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THE **AQUARIST**
AND PONDKEEPER





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AND PONDKEEPER

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The Editor accepts no responsibility for views expressed by contributors.

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WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author



I REALLY MUST congratulate you on writing an excellent column in a great magazine. It really helps people like myself, somewhat estranged from all the 'action' in England, to keep up to date. Keep up the good work, and maybe we can get the magazine published fortnightly or perhaps weekly. I'd certainly buy it!" These comments come from the first letter which I have received from a reader in Holland, and the letter was written by Mr. C. S. Horton, of 62 Nimrod Straat, Nijmegen, Holland. Mr. Horton is in the R.A.F. and is stationed "just over the German border." He only started to keep fishes recently when a friend who was leaving for England presented him with a 60 cm. x 30 cm. x 30 cm. tank, plus equipment; two weeks later another friend leaving for home presented him with a sizeable collection of fishes; since then another tank and accessories, plus various fishes, arrived. Some of Mr. Horton's stock became infected with fin rot and he tried using several different "cures." He writes: "The only one I found to have any value was Halamid. It certainly kept the fungus at bay, but even it didn't rid the fish of it completely."

Mr. Horton continues his letter by telling us something about the Dutch "scene." "In the local area I find that there is a great interest in both marine and tropical fish keeping. Within a hundred metres of our house I know of nine houses with aquaria; some of them are very big too! In the town there are no fewer than eight retailers, and I know of one wholesaler. So there is quite a selection to choose from—as well as a selection of prices too. Recently I needed a new Gro-Lux type tube and found a difference of £1, between two shops, for exactly the same article! I don't very often see 'difficult' fishes, or for that matter adult fishes—nor is there a great variety of plants. I imagine, though, if my Dutch was better, I could really find what I wanted. My limited command of the language evokes great kindness and assistance from the retailers; they really do try to help in every way." Mr. Horton goes on to give his opinions on aquarium 'ornaments': he thinks they should be left on the shop shelves. All his aquarist friends hold the same view. "Since February, one of my friends has gone from a goldfish bowl to five large, beautiful tanks, all kept in his living-room—a plug for those wondering about Air Force pay. It really is a pleasure to visit his house and watch his

communities. He has recently begun to sell his fishes' offspring back to the local shops," says Mr. Horton. He offers us a tip which was passed on to him by a local shopkeeper: keep *Tubifex* worms, in a suitable container, in the lavatory cistern. The flushing of the toilet provides a regular stream of fresh water, thus keeping the worms fresh. Mr. Horton hasn't tried this one himself as his lavatory cistern is rather high up and the necessary balancing act just didn't seem worthwhile. (I've heard the tip before but, like Mr. Horton, have never tried it out. If you've tried it, you might care to let me know of the results).

Our Dutch reader will be returning to England himself in November, and will in turn pass on his aquatic items—to a former aquarist who is about to retire. Mr. Horton will be returning to the Cambridge area and will look forward to meeting and learning from local aquarists. He would like to keep and breed blue acaras and would be pleased to hear from anyone who can supply him with relevant information. He ends his letter by praising Amsterdam's Artis Zoo Aquarium. He visited it recently and had to be dragged away by a friend. He admits to having visited very few aquaria but found the fishes at the Artis to be in the best of health; he was delighted to see a mouthbreeder, complete with her family, in a huge community tank, with no apparent bothering by other fishes. (An interesting letter, Mr. Horton). Having today visited a dealer's shop for the first time since December, 1972, my purchases included a pair of Egyptian mouthbreeders. I'd be pleased to hear from readers who have bred this fish—particularly in a community aquarium. Another of my purchases was several plants which bore the grower's professionally printed label naming them *Heteranfolia variegata*. The plants closely resemble *Ludwigia natans*, and have numbers of leaves with pretty wine red colours on the surfaces. As I've never heard of *Heteranfolia variegata* nor read about a plant with that name in any books—and as the plants do not have variegated leaves—I imagine that the grower may have been a little confused and that the plants may well be short specimens of *Ludwigia natans*; however, it may well be that I am ignorant of what may be a recently introduced plant. Do any readers know of a plant by the above

name? It's certainly not any species of *Heteranthera* which I know).

Photograph 1, as promised in the September edition, shows a young female *Aplocheilichthys lineatus*. You might care to compare it with the male of the species shown in the September edition and note the different intensities of coloration, and fin shapes. I would still like to hear of readers' experiences with the breeding and keeping of this species—particularly of any diseases which you may have treated successfully.



"I have only recently returned from England and I brought my fishes with me. They travelled very well in polythene bags, placed in a 3 ft. polystyrene lined tank, and were in the bags for about 24 hours. The only loss was a neon tetra." These comments are taken from a letter sent to me by Mr. D. Hughes, of Hollyfort, 86 Kimmage Road West, Dublin 12, Eire, and he goes on to say that neither did he lose many plants—something which pleased him as he says that plants are very difficult to get in Eire. Mr. Hughes hopes to go into plant cultivation as soon as he gets a fish house built because he says that it seems that Irish aquarists use very few plants in their tanks because of the prices. He considers this a pity as tanks look bare unless well planted. Mr. Hughes would like to meet other aquarists and he hopes that the publication of this letter will cause some aquarists to write to him or call to visit him. He continues: "I have noticed that fishes are very expensive here compared with England, so I am hoping that by breeding some I may be able to sell them at competitive prices—25p for a zebra is a bit steep!" (A pair of zebras bought from a Belfast dealer yesterday cost me 26p). Mr. Hughes was recently reading a book about plants and noted that *Acorus* (dwarf rush) and *Cryptocoryne* were originally bog plants; he decided to experiment by growing some of these plants in humid bog-like conditions. He half filled a tall glass jar with peat and some gravel, just covering the peat with water, and planted a few *Cryptocorynes* that had been retrieved from the dustbin in which a friend had thrown them. Some *Acorus* plants were added and the jar placed in a tank kept at 80°F. The top of the

jar was covered with a polythene bag to retain moisture and create humid conditions. The plants all grew remarkably well and Mr. Hughes was very pleased with the results.

Mr. A. Sanders lives at 19 Taylors Crescent, Cranleigh, and he writes: "On the subject of undergravel filters, which Mr. Terry (Basher) Green condemns so soundly, I would offer the following observations: (a) I use only the corrugated plate type (Algarde) undergravel filter. The type made up of a series of tubes is too 'local', pulling down the water only where the tubes lie, and not from the edges or corners. (b) The large bore air-lift permits better control of the rate at which the filter operates. (c) In a freshwater tank, the air-lift should be run at a fairly slow rate, pulling the water through the gravel slowly. (d) I only cover three-quarters of my tank with a U/G filter. The unfiltered gravel I plant with *Vallisneria*, *Sagittaria* and *wistaria*—all plants which I find will not grow with U/G filtration. The extensive root systems of these plants use up the waste products which drift into the gravel they are planted in.

"I swear by U/G filtration, although in the case of large fishes, e.g., Oscars, I supplement this with an outside power filter switched on during feeding and for a few hours afterwards. I will admit that my first experiences with U/G filtration were awful: all my plants died and the fishes were generally listless and lacked colour. This was caused by my only having the filter switched on at night; later I learned to keep the filter on 24 hours per day, but at a slow rate. I agree with Mr. Green's feelings on community tanks: they are ideal to start with until one gets a feeling for a particular species of fish. In a community tank the various fishes tend to inhibit each other's natural behaviour. I find that community tanks are like watching several TVs at once—there's so much going on that in the end you see little at all." Mr. Sanders continues: "I'm hoping to breed *Badis badis*, and have a tank set up ready until I can find some suitable occupants. I would like to hear from anyone who has bred this fish. I know the dietary problems, but the water and light requirements of this fish are very vague in the few publications I have found that mention them." (Do any other readers have comments to make on U/G filtration—or on keeping and breeding *Badis badis*? If so, I'd be pleased to hear from you).

Ronnie Snaith is 15 years old, and his home is at 13 Wingrove Avenue, Fulwell, Sunderland, SR6 9HJ, Co. Durham. Ronnie raises an interesting point about aquarium lighting. He writes: "In one of my tanks I use three 60 watt bulbs. They are kept on for about 10-12 hours per day and, as a result, my plant life is very good. My 'floating' plant, *Ceratophyllum demersum*—'hornwort'—grows so fast that I have to 'cull' it about once per week. All the other plants in the tank grow quite well too. But in

the other tank, where a 36 in. 'warm' fluorescent tube is in use, the above-mentioned plants, plus many other species, die quite quickly after being planted in the tank. Even though the ordinary 60 watt bulbs cost more, I think they are well worth it to be able to maintain a good selection and supply of plant life." (How many readers would agree that it is easier to grow the majority of tropical plants under ordinary tungsten bulb lighting than under only fluorescent lighting—no matter what type of tube is used?) In another part of his letter Master Snaith writes: "I am trying to re-form the Sunderland Aquarist Society by means of notices in the local pet stores and in your magazine but, at the time of writing, have only had five enquiries, all from junior aquarists: so, if nothing else, there may soon be a Sunderland Junior Aquarist Society."

58 Back Lane, Whittington, Nr. Lichfield, Staffs., is the home address of Mr. D. Withers, whose subject is commercial "cures". He writes: "For all tropical fishes the best cure is Wardley's Promethyasul. I just float a two pound jam jar, containing water with three drops of Promethyasul in it, in my tank. After two days I change the water and add five drops to the jar. I keep it at this strength for about eight days, changing the water in the jar every two days. I keep the tank temperature at 75°F and feed only live foods. If the fish is not too far gone before the treatment is started then this will cure anything."

"I would like to say that *The Aquarist* has been and still is a great help to me, a beginner in the hobby. I was in the R.A.F. when I first started to gain interest, and as I could not own a tank of my own I used to read *The Aquarist* from cover to cover so that I could store up all the knowledge ready for when I could buy my first tank." These are the opening sentences of a letter from Mr. D. Downing, of 5 Fane Crescent, Swallownest, Nr. Sheffield. Mr. Downing goes on: "I have been keeping fishes now for a year but I still make mistakes. For example, this weekend I purchased three bumblebees which I placed in a tank stocked mainly with guppies. Result: they took great pleasure in nibbling the tails from my best guppies! I do not agree with Mr. Green who wrote in your column that undergravel filters are useless and dangerous. I use a U/G filter in my 25 gal. community tank and I have never had to siphon mulm from the bottom of this tank. The only commercial cure that I have had any success with is King British Formula W.S.3 for white spot. I cured half a dozen infected fishes almost overnight, and I now add one drop to each gallon of water when topping up my tanks and have never had white spot trouble since."

Mr. K. Jenkinson is the Hon. Secretary of the British Killifish Association, and his home is at 12 Whitedalehead Road, Whitburn, West Lothian,

EH47 8LJ. Mr. Jenkinson writes to inform us that there is no longer a half-yearly subscription to the B.K.A., and he ends his letter by saying: "I would like to reiterate that the B.K.A. is a friendly Association as Mr. Stephenson will, no doubt, find, if he sends his subscription which is now £3 to the new Registrar, Peter Brown, "Rushen," Elm Grove, Eccleston Park, Prescott, Lancs., L34 2RX."

David Ward is 14 years old and lives at 7 Bridge-water Gardens, Edgware, Middlesex. As backgrounds for his tanks he makes drawings from books and paints these with poster paints. The resulting painting is stuck to the back of his tank with Sellotape. David concludes his letter thus: "I recently bought a pair of American flag fish and have also found that they eat all types of *algae*; but the male fish bites every long fin that it sees. Have any other readers had similar experiences with this colourful fish?"

5 Belcroft Close, Bromley, Kent, is the address which heads Mr. Martin Allen's letter. He writes: "It is a sad fact that the attractive plant, giant *Hygrophila—Nomaphila stricta*—is occasionally eaten by snails. When a specimen is planted in a tank containing snails its life expectancy is short, even allowing for vigorous leaf growth. This spring I planted a branch with three side leaves in a porous flower pot filled with John Innes potting compost No. 2. The flower pot was then put into a wide and fairly deep water-tight vessel and water was poured in until level with the rim of the flower pot; this kept the soil moist. Liquid house plant fertiliser was occasionally added. The mentioned shoot has grown rapidly through the summer, sending out many branches and leaves. Shoots bought from dealers or other sources often carry snails or their eggs or both; the pot-grown emerse plant naturally did not carry either. If a tank is to be set up with *N. stricta* alone, then cuttings from one emerse plant can be used. They very soon revert to the aquatic form and send out new branches and leaves. This means a planted tank's free from snails—assuming that none are already present. The system could perhaps be applied to other plants."

Photograph 2 shows my large, late and lamented *Discus*. Details please of any recent breeding experiences with this species.

Being a Cichlid enthusiast has led Mr. A. Muir, of 5 Ednam Drive, Glenrothes, Fife, Scotland, to try his hand at keeping *Discus*. Seven months ago he set up a 48 in. x 18 in. x 15 in. tank complete with U/G filters and natural, well-filtered rain water. After ten days he purchased two small brown *Discus* of about 1½ in. in length and placed them in their new home. A month later three red x brown *Discus*, of the same size, were added; more recently two 4½ in. browns were introduced. Mr. Muir has found that *Discus* do not like strong lighting: despite his tank having plenty of floating plants, he had to replace a

3 ft. fluorescent tube with three 25 watt bulbs; he found the change made the Discus more content. He considers also that these fish do not like strong filtration or aeration as they are slow-moving fish and strong currents make them exert themselves. Mr. Allen says that contrary to some people's opinion Discus are not cowards. His Discus tank contains two female *Pelmatochromis kribensis* which he has been unable to remove as he does not wish to upset the plants. He has found that his two largest Discus will not tolerate the 'kribs' in their territorial area. The "area" of the two large Discus contains eight large sword plants, and Mr. Muir has noticed the Discus picking at the plants in a form of "cleaning action." He wonders if they are seeking a spawning site and, if so, whether he should remove the other Discus or partition the tank off into appropriate sections.



"When it comes to filters, I am convinced that there is no better method than U/G. I bought my first one many years ago and I have gradually come to this opinion based on experience with many kinds of filter—including a Diatom—and on the facts of U/G filtration. An excellent article on this subject by A. Jenno, in the February 1972 *Aquarist*, should be read by all aquarists. Basically a filter which pulls the dirt to the bottom, where it would go naturally, means the tank should stay cleaner." These are the views which open a letter from Mr. A. Piggin, of 6 Watton Close, Thelwall, Warrington, WA4 2HH, and he continues: "An outside filter depends upon the dirt being stirred up. To break the dirt down biologically is much better than physical filtration; and many people think that U/G filters just hold the dirt in the gravel to build up over a period of time—which is wrong. A well-balanced U/G filter will keep a tank clear for a long time if there is sufficient flow through the gravel and the dirt doesn't go through the gravel and collect under the filter. I believe that the best U/G

filter is the Algarde model, which is very reasonably priced as well! There was a point about U/G filters that did worry me and it was the possible build up of nitrates in tanks with no plants. I have solved this in Cichlid tanks by having floating duckweed and Riccia. These grow rapidly and make a nice meal for some of the fishes. . . . In answer to Stephen Clifton's query I have found that convicts and brown acaras breed easily. Jewels are quite easy but I can't find any that don't eat their eggs. *Tilapia mossambica*, which has the added interest of being a mouthbrooder, is another very easy one. Unfortunately, they can grow quite large—up to 10 in.—but watching a mouthbrooder is quite fantastic, and young fish should not cost more than 15-20 pence each." (Speaking personally, I would prefer to have dirt physically removed from my tanks, rather than just broken down biologically; however, it's a matter of opinion in the end. What do other readers think?).

Mrs. D. Hanning, who lives at 11 Seaton Place, Ford, Plymouth, PL2 1PS, has a number of comments to make on several topics. She writes: "I have only one plastic tank and find that it seems to get more algae than glass ones, and is certainly difficult to clean as the least thing scratches it. . . . I think my favourite fish is the angel but I am also fond of my Kissing Gouramies as they are always so busy cleaning everything—and they look so funny kissing each other. . . . My Iguana has grown a little, but is not very tame; it is very choosy about food, except for meal worms which he will always eat. . . . The other day, while digging up some worms for my ducks, I found a lot of white worms and have now got a good culture in a box indoors. I can't think how they got into the garden in the place where they were, though I did have some just under the kitchen window once, after I had thrown an old culture out."

"I have been keeping three terrapins for six months now and they have doubled in size to 3 in. I keep them in a 24 in. tank containing about 8 in. of water, together with rocks to enable the terrapins to climb out of the water. Their tank contains a corner filter containing peat as well as wool and charcoal. The temperature is kept at 75°F and the tank is planted with *Ludwigia*; it also contains a few guppies and a couple of catfish to clear up uneaten scraps of food." Mr. A. Whittred, from whose letter the above comments have been taken, resides at 14 Brynn Street, St Helens, Lancs., WA10 1JG.

The plants which Andrew Pickering, of 1 Woodside Gardens, Portishead, Bristol, BS20 8EQ, can grow best are *Elodea densa* and *Ambulia*. His costliest failure was the result of keeping several cardinal tetras in very hard water, and when there was an outbreak of white spot the weakened cardinals died within 24 hours. Andrew would like to write to other

young aquarists—particularly a German one as he intends to study German at "A" level.

Mr. D. Anderson, c/o Reid, 90 Killock Drive, Glasgow, G13 3AT, started keeping tropical fishes some 2½ years ago. He began with a 48 in. × 12 in. × 15 in. tank and feels that most people who begin the hobby start with too small a tank. He considers that small tanks are almost impossible to keep clean if planted, etc., and feels that they can cause beginners to get disheartened. "How many small tanks have been relegated to the loft I wonder?" asks Mr. Anderson. (This is a point which I would question as I honestly consider that an 18 in. × 10 in. × 10 in. tank, well planted, fitted with an outside filter and not over stocked, is every bit as easy to keep clean as a 3 ft. or 4 ft. tank. One needs to take care with feeding—but then one needs to take care with feeding

amount that I should have added! Panic set in and I spent the next 4 hours emptying the tank to within 1 in. of the gravel before refilling. The gravel and glass were stained but the fishes—swords, guppies, angels, etc.—were O.K. and, I thought, the better for the treatment. I still had the problem of slightly cloudy water with some *algae*." At this stage Mr. Anderson decided to scrap his outside filter and replace it with a U/G filter. This latter item solved his problems and he would not think of looking beyond it for keeping a tank looking clean. He found also that very few of his fishes died after the U/G filter was installed. He usually runs the filters for about 18 hours per day, switching them off at night. His only remaining "bother" is a slight growth of *algae* on the front glass; he removes it easily with a soft cloth used once per week; and he considers the



in any size of tank. I have kept such tanks going for literally years without ever removing or changing any water. "Purists" might well object; but I consider that if it works then it's perfectly valid. What are readers' opinions on the relative merits of tanks of different sizes?) When Mr. Anderson set up his 35 gallon tank originally he bought an outside filter and filled it with wool and carbon. He used a Hy-Flo piston pump to operate the filter, but found that he could not keep the tank free of *algae* and as clean as he would have liked. As Mr. Anderson states: "When I say clean I mean being able to see clearly through the 4 ft. length of the tank." He continues: "Some varieties of plants did not last. I was troubled very much by *algae* to an extent that I decided to use the potassium permanganate treatment. Lo and behold when I added some to the water it became so dark that I couldn't see the fishes even from the front of the tank. However, I decided to leave it at that and see what might happen. The next day I discovered to my horror, that I had added about 100 times the

the growth of *algae* is encouraged by the light from a window near which the tank is situated; however, he says that he can live with it. His fishes are fed only on dry food—mainly Tetra Guppy Food, which they eagerly consume. Once a fortnight Mr. Anderson removes about 6 gallons of water from his tank and replaces it with fresh water at a similar temperature of 80°F. Plant growth is very rapid—especially Indian fern, which has to be thrown away fairly often. Mr. Anderson ends his letter thus: "Briefly then, I would advise beginners: large tank and undergravel filter. More power to your filters!"

Photograph 3 shows plants of *Cabomba*, hairgrass, Java fern and pennywort. Under what conditions have you found any of these plants to grow well?

Miss A. Walker is 15 years old, and she lives at 10 Bluresheld, Potters Bar, Herts. She keeps two 7 in. tinfoil barbs in a 3 ft. tank together with several other species of fishes and wonders if there are any evident sex distinctions between male and female tinfoils. Miss Walker heard that tinfoils are vege-

tarians, and although her two cleared their tank of plants in a few weeks they seem to prefer 'meaty' foods. They eat worms, Tetra Tablets, small, slim fishes up to 2 in. in length and chunks of meat, fish and cheese. In a single day one tin foil consumed ten 1 in. sticklebacks, five large worms and ten whole Tetra Tablets. The other fish consumed only half the quantity. For about a week after the bigger eater had consumed its feast it refused food; and Miss Walker considers that these fish can store food and then go without for some time without ill effects. She would like to know if any reader has bred the Australian rainbow. Miss Walker ends her letter by saying: "Isn't it amazing how many pet shop owners don't know what fishes they are selling you! When I first started up in fishkeeping I was sold a female green sailfin molly which later turned out to be a large female green Berlin sword!"

Mr. D. Lockwood's home is at Greenhill Lane, New Mill, Huddersfield, Yorkshire HD7 7EP, and he sent me some comments about aggressive behaviour in male swordtails. His two red males share their 2 ft. tank with several other species of fishes. Mr. Lockwood writes: "The swordtails are together about 80 per cent of the time I see them and they do not always fight. When they do clash, however, it is a very interesting experience to watch. The fish do not injure each other at all. At first they hover in the water, vibrating side by side, each facing in opposite directions—i.e. nose to tail. This could continue for up to one minute or longer, then one of them—usually the bigger—makes a dart at the sword or body of the other and there is a sudden speedy chase across the tank, stopping at the other end; then the hovering and vibrating begins again. The chase itself never lasts longer than a second, although the chaser can hit the other fish thrice during that time. This may give you an idea of the speed of the chase. During the hovering period the colours of the fish become very bright, and the dorsal fins of both fish are stretched out to the limit, showing how big they actually are. After a while the fish tire and give up to peck around for food. They resume after a fairly long period. If they are in combat at one of the times when I feed them, they immediately leave off each other and literally dash up to the surface to collect some food. They continually behave in this manner."

