grosvenor); 3, J. A. Whitley, Leam; 4, Mr R. Jennings; 5, Mr B. Pollard; 6, Mr G. Silburn (Grosvenor).

Minnows, danios & rasboras. Minnows, danio: 1, Mr M. Foster (Alderton); 2, Mr & Mrs Davison; 3, Mr J. Lill (Grosvenor); Harbours: 1, Mr H. Kohn (Lancaster); 2, W. D. Golding (Gainsborough); 3, Mr J. Lill; **Sharkish fishes.** Sharks: 1, Mr G. Silburn; 2, Mr H. C. Johnson (Charnock); 3, Mr T. Spinks (Boston); **Anabantids.** Siamese splinters: 1, Mr & Mrs Turner; 2 & 3, Mr A. Marwood (Woking); Small anabantids: 1, E. Kirk & Son; 2 & 3, Holmes & Whitehead, A.S.V.; 4, Mr & Mrs Blades; 5, J. & H. Darnie; 6, Mr J. Hudson (Boston).

Breeders. Egglayers: 1, Mr & Mrs Sheehan (Grantham); 2, Mr K. Shaw Sheehan (Grantham); 3, Mr R. Hodges (Thorne); Livebearers: 1, Mr G. Andrews (Hull); 2, Mr & Mrs Payne; 3, Mr & Mrs Harris (Gainsborough); **Paras.** Egglayers: 1, J. & H. Darnie; 2, Mr B. Pollard; 3, Mr & Mrs Sheehan (Grantham); Livebearers: 1, Mr G. Andrews (Hull); 2, Holmes & Whitehead (Grosvenor); 3, Mr & Mrs Blades; **Catfish & loaches.** Corydoras: 1, Mr & Mrs Pagan; 2, Mr J. Jones (Grantham); 3, Holmes & Whitehead, A.S.V.; 4, Mr P. Taylor (Independent); 5, Mr B. Pollard; 6, Mr T. Walker (Grosvenor); Loaches: 1, Mr & Mrs Davison; 2, Mr S. Whitson (Gainsborough); 3, Mr & Mrs Caldwell (Southrop); Killies. Apistogrammas: 1, Mr & Mrs Blades; 2, Mr B. Pollard; Breeder: 1, Mr & Mrs Blades; 2, Mr T. Holmes, A.S.V.; 3, Mr & Mrs Blades; 4, Mr & Mrs Harris (Gainsborough); 5, Mr D. Hughes (Grosvenor); A.S.V. tropical. A.S.V. egg-layers: 1, Mr & Mrs Sheehan (Grantham); 2, Mr D. Wivell (Grosvenor); 3, Mr & Mrs Caldwell, A.S.V. vivaries: 1 & 2, Mr A. Metcalfe (Grosvenor); 3, Mr & Mrs Caldwell; **Coldwater.** Goldfish & comets: 1 & 2, Mr & Mrs Payne; 3, Mr A. Metcalfe (Grosvenor); Shubunkins: 1, E. Kirk & Son; Fancy: 1, Mr A. Metcalfe; 2 & 3, Mr & Mrs Payne, A.S.V.; 4, Mr J. A. Whitley; 5, Mr & Mrs Blades; 6, Mr J. Payne.

AT an Extraordinary General Meeting of the **FEDERATION OF NORTHERN AQUARIUM SOCIETIES** recently held a Management Committee has been set up to deal with the running of the Federation. This Management Committee is to consist of chairman (separate from the office of president), secretary, assistant secretary, treasurer, show secretary, chairman of Judges & Standards Committee and two lay members and the Committee will have the power to co-opt. Until the next AGM the positions on the Management Committee are to be filled by the existing holders of the posts of secretary, assistant secretary, treasurer, show secretary, and the posts of chairman, chairman of Judging and Standards and the two lay members are to be filled by Mr W. Kelly, Mr C. Walker, Mr R. Davies and Mr H. Shackleton respectively. New 'B' class judges of the Federation are: Mr J. Bizard, (Sheffield & DAS), Mr E. Cartwright (Gorton & Openshaw), Mr D. Glen (Bury & DAS), Mr A. Seabright (Gorton & Openshaw).

MIDLAND Tropical Aquarists were the Society with the most entries and most awards at the fourth Open Show held by **BEDWORTH A & PS.** Mr R. Bowers (Ind.) entered the

best fish in the show. Other special award winners were: best livebearer, Mrs D. Cruickshank (Ealing); best kille, R. & F. Hirst (Coventry); best breeders egglayers, Mr R. North (Pelshall); best coldwater, Mr F. Watts (Coventry); best anabantid or Siamese fighter, Mr R. Bowers; winner of best quality class, Mr R. Bowers; best large fish (other than best in show), Mr Kinsey (Ind.); best small fish (other than best in show), Miss S. Hartwell (Hinckley); most entries, G & S (Northampton); most awards, Mr D. White (Bedworth) and Mr J. Goodman (Wormbourne). Mr Lindley of Bedworth won the 3 ft. tank and stand donated by Mr Ray Mayer.

A.S.V. puppy: 1, Miss S. Hartwell (Hinckley); 2 & 3, Mr T. A. Cruickshank (Ealing); A.S.V. male: 1 & 2, G & S (Northampton); 3, Mr R. Bowers (Ind.); A.S.V. livebearer: 1, Mrs D. Cruickshank (Ealing); 2 & 3, Mr D. White (Bedworth); Characins: 1, Mr K. Pratt (Bedworth); 2, Mr K. Brooks (MTA); 3, Mr T. C. Saunders (GORN); A.S.V. characins: 1, Mr & Mrs Downing (Sherwood); 2, Mrs M. Roberts (Ind.); 3, B. & F. Hirst (Coventry); **Hatch:** 1 & 2, Mr R. Brooks; 3, Mr T. Davis (MTA); A.S.V. hatch: 1, Miss S. Hartwell (Hinckley); 2, Master A. Simmons (Coventry); 3, Mrs D. Cruickshank, Cobble: 1 & 2, Mr J. Goodman (Wormbourne); 3, Mr F. T. Colby (MTA); A.S.V. goldfish: 1, Mr A. Kinsey (Ind. AS); 2, Mr R. Tedds (Bedworth); 3, Mr B. Small, Angel fish: 1, Mr & Mrs Gallett (Nantasson); 2, Mr & Mrs Jeffs (Nantasson); 3, Mrs C. Beard (L. Spa); **Class 11:** 1, Mr R. Bowers; 2, G. & S.; 3, Miss S. Hartwell; A.S.V. anabantid: 1, Mr G. Taylor (Loughborough); 2, Mr K. Brooks; 3, Mr C. B. Kirkham (Tamworth District); **Corydoras 2F Brodie:** 1, B. Bowers; 2, Mr T. A. Cruickshank; 3, Mr M. Bates (Haden Select); A.S.V. catfish: 1, Mr & Mrs E. Bird (Spa); 2, Mr J. T. Maple (Chelmsley); 3, Master D. Boud (Spa); A.S.V. loach: 1, Mr D. White (Bedworth); 2, Mrs P. Hilde (Coventry); 3, Mrs V. Hoagh (MTA); Killies: 1, R. & F. Hirst (Coventry); 2, Mr A. Clarke (Hinckley); 3, Mr F. Underwood (L. Spa); Rasbora: 1 & 2, Mrs M. Roberts (Ind.); 3, Mrs W. Bradley (Nantasson); **Danios etc.:** 1, Mr E. Williams (Chelmsley); 2 & 3, Mr J. Goodman; 4, Egg-layer pairs: 1 & 2, Mr R. Hough; 3, Mr T. Pazy (Loughborough); Livebearer pair: 1, Mr R. North (Pelshall); 2, Mr R. Hough; 3, Mr D. White; Breeders egg-layers: 1 & 2, Mr R. North; 3, Mr & Mrs

