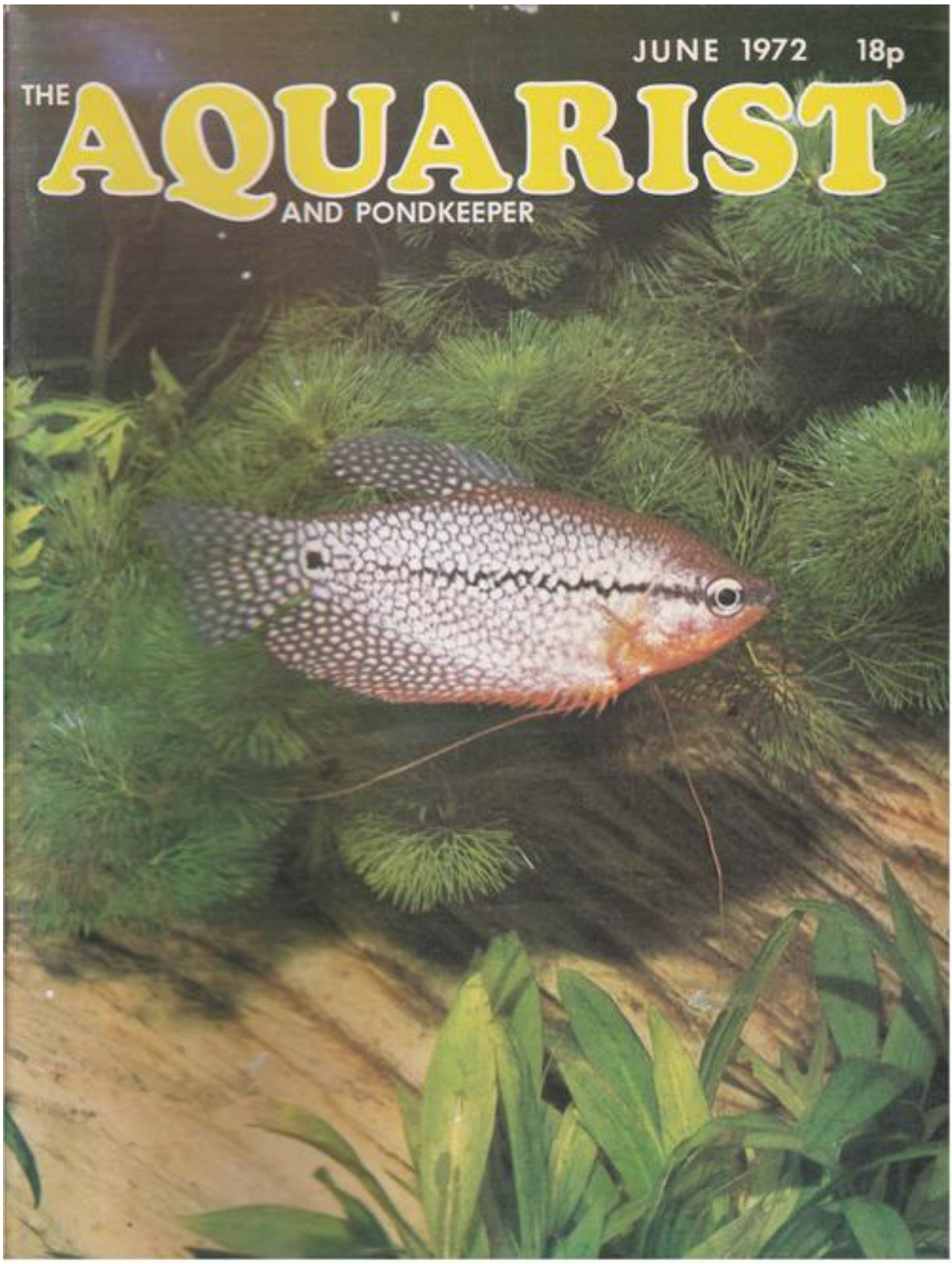
JUNE 1972 18p

THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

Published Monthly 18p

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Pearl Gourami
(see article on page 95)

WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author

I'VE RECENTLY returned from my Easter holiday, a few days of which I spent in London. I only had time to make one visit to an aquarium shop, and there I purchased my copy of *The Aquarist*—but I had a most interesting day down at Dorking, which is about 25 miles from London, and there I visited one of Britain's largest manufacturers of aquarium products. An account of my visit will appear in the next issue.