Mr. C. Wade, who has set up the Middlesex Trading Agency, at 12 Sunnycroft Road, Hounslow, Middlesex, wrote to me after reading Mr. P. Carnochan's letter (July edition) about the possibility of forming an aquarium book club. Mr Wade hopes to follow up Mr. Carnochan's suggestion in some form. Mr. Wade writes: "You may also be interested to note that I am setting up a mail order operation to cope with the demands of aquarists in the more remote regions of the country who find it

difficult to get to a good retailer for their purchases. . . . I am able to offer reasonable discounts to customers." Mr. Wade continues: "What do pondkeepers think about the use of underwater lights in their pond? I have two 'Aqualow' set on the bottom so that they shine almost horizontally across the pond. This arrangement lights up the plants as well as the fishes. On warm summer evenings we derive great pleasure from sitting by the pond watching the fishes which, under these conditions, are totally unaware of our presence. Even the most nervous of our collection can be fed by hand and touched without any signs of fear. I have also found the lights invaluable for locating small fry amongst the thickly planted hornwort, from whence they can be removed and placed in a rearing pond. At £9.90, less 15 per cent discount, they really represent good value for money. They are also perfectly safe owing to the 12 volt transformer supply included in the kit. What type of filter do aquarists use to keep their ponds clear from suspended matter? I find that a 2-4 gallon container, drilled out at the bottom and partially filled with gravel and filter wool, is excellent for this purpose, and can be fitted to the waterfall pipe. Several of my friends have adopted this method with great success. I would recommend that the filter wool is rinsed out at least once every two days to remove accumulated waste. Like Mrs. Allen, I have also found that the golden Oghon Koi is very easy to feed by hand, even at a size of only 7 in. My particular specimen will even roll on his side in the shallow part of the pool and allow one to tickle his underside! To take up the challenge, I will try feeding him from a baby's bottle and will send you the resultant photographs." Mr. Wade ends his letter thus: "What about setting up an Aquarists Postal Photo Club? Members would contribute to a portfolio which would be circulated, and would receive comments on their prints from other members. Technical details could be included thus assisting others to improve their techniques. I have many ideas on how such a scheme could be run and would appreciate any comments that you may care to make." (I'll publish any appropriate comments on any of the above, which readers care to send me—or perhaps they would prefer to write directly to Mr. Wade. Perhaps Mr. Wade would let me know of any developments in his proposed aquarium book club and I'll pass on the information through this feature in a future edition.)

Have any readers tried their hand at writing poems or verses about the aquarium hobby? If so, I'd be very interested to read their results with a view to publishing one or two of them in a future column or article. If the opportunity arises, try reading the short poem entitled 'The Guppy,' by Ogden Nash. This poem, together with a large number of equally

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OUR READERS WRITE

The Medaka

In answer to V. Pedlar's letter in the September issue of *The Aquarist*, I believe the "Baedekers" are in fact Medakas which, so I am told by my local aquatics dealer, come from China and are found abundant in paddy fields. These are a yellow gold and the females carry their eggs around with them. I have four of these fish in a 36 x 15 x 15 in. coldwater tank with some Fantails and I have twice noticed females carrying eggs, but these have disappeared, or been eaten, before I could remove them. Unfortunately Medakas can be quite vicious and should not be mixed with fish smaller than themselves. The fish can be obtained from shops in South-East Kent for about 12p per fish.

S. RODDA,
52 Radnor Park Road,
Folkestone, Kent.

Fostering Discus Fry

In recent issues of your magazine I have noticed some references to the possibility of analysing the exuded food provided by parent discus fishes. The purpose of this is, no doubt, to simulate the food and raise the young fish without the parents being present.

It would seem that many discus fanciers have overlooked the fact that discus fry have been raised already without the parents and without resorting to the process of exactly simulating the food. Art Hayley is kind enough to tell us all how to do it in his article "Something to Pick On" in the March-April 1973 edition of the *Buntbarsche Bulletin* which can be obtained from the American Cichlid Association for a small fee.

Mr. Hayley uses nothing more sinister than a mixture of egg and gelatine but the method of preparation and feeding is quite involved yet far from difficult. It would appear, then, that the fry do not require the special food but they do require it to be served in a certain way, i.e., picked from a vertical surface.

I am sure many discus fanciers would benefit from reading Mr. Hayley's article.

S. WOLSTENHOLME,
185 Smithy Bridge Road,
Littleborough, Lancs.

The Fish May Know Best

Your correspondent, Mr. V. V. Pedlar, is not dreaming he is carrying a vague memory of the Golden

Medaka or Rice Paddy fish, I think, as these fit his description very well.

The main reason, however, for writing to you was to ask if we could have less space wasted by members of the B.K.K.S. on stupid arguments with Arthur Boarder. I don't think by their ideas that they are very experienced fishkeepers or they would know that to say something definite about any fish is only to be proved wrong by the fish themselves and I suppose it won't be long before these "marvellous" fancy carp spawn at 6 in. like any other forward and well-reared carp. As an example, Mr. McInerney will say that American Flags spawn at the base of clumps of plants, but mine always spawned at the tops of plants and in water-lettuce roots, but I certainly wouldn't dream of trying to ridicule him.

A. C. GARDNER,
9 Garibaldi Road,
Redhill, Surrey.

Just Fish

I have been keeping carp in ponds for over 30 years; some have grown very large mainly Hi Goi and variations of same, common carp, mirror and Crucian, also goldfish, shubunkin and orfe. When the Koi appeared on the scene with their many varied colours, I made enquiries regarding availability and price, which was indeed exorbitant, as Mr. Boarder stated in the September issue of *The Aquarist*.

However, against my better judgment, I bought some Koi which included Sanke, Ogon, Ki-utsuri and quite honestly I cannot see why all the fuss. My shubunkins compare favourably in colour at a fraction of the cost. Koi, like Hi-Goi, require plenty of water space and if one or more died it could be a financial disaster.

Whilst on the subject, as a regular reader of *The Aquarist* since 1949, I abhor the criticism of Mr. Boarder by people like Culley, Waumsley, Telford and the B.K.K.S. who would appear to have set themselves up as a national authority on Koi. Let me conclude by saying that Koi are just fish, nothing special, apart from the price. To an experienced fishkeeper with pond facilities, no problem at all, no advice needed by the B.K.K.S.

FRANK BRADDOCK,
65 Irlam Road,
Flixton, near Manchester.

Just Carp

I notice in their letters in *The Aquarist*, September 1973, that Messrs. Culley, Waumsley, Telford say that Koi cannot be bred at six inches as stated by A. Boarder. How do these three wise men arrive at their findings?

I do not say they can be bred at six inches, but I am not such a fool as to say they can't. I notice this very new society call themselves Koi-keepers and not Koi-breeders.

I have also read the book by Colin Roe and if you use the word carp instead of the word Koi you are just reading a book on carp. The pictures are glorious, though.

I notice in B. Whiteside's columns there are youngsters of 12 years of age and upward writing in and some of them are very intelligent. Now if one of these boys start breeding Koi at that age and study the Koi, then when he is 60 or 70 years of age and has had a lifetime breeding Koi, he will be able to speak with authority on the subject.

Koi have not been in these islands long enough for there to be such a man as a *Koi-only specialist*. Mr. Boarder has not kept this kind of carp very likely, but if they are proper carp then the colour of these fish does not count, so Mr. Boarder can speak about the Koi in the same way as any other carp.

Anyway, Mr. Boarder has forgotten more about coldwater fish than some of these "wise" men will ever know.

M. Cass,
12a St. George's Road,
Brighton, Sussex.

In Conclusion

May I, as a typical woman, be allowed to have the last word and perhaps "set the records straight" on the controversy between Mr. Boarder and The British Koi-Keepers' Society?

It has never been claimed that the Society knows all the answers about breeding Koi, but neither do we gaze into a crystal ball and forecast what may happen in future years. Most of us are far too wise for that, many are experienced breeders of other fish and prefer to accept substantiated evidence rather than figments of imagination.

Considering that Koi-keeping, even in Japan, did not boom until after the All-Japan Koi Show in 1968, I do not think that British Koi-keepers have "dragged their feet," but on the other hand, will freely admit that there is a great deal more to be learned, which will be of benefit to future Koi-keepers.

With regard to the prices asked for Koi, one should not compare the basic economics of producing goldfish in an English garden pond with the cost of importing Koi from Japan by air-freight, when even a gallon of water without the fish will cost about £12 plus Import Dues and V.A.T. the moment it is landed at Heathrow. Put the situation into reverse, and Mr. Boarder would find the price of his fantails if sold in Japan to be equally exorbitant after passing through the hands of agents, importers, wholesalers and dealers.

However, I still deplore the quite ridiculous prices

asked by some traders, but then as "there is one born every minute," excessive prices will persist until the purchasers become wiser and "shop-around." Mr. Boarder can well place a value on his fantail goldfish and quite rightly so, although this may still not place them in the same price bracket as large Koi imported from Japan.

Mr. Boarder told a correspondent in the September issue of *The Aquarist* that a Koi pond does not require a filter. To me, this shows a complete lack of experience and understanding of the problems in keeping Koi. The effect of putting Koi into a previously well-established goldfish pond can be quite dramatic, particularly if the Koi are of any size.

Koi have all the habits of their wild carp ancestors and they love nothing better than sifting through the normally settled mulm on the bottom of ponds. In addition, the vast amount of food necessary to promote healthy growth and the resultant waste products are guaranteed to upset the balance in any pond by rapidly changing the chemistry of the water.

Large masses of plants and Koi are not compatible and the fish do need good clean water conditions in which to actively swim and frequently leap about. Filtration is both practical and desirable, and after several years' experience, quite a number of gravel types have been proved highly efficient, either inside or outside many Koi ponds.

It was gratifying for me, personally, to read the letters in "Our Readers Write," and at least prove unity within the Society. I would, however, hasten to inform Mr. B. Culley that there was no intention on the part of the Editor to suppress any criticisms made. I had a talk with him at the Alexandra Palace Exhibition in July, when he told me that Mr. Boarder had been taken very ill and all correspondence would have to be temporarily held over until he was fit enough to reply. This happy state has obviously been achieved.

I repeat that through the years I have gained much useful advice on the successful keeping of other coldwater fish from Mr. Boarder's articles, but he really should avoid, in view of his admitted lack of first-hand experience, making misleading statements about Koi-keeping.

Having said all that, I send Mr. Boarder the best wishes of the Society and promise to let him know as soon as any six-inch Koi breed, and look forward to meeting him again at our Society Stand at the forthcoming British Aquarist Festival, Belle Vue, 13th and 14th October.

MRS. H. M. ALLEN,
General Secretary,
The British Koi-Keepers' Society.

(Having allowed the lady to have the last word, correspondence on this subject is now closed until the appearance of precocious 6 in. breeders.—Ed.)

Memoirs of a Junior

Having read the experts' suggestions and tips on keeping tropical and coldwater fish in *The Aquarist and Pondkeeper* I feel that I am but a novice (being 17 yrs. old) having started in fishkeeping only three years ago.

I first kept goldfish and golden orfe in an inadequate fish tank—they died—so I felt that since I had obviously brought about their deaths I should amend and improve my ways by building an outside pond of no less than 8 ft. in diameter and 2 ft. deep. Since that day, fish have thrived well, bred and have grown to amazing sizes.

Regarding size of pond and number of fish, of which I have 19. All of the fish have grown larger than I would have imagined.

I have one large goldfish (which incidentally came 5th in a local show and having only been entered for the first time) of 12 in. length, a comet-tail goldfish that had grown in one year from 4 in to 9 in, a golden orfe that was 2½ in. only six months ago and rapidly reached a size of 7 in. and is still growing, as well as many other fast-growing fish.

I should like to add that during the time I have kept the fish, only three had any signs of disease, but none actually died although I did, over the past two years lose 22 fish from leaving no net over the pond and letting the local alley cats have a great feast—leaving my neighbours to laugh themselves silly, sympathise or join in the 'game' of catching the cat. Before people begin to wonder or ask questions—yes I do grow plants in the pond—reeds, iris, water lilies and floating plants. The fish themselves couldn't be healthier, their size, as I have mentioned, must give credit to the condition of the pond, as it is only cleaned every four to six months; in between it remains

algae coloured. The pond itself has no fountain and certainly no waterfall.

The fish rise daily to the surface at exactly 7.00 a.m. when my father feeds them with pellets and flakes and then they swim around below the water until I appear at 8.00 p.m. to rise again expecting, but not always getting, food.

The biggest goldfish can take two to three pellets in one go, and often performs a backward movement then rises and jumps out of the water. The fish have their last feed at 3.30 p.m. or 4.00 p.m. according to where I am at the time.

The goldfish, as well as the golden orfe and Koi have often fed out of our hands and are excellent in predicting the forthcoming weather—although I very much doubt whether I shall be appearing in the weather report yet! Early in July I managed to save a small number of goldfish eggs, as well as those of a moor and fantail goldfish which had been living in the pond for a year and a half. To date they are already swimming about very well and growing—having no sign of diseases or deformity.

As I have said, I am certainly no expert, I have certainly never read many books on the subject of keeping goldfish and I doubt very much whether this is actually due to luck.

I could go much longer about my efforts at keeping tropical fish which likewise have never had any disease. Only a few fish have died of natural causes; the tank has kept perfectly clear and algae-free for the past six months. The water has remained at a level pH of 6.6 and has only once strayed past the 7 mark.

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HERPETOLOGICAL NOTES

by Stephanie Peaker

Marginated Tortoises

LARGE Marginated Tortoises (*Testudo marginata*) have been available to collectors in this country in recent years. This attractive and desirable tortoise, which grows to a length of about twelve inches, is found in Greece. It is in fact the only tortoise found in that country although two other species from around the Mediterranean—*Testudo graeca* and *T. hermanni*—are often known as Greek Tortoises. This species is easily recognised when adult by the splayed marginal plates of the carapace and in older animals this rear

'margin' has a serrated edge. However, the marginal plates are not turned outwards in the young so it is necessary to turn to other characters in order to distinguish this species from the other tortoises from the Mediterranean and Middle East. These are the Mediterranean Spur-thighed Tortoise (*Testudo graeca*, once also called *T. ibera*), or as is sometimes seen the Algerian Tortoise; Hermann's Tortoise (*Testudo hermanni*, once called confusingly *T. graeca*), and Horsfield's Tortoise (*Testudo horsfieldii*).

Identification of all four species can be made

simply on only two characters. The first is the presence or absence of spurs or raised tubercles on the underside or the thighs, and the second is the presence or absence of a horny 'spur' on the end of the tail.

Species	Tail spur	Thigh tubercles
<i>T. graeca</i>	No	Yes
<i>T. hermanni</i>	Yes	No
<i>T. marginata</i>	No	No
<i>T. horsfieldii</i>	Yes	Yes

Marginated Tortoises require the same treatment as other European and North African species but it must be remembered that the larger specimens, and some I have seen have been large, have an appetite to match.

Chasing their own tail

Many lizards store fat in their tails and this applies particularly to skinks. But just like so many other lizards skinks can shed their tail when attacked by predators. This means that not only does the animal lose its tail but its stores of fat, built up over the months, as well. This apparent anomaly led Dr. D. R. Clark, of Texas A & M University to the discovery published in *Journal of Experimental Zoology*, volume 176, p. 295, 1971, that the tail of the skink itself escapes from the predator by means of writhing movements and that it is then searched out by its original owner and eaten! Thus all the materials lost in the emergency are recovered.

This behaviour was seen both in the wild and in captivity in the Little Brown Skink (*Lygosoma laterale*), as well as in other species. In contrast iguanids like the Green or Carolina Anole (*Anolis carolinensis*) which have no stores of fat in the tail very rarely or never re-captured their own tails. It should be pointed out that the skinks did not return immediately to seek out their lost appendage; some waited for several days before returning. Have any readers observed this behaviour in the wild or in vivaria?

As far as keeping these lizards in vivaria is concerned we must perhaps remember to leave the tail with the lizard if any are lost during necessary transfers between cages.

Continuous Light

In these articles I have sometimes warned of the dangers of exposing reptiles and amphibians to continuous light. If heat is supplied by incandescent lamps which are turned on all the time or which may come on at any time as a thermostat operates, daily activity cycles are often upset and the chances of breeding seriously affected. In fact it has recently been discovered that rats exposed to continuous light suffer damage to the retina—the light-sensitive part

of the eye, and there is no reason to suppose that reptiles and amphibians are not similarly affected. I therefore reiterate that lighting (and heating too in most vivaria) should be arranged to ensure that night is as night should be—dark.

Food

Many collectors and zoos find that newly-hatched chicks, which can often be easily obtained from hatcheries, are a convenient food for their larger carnivorous reptiles. While they are an excellent food for some snakes, the digestive system of others is upset if chicks are given too often. It is difficult to give guidance on which snakes are likely to be affected but R. L. Blakely of the Chicago Zoological Park, writing in *International Zoo Yearbook* (vol. 6, 1966), found that boas and cobras were unaffected. However, some colubrids, the Indigo Snake (*Drymarchon corais*) had digestive trouble and the faeces were extremely loose. We and others have noticed the same effect in monitor lizards.

One can of course stop giving young chicks to specimens that are affected but Blakely found that if meals of chicks and mice or other rodents were alternated trouble of this kind could be avoided.

More about Food

Amateur herpetologists often experience difficulties in obtaining food for their animals and I am pleased to see that the Herpetological Centre, Porthgwyn, Goytre, Nr. Pontypool, Monmouthshire can now supply locusts, *Drosophila* cultures, earthworms, mealworms as well as some vertebrates—mice, rats, fish and frogs. These items together with tubifex, white worms and tinned dog food, not forgetting blowflies, should see most specimens well fed during most of the year but it must be remembered that insects caught in the summer months form a very valuable addition to a basic diet.

We are incidentally convinced that to keep many lizards successfully only locusts will suffice as a basic diet—but more about breeding locusts for another article.

Books

For those interested in lizards Dr. Robert Bustard's book, *Australian Lizards* (Collins: Sydney and London, 1970) at £3.50, is an essential item of reading even though few of the species described are ever available to collectors outside Australia. Dr. Bustard, incidentally used to write these Herpetological Notes in *The Aquarist* in the late 1950s and early 60s.

Another book of interest to herpetologists has recently been published. *Crocodiles* by C. A. W. Guggisberg (David & Charles, Newton Abbot, 1972) at £2.75 is a most useful account of these animals.



MARINE QUERIES

by Graham F. Cox

I plan to buy a 36 in. × 12 in. × 15 in. aquarium to keep an anemone and some Common Clowns (*Amphiprion percula*). This is my first attempt at keeping marine life.

- (1) What strength of fluorescent lighting shall I require?
- (2) Can you advise me of a reputable brand of undergravel filter having the $\frac{3}{4}$ in. diameter airlifts which you recommend?
- (3) Is it really necessary to have three layers of filtrant media which you recommend, i.e., crushed-shell, silica and coral sand?
- (4) How should I mature the biosystem?
- (5) Will dead corals and some clam-shells be suitable for the furnishings?
- (6) How many Clownfishes will my aquarium happily house. How many anemones will that number of clownfish need?
- (7) Are there any other invertebrates which you would recommend me to keep with this selection?

General Notes

You are really jumping in at the deep end here! Neither the Common Clownfish nor the rock anemones they prefer are exactly the toughest forms of marine-life for the beginner, although in experienced hands both types of animal are quite easy culture subjects. Certainly, I would never endorse the advice given in many books on the subject that Common Clowns are an ideal beginner's fish. They are one of the last coralfishes of any species which I would allow a beginner to buy. The reason for this is that, once exposed to the inevitable days (or even weeks) of ammonia and nitrite toxicity in a beginner's bacterially non-matured biosystem, they would almost always succumb to oodiniasis (parasitisation by the saltwater dinoflagellate protozoan-Oodinium ocellatum) and are dead before a week is out. Furthermore, this particular species (whose specific name may shortly be officially revised) of the Amphiprionidae is

also often troubled by a skin-fluke (the exact species of which I haven't yet identified) which is almost host specific to *Amphiprion percula* and almost invariably locates itself on the anterior ventral surface of the fish's lower jaw.

As the surrounding tissue then begins to decompose as a result of secondary bacterial agencies, a sort of tufted, bearded appearance is created. For this reason I always refer to the condition as "Goatee-beard Disease." Furthermore, the species of anemone preferred by Common Clowns for their symbiotic relationship, are not the species of anemones which readily tolerate a high nitrite and ammonia reading. The above then are the reasons for justifying my opening sentence. Notwithstanding these facts, what you are attempting has been satisfactorily achieved by other beginners in the past, and you should also be able to do so, provided that you adhere rigidly to the advice given below.

Specific Notes

- (1) Lighting strength is not of too great importance here compared with other considerations. However, since most of the *Stoicactis* spp. and *Discosoma* spp. of anemone (i.e., those preferred most by Clownfishes, generally) have large numbers of symbiotic algae living within the tissues of the tentacles a reasonably strong lighting system of the correct colour temperature would be advisable if the anemone is to retain its coloration. I would suggest one 2 ft. Gro-lux tube and one 2 ft. 40 watt warm white fluorescent tube.
- (2) It is still probably true to say that there is still not a commercially made marine U/G filter obtainable with the same efficiency as the one I described in my monograph on the culture of marine life entitled the "New Sea Aquarium System." However, since your tank is of a standard size, you will get acceptable results

with the HYWARE marine U/G filter, three of which will be necessary.

- (3) The reasons why I recommended three layers of filtrant media for the U/G filter are as follows:

- (a) Crushed shell is particularly rich in calcium, magnesium and phosphates. The calcium provides a reserve of this element for pH buffering within the system, and also is the ideal culture substrate preferred by nitrifying bacteria. Magnesium salts are also slowly depleted from solution in your synthetic seawater and so the crushed-shell's reserve of this element is welcome. Phosphates are, of course, vital algal fertilisers. However, should you wish to delete this material from your filter bed you could compensate for magnesium depletion and phosphate removal by more frequent partial water changes and additional doses of algal fertiliser, and trace element booster.
- (b) The white silica is cheaper than coral-sand, and although not so desirable either from a pH buffering standpoint or encouraging growth of nitrifying bacteria, it does provide a slow-release reserve of the important silicon ions.
- (c) Coral-sand is almost pure calcium carbonate (CaCO_3) in the form known to mineralogists as *aragonite*. Consequently it is an excellent source of calcium for the replacement of calcium ions slowly lost from the synthetic seawater's alkaline-reserve. However, at least of equal importance the fact is that nitrifying bacteria, i.e., the microbes responsible for the slow and continued oxidation within the filter-bed of the toxic ammonia and nitrites into relatively non-toxic nitrates, show a specific preference for a calcium carbonate substrate on which to grow and colonise. Add to this the twin features that most types of coral-sand are of a porous nature and therefore collectively offer an enormous total surface area for colonisation and that, even as imported, coral-sand still retains a considerable degree of nitrifying activity thus reducing a new system's maturation time. You will now see that this third material (coral-sand), although deficient in both magnesium and phosphates when compared with crushed shell, is perhaps the most important of the three filter media mentioned above.

Now to specifically answer your question, you could delete any one or even two of the filter media mentioned above, provided that you accepted a less efficient filter-bed.

- (4) You may either mature the system by using a couple of Damsel-fishes and a non-copper-based medication to help them through the nitrite period or leave a small piece of prawn meat to rot down in the system until the nitrite reading is zero.

- (5) Yes, these two decor/refuge materials will certainly suffice, but I would advise you to include at least one or two pieces of coral and as much Westmorland Stone (another form of CaCO_3 as seems practical).

- (6) Once the U/G filtration system has fully matured bacterially, your system is capable of housing $4\frac{1}{2}$ inches of fish happily (i.e., one inch of fish to four (4) gallons of water) in, say, 18 gallons of true water space, or up to 9 inches of fish if necessary (i.e., one inch of fish to 2 gallons of water) in, say, 18 gallons of seawater.