Bird, Breeders livebearers: 1, R. & F. Hirst (Coventry); 2, Mr A. York (Nantasson); 3, Mr J. T. Maple (Chelmsley); A.S.V. tropical: 1, Mr C. E. Cartwright; 2, Mrs V. Hoagh; 3, Mr M. Bates (Nantasson); **Philippine anabantid pair:** 1, Mr F. Watts (Coventry); 2, Mr D. Underwood (Coventry); 3, Mr R. Small (Bedworth); **Pedipans (swamp goldfish):** 1, Mr & Mrs J. Boleyns (Bedworth); 2, Mrs V. Hoagh; 3, Mr A. goldfish other than pedipans: 1, Mr R. Shepperson (Bedworth); 2, Mr J. Goodman; A.S.V. coldwater pair (other than fish): 1, Mrs V. Hoagh; 2, Mr H. Hirst; Mayer; 3, Mr D. White (Bedworth).

THE best fish in show award went to Mr P. Player at the **LLANTWY MAJOR AS** Open Show. The best fish entered by a Llantwit member was that belonging to Mr J. Edwards. Detailed results are (FBAS standards):

Ad: 1, Mr S. Nelson; 2, Mr R. S. Wain; 3, Mr C. Turner; 4, Mr S. Nelson; 5, Mr W. Lambick; 6, Mr M. Williams; 7, Mr G. Scudamore; 8, Mr J. Cline; 9, Mr J. Dyer; 10, Mr P. Glover; 11, Mr W. Lambick; 12, Mr P. Player; 13, Mr T. Post; 14, Mr J. Dyer; 15, Mr J. Edwards; 16, Mr W. Lambick; 17, Mr W. G. Hart; 18, Mr & Mrs C. Turner; 19, Mr J. Thomas; 20, Mr C. Pick; 21, Mr P. A. Lewis; 22, Mr F. Russell; 23, Mr S. Nelson; 24, Mr C. Turner; 25, Mr W. Lambick; 26, Mr P. A. Lewis; 27, Mr C. J. Pick; 28, Mr C. Harding; 29, Mr W. Lambick; 30, Mr S. Nelson; 31, Mr P. A. Lewis; 32, Mr M. Williams; 33, Mr C. Harding; 34, Mr K. Williams; 35, Mr W. B. Burt; 36, Mr C. Cardross; 37, Mr K. Williams; 38, Mr D. Pelroy; 39, Mr C. Harding; 40, Mr W. Stuart; 41, Mr C. Pick; 42, Mr W. Burt; 43, Mr P. Glover; 44, Mr P. A. Player; 45, Mr S. Nelson; 46, Mr P. Glover; 47, Mr S. Scudamore; 48, Mr W. Stuart; 49, Mr M. Williams; 50, Mr P. A. Lewis; 51, Mr W. Burt; 52, Mr R. Wain; 53, Mr P. Player; 54, Mr C. Harding; 55, Mr J. & J. M. R. Perkins; 56, Mr S. Nelson; 57, Mr P. A. Player; 58, Mr P. A. Lewis; 59, Mr W. Stuart; 60, Mr S. Nelson; 61, Mr D. Egart; 62, Mr J. Egan; 63, Mr W. G. Hart; 64, Mr C. Harding; 65, Mr C. Turner; 66, Mr R. Perkins; 67, Mr S. Nelson; 68, Mr R. Harding; 69, Mr C. Harding; 70, Mr B. Harding; 71, Mr B. Harding; 72 & 73, Mr C. Rupert; 74, Mr B. Harding; 75 & 76, Mr C. Rupert.

ACTIVITIES of the MERSEY-SIDE AS have centred for some little while recently round their contribution to the Liverpool Show, which proved as successful as ever. The standard of entries in the furnished aquaria and competitive fish classes is reported as having been good and the winner of the furnished aquaria class, Alan Vassiere, won with his first-ever effort in this class. The best fish in show award was won by Kevin Daniels. The Society now numbers 117 and have been enjoying some excellent talks on club nights. When Mr Bill Smith, show secretary, spoke on the importation of fish, he emphasised the importance of quarantining all newly acquired fish. Mr Harry Ormsher spoke on marine fishkeeping and earned many expressions of praise for the presentation and content of his popular lecture.

ANOTHER specialist society meeting that will be taking place at this year's AQUARIUM SHOW is that of the BRITISH KOI KEEPERS SOCIETY. The meeting is being held on the Sunday afternoon and the officers hope that as many members as possible will be able to attend. They announce with great pleasure that a lecture at the meeting will be given by the Society's vice-president, Mr Colin Roe, who will talk on his experiences in keeping and breeding koi. The Society secretary will supply any details required and letters should be addressed to: Mrs H. Allen, 1 Anthony Close, Peterborough, PE1 3XU (Phone 0733 67997).

Strong Coldwater Section at the Midland Show



First and second in the society displays were the 'school' scene by N. Warks. AS (left) and Lucas APS entry (right)

OVERHEARD at this year's MIDLAND OPEN SHOW was a remark made by a non-fishkeeping visitor being shown around by his aquarist friend—"Is there any chance of cheating going on in the competition—can they magnify the fish at all?" He was looking at the coldwater section at the time, and he might well ask the question as there were some fine fish on view. The MIDLAND AQUARIUM AND POOL SOCIETY were, in fact, particularly delighted with the coldwater entry received at this year's Show, which turned out to be a record.