I begin with a letter received from 14-year-old Nigel Sommerfield, of 62 The Mall, Clifton, Bristol, 8. Nigel always reads this feature first and has been keeping fish for three years. He would like to own a large tank stocked exclusively with special cichlids, but lack of money has limited his ambitions to a pair of *Labeotropheus fuelleborni*. Nigel has bought a lot of items after reading advertisements and reviews and has always been pleased with the results. He ends by asking if it would not be possible to produce *The Aquarist* every fortnight, instead of every month. He says that, from what he hears, there is no shortage of articles or letters, and he feels sure that most people would be pleased to pay 18p twice a month for another edition. He reads his *Aquarist* in two days, and has to wait another month before the next issue arrives at his newsagents. (Would you like to see *The Aquarist* as a fortnightly magazine?)

In the March edition I asked for views on home-made fish foods. One reply came from an expert on fish foods: Mr. A. D. G. Phillips, Director of Phillips Yeast Products Ltd. (Aquatic Division), Park Royal Road, London, N.W.10, the manufacturers of the famous Phillips fish foods. Mr. Phillips says that manufactured fish foods, from reputable suppliers, do possess important advantages over any special home-made recipes, and he gives three main reasons why. (1) Manufactured foods are based on the expert knowledge of nutrition experts and, therefore, possess the correct dietary ratios which would be obtained only by chance in special recipes. (2) Manufactured foods are produced in hygienic laboratory conditions and are, therefore, free from the risk of bacteria contamination. They are also produced in particles of a safe size for small fishes, whereas home-made foods could easily be unsuitable in this respect, with a definite chance of causing injury of death to the fishes. (3) Manufactured foods are, in many cases, based on a formula of various ingredients, thus giving a greater variety in the diet, and when one considers the low costs of feeding per tank of fish, and how many tanks can be fed at a cost of less than 1p per day, surely the advantages of manufactured foods become self-evident. (I'm inclined to agree with Mr. Phillips—

and an importer of large numbers of tropical fishes recently pointed out to me that quality British fish foods were as good as imported foods, as well as being cheaper. The above points are certainly well worth considering!)

Geoffrey Laws is 15 years old, and he lives at Weywood, Burpham Lane, Jacobs Well, Guildford,

Surrey, a place which I was fairly near on my recent visit to England. He keeps several large Oscars and one *Plecostomus*. When he used living plants, the Oscars would rip them from the gravel and tear them to pieces, regardless of how much lead he attached to the plants' stems. He has now resorted to plastic plants, which he considers have the following advantages—(1) The fish have greater trouble in removing them from the gravel, but when they do so it is a simple task to replace them; (2) They always remain intact and free from *algae* due to the excellent work of the *Plecostomus* which, Geoffrey says, obviously cannot glean *algae* from soft, living tissue; (3) The entire lay-out of the tank can be changed at will with no detrimental effects to the plants. He says that for the life of him he cannot see why many aquarists—including Mr. A. Boarder—regard artificial plants with such abhorrence. (I must say that, in general, I'm very much in favour of living plants; however, in a large cichlid tank, I recently mixed a few artificial plants with live plants, and I doubt if anyone could distinguish which plants were which. Certainly, if a tank cannot for some reason support living plants, I would prefer plastic plants to no plants at all—or to plastic or plaster divers, sunken wrecks, etc.)

Bedford College, University of London, Bedford College Annexe, Peto Place, Marylebone Road, London, N.W.1, is the address from which Mr. C. S. Collis, B.SC., postgraduate research student, writes, and his subject is the disinfection of fish tanks following an outbreak of bacterial fish disease. In the above department there was a recent outbreak of such a disease, among brown trout kept in tanks. The disease was shown to be due to myxobacteria, and Mr. Collis successfully controlled the outbreak by baths in Myxosan. The tanks were subsequently disinfected with Bactosan, and there was no recurrence of the problem. Mr. Collis now uses Bactosan on a routine basis for tank disinfection before the introduction of fish, and following their removal for experimental purposes. All incoming fish are now given a preventative bath in Myxosan to avoid this and similar disease problems. The samples of Myxosan and Bactosan used were kindly made available by Piscisan Ltd., of Enfield, Middlesex, and Mr. Collis hopes that the above information may be of use to readers.