My advice is to wait until the system is fully matured and then, if you have used the damselfish maturation system, sell off the two damselfishes before introducing one (1) only 4 in.-5 in. dia. (oral disc. dia.) anemone and four (4) only 1 in.-1 $\frac{1}{2}$ in. Common Clownfish. Should serious bickering later break out among the Clownfish this collection could always be augmented by an additional similarly sized anemone without imposing too much of a biological loading on the system. The anemones should be fed a little finger-nail sized portion of boiled fresh prawn-meat a maximum of twice per week. Additionally a vitamin B12-containing vitamin additive should be added directly to the seawater as directed. This is a great culture aid, particularly for the anemone(s), but also benefits the Clowns.

- (7) With these fishes you may add any other invertebrates of the sessile (i.e., non-active) variety within reason, since their territorial requirements are minimal and their oxygen-uptake is low. Examples which spring to mind are living corals, sponges, gorgonians, tubeworms, starfish, brittle-stars, sea-urchins, crinoids, serpulid worm colonies, tunicates and, say, a Banded Coral Shrimp (*Stenopus hispidus*) or an Anemone Shrimp. CAUTION the latter two animals are CRUSTACEANS and will not tolerate STERAZIN medication.

Finally, because of the Common Clownfishes' astonishing proclivity towards developing the oodiniasis syndrome at the drop of a hat, and particularly in less than perfect circumstances such as beginners usually create from time to time, I strongly advise you to keep a very stringent check on your fishes' respiratory rate every day. Should this ever exceed 90 gill beats per minute (9.b/min) then take the appropriate remedial action immediately.

THE MEDAKA

by Jack Hems

UNQUESTIONABLY, *Oryzias latipes* is the scientific name of the yellow gold and extremely accommodating fish that colours the mind of Mr. V. V. Pedlar ("Our Readers Write," September, 1973). Popular names under which this species has been described at various times in the literature of the hobby include the cold-water panchax, the coldwater haplochilus (a generic name once applied to a limited number of oviparous toothcarps) and the geisha-girl fish. More usually, however, it is called the Japanese rice fish or medaka.

O. latipes ranges in the natural state from Japan through Korea to certain areas of China bounded by the Yellow Sea. It is a member of the family *Oryziatidae* (about half a dozen species in the single genus *Oryzias* are known to science), which was split away from the family *Cyprinodontidae* as recently as 1965. It grows to a length of about 1½ inches.

The coloration of *O. latipes* in its paddy field haunts is a uniform greenish grey overlaid with a bluish to violet sheen. Yet as long ago as 1895, two years before it was first made available to exotic fishkeepers in Germany, a golden form (the colour variety invariably seen over here and in the U.S.A.) was developed in Japan. Since then the fish has been a favourite experimental species (like the guppy) in the laboratories of the geneticists. Indeed, it is said that three or four colour varieties of the type are known in the Far East. Before the Second World War, Louis C. Mandeville, writing in *Water Life*, 6 October, 1936, mentions that an all-black variety was known.

The general body shape and finnage of this fish is typical of the oviparous toothcarps of general conception, that is to say elongated and depressed anteriorly with the dorsal fin set well back (posterior to the anal fin) on the body. The top of the head is flattened. The eyes are large.

In well-grown fish the anal fin of the male (this fin is long based in both sexes) is larger than that of the female and the rays extend beyond the bottom of the membrane to form a fringe. A further distinction is a triangular indentation in the posterior edge of the short-based dorsal fin. The female when she is ready for spawning is noticeably full in the silvery belly. Her dorsal fin is quite rounded.

Breeding is frequent from about April to September. Every so often during the season, the ripe female extrudes a few eggs. She is encouraged to do this by

the sight and the dancing of the aroused male. The eggs are not sprayed or scattered from her vent. They dangle in the water on minuscule filaments. Fertilisation takes place during the approaches and body-pressings of the male. Usually the fertilised eggs are brushed off the body of the female on to plants within the space of a few hours. Less frequently the filaments which hold the eggs disintegrate before they are caught in the plants and the eggs just float away.

As one batch of eggs is released another appears. Spawning continues intermittently over a period of nine days or so. Then follows a rest from sexual activity, after which the spawning procedure is repeated all over again.

At a temperature of 75°F (24°C) the eggs take about a fortnight to hatch out. The newly hatched fry move about at or near the surface of the water and are ready to take microscopical live food or flour-fine dried food from the start. As a rule, the parent fish appear not to be interested in their fry though, of course, if they have been kept on a lean diet they will almost always sink to cannibalism. The remedy here is to keep the adult fish well fed.

O. latipes is easy to feed on anything small, that is to say on such things as brine shrimps, white worms, sieved *Daphnia*, tubifex, gnat larvae, and substitutes for live food as, for example, shredded cod or fresh haddock or raw red meat. Any dried food of a suitable size is taken readily.

A small family of medakas will flourish well in an 18 in. by 12 in. by 12 in. tank. It should be stocked with plenty of feathery foliated plants. *Chara* spp., Java moss (*Vesicularia dubyana*), *Limnophila sessiliflora*, and *Myriophyllum* spp. are recommended. A bright top light is another essential.

O. latipes is an extremely hardy little fish that can withstand a gradual fall of temperature to the lower fifties (°F) without ill effect. As a matter of fact, it flourishes best at a comfortable room temperature over the rapidly shortening days of the year, but as spring comes round the temperature should be raised to the seventies (°F).

As a tropical community fish, *O. latipes* gets on well with the smaller and peaceful livebearers and barbs. It is always on the go and, in a well-planted tank, favours the upper and middle levels of the water.

From a Naturalist's Notebook

by Eric Hardy

NORFOLK rivals Lakeland as the most aquatic of English counties. I stayed several days here for the past four autumns, comparing waterlife's seasonal progress from four summer weeks of field-studies. It is like Lancashire, where lowering water-tables from modern drainage have probably reached the point of no return in the haunt of the royal fern at the Mere Brow/Meanygate end of Martin Mere, and have caused the rapid decline of the maritime form of round-leaved wintergreen on Ainsdale Nature Reserve and the surrounding sand dunes at Formby/Freshfield. It is easier to preserve lakes, or broads, with their plants, than wetlands and marshes.

After the learned Botanical Society of the British Isles visited Royden Common near King's Lynn some years ago, to see its bog-orchids, royal ferns, bog-asphodels, its three different sundews and three different cottongrasses, the Norfolk Naturalists' Trust complained that four months later "traces of the trampling of 60 pairs of feet were still evident." Their annual report called the visit "a successful maraud." Scarning Fen, a small calcareous fen at East Dereham, is specially interesting for *Orthotrium caerulescens*, as well as its grass-of-parnassus, marsh-helleborine orchids and sundews.

Surlingham Broad, near Norwich, claims to have Britain's finest stand of the reed or rond-grass, *Glyceria maxima*, in its backwaters, as well as orange balsam and the alien Himalayan balsam on the carrs. An uncommon charophyte, *Tolypella intricata*, is in the pond at Thursford Woods, near Fakenham. While the water remains there, aquatic plants grow quicker than land plants. Last June, I visited Barton Broad, below Catfield and Fenside, where a previous summer visit found a dykeside cut or "swiped" level with the ground, enabling us to visit some fine royal ferns and get right out to the bitterns and the far water. The regrowth now presented an impenetrable jungle: at least progress was so slow through the tallows and rushes which reconquered the route that we ran out of time. I've written before of the aquatic rarities of Hickling Broad. There, the summer drought enabled me for the first time to walk hardly ankle-deep across great reedbeds, instead of the usual slow progress around their banks.

The fate of *Pyrola rotundifolia maritima* is not the only anxiety on the drying Ainsdale-Formby dunes

where surrounding building development is draining off water which once ran into its dykes. The artificial "scrape" pool made on Ainsdale State Nature Reserve was too shallow, and dried out, and the special hide built in front of it is useless, and has fallen into ruin. The artificial pools made at the north of the reserve are not sufficient to save all its breeding colony of natterjack toads.

Since my friend the late L. G. Payne, a Richmond (Surrey) banker, studied the natterjacks here in the mid-1930s, no detailed studies were made of this amphibian until a few years ago when J. H. Mathias studied the comparative ecologies of the common and natterjack toads on these dunes for his doctorate at Manchester, where his thesis is now in the university library. In the same library by October should be another thesis on these natterjacks, this time by Sam Smith, a post-graduate researcher at Manchester University department of zoology and local representative of the British Herpetological Society. He was recently showing me some of the hybrids he has bred between common toad and natterjack, differing noticeably in belly and throat colour, and lacking the yellow stripe as I mentioned in natural hybrids in *The Aquarist* and now defunct *Water Life*, before the war. In some 500 portable plastic tanks in his Hillside (Southport) garden on the edge of the sandhills Sam showed me how he bred about 1,000 hybrids. Both these toads, and the hybrids, have 11 pairs of chromosomes, he tells me, which surprised me, as species usually differ. He added that the common toad's reputation for breeding earlier is because the natterjack is more nocturnal. The emergence temperature for the common toad is 9°C, he finds, and the lowest spawning temperature on land and in shallow water is 10°C. Natterjacks have a normal emergence temperature of 10°C, though he found them mating in a land and atmospheric temperature of 9°C and a minimum spawning temperature of 9°C.

Payne, who found "hundreds of natterjacks" in "almost deafening" chorus along the edge of a pool only separated from Ainsdale Shore Road by the fence, took some spawn home to Richmond, but had difficulty in inducing the growth of front legs. Incidentally, in 1939 he also had half-a-dozen albino English frogs, with pink eyes, which he fed on greenfly, etc. The tadpoles were given to him by the owner of the albino

frog photographed in *Water Life* in 1938, who obtained them from an unknown parent at the same site. His previous work on natterjacks was in their limited haunts in north Hampshire.

Fish diseases are often very puzzling in their origins. Wrong assumptions about pollution and pesticides often generate some heat in controversial circles, because while pollution causes some troubles, it cannot be blamed for everything without hard proof. For many years, over a century, flounders and dabs in the Irish Sea and elsewhere have shown the skin-lesions of lymphocystis, ulcers and fin-damage in cycles of increase and decrease. After a peak in 1971, cases declined in 1972; but further examples have been attributed to increases in the pollution of the sea there by industrial effluents, especially increasing amounts of polychlorinated biphenyls, usually called PCB. However, Shelton and Wilson, two MAFF biologists, have shown this is untrue. They linked the cycles of lymphocystis with changes in water salinity, as well as of temperature. 3,468 flat-fish were examined from Liverpool Bay to St. Bees Head. The disease is prevalent in waters of low salinity elsewhere, and it seems to increase when salinity falls, and vice versa.

Many of the damaged fins, etc., and the disease itself, occur in fish which have been caught and liberated by fishermen because they are undersize, or which have escaped from their nets.

One of Britain's rarer fish-visitors from tropical Atlantic coral seas, the file or trigger fish (*Ballistes capriscua*) most often visits the west coast, southern Ireland or the English Channel. One of these oval, thin, coral-fish was trawled off Morecambe Bay light-ship in August and measured 38 cm. overall length and was 9.4 grams weight. Its small, round mouth has protruding teeth for chewing off coral, but in British seas it bites into oysters and other shellfish for its food. A feeble swimmer, it drifts here on currents, like the new Japanese seaweed colonising parts of the English south coast. Named file-fish from its rough sheath of scales, and trigger-fish from its sharp dorsal spine erected by the action of a supporting ray, to attack enemies, this fish uses its swim-bladder to amplify the drumming noise made by rubbing its bones. I don't know what medical proof there is of its reputed poisonous flesh but, like most coral-fish with warning colours, its flesh is very unpalatable. Single specimens were caught off North Wales in 1962 and 1964.

PRODUCT REVIEW

Phillips Superfood, Extra High Vitamin Flaked Food for all freshwater tropicals and marines, manufactured by Phillips Yeast Products Ltd., Park Royal, London, NW10, available in Trial Size, 1½oz., 2½oz., and 6oz., prices unknown at time of writing.

If, like me, you're an 'ordinary' hobbyist, no doubt you'll be as keen as I am to learn about the introduction of a new food from Phillips—and a very good food it is too, I consider! In the past, many of us considered that a good aquarium food could be judged by the percentage of protein which it contained. Although this remains an important factor, Phillips' latest research findings would indicate that a food's vitamin content is at least as important. I will quote from a letter which I received from them. "... SUPERFOOD has been formulated to provide an especially high vitamin diet for tropical and marine fish, in line with the latest scientific research. We have long recognised the importance of vitamins in the diet of fish. In fact, our well-known Tropical and Cold-water Flaked Foods contain the vitamins fish need and we have also marketed AQUAVITE to provide vitamins in water-soluble form to add to the aquarium water. However, this latest scientific research clearly indicates that the vitamin requirements of fish are much greater than was previously known and much greater, weight for weight, than for any other species.

For this reason we set to work to formulate SUPERFOOD, an extra high vitamin flake. The separate leaflet enclosed gives the vitamin potency of SUPERFOOD as compared with the vitamin requirements of fish and you will see how closely its potency meets these requirements. Our own trials with this new food confirm this and in particular clearly indicate that fish fed on SUPERFOOD show better growth than fish fed on other foods."

This new food contains: liver meal, fish and meat meals, *daphnia*, prawn, high-protein wheat flour, soya bean meal, beef collagen, dried milk, dried blood, dried yeast and cod liver oil; vitamins A, D, C, E, K, B1, B2, nicotinic acid, pyridoxin, calcium d-pantothenate, cholin, biotin, folic acid, inositol and vitamin B12. The guaranteed analysis is: minimum crude protein 48 per cent, minimum crude fat 5 per cent, maximum crude fibre 3 per cent. The leaflet with which I was supplied listed certain symptoms and results which appear in fishes as a result of vitamin deficiencies, together with the appropriate vitamins required to prevent or cure such conditions. It also listed the protein amino acids and the minerals contained in SUPERFOOD.

The flakes of this food are green and brown in colour and their various sizes make them suitable for both large and small fishes. Flakes can be crushed easily between finger and thumb to provide a fine

powder for very tiny fishes—should it be required. The makers recommend that the food be fed to fishes twice daily or as required, and the food does not cloud water.

Although it would require very extensive laboratory tests, and extensive use of a food to feed fishes over a long period, to reach completely objective conclusions about a new food, one can still form useful opinions with both a subjective and an objective element of evaluation. It can be said, with validity, that hungry fishes will eat any food; it is equally true that an experienced aquarist will note that his fishes will eat some foods with much more relish than others—and this can be equally true whether or not the fishes are actually hungry. I found that all my fishes—from adult angels down to baby mollies—snapped up regular feeds of SUPERFOOD with great gusto. Unlike a few foods which I have tested, SUPERFOOD flakes are not so tough that certain species spit them out again: their consistency seems to be such that they are soft enough to be consumed by the majority of species which I keep, yet not so soft that all the flakes immediately sink to the bottom of the tank when added. As some flakes float and some sink, top, middle and bottom feeders can get their required share.

B. WHITESIDE.

Orion deluxe Double Night and Day Pump, made in Japan, price £4.67; **Orion Popo 1 Air Pump**, made in Japan, price £1.44; **SP (Esha) 202 SR Air Pump**, price £11.44, made in Germany. All prices include VAT, and all three pumps are distributed by Interpet, of Dorking, Surrey.

Having hoped for a long time that manufacturers or distributors of aquarium pumps would give some indication—even a very rough one—of just what one could expect any given air pump to operate, I was delighted when Dr. Neville Carrington, of Interpet sent me a copy of a chart entitled: "YOUR AIR PUMP SELECTION CHART". This new InterPet chart states: "You could choose your air pump on price and output alone—but most aquarists take other factors into account also. There is an InterPet pump to cover every requirement. This table can help you choose the right one." The chart also carries the message: "NOTE: The information in this table is based on our own careful tests but must not be taken as a guarantee of performance." Even bearing this latter statement in mind, I feel that InterPet should be congratulated on taking the trouble—and on having the courage—to give us some information about what their pumps will actually operate, together with other useful information. Other manufacturers and distributors please note!

The InterPet pump selection chart is divided into eight vertical columns thus: (1) names the particular pump and shows a photograph of it; (2) is for its price; (3) to (6) give the number of outlets available at

moderate output (for maximum output half the number of outlets), with (3) giving the number of 'normal' airstones of about 1 in. in diameter which a given pump will operate, and the information that long stones need about four times as much air; (4) gives the number of bottom filters, such as the Airstream Bottom Filter or others with or without airstone; (5) gives the number of airlift outside filters without airstone—such as the Airstream Slimline, or standard undergravel filters—that a given pump will operate; (6) gives the number of outside filters with airstone type airlift—such as the Airstream Cascade, Airstream Super Twin, or marine undergravel filters—which can be operated; (7) gives an idea of the noise level of a given pump; and (8) gives some general comments about each pump. Understandably, InterPet have used airstones and filters which they supply to graduate their pumps; and naturally they have only dealt with pumps which they supply. Eight such pumps are dealt with on the chart, including the three reviewed here.

The Orion Night and Day Pump is one of the most impressive and pleasing pumps that it has been my pleasure to review. Of neat and sturdy construction, it comes complete with rubber feet and hanging 'tag'; it can thus be used 'sitting' or 'hanging'. It has two air outlets, each of which is adjustable. Its unique feature is its 'night and day' switch: when pressed once the pump operates at full power, when pressed again the pump's operation, noise level and output are diminished. The pump can thus be used to operate at full power during the day, and at a reduced power—and noise level—during the night. The 'selection chart' suggests that the pump will operate, at full power, the following items at 'moderate output': ten 'normal' airstones, or ten bottom filters, or seven 'ordinary' outside filters, or three airstone operated outside filters. The chart, under 'noise level,' states: "Day output fairly quiet; night output very quiet." Under 'comments' is given: "A powerful pump on full output—suitable for several freshwater tanks or 1 or 2 marine tanks needing lots of air. Expect 1/3 output on night setting." I tested this pump on a friend's two large tanks and found that it operated the following items—with air to spare: a very large outside filter, a medium outside filter, two inside filters, one 'normal' airstone and one very large, long airstone. These were operating on full output and the noise level was almost negligible; the sound of air bubbling through water was virtually all that could be heard. (The Pump was being used in the 'hanging' position.) In this instance, the Orion Night and Day pump had replaced two other quite hefty pumps; and it produced more air than both pumps together. I consider this to be an excellent pump—both as regards its low noise level and its exceptionally high air output. The double switch and twin outlets are added attrac-

tions. At £4.67 this exceptionally good pump is extremely good value. Thoroughly recommended!

The SP (Esha) 202 SR has a number of unique features. It has a transparent base which enables one to see 'the works' operating—if one should want to—and a control knob on the side which adjusts the air output *electrically*, i.e., by slowing down or speeding up the motor of the pump. The pump is sturdily constructed and has four rubber feet and a hanging 'tab'. The air filter consists of a 'blob' of an appropriate type of filter 'wool' which can be easily replaced when necessary. The 'selection' chart indicates that the filter will operate three airstones, or three bottom filters, or two outside filters, or one airstone operated outside filter. It is said to be "very quiet on low output." Under 'comments' it states: "Adjustable output. If you have 1 or 2 small aquariums and want virtual silence—this is the pump for you." This is a very quiet pump in operation and would be ideal for use upstairs in the home—or downstairs, for that matter. My only complaint would be that the output from the pump is rather low considering its price of £11.44; however, I understand that later models of the pump are being modified to give a higher output.

The Orion PoPo 1 is a small pump—but a small pump with a relatively big performance. The 'selection chart' suggests that it will operate three airstones, or three bottom filters, or two outside filters or one airstone operated outside filter. In practice I found that these were conservative estimates of the pump's strength. The sample which I tested had a remarkable output for a small pump costing only £1.44. The chart lists the pump as being "fairly quiet," and "A remarkable low priced pump for 1 or 2 aquariums. Quietest in its class." I found this pump to be quiet in operation, to have a good air output for its small size, to be sturdily constructed, and to be excellent value for money. This is a pump I would thoroughly recommend for someone on a limited budget. Its low price belies its excellent performance.

In conclusion: I would like to test the modified version of the SP (Esha) 202 SR before reaching any final conclusions about this pump. If you're considering buying a new pump may I suggest that you have a look at the InterPet selection chart first—even if the pump which interests you is not distributed by InterPet. As I said earlier, InterPet are to be congratulated on producing their chart—and other manufacturers and distributors could do worse than consider the production of something similar for their own range of pumps!

B. WHITESIDE.

Complete Aquarium Wiring Unit, manufactured by Aquarium Electronics, 31 Summerhill Road, Launceston, Cornwall, PL15 7DU, price £3.90 complete.

When reviewing electrical appliances for use with aquaria I have often mentioned the fact that many appliances are supplied with lengths of electrical cable which are far too short for the average aquarium set up. I was thus both pleased and flattered when I learned that Aquarium Electronics, in producing their new Aquarium Wiring Unit, had decided to take up my point and make their new product available with the length of cable required by any individual purchaser, as well as units fitted with a standard 6 ft. of cable. When I reviewed some previous control/wiring units, I often made the point that I considered the price to be rather high; this new unit, at £3.90, should be within the range of many serious aquarists who wish to have a safely wired tank which is also neat and tidy to look at. As readers will know, a jumble of wires can be confusing and dangerous as well as being unsightly. The Aquarium Electronics Unit should solve all three problems at a reasonable price.

The proprietor of Aquarium Electronics, Mr. J. R. Smith, A.M.L.E.E., was keen to ensure that his new product should meet appropriate safety standards, and his unit has been tested and investigated by the Council for Small Industries in Rural Areas. The Council was quite satisfied that the unit is safe for aquarium use when used in accordance with the instructions provided—and I must say that the instructions sheet provided with this new unit is most comprehensive.

This neat little unit is approximately 7 in. × 3½ in. × ½ in., and can thus be stuck to the side of the tank with silicone sealant, or mounted on the wall beside or behind the tank using the two screws provided. The three core mains cable enters the unit at the bottom right; to its right is an easily replaceable fuse; to its left a red and a green wire emerge from the unit. To the left of these wires, along the bottom, are four two pin plugs: the first, which is controlled by a switch on the right of the unit, can be used to supply pump or lights; the second is for heater(s); the third is for thermostat; and the one at the extreme left, which is controlled by a rocker switch on the left end of the unit, can be used also for pump or lights. Each plug is neatly labelled. At the top of the front of the unit are three small lights; a yellow one to the left indicates 'heating off' and a red one beside it indicates 'heating on'; the third one, situated on the right, indicates 'water live.' Each is clearly labelled.

The following are some of the features of the unit as given in the supplied information leaflet: "Robust, long-life, complete aquarium wiring unit. Everything provided for correct connection of all your aquarium appliances. May be used as a 'centre' for several aquaria using separate thermostat and heaters . . . All plug-in facilities for separate thermostat and heater—easy screw-type connections—internal spark suppression drastically reduces thermostat wear

and radio noise. Fool-proof thermostat plug. . . Easy to install earthing provision for metal hoods (simply drill $\frac{1}{8}$ in. hole and install terminal post provided). . . Encapsulated construction with fully recessed plugs and switches. . . Live water warning provision with small water probe. . . Clear indication of mains on and heating on or off by alternating $\frac{1}{2}$ watt neon lamp (life 50,000 hours each!). . . Quick change fuse built in (3 spares provided)—5 amp maximum. . . Plus very thorough easy to follow instructions; neat appearance (only top and lamps need be visible); quick-release wall mounting—screws provided; moulded in mains cable—choose your own length (or have the standard 6 ft.); fitted 13 amp safety plug; one year guarantee against electrical failure; 10 day money back guarantee if you don't like it—we think you will!"