There were eight entries in Class 30—the Society group entries—ranging from the humorous to the prophetic and educational. The winning entry came from the North Warks. AS—a beautifully executed scene cleverly linking many humorous aquatic touches to the theme "Learning is fun with N. Warks. AS"; it showed a class room with desks and fishy students, with teacher angel pointing out the letters written on the blackboard "Aa is for anabantid—Bb is for barb . . .". Second award went to the entry from Lucas APS showing a TV control panel with tanks of fishes and plants, each tank from a particular world habitat, forming the "screens" and linked with switch-controlled lights to a world map and descriptions of the fishes. MAPS own entry was awarded third place. A delightful pond emphasised the special interest of MAPS in the coldwater side of the hobby and great play was made of the name of the Society with maps of the area and local clubs lining the walls. Fourth award was made to the British Marine Aquarists' Associa-



tion entry showing a replica of the BMAA magazine, with tanks let into the side that contained a fine selection of marine life.

Mr R. Trippas won the best in the show award, the Gilbert Cup and £10 cash prize. The coldwater award went to Mr H. Stock, the Eversden Cup and £10 cash prize. The other special trophies were awarded as follows: Mr Harvey Stock, the E. A. Mason Memorial trophy for best twintail; Mrs A. F. Wicks, the Taylor Cup for best shubunkin, the Webb Cup for best Bristol shubunkin (novice); Mr G. J. Bell, the Rowatt Cup for best shubunkin bred in 1972 by exhibitor; Mr H. T. Jago, the Raven Cup for best common goldfish. The Butler Cup for best moor to Mr M. J. Neil; Mr R. J. Hough, the Mrs A. F. Keyes Cup; Mr A. E. Roberts won the Graham-Keys Cup for best veiltail, the Cadby Cup for best

shubunkin 3 in. body limit, the P. Smith Cup for best breeders' entry, and the Championship Cup (for MAPS members only) for the highest number of points gained in the show. Awards in the tropical classes went to: Dodge Cup, best barb, Mr T. R. Davis; Harron Cup, Mr D. J. O'Leary; L. Stokes Cup for best a.v. barb, Mr & Mrs E. R. Bird who also won the J. C. Froggatt trophy for best a.o.v. catfish; S. & D. Green Cup, rasboras, Mr J. Fox; W. V. Jones Cup, best characin, Attwood & Williams; Mrs Gilbert Cup, best anabantid, Mr E. T. Cobill; Inter Pet trophy, best dwarf cichlid, Mr R. J. Parkes; T. G. Sutton Cup, best guppy, Mr J. Weekbourne; Coleman Cup, best poeciliid, and S. W. Richardson Memorial trophy Mr K. L. Brown. Panday Cup, best breeders, Mr R. Trippas; Carrington Memorial trophy, a.v. toothcarps, Mr N. Furness; Novice Tankard, Mr S. Hooper; P. W. Jinks trophy, Mr M. H. Delingpole; J. & R. Witts Cup, juniors, J. Sheldon.

Detailed results were:

Coldwater. Goldfish & comets: 1, Mr H. T. Jago; 2, Mr F. E. Watts; 3, Mr J. Witts. Bristol shubunkins, 5 in. body limit: 1, Mr C. H. Barrett; 2, Mr T. G. Sutton; 3, Mr M. T. Mason. Bristol shubunkins, bred 1972: 1, Mr G. J. Bell; 2, Mr A. E. Roberts; 3, Mr R. Sidaway. Bristol shubunkins (MAPS): 1 & 2, Mr A. E. Roberts; 3, Mr J. A. Davies. Bristol shubunkins, pairs: 1, Mr I. Ford. Bristol shubunkins, 3 in. body limit: 1 & 2, Mr A. E. Roberts; 3, Mr M. T. Mason. Bristol shubunkins (novice): 1, Mrs A. F. Wicks; 2, Mr M. T. Mason. Nacreous scaled calico veiltail: 1, Mr A. E. Roberts; 2 & 3, Mr T. G. Sutton. Metallic scaled veiltail: 1, Mr A. E. Roberts; 2 & 3, Mr T. G. Sutton. Metallic veiltail oranda: 1 & 2, Mr A. E. Roberts; 3, Mr R. J. Hough. Black moors: 1 & 2, Mr M. J. Neil; 3, Mr A. E. Roberts. Metallic scaled



The Midland A & PS display included a foreground pond (left) and the tanks staged by the BMAA were set in a partly opened 'book'

fantail: 1 & 4, Mr A. E. Roberts, Pearl Island Island; 1, Mr H. Stock; 2 & 3, Mr R. Maffin, Westfield, Woking; 1, Mr J. Goodhall; 2 & 3, H. Stock, Twickenham, Twickenham, bred 1972. 1, 2 & 3, Mr A. E. Roberts, A.V. breeders' pedigree single tail; 1 & 2, Mr M. T. Mason, A.V. breeders' pedigree; 1 & 2, Mr A. E. Roberts; 3, Mr T. G. Sattone, A.V. goldfish; 1, Mr F. Burford; 2, Mr C. H. Barrett; 3, Mr A. E. Roberts, A.V. pond and cover fish; 1, Mr R. J. Hough; 2, Mr F. W. Wain; 3, Mr R. Brown.

Tropical. Barb (tropical, striped, zebra): 1, Mr T. R. Davis; 2, Mr R. J. Hough; 1, Mr J. P. Hughes, Barb (tropical, supercolor, fish, rainbow, zebra): 1, Mr D. J. O'Leary; 2, Mr K. Brooks; 3, Mr L. Ford, A.V. barb; 1, 2 & 3, Mr R. Mrs E. R. Bird, Diana, etc.; 1, Mr J. Fox; 2, Mr J. Parsons; 3, Mr I. Ford, A.V. barb; 1, Mr J. Fox; 2, Mr R. Trippas; 3, Mr K. Brooks, Characin; 1, Mr T. R. Davis; 2, Atwood & Williams; 3, Mr R. Trippas. A.V. characin: 1, Atwood & Williams; 2, Mr E. T. Cobell; 3, Mr S. Green.

Fighters: 1, Mr K. L. Brown; 2, Mr F. Underwood; 3, Mr M. J. Tanner, A.V. goldfish; 1, Mr E. T. Cobell; 2, Mr K. Brooks; 3, Mr R. L. Hough, Caladid dwarf; 1, Mr B. J. Parke; 2, Mr R. J. Hough; 3, Mr E. T. Cobell, A.V. caladid; 1, Mr R. Trippas; 2, Mr D. J. O'Leary; 3, Mr M. J. Tanner, Anguill; 1, Mr K. Cooper; 2, Mr L. Ford; 3, Mr R. J. Hough.

A.V. sapper: 1, Mr J. Westbourne; 2 & 3, Mr K. L. Brown, A.V. mollie; 1, Mr K. L. Brown; 2, L. C. & J. L. Edwards; 3, Mr J. Westbourne, A.V. platy; 1, Atwood & Williams; 2, Mr C. J. Nightingale; 3, Mr C. W. Green, A.V. swordtail; 1, Mr H. H. Bell; 2, Mr K. L. Brown; 3, Mr R. J. Hough, A.V.; 1, Mr J. A. Clayton; 2, Mr K. L. Brown; 3, Mr E. T. Cobell.