A quick trip to Scotland now finds us at 6 Causey Foot Drive, Kilbirnie, Ayrshire, KA25 6AX, the home of another younger writer, George Houston, who is 16 years old. On the question of artificial plants he says an emphatic "No!" He thinks that they are only of use as a breeding medium—and even then he would rather not have them. On dealing with a leaking tank, as long as the leak is not too bad, he would cover it with paper (not newspaper, as it decomposes too quickly), and cover that with a few layers of silicone sealant. The paper helps the water to be held back, and gives the sealant time to set. He has found that this method works with small leaks, but if the tank is large, the best method he knows entails emptying the tank. In answer to Mr. Peerce's question on breeding convict cichlids, George tells us that about six months ago he bought six fish and only got *one* pair. The pair bred and he sold the remainder. He then got a 36 in. by 15 in. by 12 in. tank, planted it, and put in the convicts, together with other fishes such as firemouths, red jewel cichlids, *rhomasi* and brown acaras. All of the fishes were about 2 in. long. The convicts dug pits and made a feast of the plants; they bred in the tank and were exceedingly nasty. He removed the parent fish, and the red

jewel cichlids had quite a feast on 200 baby convicts. Since then, the parent convicts have spawned once and are raising their fry. He concludes by saying that convicts are good diggers, but with fish of their own size, and in a large tank, they are reasonably tolerant fish.

Our next letter takes us to Wales—to 13 Mary Street, Treharris, Glam., S. Wales—where Mr. R. Pendleton lives, and he has been keeping tropical fishes for the past three years. He was always of the opinion that plastic plants should be left on the dealers' shelves, but he has noticed that recently they have become much more realistic. For the first twelve months of keeping fish Mr. Pendleton had no luck whatsoever with keeping plants healthy—and even now not many species grow well for him. In his 24-in. tank he has really lush growths of *V. spiralis*, and thick clumps of *C. affinis* in the foreground; however, he wanted lighter green plants nearer the centre. *Elodea* and *Hygrophila* were tried but were dead within a week—so he bought his first plastic plant, a replica of *Hygrophila*. The colour did not seem quite right but he placed it in the centre of the tank and it filled the spot nicely. Now that the *Crypto. and Vallis.* plants have grown among the plastic plant, one has to take a good look to notice that it is artificial. Non-fish-keeping friends have never noticed the plastic plant, and a slight growth of *algae* has changed its colour causing it to blend in perfectly. In another tank, which is 18 in. tall, Mr. Pendleton grows Aponogetons and Amazon swords. As fine leaved plants do not seem to grow for him he has bought two other types of plastic plants with fine leaves. These plants are about 15 in. long so they are very suitable for a tall tank. To "get away" with plastic plants, he thinks that they must be used in conjunction with live plants—but he thinks that the larger leaved plastic plants, such as Amazon swords, Spatterdocks and *Cryptocoryne*, seem to have "plastic" written all over them.

Of the finer leaved tropical plants, my own favourites are *Cabomba*, *Ambulia* and water wistaria. Photograph 1 shows one of my *Cabomba* plants which flowered for me. When *Cabomba* is about to flower it produces floating leaves which carry the flower buds to the water surface. The floating leaves are quite different from the normal feathery foliage of *Cabomba*, and are covered in fine hairs. You will notice the floating leaves and flower buds at the right-hand side of the photograph. (The upper portion of the plant was submerged especially for the photograph.) Unfortunately I was unable to obtain any seeds from the flowers on this occasion, but the possibility of flowers and seeds are some of the main attractions of living plants for me. Such attractions are missing with plastic plants!

Mr. D. Trevor-Jones, of 46 Pardown, East Oakley, Basingstoke, Hants., also writes about plastic plants, and he thinks that they are very poor. He has still to see such a plant which resembles anything real. He thinks that the main faults are in the texture and thickness of the plastic used, and he says that the colours are exclusively dark evergreen and brilliant scarlet; however, he does say that they have their uses in marine aquaria and in certain cichlid tanks. Mr. Jones has found that he cannot grow any kind of plant in his cichlid tank, and so he has to use artificial plants. He then refers to prices published in advertisements in early aquarium journals. (When I visited Dr. J. N. Carrington, during my recent visit to England, he kindly let me borrow an edition of *The Aquarist* which had belonged to his father. It was published in September, 1938—rather before my time—and is the earliest copy of the magazine which I have yet seen. It is interesting to note that the magazine then