I have had the test unit in use for some time now and am very pleased with the results. Its small size makes it inconspicuous, yet it can control all the electrical items required for an average aquarium, prevent tangles of unsightly wires, provide an immediate check that everything is working properly, and provide protection from the possible risk of electric shock which is always present when water and electricity are in close contact. (This latter feature is one which, I feel, many of us are inclined to either forget or ignore!) Several heaters can be connected to the unit if needed; and although it is not primarily designed for use with a combined heater/thermostat, such can be used if plugged into one of the two switched outlets.

The basic unit is fitted with 6 ft. of mains cable but, as I said earlier, it can be ordered with longer lengths. Extra cable costs 5p per foot. Spare plugs can also be obtained, if required, as can spare 5 amp fuses.

If you require a compact little unit which will allow you to wire up your aquarium neatly and safely, I suggest that you invest in one of these units from Aquarium Electronics. The maker has obviously put a lot of thought into its design and construction and it has been designed by a keen aquarist for use by keen aquarists. £3.90 is not too much to pay for its advantages—and it is covered by good guarantees.

B. WHITESIDE.

Tetra Aquasafe, manufactured by Tetra Werke of Germany, and distributed by TetraMin (UK) Ltd., Colley Lane Estate, Bridgwater, Somerset, TA6 5LB. Price unknown at time of writing.

Few aquarists will not know about the many high quality aquarium remedies and foods manufactured by Tetra Werke of Germany; thus I was pleased when I was recently contacted, from Germany, by Mr. B. Hindersman of Tetra Werke's Sales Promotion Dept., who sent me samples and information about many Tetra Werke products, including the new Tetra Aquasafe. I received many samples of 'goodies'—a

1974 Tetra calendar of "Tropical Fish and Aquarium Plants," a binder containing the first five editions of Tetra's "Aquarium Digest International (see my review of the first edition in October 1972 *Aquarist*), sets of 157 coloured illustrations of different fishes, a variety of information leaflets, and samples of many varieties of Tetra foods, cures and remedies—including the latest Aquasafe. Readers may be interested to know that they can obtain a copy of an interesting brochure entitled "The Successful Fish Hobbyist," free of charge, from TetraMin (UK) Ltd., at the address given above, if they write enclosing a stamped addressed envelope. I hope to review various Tetra Werke products in future editions but will reserve this review for the new Tetra Aquasafe.

Tetra Aquasafe is a water conditioner, in liquid form, which is supplied in a plastic 'dropper' bottle, suitable graduated, and containing 100cc.—enough to treat 200 litres (44 gallons). A leaflet supplied with the new product gives the following information: "New water is often harmful to aquarium fish, whether it is added to an established tank or used to fill a new aquarium. New water has not yet achieved a chemical balance that fish can tolerate. The osmotic value of new water is also unsuitable for tropical fish. And new water also causes harmful effects by suddenly changing the pH value of the tank. All of these harmful effects can be avoided with regular use of Aquasafe." The leaflet continues: "Aquasafe contains a powerful colloid which protects a fish's sensitive gills and mucous membranes and aids in the regeneration of damaged mucous membrane tissue. This protective colloid impedes the growth of bacteria and fungus. Aquasafe neutralises dangerous metallic ions by binding them through a chelator into a harmless salt complex. (It contains an effective pH buffer that prevents the large or sudden changes in alkalinity which can be harmful to fish. Due to the naturally high salt content of seawater, this buffer effect does not develop in marine aquaria. Why add new water? The environment of fish is filled with the products of their own metabolism. Micro-organisms in the water see to it that these metabolic waste products are broken down from ammonia through nitrite to nitrate. Water plants utilise only a small part of the nitrate produced by fish, so in most aquaria there is a general tendency for nitrate concentration to build up. Nitrate itself is not harmful to fish. The danger of a high nitrate content in an aquarium lies in the ever-present possibility that the nitrate will be chemically converted back into toxic nitrite or ammonia. For this reason, it is strongly advisable to replace some of the water in the tank, which is high in nitrate content, with new water, which contains little nitrate. The harmful qualities in new water are eliminated by Aquasafe." Some of the other points made in the leaflet include the

Continued on page 309



OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

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

COLDWATER QUERIES

by Arthur Boarder

I have two bowls of goldfish. Can you tell me why the water smells and why there is a lot of froth on the top of the water?

The water is foul and the goldfish are mouthing at the surface for oxygen. A goldfish bowl is the very worst place in which to try to keep goldfish. These bowls should be prohibited from being made or sold. If a dog, cat or bird was kept in such conditions, the R.S.P.C.A. would institute proceedings against the owner for cruelty. Goldfish should be kept in a proper tank, or aquarium to most people. In such a container it is possible to have growing water plants which can assist in keeping the water pure by using up some of the waste matter from the fish and by giving off oxygen during the hours of sunlight. In a bowl the fish has to swim around in its small container, and is usually placed in a window in full sunshine. It is unable to escape from it or get any shade. You should get a proper tank with growing water plants and keep it away from the strong sunlight.

Some time ago I had a small pike which I kept in a large tank. Unfortunately it jumped out of the tank through a small gap in the cover and died. Do you know where I can buy another?

Pike are not the kind of fish usually offered for sale. You might be able to get one from an angler and could enquire through an angling society. If you know a lake or pond where these fish exist you might be able to catch a young one. This might be done by dragging a net through the weeds at the side where the young ones often lie. You had better get permission from the owners or renters of the pond before doing so.

I have lost several goldfish from my pond through fungus disease. Is there anything I

can put in the water to prevent this from occurring?

There is nothing you can add to the pond to prevent fungus disease from attacking the fish. The best cure is to ensure that the water remains in a good condition. Goldfish have a mucus protective covering and as long as this is intact the fish can resist most diseases and pests. It is only when the water becomes foul that the fish gets unwell. The mucus covering then becomes deranged and the fish is then probably going to be attacked by the disease. Pond water usually becomes foul through over-feeding or over-stocking. In a well-planted pond the fish require little food as they can always find something among the plants in the form of food. I think that more ponds are upset by the owner being too kind and giving much more food than can be cleared up in a short space of time than from any other reason.

I have a small garden pond in which I have some fish and plants. The fish thrive all right but the plants do not appear to grow. The leaves become covered with a brown sediment and die. What is the reason, please?

It seems that the water plants do not get enough nourishment. They should be planted in containers of soil with some stones on the surface to prevent the fish from disturbing the soil. The brown deposit could be dead *Algae* and this suggests that the water is not too pure. I do not like the idea of taking the pond water from a tin roof. This water could be contaminated. After repotting the plants, change the water for tap water and things should improve.

I have had some goldfish die in my pond and they show no signs at all of any disease or damage. I have many fishes in the pond but there are

water plants as well. What has caused the death of the fishes?

While it is impossible to be certain of the cause of death it is a fair guess that they died through lack of oxygen. Once the water becomes foul the fish are soon in trouble. This is especially so during hot weather. During such times the water contains less oxygen and if there is any decomposing matter in the pond or the pond is overcrowded with fishes, then trouble is sure to follow. A fish can be in perfect health one day but if the water suddenly turns foul, the fish can die the next day and show no external signs of ill health. If the fish could have been seen mouthing at the surface before dying, a hose playing on the water could have brought them round. Fishes can be on their sides at their last gasp, and yet recover in a matter of minutes when fresh water is played on them, and be feeding within an hour. I think that you will be better able to keep the pond in good condition if you reduce the number of fishes.

I have a tank, 36 in. x 16 in. x 12 in. with a number of goldfish, shubunkins and fantails, which have been healthy for some years. Recently I was given a couple of calicos and since then they and some of the others have died, all within a week. Why do you think this is?

The first thought is that the fresh fish were diseased and they passed this on to some of the others. The only other reason is that you overstocked the tank by adding the new fish. As your tank is of a good size and your fish appear to be quite small, this last idea does not seem to be very valid. I just wonder if the fresh fish were attacked or knocked about by the old inhabitants of the tank. Although, as a rule, goldfish do not fight, it is not unknown for new arrivals to be bullied for a time. The best time to add fresh fish is at night when the fish are quieter. The new fish could have received a slight injury which could then have become infected.

I recently bought two goldfish for my pond. Now one of them has a white spot on its upper fin which is now spreading and looks like fungus. Will this affect the other fish and how can I cure it?

The fungus may not attack the other fish as long as it is in good condition. If the affected fish has only a little fungus on it, it is possible to treat it fairly simply. While holding it in a wet cloth wipe the affected part with a wad of cotton wool dipped in neat T.C.P. You may be able to remove the fungus altogether. Another dabbing with the T.C.P. can be given the next day. If a fish is largely covered with fungus disease it is better to give the fish the usual bath for a few days in a solution of sea salt, at the strength of a tablespoonful to the gallon of water. No food should be given while the fish is under treatment, it should be kept out of the sunlight and once it recovers the strength of the solution must be gradually weakened.

I have a couple of water lilies in my pond which do not thrive. The lengths of stalk lie on the surface but the leaves do not uncurl and the flower buds just die off. What can be the reason?

Normally water lilies grow too rampantly as long as conditions are right, and it is usually the cry that they have grown too large and have taken over too much of the pond surface. I suspect that your trouble is that the plants are not getting enough nourishment. Try repotting them, and as soil use an old turf or two. Pack the turf round the outside of the container with a little at the base. Once the roots get hold of the nourishment they should soon grow and flower. As the fish are in a healthy condition there does not appear to be anything wrong with the condition of the water. Usually the fish would die long before anything went wrong with the water lilies.

TROPICAL QUERIES

Would you recommend the honey gourami (*Colisa chuna*) for a community aquarium?

The honey gourami is quite suited to a community aquarium if plenty of plants are ranged against the back and ends to afford safe havens of retreat for this timid species. And see that the other fishes sharing the aquarium are neither too curious about the anabantids' life-style nor given to boisterous chasings in all levels of the water.

I am thinking about setting up a tank for

by Jack Hems

different species of catfish. Do you think the scheme will work out satisfactorily?

There's no reason why it shouldn't so long as you choose catfish of about the same size and temperament. In short, do not be tempted to mix large-growing catfish and pygmy-sized catfish together. *Corydoras hastatus*, for instance, would not last long in the company of, say, the fast-growing *Clarias angolensis*. Again, dismiss the thought of owning an artistically planted aquarium if you go in for too many of the sand-ploughing species.

Could you give me some hints and tips on the care and management of the red-bellied piranha?

The red-bellied or *Serrasalminus nattereri* piranha is best kept as a single specimen in a two-foot or larger tank. For I hasten to inform you that a full grown *S. nattereri* may attain a length of above 9 in. The food it requires must be animal (alive or dead). Baby mice or our native minnow or the common goldfish or young carp are suitable. Red garden worms too. All the same, some red-bellied piranhas can be faddy feeders and the purchaser of this species must be prepared for some experimentation in the matter of food. For the rest, a temperature of about 75°F (24°C) is as good as any. Plants are tolerated, and thickets of *vallisneria* will display the fish to good advantage. A strong cover glass is essential and always the fish must be treated with respect. The electric-razor-sharp champing teeth can make a nasty mess of a finger or hand. Therefore it is hardly necessary to say that a piranha must be kept out of the reach of disobedient or inquisitive children.

Please give me some information on the fish known as the black shark?

The black shark is known to science as *Morulus chrysophekadion*. Prior to, and just after, the Second World War, it was described under the technical name of *Labeo chrysophekadion*. It belongs to the family *Cyprinidae*. In the natural state in Thailand and Indonesia it grows to at least 2 ft. In the aquarium, however, it attains only about half this size. But this only if it is given plenty of swimming space and well-aerated water. It is a peaceful species, but commonsense dictates that large specimens should not be kept with diminutive species. It eats mossy algae and anything else and a couple I owned until a few years back were purchased in the middle 1950s.

Having become interested in keeping some discus in a large aquarium I am about to set up in my lounge, I visited my local library and borrowed a number of books dealing with the genus *Symphysodon*. Imagine my surprise when I discovered that two leading American authorities on aquarium fishes recommended that the mineral content of the water should be below 5DH and the pH in the region of 5.5 to 6.0. Yet in a back issue of *The Aquarist* one of your contributors mentioned nothing at all about water hardness but stated that the pH should be between 6.4 and 7.2. What am I to believe?

What you must believe and adhere to is that *Symphysodon* spp. and varieties demand soft water giving a neutral to acid reaction. As the pH value of the water varies (slightly) according to the effect

of received light and the growth and activity of plants, and the food consumed, it is almost impossible to keep it at one level day in and day out throughout the year. Meticulous cleanliness of the water and the tank in general a low DH and a temperature in the middle to upper eighties (°F) are the best aids to success.

I have a 30 in. by 15 in. by 12 in. aquarium illuminated by a 30 watt pink-tinted fluorescent lamp which is kept switched on for approximately eight hours a day. There are about three dozen *vallisneria* plants set along the rear half of the tank. They are not growing very well. Yet blanket weed prospers and I find I cannot keep it in check. I would be grateful for any help you can give me.

Remove all the blanket weed you can in one single session of cleaning and then without much, if any, delay, introduce a lot more genuine submerged plants such as *Elodea densa* or *Hygrophilia polysperma*. These will utilize more of the nutrients in the water which promote algal growth. To encourage a healthy growing higher plant life, I suggest that you keep your light switched on for at least ten hours a day.

I wonder whether you can tell me how to sex, keep and breed the neon tetra?

In well-grown neon tetras sexing does not present much of a problem because the males are slimmer than the females and a female in spawning condition assumes a bloated appearance. There is nothing difficult about keeping the neon tetra. All this species demands is matured clear water preferably on the acid side and a temperature in the seventies (°F). Breeding is another story. Although eggs are quite frequently scattered in feathery plant life or stringy algae, keeping the fry alive is not easy. They require absolute purity of water, a diffused light, microscopical live food and neutral to acid conditions.

I have been informed that a pleasing background for fish may be made by covering a sheet of glass with small pebbles or granite chippings pressed into moist cement. After this mixture has set the coated glass is propped against the rear wall of the aquarium. What is your opinion?

Artistically the idea has much to recommend it but in practice it is not so easy as it seems because the pebble-dashed glass must be soaked and soaked and soaked in several changes of acidulated water to get rid of the free lime.

I should like all the know-how possible on the care and breeding procedure of the angel fish (*Pterophyllum*).

I should require several pages of this magazine to give you even a brief outline of the most important things you should know about the care and breeding habits of the angel fish. I suggest that you obtain a copy of *Angel Fish—King of the Aquarium*, which can be sent to you for 30p post paid from this office. Dr. Feroze Ghadially the author of this interesting and informative booklet, was a most successful breeder of angel fish before he left this country to take up an appointment abroad.

Can freshwater shrimps, of which I have a flourishing colony in an old kitchen sink, be used as a livefood for aquarium fishes?

Freshwater shrimps make a valuable livefood for those fishes large enough to swallow them. Yet I must inform you that several containers are necessary to keep up the supply, for it takes more than a year for the freshwater shrimp to reach maturity and breeding them is not a rapid process like, say, breeding whiteworms or *Daphnia*.

Are complete changes of water combined with efficient filtration necessary to maintain an aquarium in tip-top condition?

For the general run of the aquarium fishes the short answer to this is no. The so-called balanced aquarium will work, whatever some people may say to the contrary, provided the plant growth is thick and healthy, the tank is not crowded with livestock and excessive mud is siphoned from the bottom every so often.

What thickness and quality of glass must I buy to glaze a steel frame measuring 48 in. by 18 in. by 12 in.?

I suggest you buy plate glass one quarter of an inch thick.

I have bought a 7 in. catfish which my dealer informed me is formally known as *Heteropneustes fossilis*. Please can you let me know the country of origin of this species, its maximum size and whether it is well behaved in a community tank?

H. fossilis ranges in the wild state from India to Vietnam. It attains a length of about 2 ft. and is fond of making a meal from much smaller fishes if given the opportunity to do so.

I am very fond of the red-tailed shark and I have several in good colour and health in my 30 in. by 15 in. by 12 in. aquarium. Although they browse on the mossy algae that forms on the glass sides they do not work diligently enough to keep the green growths in check. My dealer said I should introduce a couple of *Gyrinocheilus aymonieri* to do the necessary. Do you think I should take his advice or do you think the introduction of *G. aymonieri* will upset the sharks?

G. aymonieri has the nasty habit of sucking at the body slime of other fishes, but I do not think your *Labeo bicolor* will attract the algae-eater's attention.

PRODUCT REVIEW

(continued from page 305)

fact that carbon filtration should be discontinued when adding Aquasafe, and that strongly chlorinated water is best treated with "one of the better antichlorine products, for example, Contra Chlorine from the TetraCare range." Other information about this product can be found in the advertisement on page xvi of the September 1973 edition of *The Aquarist*.

The product is simple to use: "When setting up a new aquarium add 2cc. of Aquasafe for every gallon of water in the tank. After adjusting the temperature you may add the fish immediately with no danger. Even sensitive fish will experience no discomfort. When changing water, add 2cc. of Aquasafe to every gallon of new water added to the tank."

I tried out this new product with a variety of fishes and found that none showed any signs of distress when moved to a tank containing fresh water to which Aquasafe had been added; similar results were found when old water in an established tank was partially replaced by fresh water to which Aquasafe had been added. However, it is virtually impossible to reach

any valid conclusion from such limited experiments as the fishes involved might well have reacted in the same way had fresh water without Aquasafe added been used. Although Aquasafe is pale blue in colour, its contents are not listed, and one cannot see any visible change in the new water to which it has been added; however, I have no doubt that any product that comes from the Tetra range will reach the very high standards that aquarists have come to take for granted from Tetra products—and this new product would seem to be ideal for use by the aquarist who lives in an area where the tap water is not as pure as it might be. It should be particularly useful to aquarists whose water passes through copper pipes or to those who keep particularly sensitive fishes such as Discus. If it does all that is claimed for it—then it will make a useful addition to the 'medicine chest' of those aquarists who like to prevent aquarium trouble rather than attempt to cure it after its presence is obvious.

B. WHITESIDE.

THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 18)

by Andrew Allen

38. Schreiber's Lizard (*Lacerta schreiberi*)

Description.—This elegant lizard grows to 30 cms., having a strong body and thin, lengthy tail. It is green in colour, with many large black patches that are often concentrated into bands. The patches continue onto the belly, thus allowing the species to be readily distinguished from *L. viridis*. The young are uniformly brown, with up to four irregular rows of black-rimmed eyespots.

Distribution.—*L. schreiberi* is confined to the Iberian Peninsula, especially to the South and West of that landmass. It inhabits sunny localities among rocks and stones, on walls, rough slopes, and in woods.

Breeding Habits.—Its breeding habits are similar in most respects to those of *L. viridis*.

Care in Captivity.—On most counts this beautiful animal could be treated similarly to the Green lizard. It is about the same size, comes from similar habitats, has the same enemies and will take similar food.

However, it is probably not equally hardy. Green lizards fare well in Central Europe, whilst Schreiber's lizard is restricted to a very small corner of the extreme South-West of the continent, where the climate is very warm and favourable. Accordingly I would not recommend housing them in outdoor reptiliaries, where they would be at the mercy of every vagary of the British weather. But they should succeed in a greenhouse, provided that this is fully exposed to the sun and has an abundance of well insulated hibernacula.

Indoors it would require a vivarium of similar size and design to that described earlier in the series for *L. viridis*. Abundant space, sun-drenched aspect and artificial heat and light are all imperative. In general not a great deal is known about the requirements of this species, but it is exceptionally attractive and would make a worthy inhabitant of an artistically arranged vivarium.

There are no sub-species.

39. The Eyed Lizard (*Lacerta lepida*)

Description.—With lengths of 60 cms. or more, this is easily the largest European lacertid (though not the largest European lizard). It is strongly and heavily built with a powerful head and long tail. Dorsally it is greenish-brown in colour, with a network of green or yellow lines. The flanks are of brighter green, with several large blue patches bounded by black. Ventrally it may be yellow, cream or white, with no markings. The young are initially grey, with brown patches soon developing.

Distribution.—This massive lizard inhabits most of the Iberian Peninsula, North Africa, the Iles d'Hyeres, Liguria and Mediterranean France. It favours rough, rocky country and scrub, and may be found up to moderate altitudes.

Breeding Habits.—After mating comparatively late in the spring, the female lays up to ten eggs in holes in the ground or beneath stones.

Care in Captivity.—Because of its great size and semi-hardiness *L. lepida* is not the easiest of lizards to deal with. Its care is a full time job, and not to be lightly undertaken. But given that it is a demanding species, it is also a rewarding one, certainly the most spectacular of the moderately hardy Reptiles.

Indoors it requires space above all else. It is large, it is active, it climbs, it burrows. All this demands a very sizeable vivarium. One of six feet by six feet by four feet would be distinctly cramped for a true pair of these animals. If you can't provide a vivarium of these dimensions or greater—don't attempt to house this species indoors. An interesting alternative to such a bulky vivarium would be to give the lizards the run of an entire escape-proof, carefully heated room. In either event, natural sunlight is an absolute "must", supported by additional heat and illumination. There should be a thick layer of soft soil on the floor, a large water bowl (but a dry atmosphere and good ventilation),

large caves as hiding places, and sturdy branches for climbing.

The lizards can be hibernated by packing them away in a solid, escape-proof wooden box filled with newspaper (a great boon to the herpetologist), dry leaves, straw and moss. The box should be airy, and must be placed in a cool dry location. It should be inspected regularly when spring arrives, so that the inhabitants can be given an immediate drink upon awakening.

The Eyed lizard is of rather suspect hardiness. It is very much a creature of the deep South of Europe, prospering only in really warm climes. On account of this it is not to be recommended for the average outdoor reptiliary. It might live happily in a large reptiliary in the extreme South or West of England, if this was protected from the wind and received an absolute maximum of sunlight. But elsewhere the winters would be too long for such a sensitive animal, and the summers insufficiently hot. If accommodated in a reptiliary it would require some very deep and thoroughly protected hibernating chambers.

On all criteria the ideal home for this species is in a greenhouse. This could easily be of the required dimensions, provides all the sun (and more!) that these lizards relish, and gives a maximum of protection from even our longest and most inclement winters. In an intelligently arranged greenhouse the Eyed lizard could enjoy itself enormously, tame fairly readily, and live for a goodly number of years. But even under exemplary conditions it will still only appear when the sun shines brightly, will retire to hibernate very early and only emerge again when spring is thoroughly established.