Breeders' egg-layers: 1, Mr R. Trippas; 2, Mr J. Fox; 3, Mr T. G. Sattone, Livebearing; 1, Atwood & Williams; 2, Mr F. E. Wain; 3, Mr F. Underwood, A.V. Cichlid, Brook; 1, Mr K. L. Brown; 2, Mr J. Wain; 3, Mr R. J. Hough, A.V. catfish; 1, Mr & Mrs E. R. Bird; 2, Whitfield & Massey; 3, K. L. Brown, A.V. loach; 1, Mr E. J. Hough; 2, Mr D. Green; 3, Mr J. Westbourne, A.V. loach; 1, Mr N. Parsons; 2, R. & F. Hirst; 3, Whitfield & Massey, A.V. angler (tropical); 1, Mr G. E. Arnold; 2, and 3, Mr K. Ireland, A.V. angler; 1, Mr S. Hooper; 2, Mr K. Ireland; 3, Mr K. Hoving.

Plant, water: 1, Mr M. H. Dellingpole; 2, Mr R. Trippas; 3, Mr C. J. Nightingale, A.V. plant floating; 1, Mr S. Loquon; 2, Whitfield & Massey, A.V. plant carriage; 1, D. A. & C. J. Correnti; 2, Mr R. Trippas; 3, Mr S. Loquon, Junior livebearer; 1 & 2, J. Sheldon; 3, Miss J. Wain, Egg-layers; 1, J. Sheldon; 2-1, K. Peak; 3, J. Sheldon. Artificial decorative tropical; 1, Mr & Mrs E. R. Bird; 2, Mr R. Woodard; 3, Mr T. G. Sattone, Invertebrate decorative tropical; 1, Midland Tropical AS; 2, Coventry Pool AS; 3, Hubery Select, Goldwater, Invertebrate decorative; 1, Hubery Select; 2, MAPS, Aquascapes; Mr A. R. Aldridge, Marine individual; Mr C. T. Partridge, Marine invertebrate; 1, MAPS; 2, Coventry Pool AS.

THE date of the CRESWELL & DAS Open Show was given incorrectly in our Dates for Your Diary column at 15th November. This in fact should read 12th November and we apologise for the error. This is the Society's first Open Show and we wish it great success. Details and schedules can be obtained from Mrs H. Blades, 12 Westmeier Close, Workshop, Notts, S81 0PN.

A RED oscar, owned by Mr J. A. Whitely of Aireborough, won the best fish in show award at the ANSON AQUATIC CLUB Show (FBAS).

Aach: 1, Herdon; 2, Hantswood; 3, Independent; B: 1, Mr Bacon (Basingstoke); 2, Mr B. Funnell (Uxbridge); 3, Mr T. Butler (Anson, C); 1, Mr D. Kelly (Anson); 2, Mr J. Howe (Anson); 3, Mr J. A. Whitely, C: 1, Mr A. Kinser (Ind.); 2, Mr M. Strang (Basingstoke); 3, Mrs G. Leslie (H. Wycombe); D: 1, Mr J. A. Whitely; 2, Mr J. Burt (Hilling); 3, Mr D. Howe (Anson, D); 1, Mr B. Weston (Basingstoke); 2, Mr L. Jordan (Basingstoke); 3, Mr L. Brewer (Anson, E); 1, Mr J. Burt; 2, Mr F. Constant (Basingstoke); 3, Mr R. G. Leslie (H. Wycombe); E: 1, Mr R. Burt (Ind.); 2, Mr A. Taylor (Anson); 3, Mr F. Wainson (Anson, F); 1 & 2, Mr R. Sargent (Blanchley); 3, Mr A. Powell (Basingstoke); 1, Mr A. Taylor; 2, Mr L. Brewer; 3, Mr M. Nathaniel (Basingstoke); H: 1, Mr V. Marsh (Hilling); 2, Mr P. A. Moss (Anson); 3, Mr F. Marsh (Hilling); J: 1, Mr M. Chambers (Blanchley); 2, Mr J. Kinser; 3, Mr A. Wood (Anson, K); 1, Mr S. Mason (Ind.); 2, Mr P. A. Moss; 3, Mr D. Kelly (Anson, L); 1, Mr M. Carter (Basingstoke); 2 & 3, Mr R. G. Leslie (H. Wycombe); M: 1, Mr E. Paulson (Anson); 2, Mrs J. Gurnall (Basingstoke); 3, Mr M. Nathaniel (Basingstoke); N: 1, Mr V. Marsh (Hilling); 2, Mr K. Wilson (Uxbridge); 3, Mr J. A. Whitely (Aireborough); No: 1, Mr M. Nathaniel; 2, Mr A. Blake (Basingstoke); Mr J. J. Burt.

O: 1, Mr A. Taylor; 2, Mr S. W. Mason (Basingstoke); 3, Mr J. Howe (Anson); P: 1 & 2, Mr P. A. Moss; 3, Mrs J. Gurnall; Q: 1, Mr A. Blake; 2, Mr J. A. Whitely; 3, Mr P. Ganger (Uxbridge); R: 1, Mr H. Bacon; 2, Mr A. Blake; 3, Mr V. Marsh (Hilling); S: 1 & 2, Mr M. Nathaniel; 3, Mr B. Whithead (Uxbridge); T: 1, Mr B. Funnell (Uxbridge); 2, Mr R. Newman (Uxbridge); 3, Mr B. Herby; U: 1 & 2, Mr F. Pender; 3, Mr J. Bowles; V: 1, Mr J. S. Hall (Aireborough); 2 & 3, Mr Nutt (Conham); W: 1, Mr J. S. Hall; 2, Mr A. Kinser (Ind.); 3, Mr R. Rich (Uxbridge); X: 1, Mr R. Newman (Uxbridge); 2, Mr D. Childs (Basingstoke); 3, Mr P. A. Grouse (Basingstoke); Y: 1, Mr M. Strang; 2, Mr P. Ganger; 3, Mr J. A. Whitely.

North-West London Group Competition results: Class A-1: 1, Herdon; 2, Hantswood; 3, Independent; A: 1 & 2, Mr T. Laughlin (Ind.); 3, Mr L. South (Basingstoke); B: 1 & 2, J. Suttain (Basingstoke); 3, Mr T. Kinser; C: 1 & 2, Mr J. Suttain; 3, Mr T. Laughlin, D: 1 & 2, Mr T. Kinser; 3, Mr T. Laughlin.