cost 1s. 0d., but I suppose that 1s. 0d. in 1938 was worth much more than is 5p today. I discovered that *The Aquarist* was founded by a Mr. A. E. Hodge, F.Z.S., in 1924, which means that it will be 50 years old in 1974. I wonder if any of those who bought the first copy are still buying the magazine today? If so, I'd be interested to hear from them. In the 1938 edition the only names which I recognised were those of Mr. Harold W. Cotton and Mr. Eric Hardy—the latter still being an active contributor to the magazine today. With 2½ in. goldfish costing 2s 6d. per dozen, and 17s. 0d. per 100, I feel that times have certainly changed! Mr. R. Brown, a colleague of the plant supplier Mr. D. Smith of Kidderminster, sent me a number of copies of a small aquarium magazine called *The Aquarist's Journal*, costing 6d. in 1948. I have never seen this magazine before but note that in 1948 heaters cost 12s. 6d. and thermostats 25s. 6d. My thanks to the two gentlemen who supplied me with both these magazines.)

Going back to Mr. Jones's letter, I read that he only once experimented with home-made fish food. He collected a large quantity of stinging nettles and boiled the leaves for 1½ hours. The leaves were then strained, minced, and compressed into ¼ in. square tablets; these were then fed to his livebearers which seemed to relish them, and Mr. Jones considers this to be quite a reasonable livebearer conditioning food.

Mr. J. Burtles' address is "Nicosia," Cypress Road, Burgess Hill, Sussex, and he kindly sent me recent copies of the Mid-Sussex Aquarists Society newsletter, a publication which runs to 24 pages, and which is most impressive—complete with advertisements. The newsletter, which Mr. Burtles edits, contains everything from news and views, to articles, jokes and aquatic poetry. He is also the secretary of the British Cichlid Association, and sent me a copy of its official journal, "Cichlid Clarion." The journal would certainly be of interest to those who keep cichlids, and runs to 14 pages. Perhaps a member of the association—or anyone who knows—could suggest reasons as to why my pair of Discus have become so shy. The fish are housed in a 30 in. by 15 in. by 15 in. well planted aquarium, and they are so shy that the tank might just as well be empty. I've yet to see either fish leave the back corners of the tank, and not infrequently when I enter the room in which their tank is housed, one of the fish will shoot across the back of the tank, into the opposite corner, and bang itself hard against the glass or combined heating units. The larger of the two fish damaged itself, but the small wound has now healed; however, it's not much fun keeping the élite fish of the aquarium world if one cannot even see it. The only way in which I can get the fish to feed is to creep into the room and and carefully drop whiteworms so that they fall directly in front of the snouts of the fish in their tank. The fish were very different when kept in a small tank which contained no plants—and I thought I was doing them a great favour in supplying them with a large tank, with powered filtration, soft water, accurate temperature control, a varied diet, and subdued lighting. Where might I have gone wrong? Discus which I have seen in England have been so tame that they have eaten food from their owner's fingers. I'd be interested to have your views!

Mr. Burtles has kept prawns and shrimps for over a year now, and they have got on well in his native, marine set-up. Shore crabs have also been quite happy, but several hermit crabs were caught by a large, hungry blenny when they were "changing house." Starfish don't seem too happy in the confined space. Discussing easy and difficult fishes, Mr. Burtles says that he has found the hardiest to be large cichlids such as Oscars, and the most difficult orange Chromides and "Rams." (Photograph 2 shows a beautiful little "Ram" which I managed to keep for a number of months, but it never grew any larger, and recently died. Your opinions on the keeping and breeding of this species should make interesting reading. Photograph 3 shows a Harlequin which I have had for a number of years. I consider Harlequins to be beautiful little fish, and very easy to keep. Would you agree?) One of Mr. Burtles' 4 ft. tanks started to leak at the bottom of the front glass, but the leak sealed itself inside a week and the trouble has not recurred in the 7 months since then. He assumes that mulm, etc., was forced into the small opening, and formed a seal.

Well, that's all I have space for this month. With the Easter holidays over, I look forward to receiving the usual number of letters for next month's feature; however, I do have a fair number of unused letters to hand should you find that you are too busy to send your opinion this month—but I would like to hear from YOU!