In keeping with its size and activity the Eyed lizard has a massive appetite, though under imperfect conditions it is perhaps more liable to go on "hunger strike" than other European lacertids. It will take the usual range of insect fare, though only at the larger end of the scale. This includes mealworms, earthworms, cockroaches, beetles and smooth caterpillars. Any vertebrates smaller than itself will be attacked

and eaten. This includes some frogs, toads and newts, many lizards and snakes, fledgelings, and mammals such as mice. Raw meat may sometimes be accepted, though it should only be held as a standby. Eggs are very popular, and soft fruit of all kinds makes a welcome change from animal fare. If feeding by hand, keep an eye on your fingers. *L. lepida* has a distinctly powerful and painful bite, though not a dangerous one.

Its pugnacity and appetite scarcely recommend it as the perfect community reptile. A safe working rule is to assume that anything smaller, meeker or softer than itself will be eaten or savaged. This doesn't leave it with many possible companions. Large adult Marsh and Edible frogs and Clawed toads should be reasonably safe, as should adults of some Southern sub-species of the common toad. With their virulent poisons and bright warning colours the Fire salamanders are also proof against molestation. Land tortoise, water tortoise and terrapins are ideal companions. I defy any Eyed lizard to make a meal of a tortoise! The only acceptable lizard is the Glass snake (*Ophisaurus apodus*), itself a confirmed cannibal. Several snakes are in the same size range, and are at least potential companions. However, I would hesitate to recommend any in this capacity, for the balance between this predatory lizard and the predatory snakes would be at best a delicate one. A measure of caution is probably indicated.

It is scarcely a major disadvantage that the Eyed lizard can be incorporated into so few communities. It is such a gloriously aristocratic, beautiful, temperamental animal that it is well worth a large vivarium of its own; one where it can occupy permanently the centre of the stage, without the distractions of superficially drabber companions. For those with long experience of the ways of lizards, and a lot of space, money and time it is a magnificent beast that makes the ideal centre-piece in any collection of European Reptilia.

The following article will consider the Wall and Ruin lizards, and some of their numerous relatives.

PRAWNS

by Huw Collingbourne

ALMOST INVISIBLE bodies streaked with wild gashes of brilliant glowing colour glide gently and silently in the brine. Hunched backs stroked by long flowing tendrils characterise one of the strangest, and luckily, most common of the myriad strange inhabitants of the shallow sea.

Often strikingly beautiful in colour, these creatures are easy to keep in a small aerated marine aquarium, and what is more they are easy to breed in large numbers!

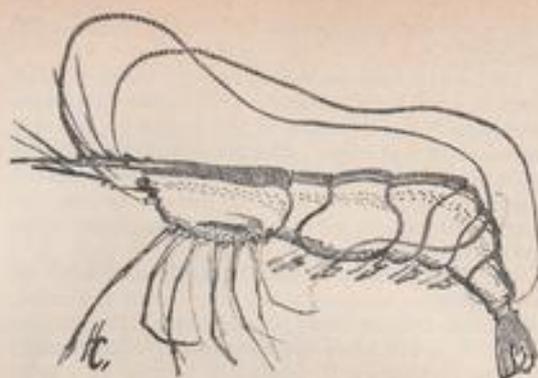
I am talking about the common prawn, of course, a misleading name covering numerous different species

of the genus *Palaemon*. Some of the species can grow to, or even exceed seven cms. in length, and markings vary from blue, yellow and silver to the brilliant scarlet of some varieties. Even at night a prawn may be easily distinguished through the unlit and colourless water, for the weird stalked eyes reflect an eerie green light.

In contrast to the clumsy and ungainly swimming actions of many fish species of shallow water (e.g., the blenny or the goby), the prawn is a remarkably accomplished swimmer—despite the fact that it looks the least suited for the marine environment. Its power of motion is generated by five pairs of swimmerettes, hardly visible, in a cavity running the length of the ventral surface of the abdomen. When swimming, these little appendages may be observed continually rowing backwards and forwards, allowing the prawn perfect freedom to use its long pincer arms to catch its unsuspecting prey.

If a prawn has need to vacate the vicinity with great rapidity, however (if perhaps he has just attempted to secure a hungry grouper for a prawn-sized meal and suddenly finds the role of hunter and hunted unpleasantly reversed), then a different and more forceful means of motion may be employed and the prawn executes a quick backward jerk by folding its "tail" in upon itself with great energy and rapidity. This proves very effective, and in an aquarium a prawn may sometimes do this with such gusto that it will hurtle itself backwards out of the water.

One strange feature of the prawn's transparent body is that it allows one to watch the creature's meal being



passed into the stomach in the thing's head which then palpitates in a most disconcerting fashion.

Prawn eggs are easily hatched in a small aerated marine aquarium, and the rapidly changing young are very interesting to watch as they grow.

When looking for prawns (they are easily caught in rock pools) some are frequently found during spring and summer with clusters containing hundreds of tiny eggs adhering in grey masses to the swimmerettes of the parent. Quite soon many little black eyes may be seen peeping out from inside the imprisoning eggs. Soon tiny prawns hatch as prawn larvae or zoë, and they join the drifting life of the plankton. Gradually these peculiar creatures change shape and begin to look like the adult prawn, until eventually they actually become very tiny versions of the adult.



ADVANCE NOTICE

THE FEDERATION OF SCOTTISH AQUARIST SOCIETIES
are happy to announce

THE 2nd SCOTTISH AQUARISTS' FESTIVAL

will be held at the CIVIC CENTRE, MOTHERWELL near GLASGOW

on

SATURDAY AND SUNDAY - 13th, 14th APRIL, 1974

FURTHER DETAILS SHORTLY

Answer to Aren't We All?

FISH BREEDERS

THE MAYFLY

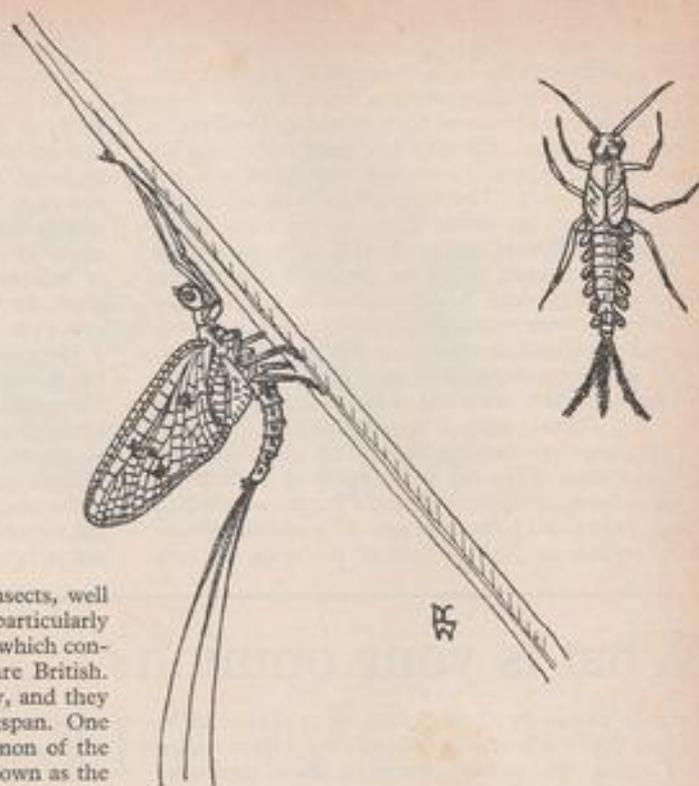
by
David Wareham

MAYFLIES are a group of rather primitive insects, well known by anglers as excellent bait for fish, particularly trout. They form the order *Ephemeroptera*, which consists of thirteen families, eight of which are British. There are over forty species in this country, and they vary in size from $\frac{1}{2}$ inch to $1\frac{1}{2}$ inches in wingspan. One of the largest, and possibly the most common of the Mayflies, is *Ephemera danica*, sometimes known as the Green Drake. Anglers frequently make artificial copies of this insect for fishing.

Mayflies are found throughout the country and are common round the margins of inland waters. Their brief lives are proverbial, and although they may live for just a few hours (up to three or four days in captivity) this is true only of the adult insects. The nymphs or *larvae*, which are completely aquatic, may live for as long as three years before completing their development.

The nymphs vary a good deal in shape and form, depending largely on whether they live in still or running water. This factor is an important aid in the identification of their genera.

On hatching from the egg, the nymph has no visible breathing apparatus, but draws oxygen from the water through its outer skin. A week or two later tracheal gills develop, and these usually consist of seven pairs attached externally to the abdominal segments. These gills vary much in form, again depending on the species. Mayfly nymphs feed on minute animal and vegetable matter such as *algae* and diatoms and certain plant tissues. Some species prefer to live in the silt and sandy beds of streams and rivers whilst others inhabit the decaying vegetation and debris of ditches and ponds. Although many spend their aquatic existence living in tunnels in the mud or clinging to stones and



plants, there are a few species which are active swimmers.

During its period under the water the nymph has numerous moults, with over twenty having been counted, and it is in the later months that the wings are formed in cases. When fully developed the nymph rises to the water's surface, generally in late spring or early summer, and climbs on to a stone, or up a nearby plant stem. Almost immediately the nymphal case splits open and a winged insect emerges. However, unlike the similar process encountered in other insects, butterflies for example, this is still not the final stage of its life history. It is now in the stage known as the semi-adult, or sub-imago, something which is unique in insect metamorphosis. Generally, insects have three stages in their life, the *larva*, the *pupa*, and the adult or imago, but with the Mayfly there are four, with a moult occurring in the adult stage.

The sub-imago, known by the fisherman as a "dun," is dull-coloured, and the whole of the body, together with all the appendages, is covered by a thin hairy skin. After a short while it flies off to hide itself in the vegetation along the water's edge. Here the final moult takes place, and a perfect, brighter, and more delicate Mayfly emerges. This fourth stage, or second adult as it were, is called a "spinner."

The adult Mayfly is a rather pretty, fairy-like creature, with four membranous, transparent wings with numerous veins. The abdomen is long and soft, and ends in two or three very long cerci, or tails. These tails are believed to act as navigational aids whilst the insect is in flight. The Mayfly's head and threadlike antennae are small, and it has two compound eyes and three simple ones. The forelegs are long whilst the other two pairs are rather short. In the male, at the base of the abdomen, and at the root of the tails, there is a pair of claspers, which are employed to grasp the female when pairing. Adult Mayflies do not feed, the mouthparts being vestigial. When the insect is at rest, the wings are held vertically upwards as in a butterfly.

Large swarms of Mayflies are a common sight near streams and rivers at the end of May and the beginning of June. These swarms consist entirely of males which engage in a dancing flight. This dance occurs at different times of the day and is made up of rhythmic up-and-down movements. When a female approaches, some of the males go to meet her. The successful male flies beneath her, taking hold of her with his long

forelegs. Then, passing his outer tails between her hind and forewings, the pair drift together in the summer breeze, and mating takes place.

The instant they separate, the female returns to the water to deposit her eggs. She either drops her eggs into the water whilst flying low over the surface, or she lands on a floating leaf, or on a stone, and dips her abdomen below the surface. The females of some species crawl completely under the water to lay their eggs. As many as 4,000 eggs are laid either in masses or individually. Some have filaments hanging from them, by which they become attached to plants and rocks, etc.

Many members of the Mayfly family are day fliers, but there are several species which are active at night. The nocturnal species are easily attracted to light and frequently come to lighted windows where they can be caught and examined more closely. Unfortunately, because of the short life of the adult and the long life of the nymph, they do not make suitable inmates for the aquarium. They can, however, be reared quite successfully in a garden pond.

What is your opinion?

continued from page 293

amusing poems by Ogden Nash, is published in an Aldine Paperback called 'Versus', by Ogden Nash. I'm typing this month's feature a short time after having left hospital after an operation, and a friend brought me a present of a copy of Nash's book during my illness. I found that it helped to amuse me during the early stages of my recovery. By the way, many thanks to those kind people who sent me get well messages during my stay in hospital; I appreciated them very much!

Please send me your opinions on the following for future features: (a) What have been your experiences

with the breeding of zebras? (b) What have been your experiences with keeping and breeding frogs and toads? (c) Which lighting gives best plant growth—tungsten, fluorescent or a combination of both? (d) How do you treat fresh *Tubifex* before feeding them to your fishes? (e) What have been your experiences with the keeping and breeding of pearl gouramies? (f) What are the optimum conditions for flourishing plants of the dwarf lily? (g) For how many hours per day do you consider aquarium filters should be operated? I look forward to receiving your letters.

EVANS AQUATIC HEATERS AND "ELEPHANT" THERMOSTATS

Evans Electronic Developments Limited of Evonic Works, Shady Lane, Birmingham B44 9EF, announce that in view of the great expansion in the volume of electronic equipment produced, the Company will be ceasing the manufacture of aquarium heaters and thermostats. For many years the major part of the Company's business has been devoted to the growing demand from the Industrial Electronics market and the point has now been reached when the manufacture of their quality Heaters and "Elephant" Thermostats will cease.

AREN'T WE ALL?

By Hilary Maynard

My first is in BUTTERFLY but not in NET,
My second is in GAMBLING but not in BET.
My third is in STAINLESS and also in STEEL,
My fourth is in HANDSTAND but not in KNEEL.
My fifth is in BLOOD but not in RED,
My sixth is in DISAPPEARED but not in FLED.
My seventh is in PLENTIFUL but not in FULL,
My eighth is in BEEFSTEAK but not in BULL.
My ninth is in LECTURED and also in TOLD,
My tenth is in TEMPERATURE but not in COLD.
My eleventh is in COLOUR but not in SHADE,
My twelfth is in SWORD but not in BLADE.

Answer on page 312.



THE PSYCHEDELIC FISH

by H. G. B. Gilpin

Synchiropus picturatus, commonly known as the Psychedelic Fish, is a member of the Dragonet family. Little seems to be known about these fish which are found both in shallow water and also at quite considerable depths off the coasts of the Philippines and New Guinea, probably due to the difficulties experienced in capturing them. Although they have appeared at times on the market in fairly large numbers, securing them in their native surroundings presents problems. Their habit of partially burying themselves in the sand allows some to be collected by sieving at low tide. Trapping is also employed but for success, both these methods require a reasonably high concentration of fish and an accurate knowledge of their whereabouts.

Our specimen, obtained from a local aquaria dealer measured two inches in total length on arrival, suggesting that it was immature, as fully grown members of the species are said to attain a maximum of three inches. It is an attractively coloured fish, basically green enhanced by numerous smooth edged, dark patches, outlined with borders of ochre and black. The tips of the fins are also brightened with an ochre edging and an ochre suffusion spread over the lower part of the head. The sides of the head carry dramatic, dark, slanting lines.

Two fins extend from the dorsal surface, the anterior one being sharply pointed. The ventral fins are situated well forward on the body and are sometimes used as pseudo limbs enabling the fish

to "walk" along the bottom of the aquarium. According to the literature, males may be distinguished by their brighter colours and larger caudal and first dorsal fins. In the absence of any others to compare with our fish we are unable to establish its sex with any degree of certainty. Its gill openings are no more than small round holes placed near the preopercular processes which, as in the other members of the family, possess a series of hooks and spines. Its mouth is equipped with small teeth.

We have been unable to discover any details about the reproduction of Psychedelic Fish but they are said to produce eggs.

On arrival our specimen was installed in a marine aquarium 40 inches by 15 inches by 12 inches, salinity 1.25 and nitrites nil, maintained at a temperature of 75°F and furnished with pieces of coral plentifully covered with green *algae*. It spent much of its time resting on the coral sand covering the floor of the aquarium.

When the Psychedelic Fish was introduced, the aquarium supported a population of two Common

Clowns, two White-tailed Damselfish, two Cardinals and a Bird Wrasse. The newcomer showed no signs of aggression towards its companions, but after a few days its fins became slightly tattered. Blame for this was accorded to the Bird Wrasse and the offender was forthwith removed and transferred to a tank devoid of other inhabitants where its somewhat bellicose behaviour could do no damage.

Although a Psychedelic Fish seems harmless in a community aquarium these fish have a strong territorial sense and when several males are confined together in a large aquarium a "pecking order" is established. Battles can be serious and fights to the death may be expected to occur. For satisfactory results one member of the family to a tank should be the rule.

Feeding our fish presented no difficulties. Offerings of brine shrimps, baby guppies and dry marine food proved acceptable. *Tubifex* worms have been suggested as a food for this species but to date we have not tried them on our fish.

PLAYTAX ORBICULARIS

by H. G. B. Gilpin

ONLY FOUR species of Batfish are known to occur and one of these is considered by some authorities to be no more than a phase of one of the other species. All are said to be very hardy and adaptable to aquarium conditions. They eat freely and will take a wide variety of foods, including in their native habitat, offal and garbage. These marine fish do, it is true, grow rather rapidly and may attain a total length of one foot or more, necessitating plenty of swimming room in an aquarium.

We found our specimen of *P. orbicularis*, the most frequently encountered and easily maintained member of the family, in an aquaria shop and intrigued by its slow, majestic passage through the water, its fascinating shape and warm colourisation meant we were unable to resist buying it.

At present it is a deep-bodied, laterally constricted fish, some four and a half inches long, its almost triangular shape accentuated by the elongated dorsal, anal and ventral fins. With the approach of maturity it may be expected that the fins will become relatively shorter in comparison with the body length and the whole fish assume a more rounded appearance.

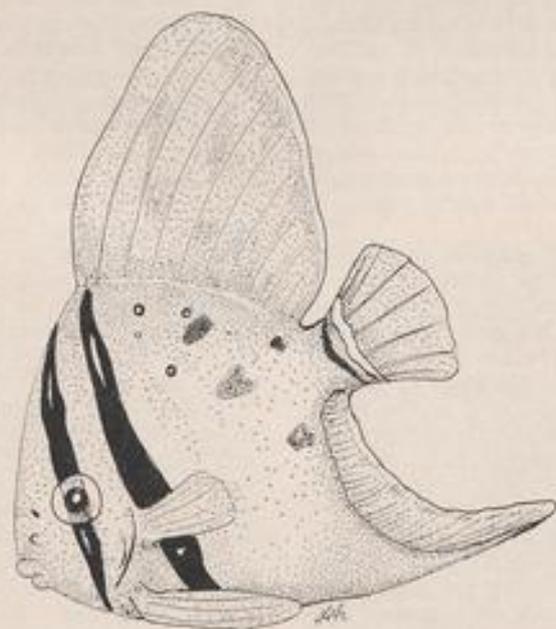
The basic colour of this fish is a rich, reddish-brown, lightening to almost orange around the mouth. Its body varies to a deeper brown from time to time, although the red ventral fins, lined around the edge with black, show no change in hue. In common with other members of the *Placidae*, it has a dark band passing vertically through the eye and another crossing the body from just in front of the dorsal fin though the base of the pectoral fin. The bands,

like the body, darken or pale with varying conditions and moods. Considering the shape and colour of this fish one can readily understand how difficult it is to see it in its native surroundings where its close resemblance to a dead leaf, enhanced by its habit of floating along on its side amongst genuine dead leaves and pretending to be moribund, provides a virtually impregnable camouflage.

It is fascinating to watch the stately leisurely motion of this fish as it "sails" along with head lowered and mouth slightly below the horizontal. *Obicularis* is strictly non-aggressive and we have found it to be completely harmless even towards

however, re-established themselves in their original private retreats, and now show no signs of alarm. Although in our experience Batfish are indifferent to the presence of smaller fish, they are said to be timid on occasion and liable to suffer fin-damage if confined with pugnacious species.

After only a week in our possession the Batfish developed a bad attack of "white spot," although no signs of the infection had appeared in the aquarium prior to its arrival, emphasising once again the necessity of quarantining newly purchased fish before introducing them to one's resident stock. Fortunately no harm resulted. Two Hilenasaan &



fish much smaller than itself, provided they are not so small as to be easily swallowed.

Our fish occupies an aquarium forty inches by fifteen inches by twelve inches, maintained at a temperature of 75°F, well lighted and aerated and furnished with lumps of coral arranged to provide retiring places for the other inhabitants of the aquarium, and floored with coral sand. It shares the accommodation with two White-tailed Damsels and four Cardinals. These latter two species were the original denizens of the aquarium. When the Batfish was first introduced, and subsequently, it completely ignored its companions. To begin with the Damsels, hitherto firmly entrenched in the territories they had chosen for themselves, were thoroughly upset by the arrival of the relatively enormous newcomer. They quickly adapted themselves to the situation,

Co. tablets were added to the water, the dose being repeated a few days later and the aquarium was connected to a Diatom filter pump, changing two hundred gallons an hour, to remove any parasites in the free-swimming stage. The treatment proved entirely successful and the infection cleared up completely within a few days. Today, months later, all the fish in the aquarium are in fine condition and there has been no return of the trouble.

Batfish eat a variety of foodstuffs. In an aquarium they will take small guppies, marine dry food, chopped earthworms, brine shrimps and, judging from our specimen, are particularly fond of dried shrimp. *P. obicularis* rapidly becomes tame. Ours learned to take food from the fingers in a remarkably short space of time and has proved to be an entirely additional attraction to our marine population.

PLAYFAIR'S PANCHAX

by Jack Hems

Pachypanchax playfairii, *Panchax playfairii*, *Haplochilus playfairii*—whatever technical designation you find this oviparous tooth-carp or killifish described under—owes its trivial name to Lieutenant-Colonel R. L. Playfair, who collected specimens in the Seychelles during the latter half of the nineteenth century.

Unlike so many of the species known to killifish enthusiasts, Playfair's panchax is not confined in territory. On good authority we learn that, besides the Seychelles, it is found also in the coastal regions of East Africa, including various nearby islands, as far south as Mozambique.

Unfortunately, in its larger sizes—it can grow to a length of some three to four inches—it becomes aggressive and predatory and, as a precautionary measure, it is best kept isolated from much smaller specimens of its own kind and other fishes of marked timidity or of a swallowable build likely to put their lives in jeopardy. A pity, all this, as the fish is decidedly attractive to look at and no problem at all to keep or breed. (The regular 18 in. × 10 in. × 10 in. tank will make a comfortable home for a pair or trio).

The coloration of the male is brown on the back shading to greenish or golden olive on the side through to yellow or greenish blue melting into silvery olive on the belly. Red dots extend in horizontal lines from head to tail. Red dots are also present in the unpaired fins, which are basically greenish or yellowish margined with brown or red. The female lack the colourful appearance of the male. In general, her colours are brown, light olive to muddy, with nearly colourless fins except the dorsal which is adorned with a black spot or blotch. A peculiarity of this species is that, with increasing age, the scales stand out from the upper part of the body, like those of a fish suffering from dropsy.

In the natural state, Playfair's panchax inhabits soft water giving an acid reaction. Therefore clean rainwater or naturally soft tapwater strained several times through moist moss peat is what we would expect the fish to live in best. Yet there are keen students of African killifish in captivity who inform us that water on the hard side and not unreasonably alkaline is best suited to their health. We live and learn.

When I kept Playfair's panchax years ago I used ordinary water from a South London tap. My fish lived and bred well. Which seems to indicate that the quality of water required for satisfactory maintenance (and breeding) is of no great importance except to the over-meticulous.