AT ALFRETON & DAS Open Show over 580 fishes were benched from 33 different societies. Results were as follows:

Guppies (males): 1 & 2, Mr M. Laycock (Sheffield, section winner); 3, Mr J. Jones (Levensham), Guppies (females); 1, Mr M. Laycock; 2, G. & S. (Northampton); 3, Mr R. Holmes (D. Ragon), Platy: 1, Mr & Mrs Dixon (Doncaster); 2, Mr T. Sheppard (Doncaster); 3, Mr J. Bousley (B. Van), Swordtails: 1, Mr M. Allopp (Barnetford, section winner); 2, Mr F. Coche (Huddersfield); 3, Mrs V. Thomas (Four Star), Mollies: 1, Mr P. Mighall (Huddersfield); 2, Mr R. P. Baker (Wolbeck); 3, Mr J. Igoe (Sherwood), A.V.: 1, Mr E. Smith (Sheffield); 2, Mr & Mrs Davison (Gainsborough); 3, Mr & Mrs Taylor (Sheffield), Barb, small: 1, Mrs V. Rhodes (Four Star); 2, Mr M. Clarke (N. Staffs); 3, Mrs B. Cohen, Barb, large: 1, Mr R. Clarke (Sherwood, section winner); 2, Mrs Stum (Chatterfield); 3, Mrs B. Cohen (Chatterfield), Characin, small: 1, Mrs J. Leadley (Alfreton, section winner); 2, Mr & Mrs P. Harris (Gainsborough); 3, Mr J. Wright (Alfreton).

Characin, large: 1, Mr R. Shaltonson (Barnetford); 2, Mr R. Middleton (Gainsborough); 3, Mr & Mrs Downing (Sherwood), Killifish: 1, Mr P. Harrison (Sherwood, section winner); 2, Mr T. Smith (Sheffield); 3, Mr G. Thirkens (Wolbeck), Mollie: 1, Mr D. Bennett (Leicester); 2, Mr & Mrs D. Stone (Chatterfield); 3, Mr R. Clarke (Sherwood), Sharks & loach: 1, Mr J. A. Chapman (Luton, section winner); 2, Mr G. Thirkens; 3, Mr T. Smith (Sheffield), Rainbow: 1, Mr & Mrs Downing (Sherwood); 2, Mr J. S. Hall (N. Staffs); 3, Mr & Mrs Davies (Doncaster), Cichlid, dwarf: 1, Mrs Jones (Chatterfield); 2, Mrs H. Blyden (Crawford); 3, Mrs D. Robertson (D. Ragon), Cichlid, large: 1, Mrs G. Galloway (Barnet); 2, Mr D. A. Freeman (Leicester); 3, Mrs H. Blades, Anguill: 1, Mr & Mrs Davison (section winner); 2, Miss A. Hill; 3, Mrs J. Leadley (Alfreton), Corydoras: 1, Mr M. Baxton (Sheffield, section winner); 2 & 3, Mr & Mrs Downing, A.V. catfish: 1, Mr J. S. Hall (N. Staffs); 2, Miss M. Leadley (Alfreton); 3, Mr & Mrs Bell (D. Ragon), Loach: 1, Mr P. Mighall; 2, Mr & Mrs Davison; 3, G. & S. (Northampton), 4, Mr & Mrs Taylor; 5, Mr J. S. Hall; 6, Mr & Mrs Clarke (Barnet), A.V. anguill: 1, Mrs R. Cohen (Chatterfield, section winner); 2, Mr K. Allen (Woking); 3, Mrs V. Rhodes, Tropical livebearer: 1, Mr R. Harlow (D. Ragon, section winner); 2, Mr G. Thirkens; 3, Mr K. Dore (Pebble), Tropical mollie: 1, Mrs M. Igoe (Sherwood); 2, Mr J. Igoe (Sherwood); 3, Mrs Swainwick (Huddersfield).

Fish, egg-layers: 1, Miss A. Gregory (Nelson, section winner); 2, Mrs H. Blades; 3, Mr P. Spurling (Workop), Livebearing: 1, Mr & Mrs C. J. Sheppard (Grafton); 2, Mr B. J. Rogers; 3, G. & S. (Northampton), egg-layers: 1 & 2, Mr M. Clarke (N. Staffs); 3, Miss S. Clarke (Sherwood), Livebearer: 1, Mr A. Doss (Alfreton); 2, Miss S. Clarke (Sherwood); 3, Mr W. Dickinson (Castledon).

Goldfish and comets: 1, Mr J. S. Hall (Aireborough); 2, Mr J. Bousley (B. Van); 3, Mr B. J. Rogers (Cresswell), Shubunkin: 1 & 2, Mr J. S. Hall; 3, G. & S. (Northampton), goldfish: 1 & 2, Mr J. S. Hall; 3, Mr & Mrs Payne, A.V. goldfish: 1, Mr J. S. Hall (section winner); 2, Mr J. Bousley (B. Van); 3, Mr J. S. Hall, Breeders' egg-layers: 1, Mr A. Thomas (Leaves, section winner); 2, Mrs R. Cohen (Castledon); 3, Mr & Mrs Tomkinson (Chatterfield), Livebearer: 1, Mr & Mrs Dixon (Doncaster); 2, Mr P. Harrison (Sherwood); 3, Mrs Tomkinson, Cichlid: 1, Mr J. S. Hall, Novice: 1, Mrs P. Clarke (Sherwood); 2, Mr W. Clarke (N. Staffs); 3, Mr J. Wagnall (Alfreton), Furbled specimen: 1, Mr J. Bousley (B. Van), Mollie: 1, Mr R. Holmes (D. Ragon); 2, Mr & Mrs J. Gale (Chatterfield); 3, Mr & Mrs J. Gale (D. Ragon), Platy: 1, Mrs S. Bousley (B. Van, section winner); 2, Mr J. Wright (Alfreton); 3, Mr P. Spurling (Workop).

The best fish in the show was a dwarf pencil (marginatus) owned by Mrs J. Leadley of Alfreton A.S., who received a gold pin, the Jack Anson Cup, the Shield for Characin, a travelling clock and the Ladies Prize. Sherwood AS won the Society Rose Bowl.

FISHKEEPERS from 28 clubs, from Canada to East London and from Blenheim to Hastings benched 519 exhibits at the first Open Show held by **TONBRIDGE & DAS**. Judges were: Mr W. Wilson (GSGR) and Messrs Ellis, Jeffs, Nicholl, Tomkins and Towell (FBAS), and they were very pleased to be able to award a fourth place to a Betta splendens sent by post from Canada! Special awards were: Tonbridge trophy for best fish in show, Mr C. J. Martin (NKAS) who entered a *Prochilodus lineatus*; FBAS Champion-

ship trophy, class I, Mrs Martin, southern loach; Characin trophy and Ladwight trophy, Mr D. Dare (Independent), *H. ocellifer*; Larvey Cup for best eschid, Mr A. Kinsey (Independent), *T. mariae*; JJ Angel trophy, Mr P. O'Bryan (Thurrock); Glen Aquatics Cup, labyrinths, Mr D. Dare; J. M. M. Fighter Cup, Mr S. W. Applin (Independent); Secretary's Cup for best lillifish, Mr B. Wright (Thurrock); D. B. Ross Award for a.o.s. catfish, Mr F. Marsh sen. (Ealing); dwarf talking cat; Greatfields trophy (class H), Mr C. J. Martin; The Golding trophy for best puppy was won by Mr S. Murphy of Anson; The L & G trophy for class M was won by Mr B. Goodson of Southampton with a Siamese tiger fish. The Tanbridge Park trophy went to Mr L. J. Brazier of Sudbury, the Head Livebearer trophy to Mrs D. Cruickshank (Ealing); The Tanbridge Coldwater trophy to Mr V. P. Voysey for a purple-eyed bass, and the Hurt Cup for best plant to Mr & Mrs Burles (Mid-Sussex) for a Madagascar lace plant.