For next month please send your opinions on any of the questions in the text above, and on the following: (a) Under what conditions have you bred the Harlequin? (b) Have you managed to get *algae* to grow in your marine aquarium? If so, what are the advantages and disadvantages? (c) Are the bright colours of marine creatures (such as those shown on the excellent cover photograph of the April edition) more attractive than the more subtle colours of freshwater tropical fishes—and plants? (d) Several top experts (*the majority of whom have no vested interest*) have convinced me that British fish foods are at least as good as foreign foods. Would you agree? (e) As an experiment, I've just replaced a special fluorescent tube, which was produced to encourage plant growth with a warm white tube, on one of my tanks, to see if there is any marked difference in plant growth. If you use fluorescent lighting, which of the two types

of tube have you found to give the better results? (f) The head of the science department of the school in which I teach, Mr. D. Muirhead, recently suggested that the failure of plants to grow in two school tanks was due to the fact that each had an outside filter which operated for 24 hours per day, every day. To test the hypothesis I have disconnected the filter to one tank. If any readers whose plants are failing to flourish under similar conditions would care to duplicate the experiment, I would be pleased to hear of their results. (Mr. Muirhead's theory is that the continual aeration by the filter removes a lot of the carbon dioxide from the water, and the plants fail because this essential commodity for plant growth is in relatively short supply.) Finally, I had a letter from a vet who lives at 8 Spottiswode Street, Andersons Bay, Dunedin, New Zealand, and his name is Mr. R. C. S. Hedgman. He would like to contact Mr. J. P. Nash, of Bristol, and Mr. N. Gray, of Galmpton, Nr. Brixham, Devon, both of whom sent me letters some years ago, on the subject of aquatic plants. Unfortunately, I do not now have their full addresses, and Mr. Hedgman would like to write to them about plants. If they read this, perhaps they would care to drop him a letter, by air mail. It could result in an interesting exchange of ideas. Good-bye until next month!

TRANSPORTING LARGE FISH

by W. S. Rodgers

THOSE of you who keep large fish may often think of showing them, but the problems of transport can be very off-putting, to say the least. You have to cart the fish there as well as a bucket or two of water, not forgetting a tank. What's the water done when you arrive? Well, if you're lucky it's still in your carrier; if you're unlucky it's all over the car.

By the time you dump the tank on a bench, fill it with the remains of the water you brought, dropped your fish in, you can relax for a while—and count the missing scales and fin-splits. So try it the easy way, kill three birds with one tank lid.

The sketch for the lid explains itself, so I won't go into details of manufacture, but I will explain a few details about each part.

Let's start with the tank. A good size is 18 in. × 12 in. × 10 in. Big enough to throw an 8 in. or 9 in. fish into for an hour or two, but not too big to move when three-quarters full of water. An early word of warning here. A normally glazed tank objects strongly to being carted about full of water, so it is essential that you silicone-seal all internal corners really well.

Angle iron is a must because the thin edge of a pressed steel frame is not rigid enough nor is it thick enough to tap. The first job is to dress any weld off the top four corners of the frame (it won't weaken it), so that you have a smooth flat top for the rubber to seal against.

Remember, you have glass and putty inside the frame so measure to see if you have room to get a $\frac{1}{4}$ in. screw in. You should have, but if not use $\frac{3}{16}$ in. and put some extra ones in. I suggest four a side.

Don't drill yet. Leave that till last. The rubber strip may be glued into position or left loose, whichever way you prefer. It's easier to fasten up if glued, as you won't have to line the holes up.