The aquarium should be thickly planted with fine-foliaged plants such as nitella, myriophyllum or vesicularia. For it is in dense tangles of plants or substitutes for plants, such as non-toxic man-made fibres, that the fish chooses to spawn. Then again, plenty of plants afford hiding places for too energetically driven females (it is recommended to keep more than one female with every male). A temperature in the lower seventies (°F) is perfectly satisfactory for general maintenance, but for breeding a temperature in the neighbourhood of 77°F (25°C) is about right.

A couple in breeding condition can usually be recognised by their enhanced colours (in the male) and fuller abdomen (in the female) and general air of excitability. The deposited eggs, which adhere to the stems and leaves of the plants, are released and fertilized over a period of several days.

The eggs are about the size of a head of a pin and look quite clear. But before a week is out they take on a brownish hue. This darkening is brought about by the development of the embryos inside the eggs. Infertile eggs grow a fungus. They should be removed from the tank without delay. The fertile eggs incubate in ten to twelve days and the fry, at the start of their free-swimming lives, are nearly the size of a newly born guppy. They are large enough, at any rate, to eat large infusorians, micro worms, brine shrimps, and the like, for the first nine days or so, after which Grindal worms, minced tubifex, sieved Daphnia, and so on, should be placed on the menu.

The aquarist who is not concerned about saving all the fry (bear in mind that as the eggs are deposited on different days the fry will be of different sizes) can leave them where they are and trust to luck that the parent fish do not scoff too many or the lot. For a number will always succeed in keeping clear of their cannibalistic parents. A breeding tank larger than 18 in. × 10 in. × 10 in. will guarantee

this. But the wiser plan is to remove the eggs (they are hard-shelled enough to be lifted out with the fingers or taken out with pruned-back plants) and incubate them in another aquarium (with no other fishes present) or large jars maintained, of course, at the proper temperature.

Full grown *P. platyfairii* do not demand live food, but some specimens will not accept dried food with any enthusiasm. And this the aquarist with no previous experience with this fish does not always realise. Another thing, this species is essentially a haunter of

the upper levels of the water and is not always on the go. It sometimes stays quiescent for what appears to be an unhealthy length of time. But it is never anything but alert to what is going on around it. And when it moves it moves with great speed and is a jumper into the bargain. Therefore, never leave its aquarium uncovered and make certain that the cover fits fairly closely all round or else you may find one or more of your fish missing every now and then and, later, find them dried up on the floor.

CIVILISED BEHAVIOUR AMONG GOLDFISH

by S. L. Berry

ONE OF THE interesting features of the course known as The Biological Basis of Behaviour which is conducted by the Open University is the assignment to train a goldfish. I have a devoted pair of goldfish, the larger one is 3½ ins. long and three times the volume of the smaller one which is only 2¼ ins. long.

When I am not training them, I feed them by sprinkling food on top of a special feeding area. This slowly floats down to settle on the bottom of the training tank. The goldfish watch this miracle of food delivery with eager anticipation but both fish seem frozen still in their positions. They are waiting for me to leave them now that the food has been delivered and only when I am out of their sight do they attempt to tackle the food.

I regulated the quantity to keep both fish in perfect health. Obviously, the larger fish would eat the greater portion of the food but I was very concerned to know if the smaller fish received its fair portion. I pretended to leave them and waited and watched their ritual of eating.

The smaller fish swam to the food and then swam back to the larger fish, as if to suggest that they should begin to eat. It was clearly waiting for the larger fish to give it a lead. After a pause, the larger fish began to pretend to eat by picking up gravel in its mouth and expelling it. It went nowhere near the food. The smaller one accepted this as a lead to eat and went directly to the food. It imitated the action of the larger fish but it really began to eat. Slowly and gradually, the larger fish drew nearer to the food. By this time it was so ravenous that it had to struggle to restrain itself. Even so, it contented itself by searching for scattered fragments on the fringe of the feeding

area until the smaller fish moved away a little. As the smaller fish had had its fill the larger fish now felt free to swallow what remained at a very rapid rate. Both fish had their fill but they habitually spent a long time searching among the gravel for any scraps they might have missed.

There are occasions when the fish have to be separated for individual training sessions. They are so glad to be re-united again it is a pleasure to watch them communicate this to each other.

What have my fish learned from me? I have taught them to feed themselves from a feeding tube. When they are given a selection of tubes, they nominate the tube they select by tapping it before expecting to receive food from it. Sometimes the tubes bear different colours. The larger fish can discriminate between different colours so that it knows which tube contains the promise of a food reward. Sometimes the tubes bear different shapes of the same colour, i.e. a circle or a square. The larger fish can discriminate between different shapes and will select the right one even if it is not really hungry enough to want a reward. Goldfish enjoy playing "games" of this kind and even offer a display performance of their own.

When my fish became used to me, they no longer waited for me to leave before beginning their eating ritual and the mystery of how the fish had developed it soon became apparent. If the larger fish forgot to observe the formalities it was very quickly reminded of them. The smaller fish used its snout to push the larger fish in the tail until it behaved. The larger fish is so devoted to the smaller one that it yields. By repeated corrections, the smaller fish had "trained" the larger fish to be more "civilised".



from AQUARISTS' SOCIETIES

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

AN Invitation Show held by Slough and District A.S. proved a great success with nearly 200 entries. The results were as follows: Class B: 1, R. Leslie (High Wycombe); 2, K. Smith (Roynemede); 3, D. Cruickshank (Ealing); 4, B. Sellers (Baling). Class C: 1, R. Goodson (Roehampton); 2, R. Cox (High Wycombe); 3, L. Little (Bracknell); 4, Mrs. Pratt (Hounslow). Class D: 1, T. Hall (High Wycombe); 2, J. Batts (Ealing); 3, J. Shepherd (Runnymede); 4, F. McDowall (Runnymede). Class E: 1, Mrs. Parrish (Hounslow); 2, L. Little (Bracknell); 3, Mrs. Sawford (Roehampton); 4, O. Leslie (High Wycombe). Class G: 1, D. Lambourne (Roehampton); 2, P. Lambourne (Roehampton); 3, M. Nethersell (Riverside); 4, J. Batts (Ealing). Class H: 1 and 4, J. Shepherd (Runnymede); 2, Mrs. Parrish (Hounslow); 3, J. Batts (Ealing). Class N: M. Nethersell (Riverside); 2, R. Pook (Hounslow); 3, R. Leslie (High Wycombe); 4, J. Batts (Ealing). Class O/P: 1, L. Little (Bracknell); 2, T. King (Roehampton); 3, M. Nethersell (Riverside); 4, T. Cruickshank (Ealing). Class Q/R: 1 and 2, L. Pierce (High Wycombe); 3, L. Little (Bracknell); 4, S. Mason (Roehampton). Class S: 1, D. Cruickshank (Ealing); 2 and 3, D. Lyne (High Wycombe); 4, S. Mason (Roehampton). Class T: 1, D. Cruickshank (Ealing); 2 and 3, A. Smith (Hounslow); 4, J. Shepherd (Runnymede). Class X: 1, J. Stollery (Roehampton); 2, L. Little (Bracknell); 3, D. Lyne (High Wycombe); 4, M. Collins (Hounslow). Phant Trophy for A.O.S. Liverbearer: Doris Cruickshank (Ealing). Knight Trophy for Best Club: High Wycombe. Kei Ang Trophy (Best Fish in the Show): D. Lambourne. Young Trophy (for highest placed Slough member): Keith Ferris.

THIS year's Open Show of Mid Herts A.S. attracted a record 468 entries. The Best Fish in Show and winner of Aquarist Gold Pin was a Goldfish owned by Mr. Crew of Wellingborough A.S. Sudbury A.S. took the points trophy. The full results were as follows: Class Aa: 1, United A.S. Class Ad: 1, A. Welsh. Class Am: 1, R. A. Welsh; 2, A. Worth (Mid Herts); 3, Mrs. M. Larder (Mid Herts). Class B: 1, Mrs. D. Cruickshank (Ealing); 2, L. G. Little (Bracknell); 3, A. Lusby (Mid Herts); 4, C. S. A. Withers. Class C: 1 and 4, R. A. Ott (Haverhill); 2, D. G. Wood (Haverhill); 3, P. A. Moye (Sudbury). Class Ca: 1, L. G. Little (Bracknell); 2, L. J. Brazier (Sudbury); 3, B. E. Lea (Northampton); 4, J. M. Bayly (Sudbury). Class D: 1, D. Lyne (High Wycombe); 2 and 3, I. Farlow (Dunmow). Class Db: 1 and 4, R. F. Rumney (Mid Herts); 2, D. G. Wood (Haverhill); 3, L. Draper (Interpeise). Class E: 1, L. G. Little (Bracknell); 2, T. A. Cruickshank (Ealing); 3, R. L. Gillard (Dunstable); 4, L. J. Brazier (Sudbury). Class F: 1, A. Worth (Mid Herts); 2, R. L. Gillard (Dunstable); 3, Mrs. S.

Wood (Haverhill); 4, E. A. Holmes (Banbury). Class G: 1 and 2, M. J. Lewis (Sudbury); 3, R. Gracie (Mid Herts); 4, E. Milford (Dunmow). Class H: 1, P. A. Moye (Sudbury); 2, L. J. Brazier (Sudbury); 3, M. J. Lewis (Sudbury); 4, A. Thacker (Vauxhall). Class J: 1, L. G. Little (Bracknell); 2, A. C. Tufts (Hemel Hempstead); 3, T. A. Cruickshank (Ealing); 4, P. A. Moye (Sudbury). Class K: 1, T. A. Cruickshank (Ealing); 2, A. Schofield (Hemel Hempstead); 3, D. Kinslingbury (Uxbridge); 4, J. M. Bayly (Sudbury). Class L: 1 and 4, P. Saunders (Mid Herts); 2, A. Lusby (Mid Herts); 3, A. C. Tufts (Hemel Hempstead). Class M: 1, C. De Cruz (Dunmow); 2, L. J. Brazier (Sudbury); 3, A. Lusby (Mid Herts); 4, P. A. Moye (Sudbury). Class N: 1, W. Holmes; 2, A. Lusby (Mid Herts); 3, L. J. Brazier (Sudbury); 4, C. S. A. Withers. Class O: 1, Mr. Crew (Wellingborough); 2, D. G. Wood (Haverhill); 3, L. G. Little (Bracknell); 4, C. W. Goddard (Sudbury). Class P: 1 and 2, C. Kinslingbury (Uxbridge); 3, A. Worth (Mid Herts); 4, E. A. Holmes (Banbury). Class Q: 1 and 4, P. A. Moye (Sudbury); 2, C. Kinslingbury (Uxbridge); 3, Mrs. M. Crew (Wellingborough). Class R: 1, L. G. Little (Bracknell); 2, A. Lusby (Mid Herts); 3, A. Boice (Hemel Hempstead); 4, W. Holmes. Class S: 1, Mr. Crew (Wellingborough); 2, A. Welsh; 3, Mrs. D. Cruickshank (Ealing); 4, W. Holmes. Class T: 1, A. C. Tufts (Hemel Hempstead); 2, A. Lusby (Mid Herts); 3 and 4, L. G. Little (Bracknell). Class U: 1, Mr. Crew (Wellingborough); 2 and 4, I. Fennies (G.S.G.B.); 3, P. S. Kadwell (G.S.G.B.). Class V: 1 and 4, P. S. Kadwell (G.S.G.B.); 2 and 3, A. Lawman (G.S.G.B.). Class Xb-m: 1 and 4, P. A. Moye (Sudbury); 2, P. Martin (Haverhill); 3, Mr. Crew (Wellingborough). Class Xc-t: 1, Mr. Crew (Wellingborough); 2, L. G. Little (Bracknell); 3, E. A. Holmes (Banbury); 4, R. F. Rumney (Mid Herts). Class Xu-w: 1, 2 and 3, I. Fennies (G.S.G.B.); 4, P. S. Kadwell (G.S.G.B.). Junior: 1, Lynn and Michele Brazier (Sudbury); 2, Richard Little (Bracknell); 3, Anita Moye (Sudbury); 4, Miss J. E. Goddard (Sudbury).

THE Fancy Guppy Association (Birmingham Section) held its annual autumn Open Show late in September. Members were given a very interesting talk by D. Phillimore on the F.G.A.'s judges' training course. The major awards for this meeting were won by D. Curry (Best Female Wedgetail); D. Phillimore (Best Male Fantail) and Best Breeder, Best in Show with Breeder's Pairs. The Association meet on the fourth Sunday afternoon of each month at the Glebe Farm Community Centre, Stechford, Birmingham. Anyone wishing to learn the genetics and breeding of the Fancy Guppy are warmly welcomed.

FIFTEEN member societies were represented, including two new members, Hereford A.S. and Cotswold A.S., at the annual general meeting of the Severnside Aquarist Association. Officers for 1974 were elected and were: L. Littleton (chairman); D. Noble (secretary), 45 Hillside Avenue, Kingswood, Bristol; P. Baines (treasurer); and C. Stickland (P.R.O.). The judging and standards committee for 1974 are: L. Littleton, L. Nighingale, E. Short, D. Noble, P. Wright, P. Greenwood and E. Newman. The financial report was very

encouraging but the Association still has a long way to go. A proposal to streamline the Constitution was adjourned to, on Saturday, 5th January, 1974. The Judging and Standards Committee hope soon to publish their standard list of Show Classes which will prove a useful guide in the future. Any society interested in Severnside is invited to send representatives to any meeting of the Association and also any person wishing to become a Judge is invited to submit his name, etc.—in either case, please contact the secretary.

GUEST speaker at the well-attended meeting of the Gloucester Fishkeeping and Social Club was Mr. H. C. B. Thomas from Bristol, who gave a very interesting and at times amusing talk entitled: "Are we fishkeepers or fishkeepers?" This dealt mainly with the need to provide fish with conditions as near as possible like their natural environment. This produced plenty of questions from his audience and members showed their appreciation with a round of applause at the close. The Table Show at this meeting was the last one of the club year and the results were awaited with a great deal of interest as the outcome of this show would decide the holders of the club trophies for this year. The show, which was for A.V. Gouramis, was judged by Mr. Thomas and resulted in a victory for Mrs. E. Adlam, who was placed first, second and fourth with M. Toomey in third place. A new venture is being tried this year by the organising of a competition for Home Aquaria and entry will be free. Due to the organising necessary, however, on this occasion it will be restricted to aquarists resident in Gloucester. Should the event be a success, it is probable the competition will be widened next year. This venture is only due to the generosity of the proprietors of the Barrier Reef, Westgate Street, Gloucester, who are sponsoring this competition and it is the first time in this area that an open competition for Home Aquaria has been held. The winner will hold the "Barrier Reef" Challenge Trophy and also a prize to the value of £15, and the runner-up receives £5. The winner of the Junior section will receive a prize to the value of £10. All details will be announced as soon as the arrangements have been finalised.

THE Leytonstone & Stratford District A.S. held their annual general meeting recently and the new officers elected were as follows: chairman, R. J. Lugmayer; vice-chairman, A. Hove; secretary, R. Sampson, 59 Bute Road, Barking, Essex; treasurer, R. Dale; show manager, P. Lamas; show secretary, B. Davies; librarian, P. Barry; committee, T. Kudervitch, R. Champion.

The year's club achievement results were:— Best Fish of the Year: R. J. Lugmayer. Highest Points Cup of the Year: A. Hove. Highest Pointed: Platy Cup, A. Hove. Chaacin Shield, R. J. Lugmayer; Labyrinth Cup, R. Sampson. Lauraine Cup (won jointly), R. J. Lugmayer, A. Hove, R. Sampson. Junior Cups Points, J. Sampson; Furnished Jars Cup, T. Kudervitch. The society has a slide show for hire with speaker and equipment. Those interested should get in touch with R. J. Lugmayer. All new members are welcomed with senior citizens at reduced rate. The meetings are held every Thursday at Harrow Green Baptist Church, Harrow Road, Leytonstone High Road.

AT the September meeting of the Lincoln and District A.S. the competition for the Richard Baines Trophy was held. This was judged by Mr. W. D. Gilding of the Gainsborough A.S. and the results were as follows: 1, J. Goldson; 2 and 3, Mr. and Mrs. Horrell and Son; 4, C. Goldson.

COMMITTEE members elected at the annual general meeting of the Grantham & District A.S. were: chairman, P. Harris; treasurer, G. Hollingsworth; secretary, Mr. and Mrs. Patison, 27 Lynn Court; show secretary, C. Shipman, 40 New Beacon Road; fund-raising officer, E. Neville; junior committee member, M. Chappell. Many thanks are expressed to the

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retiring chairman, J. Jones, for all the hard work he has done during his five years in the chair. Club nights, second Wednesday and last Friday each month, at the Victoria Hotel. New members always welcome.

THE excellent quality and standard of the fish entered at **Bethnal Green's A.S.** open show made it their most successful and largest yet. Best fish in the show was owned by John Bates of Ealing. F.B.A.S. Championship Trophy, class C2, was won by Mrs. Beryl Scates, Erith, and she also won the "Wanda's" Trophy for Best Lady's Exhibit. The Delta Connolly Rosebowl for Best Junior was won by Miss Rhonda Coyle. Detailed results: Class Aa-b: 1, Leytonstone and Stratford; 2 and 3, Walthamstow; 4, Dunmow. Class Ad-e: 1, D. Nutt (G.S.G.B.); 2, Shirley Jacobs (Roehampton); 3, J. Jones (B.G.A.S.). Class B: 1, Rita Coyle (Independent); 2, A. E. Williams (Freedance); 3, M. D. Chapman (Brighton Hill); 4, R. Newman (Uxbridge). Class C2: 1, Beryl Scates (Erith); 2, D. Dare (B.K.A.); 3, R. Goodson (Roehampton); 4, Rita Coyle (Independent). Class C2: 1 and 3, D. P. Ingle (Chingford); 2, R. Bowes (Independent); 4, P. Jarvis (Freedance). Class Cb: 1, J. Batts (Ealing); 2, R. A. Vanderson (Harlow); 3 and 4, Barry Davies (Leytonstone and Stratford). Class D2: 1, J. Batts (Ealing); 2, D. Dare (B.K.A.); 3, J. Connolly (B.G.A.S.); 4, A. Hall (High Wycombe). Class D3: 1, M. D. Chapman (Brighton Hill); 2, P. Jarvis (Freedance); 3, A. J. Isted (Uxbridge); 4, A. E. Williams (Freedance). Class E2: 1, Rita Coyle (Independent); 2, A. P. Taylor (Sudbury); 3, P. D. Elson (Freedance); 4, J. M. London (Thurrock). Class E3: 1 and 3, R. Bowes (Independent); 2, E. McQuade (Int. Beta Congress, Canada); 4, A. P. Taylor (Sudbury). Class E4: 1, R. Bowes (Independent); 2, R. C. Burton (Freedance); 3, P. Gardner (Sudbury); 4, Beryl Scates (Erith). Class E5: 1 and 2, C. and K. Thomas (Walthamstow); 3, J. M. London (Thurrock); 4, R. Bowes (Independent). Class G: 1, May Netherell (Riverside); 2, R. Bowes (Independent); 3, D. J. Howe (Anson); 4, R. Goodson (Roehampton). Class H: 1 and 2, J. Batts (Ealing); 3, T. Woolley (Harlow); 4, F. H. Lammis (Leytonstone and Stratford). Class I: 1, P. Coyle (Independent); 2, S. Adams (B.G.A.S.); 3, J. Batts (Ealing); 4, S. Mason (Roehampton). Class K: 1, 2 and 4, J. Connolly (B.G.A.S.); 3, P. Coyle (Independent). Class L: 1, A. Coyle (Independent); 2, D. Bundy (B.G.A.S.); 3, I. R. Pierce (High Wycombe); 4, G. Thorp (Regaine and Redhill). Class M: 1, B. Pascock; 2, A. Billock (B.G.A.S.); 3, May Netherell (Riverside); 4, Rita Coyle (Independent). Class N-m: 1, R. Bowes (Independent); 2 and 4, J. Batts (Ealing); 3, T. Woolley (Harlow). Class No-t: 1, T. Woolley (Harlow); 2, R. Newman (Uxbridge); 3, A. Heath (Lewisham); 4, I. R. Pierce. Class O: 1, K. Usher (Anson); 2, C. Kilingbury (Uxbridge); 3, A. Hall (High Wycombe); 4, May Netherell (Riverside). Class P: 1, D. King (Roehampton); 2, A. King (Roehampton); 3 and 4, A. J. Hoye (Leytonstone and Stratford). Class Q: 1, I. R. Pierce (High Wycombe); 2, K. Usher (Anson); 3, R. Newman (Uxbridge); 4, J. Connolly (B.G.A.S.). Class R: 1, M. D. Chapman (Brighton Hill); 2, May Netherell (Riverside); 3, J. Hoser (Anson); 4, G. Smith (Walthamstow). Class S: 1 and 2, May Netherell (Riverside); 3, S. Mason (Roehampton); 4, J. Howe (Anson). Class T: 1, 2 and 3, K. Usher (Anson); 4, R. Newman (Uxbridge). Class U: 1, 2, 3, and 4, P. Pinder. Class V: 1, 2 and 4, A. Lawman (G.S.G.B.); 3, D. Nutt (G.S.G.B.). Class W: 1, T. Woolley (Harlow); 2, Sandra Taylor; 3, D. Nutt (G.S.G.B.); 4, P. Pinder. Class Xb-m: 1, B. Bulbin (Walthamstow); 2, D. McMurdie (Dunmow); 3, P. Martin (Haverhill); 4, A. Chandler (Walthamstow). Class Xc-t: 1, K. Usher (Anson); 2, B. Bulbin (Walthamstow); 3, A. Chandler (Walthamstow); 4, T. Woolley (Harlow). Class Z: 1 and 2, A. Chandler (Walthamstow); 3 and 4, D. Keen (Bury St. Edmunds). Class B-Ty: 1, Rhonda Coyle (Independent); 2 and 4, S. Adams (B.G.A.S.); 3, Miss J. Goddard (Sudbury).

THERE was a record entry at the **Hetton Aquatic Section** of the Herion Community Association Centre. The judges were K. Low, L. Collins, A. Cutting and G. Liddle, all F.B.A.S., Class "A" or "B". Results: Guppies: L. Southall (South Shields). Platies: Mr. and Mrs. Hunt (Ashington). Swordtails: Mr. and Mrs. Coates (South Shields). Mollies: K. Greenley (Half Moon, Billingham). Small Barbs: Mr. and Mrs. Ribbidge (South Shields). Large Barbs: J. Robertson (Mount Pleasant). Small Characins: J. Furness (Castleford). Large Characins: Mr. and Mrs. Wellford; also Best Fish in Show (Paranha) (Cleveland). Dwarf Cichlids: C. Enright (South Shields). Large Cichlids: R. Asherton (Hartlepool). Rasboras and Danios: E. Buck (Heston). Sharks and Labros: G. Brown (Mount Pleasant). Corydoras: K. Greenley (Half Moon Billingham). Catfish and Loach: Mr. and Mrs. Saunders (Stockton). A.V. Fighter: F. Myer (Independent). A.O.V. Labyrinth: Thompson (Bishop Auckland). I.L.L.T.C.: Mr. and Mrs. Kilvington (Doncaster). A.V. Angel: C. Enright (South Shields). Breeding Pairs (Livebearers): M. Gillespie (Castleford). Breeding Pairs (Egglayers): P. Newton (Hartlepool). Breeder (Livebearers): J. Furness (Castleford). Breeder (Egglayers): J. Furness (Castleford). A.V. Coldwater: B. Edwards (Half Moon, Billingham). A.O.V. Tropical: P. Wright (Independent). Junior Section: Master A. S. Furness (Castleford). The Society receiving the most points was South Shields. Runner-up being Castleford and third was Hartlepool. Individual with the most points was M. Gillespie (Castleford). Runner-up: Mr. and Mrs. King (Doncaster) and third K. Greenley (Half Moon, Billingham) and J. Furness, with 11 points.