FEDERATION



NEWS

Judge-Grading Proposals to Receive Further Discussion

AT the opening of the Federation's Assembly last month in London, chairman Mr R. Essex paid a tribute to Mr Ron Dudley, whose sudden death had occurred a week earlier. All at the Assembly stood in silence for a minute's observance. The delegates met in the larger hall now required to accommodate the numbers attending. It was announced that the latest total of affiliated societies was 187 and that more and more societies in all parts of the U.K. are taking advantage of the benefits of affiliation. One of the major items of discussion in the

afternoon's meeting proved to be the proposals from the Federation's Judges and Standards Committee for a new 'three-tier' judge-grading system. The present number of 'A class' judges is well known to be inadequate for the calls made for judges' services. The proposal to introduce a 'C class' of judge had the object of remedying this shortage and delegates were asked to bring back their societies' comments for consideration at the annual general meeting of the Federation to be held on 2nd December next.

1972 Championship Class Results

Class Ba	Barbs (Medway AS Show)	Mrs R. Coyle (Independent AS)
Class D	Cichlid (Tottenham & DAS Show)	Mr A. Kinsey (Independent AS)
Class Db	Cichlid (Stockton-on-Tees Show)	Mr I. R. Hepinstall (Castleford)
Class Dc	Rift Valley cichlids (Rochampton AS Show)	Mr R. Bowen (Independent AS)
Class E	Labyrinths (Portsmouth AS Show)	Mrs P. Tee (Mid-Sussex AS)
Class G	Catfish (Thurrock AS Show)	Mr D. Lambourne (Rochampton)
Class H	Corydoras (Corby & DAS Show)	Mr R. Wright (East Dulwich AS)
Class J	Rasbora (Bracknell AS Show)	Mr D. J. Mackay (Kingston & DAS)
Class K	Danios & minnows (High Wycombe AS Show)	Mr R. Newman (Uxbridge & DAS)
Class Nb-m	Egg-layer pairs (Yeovil & DAS Show)	Mr A. Blake (Basingstoke & DAS)
Class P	Guppy, female (Independent AS Show)	Mr P. Coyle (Independent AS)
Class Q	Swordtails (Runnymede AS Show)	Mr S. Mason (Rushampton)
Class R	Platy (E. Dulwich AS Show)	Mrs D. Cruickshank (Kingston & DAS)
Class S	Mollie (Southend, Leigh & DAS Show)	Mr D. King (Kingston & DAS)
Class V	Twin-tailed goldfish (Anson AS Show)	Mr J. S. Hall (Asreborough AS)
Class Xo-t	Breeders (Half Moon AS Show)	Mr & Mrs Kilvington (Doncaster AS)

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

See the Champions in London this month

R. 1. Mr J. Ross (ELAPA); 2. Mr F. Green (NKAS); 3. Mr J. Parker (NKAS); 4. Mr J. S. Mason (NKAS); 5. Mr J. Bellington (Towbridge); 6. Mr J. Marshall (Mid-Sussex); C. 1. Mr P. Coyle (DAS); 2. Mr J. H. Ross; 3. Mr T. Jones (Thurrock); 4. Mr D. M. Dare (AS); 5. Mr P. Coyle; 6. Mrs M. Northwell (Bromley); D. 1. Mr A. Kinsey (DAS); 2. Mr B. Wright (Thurrock); 3. Mrs J. Bellington (Towbridge); 4. Mr P. O'Bryan; 5. Mr D. Dare; 6. Mr B. Silvester (AS); 7. Mr L. J. Brazier (Sudbury); 8. Mr P. Nolan (ELAPA); 9. Mr R. Bowen (AS); 10. Mr D. Dare; 11. Mr J. Blackwell (Crowthorne, Norfolk); 12. Mr C. Marsh (Barnet); 13. Mr S. W. Applin (DAS); 14. Mr R. Bowen; 15. Mr C. Wood (NKAS); 16. Mr & Mrs L. Wright (Thurrock); 17. Mr J. S. Lambourne (Towbridge); 18. Mr J. S. Lambourne; 19. Mr J. Bellington; 20. Mr J. Blackwell; 21. Mr F. Marsh sen. (Ealing); 2. Mr P. O'Bryan (Towbridge); 3. Mrs M. Northwell; 4. Mr & Mrs C. J. Martin (NKAS); 5. Mr R. Marsh sen. (E.); 6. Mr P. Stahly (AS); 7. Mr B. George (Mid-Kent); 8. Mr P. O'Bryan; 9. Mr R. Bowen; 10. Mr J. Wood (Mid-Sussex); 11. Mr J. Wood (AS); 12. Mr R. L. L. (Mrs R. Martin (NKAS)); 13. Mrs D. Cruickshank (Ealing); 14. Mr M. Jones (Thurrock); 15. Mr R. Goodson (Southampton); 16. Mrs M. Northwell; 17. Mr J. Lambourne (Thurrock); 18. Mr J. S. Lambourne; 19. Mr R. Taylor (Towbridge); 20. Mr T. Adams (Hasting); 21. Mr E. Mathias (AS); 22. Mrs P. Brown (Sudbury); 23. Mr E. Mathias (Towbridge); 24. Mrs M. Northwell; 25. Mr J. Murphy (Anson); 26. Mr K. Woodbridge (Towbridge); 27. Mr A. Wood (AS); 28. Mr R. Shoobridge; 29. Mr S. Mason (Ealing); 30. Mr P. Coyle (AS); 31. Mr J. Fisher (Thurrock); 32. Mr P. O'Bryan; 33. Mr B. Wright (Thurrock); 34. Mrs D. Cruickshank; 35. Mr R. Bowen; 36. Mr R. Wright; 37. Mr J. M. M. Northwell; 38. Mr P. Nolan (Barnet); 39. Mr J. S. Lambourne (Thurrock); 40. Mr L. Brazier (Sudbury); 41. Mr D. Dare (AS); 42. Mr V. Voysey; 43. Mrs S. Jones (Anson); 44. Mr V. Voysey; 45. Mr R. Parker (NKAS); 46. Mr J. S. Mason; 47. Mr T. Adams (Hasting); 48. Mr J. S. Lambourne; 49. Mr J. Marshall (Medway); 50. Mr T. King (Gerris); 51. Mr W. Woodhead (Sudbury); 52. Mr & Mrs Burles (Mid-Sussex); 53. Mr C. Elliot (Medway); 54. Mr J. Marshall (Medway).

In Brief . . .

... 'ARE the experts always right?' provided **BRISTOL AS** with an evening of controversy when they met as usual on the second Monday of the month, 7.45 p.m., at Bishopston Parish Hall. The questions, from current periodicals, were put to the floor and answers compared with the one given in the magazine. The result showed that there can be several correct answers to seemingly the most simple question.

... **MR R. TURNER** won in the tropical labyrinth class with a thick-lip gourami in the **SUFFOLK A & PS** table show competition (2, Mr D. Howard; 3, Mr N. Crown). The coldwater class was led by Master G. Beaton (2, Mr M. Hart).

... **AS HASTINGS & ST LEONARDS AS** pride themselves on obtaining some of the best speakers in the hobby they were delighted to welcome their three most recent speakers. Mr Graham Cox gave a slide lecture on the fishes of the coral reefs; Mr Ron Elmes had illustrations and some fine specimens for his talk on the specialised art of guppy breeding; and a most unusual lecture was given by Mr Halley, herpetologist, who allowed his pet snakes and reptiles to be handled by a somewhat apprehensive audience.

The female members of the Society have been very successful in recent table shows. Dwarf cichlids: 1, Mrs A. Adams; 2, Mr H. Carey; 3, Mrs M. Greig. Male guppies: 1, Mrs French; 2, Mrs A. Adams; 3, Mrs M. Greig. Mollies: 1, Mrs French; 2, Mr H. Carey; 3, Mr P. Maxwell. The Society was defeated on the show bench as the guests of **BEXHILL AS**, but equilibrium was restored when the visitors won the quiz. Members have also visited Mr French's establishment, a breeder of repute who lives at nearby Warbleton.

... 'NATURAL and novelty aquascaping' was the helpful lecture given by Margaret Scot to members of **SMETHWICK & DAS** recently. Mr D. Johnstone was very successful at the table show at this meeting, winning in the class for livebearers with a golden sailfin mollie and in the class for guppies.

... **SLIDES** on 'An Introduction to Cichlids' and 'Marines' were shown to a good gathering of **KEIGHLEY AS** members and friends when they met as usual at Dere House, Russel Street, Keighley. Table show winners were: Fish of the month, barbs

& coldwater, Mr Hart; a.o.v., Mr J. Mosley; novice a.o.v., Mr D. Mosley; junior a.o.v., Master Beckett.

... **MR A. HELLS** won the first four places in **BISHOPS CLEEVE AS** table show class for ramboras, danios and minnows. The meeting proved unusually interesting when the four guests—judges Mr W. Holland, Mr M. Littleton, Mr R. Parsons and Mr M. McCellett, answered questions on show judging and how to run a 3-day show.

... **BLYTH TFS** are to hold an Open Show jointly with **ASHINGTON & DAS** on the 8th October at the YMCA, North View, Ashington, opening at 2.00 p.m. (see Dates for Your Diary). The Society have recently enjoyed a slide show on tropical and marine champions.

... **FROM** 1st September Mr Neville B. Hulme-Vickerstaff is the Species Controller of the **BRITISH KILLIFISH ASSOCIATION** owing to the resignation, after several years' valuable service, of Mr Dick Armstrong because of pressure of work.

THE BRITISH KILLIFISH ASSOCIATION have quite a problem on hand with the number of letters sent each week to registrar Mr Bill Devison that should be going to secretary Mr Ken Jenkinson, 52 Whitdale Road, Whitburn, West Lothian, EH47 8LJ. Mr Jenkinson would be grateful if readers could note that all enquiries concerning the Association should be sent direct to him.

... **MEMBERS of GRIMSBY & CLETHORPES AS** tried their hands at judging one of the classes in a recent table show. The 50p prize for obtaining a result nearest to that of the show judges went to Mr K. Svendsen, who also won the fish of the show award. Results were: a.o.v. livebearers: 1, 2 & 3, Mr P. Atkinson. Small barbs: 1, Mr K. Svendsen; 2, Mr D. Norton; 3, Mr R. Jennings. Large characins: 1 & 3, Mr B. Pulford; 2, Mr A. Whitehead. Juniors: 1 & 2, D. Kirk; 3, P. Metcalfe.

... **CHAIRMAN of BRIGHTON & SOUTHERN AS**, Mr A. Dawes, warmly welcomed Dr N. Carrington of Interpet when he lectured to the Society on water chemistry and general fish care. Dr Carrington illustrated his talk with a demonstration of equipment measuring water hardness and explained how water conditions affected fishes.

... **MEMBERS of WELBECK AS, CASTLEFORD** wish to record their thanks to Mr Phillip Moor-

house for his interesting talk on showing and show standards of tropical fish. Mr Moorhouse also judged the table show and made the best in the show award to P. Baker for a catfish as well as firsts for loaches and for the junior class.

... **MEMBERS of LEAMINGTON & DAS** have been enjoying a number of very pleasant social occasions this summer. On one, when their meeting hall was in other use, an evening picnic was held and members were able to further their aquatic interests by obtaining plants from a large pond. Another outing took the form of a trip aboard a barge on the Braunston Canal.

... **MEMBERS of NOTTINGHAM & DAS** have just held their annual pond competition. Among the eight entries were most attractive ponds and settings; all the club members were able to enjoy the competition since slides of the ponds were shown at a club meeting.

... **COVENTRY P & AS** members enjoyed a lecture on 'Water—its effect on fish' by Dr Hawcroft of the Lanchester Polytechnic. Dr Hawcroft is a keen aquarist and he was able to explain this complicated subject in terms suitable for the interests of his audience. Of particular interest were details such as the facts that Coventry water is very hard, whilst Birmingham water (only 20 miles away) is very soft so that fishes bought in Birmingham need to be accustomed to Coventry water with some care. The Society's garden pool competition was won by Mr John Wileman (72 pts); 2 & 3, Mr F. Shipston.

... **FREELANCE AC** have now moved into their new club house on the Aylesbury Estate, East Street, where new members will be welcomed on Tuesday nights at 8.0 p.m. New members have recently enjoyed a talk by Mr J. Stamp on fitting out aquaria and on the different types of equipment available. The novice table show, judged by Mr R. Bowes, was won by Mr R. Simmons (2 & 3), Mr V. Williams.