FOR the first meeting of the month the **Hastings and St. Leonards A.S.** heard P. Harbord speak on "Fishes I Have Bred." R. Funnell illustrated the talk by showing coloured slides. Mr. Harbord started with the Common Guppy and continued on to the more difficult fish like angels and killifish. He also spoke on feeding and water conditions. The table show was Platys, judged by R. Sleer. Result: 1, Miss H. French; 2, A. Adams; 3, T. Adams. At the second meeting J. Burtles spoke on Cichlids and illustrated his lecture with drawings covering the four separate groups namely, Dwarf, Large, African and Rift Valley Cichlid. He said Dwarf are mainly suitable for the community aquarium, Large are best kept on their own. Rift Valley are expensive and difficult to keep. The table show was Cichlids, judged by Mr. Corbin (Mid Sussex). The winners were: 1, J. Livings; 2, Mrs. Power; 3, T. Adams. Members and their families enjoyed a visit recently to Windsor Safari Park, arranged by the Society.

THIRD open show results of the **Buxton and District A.S.** were as follows: Guppies: 1, Mr. and Mrs. Marshallises (Blackburn); 2 and 3, D. and M. Laycock (Sheffield). Mollies: 1, R. Brown (Scunthorpe and District); 2, C. Morson (Chesterfield); 3, J. Igoe (Sherwood). Platies: 1, P. Whelan (Blackburn); 2, Mr. Blundel (Doncaster); 3, Mr. and Mrs. L. Thorne (Northwich). Swordtails: 1, Mr. Andron (Doncaster); 2, Mr. Feasey (Doncaster); 3, Mr. and Mrs. Fletcher (Doncaster). Small Gouramis: 1, Mr. and Mrs. L. Thorne (Northwich); 2, N. Carr (Doncaster); 3, M. Clarke (Buxton). Fighters: 1 and 3, F. Croven (Buxton); 2, A. Axon (Ashton-under-Lyme). Labyrinth A.O.V.: 1, R. Hall (Derby Regent); 2, Master A. Miffim (North Staffs); 3, Miss J. Gullane (Buxton). Small Characins: 1, D. and M. Laycock (Sheffield); 2, Mr. and Mrs. Pattison (Grantham); 3, Mr. Blundel (Doncaster). Large Characins: 1, Mr. and Mrs. Bailey (Sherwood); 2, R. Mellieu (Oswestry); 3, A. Cass (Macclesfield). Tropical Freshwater A.O.V.: 1, Mr. and Mrs. Shroton (Grantham); 2, Master A. Miffim (North Staffs); 3, Mr. and Mrs. Heap (Village). Corydoras and Brochis: 1 and 3, M. Clarke (Buxton); 2, Mr. and Mrs. Wells (Doncaster).

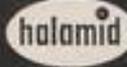
Loaches: 1, Mr. and Mrs. Marshallises (Blackburn); 2, Mr. and Mrs. Daines (Doncaster); 3, D. and M. Laycock (Sheffield). Catfish and Loach A.O.V.: 1, Mr. and Mrs. Gabe (Chesterfield); 2, Mr. and Mrs. Barr (Scunthorpe and District); 3, I. Snadden (Buxton). Angels: 1, Mrs. M. Igoe (Sherwood); 2, Mr. and Mrs. E. Smith (Sheffield); 3, Mr. and Mrs. Bailey (Sherwood). Dwarf Cichlids: 1, Mr. and Mrs. L. Thorne (Northwich); 2, Mr. and Mrs. Blades (Creswell); 3, Miss R. Kaye (Top Ten). Cichlids A.O.V.: 1, Mr. and Mrs. Blades (Creswell); 2, Mr. and Mrs. L. Thorne (Northwich); 3, S. E. Marshall (Buxton). Breeders Teams (Egglayers): 1, B. Blackburn (Sherwood); 2, P. Stamford (Don Valley); 3, A. Lane (Derby Regent). Breeders Teams (Livebearers): 1, J. Igoe (Sherwood); 2, Mr. Blundel (Doncaster); 3, R. Knowles (Northwich). Small Barbs: 1, Mr. and Mrs. Blades (Creswell); 2, T. Smith (Sheffield); 3, Mr. and Mrs. Fletcher (Doncaster). Large Barbs: 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. Bailey (Sherwood); 3, Mr. Feasey (Doncaster). A.V. Killifish: 1 and 3, Mr. and Mrs. Blades (Creswell); 2, T. Smith (Sheffield). Carps and Minnows, Sharks and Labros: 1, Miss J. Gullane (Buxton); 2, Mr. and Mrs. Bailey (Sherwood); 3, Mr. Blundel (Doncaster). Carps and Minnows, Rasboras, Danios, W. Cichlids: 1, T. Smith (Sheffield); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Blades (Creswell). Egglayers (Pairs): 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. R. T. Bull (Derby Regent); 3, Mr. and Mrs. D. Stone (Chesterfield). Livebearers (Pairs): 1, Mr. Blundel (Doncaster); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Copley (Doncaster). Common Goldfish: 1 and 2, Miss R. Blount (Buxton); 3, K. Wood (Buxton). Fancy Goldfish: 1, Mr. Harris (Nelson); 2, Mr. Hunt; 3, Miss J. Gullane (Buxton). Coldwater A.O.V.: 1, Mr. and Mrs. L. Thorne (Northwich); 2, M. Clarke (Buxton). Tropical Marine: 1, D. Preston. Best Fish in Show: Mr. and Mrs. Marshallises (Blackburn).

THE **High Wycombe A.S.** were entertained recently by an illustrated talk entitled "Various Fish Slides" given by Pete Ginger. In September, Mr. Ginger returned to judge the twelve-a-side competition, at home, against Amersham, the final result being a win for High Wycombe with 156 points against Amersham's 144. Individual places as follows: 1 and 2, A. Hall (High Wycombe); 3, B. Jessop (Amersham); 4, J. Bushby (High Wycombe). Prospective members are most welcome at the "White Horse," Oxford Road, High Wycombe, on alternate Thursdays. Please contact the Secretary at Penn 3825 for details. The club is now also able to accept junior members.

A TABLE show was held in September when **Llanrwit Major A.S.** held their meeting in which members competed for the Club's Perpetual Trophies. Results as follow: A.O.V. Egglayers: 1 and 2, W. Limbrick; 3 and 4, A. Ibbertson. A.O.V. Livebearers: 1, Master Paul Glover; 2, J. Massey; 3, J. Thomson; 4, N. Haley. Breeders (Egglayers): 1, A. Ibbertson. Breeders (Livebearers): 1, Master Paul Glover; 2, A. Ibbertson; 3, N. Haley.

While the judging was taking place members were entertained by a short talk given by Club Secretary, S. Nelson, on "Filtration."

RESULTS of **Cleveland A.S.** open show were: Guppies: 1, J. King (Cleveland); 2, Mr. and Mrs. Saunders (Stockton); 3, J.

PREVENTS

 ALGAE
 Hillside Aquatics London N12

(Hinkley), Angel Fish: 1, P. Watts (Coventry); 2 and 4, G. Allen (Independent); 3, T. Salisbury (Bedworth). A.O.V. Cichlids: 1, R. Shakespeare (Bedworth); 2, G. W. Allen (Independent); 3, Mr. and Mrs. A. Jeffs (Nuneaton); 4, D. and H. (Tamworth Killie). Barbs Named: 1, D. and H. (Tamworth Killie); 2, B. and S. Wharton (Gornal); 3, K. Buxton (G.K.N.); 4, Mr. and Mrs. G. Cox (Nuneaton). A.O.V. Barbs: 1, A. Simmonds (Coventry); 2, F. Underwood (Spa); 3, K. Buxton (G.K.N.); 4, Mr. Neville (Granttham). Corydoras and Brochis: 1, Attwood and Williams (Rubery); 2, R. Whitfield (Rubery); 3, J. Goodman (Gornal); 4, T. Saunders (G.K.N.). A.O.V. Catfish: 1 and 3, C. Pratt (Bedworth); 2, Attwood and Williams (Rubery); 4, J. Goodman (Gornal). A.V. Loach: 1, J. Goodman (Gornal); 2, C. Edwards (Kidderminster); 3, D. White (Bedworth); 4, Mrs. P. Hinde (Coventry). A.V. Swordtail: 1, 2 and 3, D. White (Bedworth); 4, G. W. Allen (Independent). A.V. Platy: 1, Mr. and Mrs. G. Nashitt (Goodyears End); 2, Attwood and Williams (Rubery); 3, C. Pratt (Bedworth); 4, Mrs. D. Moore (Bedworth). A.V. Molly: 1, J. Salisbury (Bedworth); 2, R. Shakespeare (Bedworth); 3, G. W. Allen (Independent); 4, Mr. and Mrs. Hancock (Spa). A.V. Guppy: 1, Mr. and Mrs. Short (Nuneaton); 2, Mr. and Mrs. Hancock (Spa); 3, Mr. Biley (Rhonda); 4, C. Pratt (Bedworth). A.V. Livebearer: 1 and 3, G. W. Allen (Independent); 2 and 4, J. Goodman (Gornal). Livebearer (Pair): 1, C. Pratt (Bedworth); 2, J. Salisbury (Bedworth); 3, L. W. Poole (Banbury); 4, D. Fenwright (G.K.N.). Egglayer (Pair): 1, J. Carney (Canock); 2, D. and H. (Tamworth Killie); 3, B. C. Roberts (Independent); 4, B. and S. Wharton (Gornal). A.V. Rasbora: 1 and 4, D. White (Bedworth); 2, Mr. Taylor (Loughborough); 3, K. Pratt (Bedworth). Danio and W.C.M.M.: 1 and 2, T. Saunders (G.K.N.); 3, T. Allen (Bedworth); 4, G. Carney (G.K.N.). A.V. Killies: 1 and 4, B. and F. Hirst (Coventry); 2, T. Allen (Bedworth); 3, J. Goodman (Gornal). A.O.V. Tropical: 1, Mr. and Mrs. Shipman (Granttham); 2, J. Salisbury (Bedworth); 3, Mrs. J. Carney (Canock); 4, C. Pratt (Bedworth). Junior Egglayers: 1 and 3, Miss L. Shipman (Granttham); 2, Master D. Carney (Canock); 4, Miss J. Sheldon (Rubery). Junior Livebearers: 1, C. Pratt (Bedworth); 2, Master R. Hill (Independent); 3, Master I. Short (Nuneaton); 4, Master S. Breathwick (Goodyears End). Breeders Egglayers: 1, B. and F. Hirst (Coventry); 2 and 4, J. Salisbury (Bedworth); 3, T. Salisbury (Bedworth). Breeders Livebearers: 1, Mrs. W. Moore (Bedworth); 2, Mr. and Mrs. Hancock (Spa); 3, J. Goodall (S.A.S.S.); 4, Mr. Neville (Granttham). A.V. Platy: 1, 3 and 4, J. Goodman (Gornal); 2, J. Salisbury (Bedworth). Single Tail Goldfish: 1, F. E. Watts (Coventry); 2, Mr. Basingwood (Coventry); 3, Shilton & Mayer (Atherstone); 4, Mr. Wilman (Coventry). Twin Tail Goldfish: 1, Mr. and Mrs. R. Impy (Hickley); 2 and 3, Attwood and Williams (Rubery); 4, C. Pratt (Bedworth). A.O.V. Pond or River: 1 and 3, S. Hilton and Mayer (Atherstone); 2, C. Pratt (Bedworth); 4, J. Salisbury (Bedworth). Best Fish in Show: Mr. and Mrs. Shipman's Siamese Tiger Fish.

THE Weymouth A.S. Show was a great success with 25 classes and a total number of 254 fish entered. The results were: Best Fish in Show: President's Cup won by K. Forrester. Best Sexed Pair: Wyland Cup won by K. Forrester. Furnished Aquaria: Allan's Cup won by Mrs. V. Worth. Best Goldwater Entry: Naomi Worth Trophy won by J. White.

Class winners were: Furnished Aquaria: 1, Mrs. V. Worth; 2, J. Fancy; 3, D. Mullen; Barbs: 1 and 2, R. Hart; 3, A. S. Carter; 4, Mrs. P. Carter. Characins: 1, Mr. and Mrs. Medway; 2, K. Forrester; 3, A. Cox; 4, J. Fancy. Cichlids: 1, 3 and 4, R. Hart; 2, K. Forrester. Angels: 1, Mrs. M. Mackie; 2, K. Forrester; 3, C. Taylor. Dwarf Cichlids: 1, Mr. and Mrs. Medway; 2, K. W. Forrester. Labyrinths A.O.V.: 1, A. Worth; 2, A. Billington; 3, J. Brooks; 4, R. Hart. Siamese Fighters: 1, M. Cleall; 2, D. Mullen; 3, A.

Billington; 4, N. Fry. Tropical Catfish: 1, M. Nixey; 2, Mr. and Mrs. Medway; 3, M. Cleall; 4, K. Forrester. Corydoras and Brochis: 1, A. Billington; 2, P. Taylor; 3, Mrs. P. Carter; 4, Mr. and Mrs. Medway. Rasboras: 1, J. Brooks; 2, M. Cleall; 3, Mrs. P. Carter; 4, K. Forrester. Danios and Minnows: 1, 2, 3 and 4, M. Cleall. Loaches and Botia: 1, D. Kelly; 2, K. Forrester; 3, J. Fancy; 4, N. Fry. Egglayers A.O.S.: 1, K. Forrester; 2, J. Fancy; 3, M. Cleall; 4, Mrs. V. Worth. Sexed Pairs: 1, K. Forrester; 2, Mr. and Mrs. Medway; 3, Mrs. P. Carter; 4, R. Mannin. Male Guppies: 1 and 2, D. Mullen; 3 and 4, Mrs. V. Worth. Female Guppies: 1, K. Forrester; 2, D. Kelly; 3, A. Billington; 4, M. Cleall. Swordtails A.V.: 1, A. Worth; 2, M. Kelly; 3, M. Cleall; 4, A. Billington. Platies A.V.: 1, Mr. and Mrs. Medway; 2, G. Taylor; 4, D. Mullen; 4, A. Billington. Mollies A.V.: 1, J. Brooks; 2, Mrs. P. Carter; 3, A. Billington. Livebearers A.O.S.: 1, D. Mullen; 2, Mr. and Mrs. Medway. Breeders: 1, R. Hart; 2, A. Worth; 3, J. Fancy; 4, Mrs. P. Carter. Plant Cuttings: 1 and 3, A. Worth; 2, M. Cleall; 4, D. Mullen. Common Goldfish: 1, B. Mannin. A.O.S. Goldwater: 1, 2, 3 and 4, J. White. Meetings are held on the second Tuesday of the month at Ratcliff Hall, Queens Road, Radpole Spa, Weymouth, at 7.30 p.m. and visitors and new members are very welcome.

THE Gainsborough A.S. second Annual "mini" open show winners were: Guppies: 1, L. Smith (Castleford); 2, D. and M. Laycock (Sheaf Valley); 3, A. Mawson (Workop). Platies: 1, Miss K. Stevenson (Sherwood); 2, Mr. Blundell (Doncaster); 3, Mr. and Mrs. Wells (Doncaster). Mollies: 1, Mr. and Mrs. D. Caldwell (Scunthorpe and Dist.); 2, R. Brown (Scunthorpe and Dist.); 3, L. Smith (Castleford). Swordtails: 1, M. Whitlam (Scunthorpe Museum); 2, A. Feasey (Doncaster); 3, Mr. and Mrs. Borrell and Sons (Lincoln). Small Barbs: 1, Mr. and Mrs. J. Dickinson (Pontefract); 2, Mr. King (Doncaster); 3, Mr. and Mrs. Stanton (Sheffield). Large Barbs: 1, Mr. A. Feasey (Doncaster); 2, Mr. and Mrs. Stanton (Sheffield); 3, Mr. and Mrs. P. Dixon (Gainsborough). Small Characins: 1, Mr. and Mrs. Sidebottom (Sheffield); 2, D. and M. Laycock (Sheaf Valley); 3, Mr. and Mrs. Wells (Doncaster). A.O.V. Tropical: 1, Mr. and Mrs. Burr (Scunthorpe and Dist.); 2, Mr. and Mrs. Simpson (Workop); 3, Mr. and Mrs. A. Binns (Scunthorpe and Dist.). Large Characins: 1 and 2, Mr. and Mrs. Stephenson (Sheffield); 3, Mr. Blundell (Doncaster). Killies: 1, L. Smith (Castleford); 2, Mr. and Mrs. Borrell and Sons (Lincoln); 3, Mr. Fortman (Lincoln). Fighters: 1, Mr. and Mrs. Sellars (Lincoln); 2 and 3, J. Rhoades (Scunthorpe). A.O.V. Anabantids: 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mr. and Mrs. Simpson (Workop); 3, Mr. and Mrs. Stanton (Sheffield). A.O.V. Catfish: 1, Mr. and Mrs. Steeles (Creswell); 2, Mr. and Mrs. Burr (Scunthorpe and Dist.); 3, R. Brown (Scunthorpe and Dist.). Corydoras: 1, 2 and 3, Mr. and Mrs. Wells (Doncaster). Dwarf Cichlids: 1, Mr. and Mrs. Perkins (Workop); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, Mr. and Mrs. Sellars (Lincoln). A.O.V. Cichlids: 1, Mr. and Mrs. Gilding (Gainsborough); 2, Mr. Reid (Workop); 3, Mr. and Mrs. Hatfield (Gainsborough). Angels: 1, Mr. and Mrs. P. Dixon (Gainsborough); 2, Mr. and Mrs. Steeles (Creswell); 3, Mr. and Mrs. Whitlam (Scunthorpe Museum). Sharks and Foxes: 1, Mr. Blundell (Doncaster); 2, Mr. and Mrs. Stanton (Sheffield). Botias and Loaches: 1, Mr. and Mrs. Toyne (Sheaf Valley); 2, D. and M. Laycock (Sheaf Valley); 3, Mr. and Mrs. Perkins (Workop). Pairs (Egglayers): 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. Reid (Workop); 3, Mr. and Mrs. Gilding (Gainsborough). Pairs (Livebearers): 1, Mr. Blundell (Doncaster); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, Mr. and Mrs. Wells (Doncaster). Minnows: Danios and Rasbora: 1, Mr. and Mrs. Gilding (Gainsborough); 2, Mr. Thorpe (Doncaster); 3, Mr. and Mrs. Binns (Scunthorpe and Dist.).

A.V. Goldwater: 1, Mr. and Mrs. Caldwell (Scunthorpe and Dist.); 2 and 3, Mr. Bennett (Gainsborough).

AT the first ever attempt at showing fish, Abingdon A.S., member and P.B.A.S. delegate D. Blundell won best in class with a spanner barb at the Reading and Newbury shows. Interested fish keepers always welcome on alternate Thursdays, i.e., 1, 15 and 29 November. The Secretary is C. R. Hall, 16, Morell Crescent, Littlemore, Oxford.

A FIRST ever win in a competition against another society was recorded by Scarborough and District A.S. against Eboracum A.S., who came from York. In the previous match Scarborough lost by 119 points. However, at the meeting in September, Scarborough won by the very narrow margin of four points. Mr. Carrick from Scarborough won a small trophy for the best fish in the show. The judges for the show were Mr. Welford from Cleveland and Mr. Hawkey from York and D.A.S.

THE September meeting of the Weymouth A.S. was well attended and the Chairman thanked members for the good attendance at the inter-club show at Yeovil in September. This was again won by Weymouth who took the first four places out of 24 fish. The results of the inter-club show were: 1, J. Hodder; 2, A. Worth; 3, J. White; 4, R. Hart. After club business had been discussed members were entertained with a slide show on Siamese fighters, "Bones by the Bucketful." There were 17 entries for the table show. The results were: Breeders: 1, Mrs. E. Hart; 2 and 4, K. Forrester; 3, A. Worth. Barbs: 1 and 2, Mrs. E. Hart; 3, M. Nixey; 4, A. S. Carter.

THE results of the Portsmouth A.S. Open Show were as follows: Taylor Trophy—Club Tropical Aquaria; Portsmouth A.S. Richmond Cup—Goldwater; Portsmouth A.S. Louise Wilson Cup—Individual Tropical Aquaria: A. Atkinson. B. Knight Cup—Goldwater: A. Atkinson. C. and A. Smith Cup—Junior Tropical Aquaria: P. Bealey. Junior Cup—Junior Goldwater Aquaria: P. Furnedge. Stoodley Cup—Best Barb: R. Adams. J. and M. Mason Shield—Best Characin: J. Pollard. I. and M. Mason Shield—Best Cichlid: K. Rees. Scott Morgan Cup—Best Beta Splendens: A. Mephram. Labyrinth Bowl—Best Aes Labyrinth: D. Mackay. Howard Cup—Best Egglayer Toothcap: M. Strange. J. D. Trophy—Best Tropical Catfish: J. Pollard. Stockdale Cup—Best Rasbora: D. Mackay. Furnedge Trophy—Best Danio: W. C.M.M.; S. Crabtree. D. Force Cup—Best A. O.S. Tropical Egglayer: F. Willis. McDowell Trophy—Best Guppy: R. Rice. SureGrow Cup—Best Swordtail: A. Mephram. Veilhead Trophy—Best Veilhead Goldfish: W. Evans. T. F. H. Trophy—Best Koi: D. Stokes. Hunt Cup—Best Sunfish: E. Binstead. Taylor Trophy—Breeders' Tropical Egglayers: F. Willis. D. Force Cup—Breeders (Livebearers): M. Strange. Taylor Trophy—Breeders (Goldwater): A. Atkinson. Harris Leyor Trophy—Best Fish in Show: S. Crabtree. Taylor Trophy—Highest Total Points (Tropical): B. Bisson. Taylor Trophy—Highest Total Points (Goldwater): V. Hunt. F.B.A.S. Championship Trophy—Breeders Guppies: Mrs. B. Lamboll. Aquarist Gold Pin and Portsmouth Aquarist Society Diploma, for Best Fish in Show: S. Crabtree. Club Members' Trophies—Wm. Taylor & Sons Trophy—Best C/M. Tropical Fish: F. Willis. Henry Luff Trophy—Highest Pointed C/M. Goldwater Fish: D. Stokes. King Cup—Best C/M. Shubunkin: E. Binstead. Emma Banbury—Best C/M. Plant: G. Parish. A.V.T. Trophy—Highest total points: C.M.; V. Hunt. Class Winners: Basingstoke (Ba); Brighton (Br); Gosport (G); Havant (H); Kingston (K); Portsmouth (P); Salisbury (Sa); S.P.A.S.S. (Sp); Unattached (U). Class Aa: Portsmouth. Class Ab: Portsmouth. Class Ad: A. Atkinson. Class Ady: P. Bealey (P). Class Ae: A. Atkinson (U). Class Aey: P. Furnedge (U). Class Af: J. Lamboll (P).