... **SOME** very interesting fish changed hands between members of **SOUTHEND, LEIGH & DAS** when an auction took place one club night. It was a great success and was held in conjunction with the third round of the members' Challenge trophy competition. A light-hearted quiz conducted by president Mr D. Edwards also proved popular.

Dates for Your Diary

Dates preceded by ★ are of shows in which FRAS Championship Classes are allocated.

10 October. **LEICESTER FC** Open Show. St. Martin's Church Hall, Belgrave Road, Leicester. Booking 21.2.26-1.0 p.m. Details: Mr. H. Freeman, 38 Sheffields Road, Leicester, LE2 5GX.

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

10 October. **CHESTERFIELD & D. A.S.** Open Show. Clay Cross Social Centre, Chesterfield Road, Clay Cross, nr. Chesterfield, Derby, E20 19 0H. 4.00 p.m. to 10.0 p.m. Following signs. Details: Mr. D. Stone, 227 North Wingfield Road, Chesterfield.

10 October. **RASS** Meeting. Fellows Lounge Hall, London Zoo, Regatta Park, London. All welcome. Tickets from Mr. F. Stone, Highgate, Old Hill Woking, Surrey.

10 October. **EAST LONDON A. & P.A.** Open Show. Hopton Road School, Hopton, Essex. Booking from £2.00. 10.00 to 10.00 p.m. Details: Mr. F. Vicker, 11 Inna Way, Rainford, Merseyside.

10 October. **SLYTH TFS** and **ASHINGTON & DAS** Joint Open Show. YMCA, South View, Ashington, 2.00 p.m. Enquiries to: Mr. G. P. Hunt, 9 Tyne Street, Ashington, Northumberland or Mr. S. Seed, 24 Wilton Road, Blyth (phone Blyth 4876).

10 October. **BUXTON & D. A.S.** Open Show. The Pavilion Gardens, Buxton. Details to follow.

14th-15th October. **B.A.F.**, Belle Vue Manchester. All details from show secretary Mr. G. W. Cooke, Field Hill, Batley, Yorks.

15th October. **HETTON COUNTY AS** Open Show. Hetton Community Association Centre, South Market Street, Hetton-Le-Hole, Co. Durham. Booking 10.00-2.00 p.m. Schedules: Mr. R. C. A. Riley, 22 The Meadows, West Rainson, nr. Houghton-Le-Spring, Co. Durham.

21st October. **MAAS** Convention. Main Auditor, Dr. G. Chubb (Liverpool University Zoological Department). Details: Mr. P. J. Clements, 25 Farnish Avenue, Parkside, Seaford, South.

22nd October. **MIDLAND AQUARIST LEAGUE** Show staged by Coventry Pool & A.S., Foleshill Community Centre, Foleshill Road (A444), Coventry. Booking 10.0-2.20 p.m. Details: Mr. S. Woodbridge, 12 Ridgeway Avenue, Coventry.

22nd October. **SHEERWOOD A.S.** Open Show. Rainsworth Recreation Centre, Wainup Lane, Rainsworth, Mansfield, Notts. Show secretary: Mr. J. Ede, 25 Marples Avenue, Mansfield-Woodhouse, Notts.

★17th-19th October. **THE AQUARIUM SHOW '72**. Royal Ethnological Society Old Hall, Vincent Square, London S.W.1. All details from the Organiser, 254 Gerrard Lane, London SW17 6NY (01-947 8805).

20th October. **NEWCASTLE GUPPY AND LIVREARER SOCIETY**, Open Show Central Hall, Gosforth, Newcastle upon Tyne 5. (13 livebearer classes, 17 appls). Schedules: Mr. J. A. Laidlaw, 19 Aldi Avenue, Gosforth, Newcastle upon Tyne 5.

20th October. **BRITISH KOI KEEPERS SOCIETY** Meeting. The Aquarium Show, Royal Society Old Hall, Vincent Square, London, S.W.1.

10th November. **MIXENDEN TFS** Open Show. The Mixenden Community Centre, Clough Lane, Mixenden, Halifax. Details: Mr. S. Lovell, 74 Clough Lane, Mixenden, Halifax, Yorks.

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

11th November. **BRADFORD & DAS** Open Show. East Bowling Unity Club, Leicester Street, Wakefield Road, Bradford. Details: Mr. J. P. Chorley, 21 Spoonon Avenue, Bradford 7.

12th November. **HARTLEPOOL A.S.** Open Show. Longcut Hall, Seaton Capes. Schedules: Mr. J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham, TH12 1PZ.

12th November. **CRESWELL & DAS** Four Open Shows. Workop Sports Centre, Valley Road, Workop, Notts. Schedules: Mrs. H. Blakes, 21 Wainwright Close, Workop, Notts; Workop 625.

12th November. **AIREBOROUGH & DAS** Open Show. Yeoman Town Hall (ask for location), Schedules: The Secretary, 1 Greenlee Avenue, Yeoman, nr. Leeds.

23rd December. **HORSFORTH AS** Open Show. New Civic Hall, Bradford Road, Stanningley, Pudsey. Schedules: Miss J. Hales, 20 Wellington Road, New Wortley, Leeds 12; phone Leeds 21025.

1973

12th May. **CORBY & DAS** Open Show. Corby Civic Centre, FRAS rules. Details later.

12th May. **DEBRY REGENT AS** Open Show. Sherwood Foresters Recreation Centre (Normanton Barracks), Gainsborough Road (A5311) Derby. RAC appointed Show secretary: Mr. S. G. Harlow, 140 Mansfield Road, Derby; phone 44322.

20th May. **YEOVEL & DAS** Open Show. The School Hall, Church Street, Martock, nr Yeovil. Details later.

20th June. **LLANTWIT MAJOR AS** Open Show. Show secretary: Mr. J. Edwards, Ffanston Mill Park, Llansythian, Cowbridge, Glam.

17th June. **SWILLINGTON AS** Open Show. John Swanton School, off Barwick Road, Leeds 14. Show secretary: Mr. B. Stanley, 18 Goodwood Avenue, Kippax, nr Leeds, Yorks.

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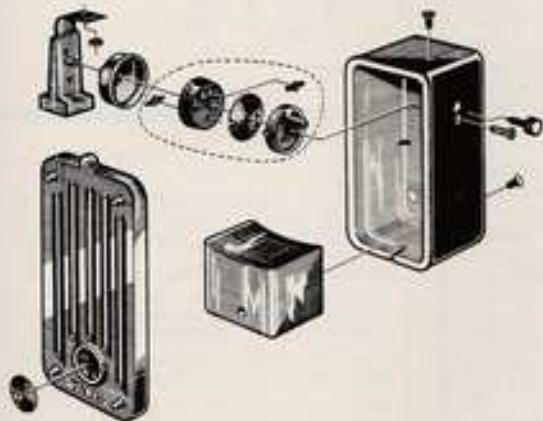
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