Class Ak: Mrs. J. Stillwell (P). Class B: R. Adams (Sal). Class Ca: J. Bailey (U). Class C: J. Pollard (K). Class Da: P. Willis (P). Class Db: D. Haines (G). Class D: K. Rees (G). Class Ea: A. Mepham (Br). Class E: D. Mackay (K). Class F: M. Strange (Ba). Class H: J. Pollard (K). Class J: D. Mackay (K). Class K: S. Crabtree (H). Class L: B. Bisson (Ba). Class M: F. Willis (P). Class O: R. Rice (Br). Class P: Mrs. J. Stillwell (P). Class Q: A. Mepham (Br). Class R: B. Bisson (Ba). Class S: B. Bisson (Ba). Class T: B. Bisson (Ba). Class Ua: Miss W. Ryder (P). Class Ub: J. Pollard (K). Class Uc: E. Birstead (P). Class Ud: V. Hunt (P). Class Va: W. Evans (P). Class Vb: D. Stokes (P). Class Vc: A. Montague (P). Class V: P. Bealey (P). Class Wa: D. Stokes (P). Class Wb: E. Birstead (P). Class Wc: W. Ryder (P). Class Xa: V. Hunt (P). Class Xb: F. Willis (P). Class Xc: M. Strange (Ba). Class Xd: Mrs. B. Lambell (P). Class Xe: A. Atkinson (U). Class Za: G. Parrish (P). Class Zb: B. Bisson (Ba). Class Zc: J. Jupp (G). The show was judged by Messrs. Brian Baker, Ginger and R. Bisson, all Federation of British Aquarist Society "A" class judges.

OPEN Show results of **Huddersfield T.F.S.** were: Guppies: 1, L. Smith (Castelford); 2, A. and L. Barrett (Castelford); 3, Mr. and Mrs. Wells (Doncaster). Mollies: 1, 2 and 3, R. Brown (Scunthorpe). Swordtails: 1 and 2, J. Ibbotson (Keighley); 3, J. Brown (Hyde). Platies: 1, Mr. Lawson (Unattached); 2, T. Smith (Sheffield); 3, J. Ibbotson (Keighley). A.O.V. Livebearers: 1, A. Moss (Huddersfield); 2, Mr. and Mrs. Marshall (Oldham); 3, J. Furness (Castelford). Small Characins: 1, A. Moss (Huddersfield); 2, Mr. and Mrs. Marshall (Oldham); 3, Mr. and Mrs. Smith (Ozram). Characins (large): 1, D. Kennedy (Keighley); 2, J. Furness (Castelford); 3, T. Smith (Sheffield). Barbs (small): 1 and 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Furness (Castelford). Barbs (large): 1, T. Smith (Sheffield); 2, S. Bertley (Huddersfield); 3, Mr. Dunn (Horsforth). Danio and Rasbora: 1, R. L. Payne (M.A.S.); 2, H. Jackson (Keighley); 3, A. and L. Barnett (Castelford). Igglywing Toothcarps: 1, Mr. and Mrs. Armstrong (Unattached); 2, L. Smith (Castelford); 3, T. Smith (Sheffield). Angels: 1, Mr. Dunn (Horsforth); 2, D. Harrop (Huddersfield); 3, J. Ibbotson (Keighley). Fighters: 1, G. Gillespie (Castelford); 2 and 3, A. Churchin (South Leeds). A.O.V. Anabantids: 1, R. L. Payne (M.A.S.); 2, Mr. and Mrs. Armstrong (Unattached); 3, J. Ibbotson (Keighley). Anabantids (small): 1, G. Gillespie (Castelford); 2, J. Ibbotson (Keighley); 3, C. Woolnough (Huddersfield). Corydoras: 1, G. Gillespie (Castelford); 2, W. Edwards (Castelford); 3, T. Smith (Sheffield). A.O.V. Catfish: 1, L. Burr (Scunthorpe); 2, Mr. and Mrs. Gabe (Chesterfield); 3, C. Woolnough (Huddersfield). Loaches: 1, Mr. and Mrs. Marshall (Oldham); 2, R. L. Payne (M.A.S.); 3, T. Smith (Sheffield). Sharks and P. Foxes: 1, Mrs. P. Wales (South Leeds); 2, C. Spaven (South Leeds); 3, Mrs. I. S. Brook (Huddersfield). A.O.V. Tropical: 1 and 2, L. Burr (Scunthorpe); 3, A. and L. Barrett (Castelford). Breeders Livebearers: 1, A. Moss (Huddersfield); 2, J. Furness (Castelford); 3, Mr. and Mrs. Wells (Doncaster). Breeders Egglayers: 1, Mr. and Mrs. Wells (Doncaster); 2, A. Churchin (Castelford). Pairs (Livebearers): 1, Mr. and Mrs. Wells (Doncaster); 2, J. Furness (Castelford); 3, Mr. and Mrs. Marshall (Oldham). Pairs (Egglayers): 1 and 2, Mr. and Mrs. Wells (Doncaster); 3, A. Churchin (Castelford). Fancy Goldfish: 1, C. H. Whitley (Accrington); 2 and 3, M. Edwards (Huddersfield); 4, Dr. P. A. Lewis (Accrington). Common Goldfish: 1 and 2, C. H. Whitley (Accrington); 3, H. Ackroyd (Huddersfield). Juniors: 1, A. Beal (Doncaster); 2, A. S. Furness (Castelford); 3, A. Wild (Accrington). Ladies: 1, Mrs. V. Hough (Huddersfield); 2, Mrs. B. Kaye (Top Ten). Furnished Jar: 1, Mr. Wild (Accrington); 2, J. Ibbotson (Keighley); 3, Mr. and Mrs. Gabe (Chesterfield).

IN September the **Three Counties Group** held their Open Show, the results being as follow:

Class Ag: 1, T. Duffy (Bracknell); 2, Mrs. B. I. Jackson (Basingstoke); 3, P. Rushbrooke (Reading). Class Ba: 1, D. R. Blundell (Abingdon); 2, A. Marshall (Basingstoke); 3, K. Rees (Gosport); 4, J. Davidson (Didcot). Class Bz: 1, R. Leslie (High Wycombe) also Best in Show; 2, L. Little (Bracknell); 3, T. Taylor (Unattached); 4, P. Brown (Southampton). Class Ca: 1, B. Bisson (Basingstoke); 2, T. Winter (Southampton); 3, J. H. Jackson (Basingstoke); 4, M. Strange (Basingstoke). Class Ca: 1, T. Hewitt (Lewisham); 2, M. Little (Bracknell); 3, B. Bisson (Basingstoke); 4, J. Connolly (Bethnal Green); 5, A. P. Taylor (Sudbury). Class Da: 1, T. Taylor (Unattached); 2, G. E. Dixon (Newbury); 3, L. J. Brazier (Sudbury); 4, S. R. Broome (Reading). Class Db: 1, M. D. Chapman (Unattached); 2, K. Bisson (Basingstoke); 3, B. Bisson (Basingstoke); 4, P. Brown (Southampton). Class Dc: 1, K. Rees (Gosport); 2, D. Lyne (High Wycombe); 3, G. E. Dixon (Newbury); 4, M. J. Davis (Reading). Class Dd: 1, P. Brown (Southampton); 2, J. Connolly (Bethnal Green); 3, A. Hall (High Wycombe); 4, M. J. Davis (Reading). Class Ea: 1, P. J. Shepherd (Reading); 2, A. P. Taylor (Sudbury); 3, T. Taylor (Unattached); 4, A. Hall (High Wycombe). Class Eb: 1, A. P. Taylor (Sudbury); 2, Miss J. Goddard (Sudbury); 3, J. H. Jackson (Basingstoke); 4, R. Peck (Basingstoke). Class F: 1, A. Gibson (Reading); 2, L. J. Brazier (Sudbury); 3 and 4, M. E. Cott (Gosport). Class G: 1, L. J. Brazier (Sudbury); 2 and 4, P. Merritt (Reading); 3, B. Bisson (Basingstoke). Class H: 1, P. Moye (Sudbury); 2, P. Rushbrooke (Reading); 3, T. Duffy (Bracknell); 4, A. C. Masters (Reading). Class I: 1, M. Carter (Bracknell); 2, A. Harnsworth (Basingstoke); 3, T. Taylor (Unattached); 4, J. Clarke (Gosport). Class K: 1, T. Taylor (Unattached); 2, J. Baily (Sudbury); 3, M. Carter (Bracknell); 4, J. H. Jackson (Basingstoke). Class L: 1, 3 and 4, M. Carter (Bracknell); 2, T. A. Cruickshank (Ealing). Class M: 1, A. P. Taylor (Sudbury); 2 and 3, P. Merritt (Reading); 4, A. Gibson (Reading). Class N-m: 1, G. E. Dixon (Newbury); 2 and 3, L. J. Brazier (Sudbury); 4, B. Bisson (Basingstoke). Class No-t: 1, M. Strange (Basingstoke); 2, E. A. Holmes (Banbury); 3, M. J. Lewis (Sudbury); 4, R. Onslow (Basingstoke). Class O: 1, T. A. Cruickshank (Ealing); 2 and 4, C. W. Goddard (Sudbury); 3, A. Watts (Didcot). Class P: 1, A. Watts (Didcot); 2, L. J. Brazier (Sudbury); 3, P. Merritt (Reading); 4, E. A. Holmes (Banbury). Class Q: 1, I. Pierce (High Wycombe); 2, P. Ronald (Unattached); 3, L. Turner (Basingstoke); 4, A. Wraspen (Gosport). Class R: 1, M. E. Cott (Gosport); 2 and 4, M. D. Chapman (Unattached); 3, L. Little (Bracknell). Class S: 1, B. Turner (Basingstoke); 2, D. Lyne (High Wycombe); 3, M. D. Chapman (Unattached); 4, M. J. Lewis (Sudbury). Class T: 1, M. Strange (Basingstoke); 2, A. Heath (Lewisham); 3, K. Bisson (Basingstoke); 4, E. A. Holmes (Banbury). Class U-d: 1, P. Pinder (Unattached); 2, 3 and 4, R. C. Cowley (Gosport). Class Ue-c: 1, 3 and 4, C. Beavis (High Wycombe); 2, L. Menhennet (New Forest). Class V: 1, 2 and 3, Rudland & Green (Reading); 4, P. Pinder (Unattached). Class Wb: 1, M. Little (Bracknell). Class Wz: 1, A. Heath (Lewisham); 2, 3 and 4, P. Pinder (Unattached). Class Xb-m: 1, D. Lyne (High Wycombe); 2, G. E. Dixon (Newbury); 3, R. Peck (Hounslow); 4, P. Ronald (Unattached). Class X-t: 1, R. Onslow (Basingstoke); 2, E. A. Holmes (Banbury); 3, L. Little (Bracknell); 4, P. Ronald (Unattached). Class Z: 1, 2 and 3, T. Duffy (Bracknell); 4, K. Bisson (Basingstoke). Tableau: 1, Reading; 2, High Wycombe. Highest Pointed Society: Basingstoke. Highest Pointed Competitor: L. J. Brazier (Sudbury).

AT the first meeting of **Bracknell A.S.** in September the novices table show was won by J. Horsey who took first, second and third

places. Table show results at the second meeting in September were: 1, M. Morgan; 2, E. Morgan; 3, R. Norris. This being the last table show before the annual general meeting. The highest points for the year were: Specialist Class: L. Little, 23 points; Senior A.O.S.: L. Little, 18 points; Novices: A. V. J. Horsey, 26 points.

RESULTS of the Third Open Show of the **West Cumberland A.C.** were as follow:

Best Tropical and Best in Show: J. H. Whiteley (Aireborough). Best Goldwater: J. S. Hall (Aireborough). Exhibition gaining most points: R. Strand. Best in Livebearers: J. S. Hall. Platies: 1 and 2, J. T. Powley (Borner); 3, J. S. Hall (Aireborough). Swords: 1, J. Parker (West Cumberland); 2, J. S. Hall (Aireborough); 3, S. Clarke (Aireborough). Mollies: 1, J. S. Hall (Aireborough); 2, Mrs. Hall (Aireborough); 3, E. Leadbetter (Fleetwood). Guppies: 1, S. Clarke; 2 and 3, E. Leadbetter. A.O.V. Livebearers: 1, J. E. Whiteley; 2 and 3, R. Strand. Best in Cichlids: R. Leckie (West Cumberland). Dwarf Cichlids: 1, J. E. Whiteley; 2, E. Leadbetter; 3, L. and P. Graham (East Lancs.). A.O.V. Cichlids: 1, R. Leckie; 2, E. Leadbetter; 3, B. Black (Fleetwood). Best in Barbs: B. Black. Barbs up to 3 1/2 in.: 1, B. Black; 2, J. Hall (West Cumberland); 3, S. Clarke. A.O.V. Barb: 1, E. Leadbetter; 2, S. Clarke; 3, J. T. Powley. Best in Characins: J. S. Hall (Aireborough). Hemigrammus and Hypemobrycon Sp.: 1 and 2, S. Clarke; 3, M. Ball (West Cumberland). Anostomus and Ass. Sp.: 1, J. S. Hall; 2, J. E. Whiteley; 3, L. and P. Graham. A.O.V. Characin up to 3 in.: 1, R. Strand; 2 and 3, E. Hodgson (Borner). A.O.V. Characin over 3 in.: 1, E. Hodgson; 2, D. and R. Standen (East Lancs.); 3, J. T. Powley. Best in Section E: J. T. Powley. Sharks and Ass. Sp.: 1, J. T. Powley; 2, R. Woodward (West Cumberland); 3, W. Riddle (West Cumberland). Rasbora: 1, R. Strand; 2, J. Hadley (Borner); 3, J. E. Whiteley. Danios and Minnows: 1, 2 and 3, R. Strand. Killies: 1, J. E. Whiteley; 2, J. S. Hall; 3, J. Collier (Borner). Best in Cans and Loaches: S. Clarke. Corydoras: 1, B. Black; 2, J. T. Powley; 3, D. and R. Standen. A.O.V. Cats: 1, E. Leadbetter; 2, D. and R. Standen; 3, E. Hodgson. Loaches: 1, S. Clarke; 2, L. and P. Graham; 3, J. E. Whiteley. Best in Anabantids: J. S. Hall. Small Anabantids: 1, S. Clarke; 2, E. Hodgson; 3, E. Leadbetter. A.O.V. Anabantids: 1, J. S. Hall; 2, E. Carr (Independent); 3, R. Bray (West Cumberland). A.O.V. Tropical: 1, J. E. Whiteley; 2, J. Collier; 3, J. S. Hall. Best in Pairs: R. Leckie. Pairs (Livebearers): 1, S. Clarke; 2, J. S. Hall; 3, E. Leadbetter. Pairs (Egglayers): 1, R. Leckie; 2, E. Hodgson; 3, E. Leadbetter. Best in Breeders: E. Leadbetter. Breeders (Livebearers): 1 and 2, E. Leadbetter; 3, A. Hunt (Borner). Breeders (Egglayers): 1, R. Strand; 2, G. Scott (West Cumberland); 3, R. Mitchell (West Cumberland). Common Goldfish: 1 and 3, J. S. Hall; 2, R. Mitchell (Fleetwood). Shubunkins: 1 and 3, J. S. Hall; 2, G. Burton (Borner). A.O.V. Singletail G.F.: 1, 2 and 3, J. S. Hall. A.O.V. Twintail G.F.: 1, 2 and 3, J. S. Hall. A.O.V. Coldwater: 1, L. and P. Graham; 2, J. S. Hall; 3, R. Mitchell (Fleetwood). Novelty Mini Jar: 1, Mrs. Parker (West Cumberland).

THE **Goldfish Society of Great Britain** held its 25th Anniversary Show at Sutton and a special vote of thanks was passed to Mr. J. Linsale who gave a very interesting address on Veil Tails as well as judging. The best fish in the show was a fine Singletail bred and owned by Miss D. Morris. The prizewinners were as follow: Singletails: 1 and 4, D. Morris; 2 and 3, G. King. Veil-tails: 1, 2, 3 and 4, S. Tibble. Globe-Eyes: 1 and 4, B. Herbert; 2 and 3, S. Tibble. Brambleheads: 1 and 3, D. Morris; 2, W. Cook; 4, H. Jago. Pearlscales: 1, M. Cline; 2 and 3, P. Whittington; 4, M. Dudley. Celestials: 1, J. Smith. Pom-poms: 1 and 2, T. Halpin. Bubble-Eyes: 1 and 2, K. Speaks.

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Common Goldfish: 1 and 2, C. Speaks; 3, M. Dudley; 4, D. McKay. London Shubunkins: 1, 2, 3 and 4; P. Whittington. Comets: 1, D. Herman. Fantails: 1, C. Speaks; 2, B. Herbert; 3, H. Berger; 4, S. Tibble. Orandas: 1, A. Lawman; 2, R. Whittington. Broadtail Moor: 1, A. Lawman; 2, N. Giles; 3, R. Whittington; 4, H. Jago. Breeders: Single-tails: 1 and 2, I. Fleming; 3, H. Jago; 4, D. Morris. Veiltails: 1, 2 and 3, T. Halpin; 4, B. Herbert. Globe-eyes: 1, 2 and 4, B. Herbert; 3, D. Morris. Braubheads: 1, Marvin Johnson (Japan); 2, D. Morris. Pearlscales: 1 and 2, P. Whittington; 3, M. Cluse. London Shubunkins: 1 and 2, P. Whittington. Comets: 1, 2 and 3, I. Fleming. Fantails: 1, L. Roberts; 2 and 3, B. Herbert. Orandas: 1 and 3, A. Lawman; 2, M. Johnson. Broadtail Moor: 1, H. Jago. Photographic Classes: Black and White Prints: P. Whittington; Colour Prints: P. Whittington; Colour Slides: D. Herman.

SECRETARY CHANGES

Abingdon A.S.: G. R. Hall, 16 Morrell Crescent, Littlemore, Oxford. Show Secretary: D. Higgs, 58 Austin Place, Abingdon.
Rotherham and District A.S.: M. Woodsworth, 156 Claypit Lane, Rawmarsh, Nr. Rotherham, Yorkshire.
Hartlepool A.S.: Maxwell Smedden, 35 Spurn Walk, Hartlepool, Co. Durham.
Sandgrounders A.S.: Show Secretary is now T. Tasker, 44 Kensington Road, Southport.

CHANGES OF VENUE

Sandgrounders A.S. now at The Mount Pleasant Hotel, Manchester Road, Southport. Meetings held every other Thursday. A list of activities and other information available from S. Hooton, 81 Radnor Drive, Southport. All visitors welcome.
Abingdon A.S.: Meetings now held at the "Barley Mow," West St. Helen Street, Abingdon (off High Street).

SHOW CANCELLATION

The Committee of the KDAS/SPASS Combined Open Show regret to announce the

cancellation of the Open Show arranged for 17th November, owing to a disagreement of Judging Standards between the two main national bodies, the F.B.A.S. and G.S.G.B.

NEW SOCIETIES

A new Club has been formed at Devizes in Wiltshire named **Devizes Aquarist Society**. Meetings are held every fourth Tuesday at "Three Crowns," Devizes. Secretary: R. Aslet, The Bungalow, Baden Down Farm, Enford, Nr. Pewsey, Wiltshire. Show Secretary: M. Brown, "Patrice," Dauntsey Gardens, Nr. Chippenham, Wiltshire.

A new club has recently been formed called **South London A.S.** Meetings are held at 18 Ommamy Road, New Cross, London, every Tuesday at 8 p.m. The society would be pleased to hear from other societies regarding shows, etc. Please contact the Secretary, Mrs. Pamela Jarvis, Flat 2, 295 Hither Green Lane, Lewisham, London, S.E.13 for details of the society.

AQUARIST CALENDAR

3rd November: G.S.G.B. Quarterly Meeting, 2.30 p.m., Conway Hall, Red Lion Square, Holborn, London. Goldfish for Beginners, Part Four. R. Whittington. The Bristol Shubunkin. L. Emery. Choosing next year's Breeders. Panel. Table Classes. Refreshments available.

4th November: Mixenden T.F.S. Open Show Mixenden Community Centre, Clough Lane, Mixenden. Halifax schedules Mrs. J. Poole, 18 Chester Terrace, Halifax, Yorks, HX3 6LT.

11th November: Hartlepool A.S. Annual Open Show will be held at Longcote Hall, Seaton Carew. Show Secretary: Mr. J. Watson, 42 Sydenham Road, Hartlepool, Co. Durham TS26 9BW.

11th November: Walthamstow and District A.S. Open Show at Chingford Junior High School, Wellington Avenue, Chingford, London, E.4. Show secretary G. Smith, 22 Ardleigh Road, Walthamstow, London, E.17.

11th November: Blackburn Aquarist Waterlife Society, First Open Show at Regency Hall (King Georges Hall), Northgate, Blackburn. Enquiries to D. G. Metcalf, 3 Baker Street, Blackburn.

17th November: K.D.A.S./S.P.A.S.S. third Combined Open Show will be held at the T.A. Centre, Surbiton Road, Kingston, Surrey. Show schedules are obtainable from D. J. Mackay, c/o 51 Mount Road, New Malden, Surrey. Tel: (Day) 01-572 0632; (Night) 01-942 9021.

18th November: British Killifish Association (Durham Group) Open Show for E.L.T.C. only. Details and schedules may be had from R. Riley, 32 The Meadows, West Rainton, Houghton-Le-Spring, Co. Durham, DH4 6NP. This show is open to non-members of the B.K.A. as well as B.K.A. members.

18th November: Bradford & District A.S. are once again holding their Annual Open Show at East Bowling Unit Club, Leicester Street, off Wakefield Road, Bradford.

24th November: Hendon Congress.

25th November: Aireborough & District A.S. Annual Open Show at Yeaton Town Hall, Near Leeds/Bradford Airport. Batching 12 p.m. to 2 p.m.

2nd December: Horsforth A.S. fourth Open Show, New Civic Hall, Stanningley, Pudsey. Show secretary, C. Corns, 15 Thornleigh Grove Leeds, LS9 8QR.

8th December: The Bury St. Edmunds and District A.S. will be holding an Exhibition of fish at the Oddfellows Hall, Whiting Street, Bury St. Edmunds. Doors opening from 10 a.m. to 5.30 p.m. Refreshments available.

1974

9th March: Catfish Association (G.B.) are holding their Open Show which consists of eighteen classes of Catfish (G. and H.). Venue to be announced later. Show secretary, Mr. D. Lamborne, 7 Wheeler Court, Plough Road, London, SW11 2AX. Tel: 01-223 2630.
28th April: Coventry Pool and Aquarium Society, Open Show. Further details (s.a.e. please), from Show Secretary, S. Wooldridge, 32 Ridgeway Avenue, Coventry, CV3 5BP.

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