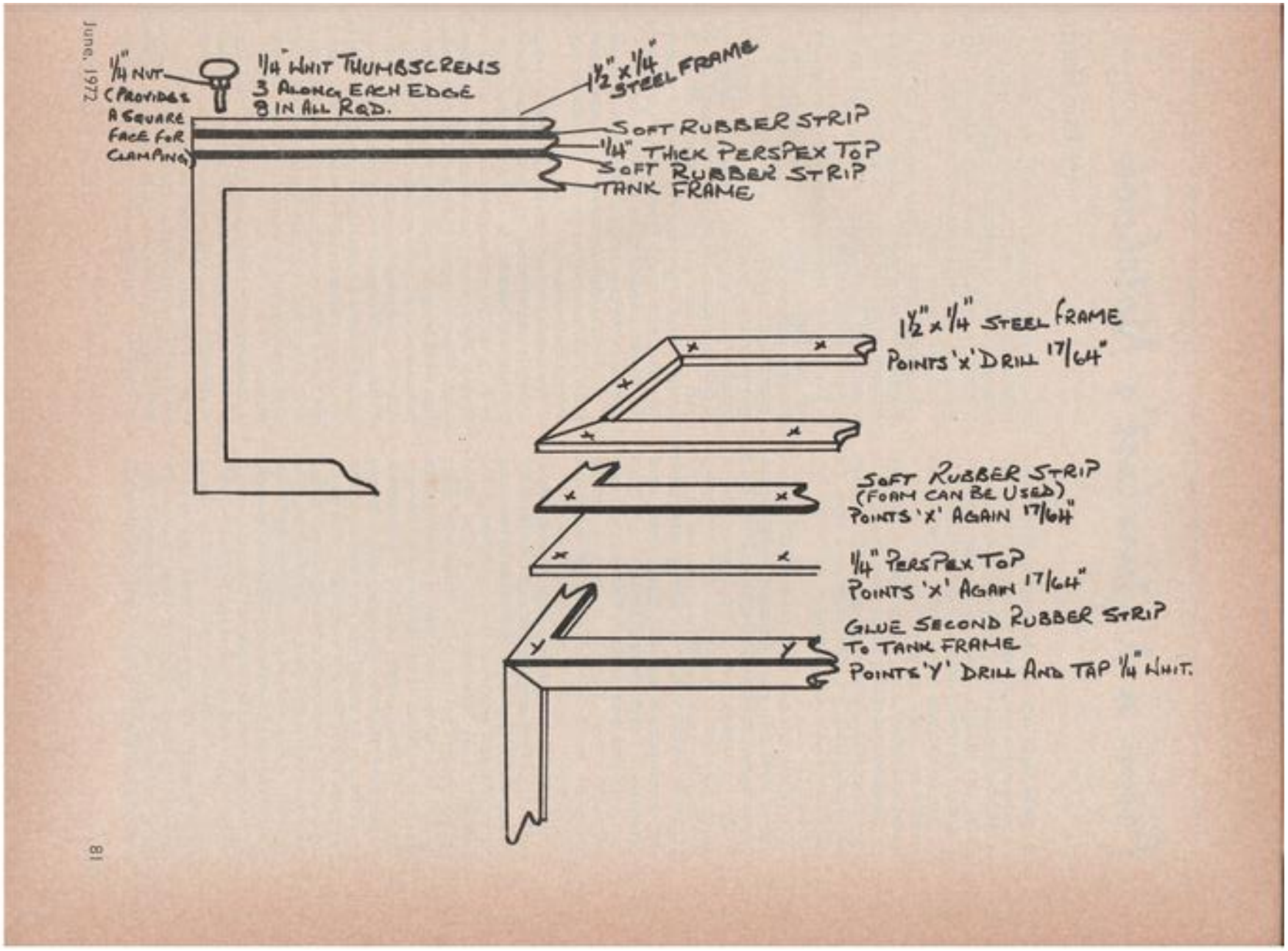
If you go the whole hog and have a tank made (or a frame, anyway), have it made from $1\frac{1}{2}$ in. × $\frac{3}{16}$ in. angle, it's much more sturdy without being much more expensive. Use Perspex or PVC for the top; it's easy to drill and a lot more flexible than glass. Any warp in the frame would break glass, but the plastic will bend slightly without any danger.

The second rubber strip is only to protect the Perspex from the metal of the top frame. It may be left loose or glued, as with the first, whichever way you prefer. I have stated that foam rubber may be used, but soft rubber strip is preferable, and can be obtained from most handyman stores.

The metal frame for the top you may be able to have made through your local aquarist suppliers. If not, there are usually a few advertisements in this magazine from manufacturers who specialise in such things.

The drilling. You will probably find the easiest way to do this is to put all parts together and, holding firmly in place, drill two pilot holes of about $\frac{1}{8}$ in. at opposite ends of the tank, right through the whole stack. These holes can then be opened out and tapped. After this, reassemble the top with two screws, and drill pilot holes for the rest of the assembly. By doing this you will find it easier to make all the holes line up. This is very important as the $\frac{17}{64}$ in. size only gives a $\frac{1}{64}$ in. clearance to a $\frac{1}{4}$ in. screw.

Many variations are possible on this lid (e.g., a handle to cart the infernal thing about with), but in my opinion it is worth the effort to make and is relatively inexpensive.


1/4 NUT (PROVIDES A SQUARE FACE FOR CLAMPING)
1/4" WHIT THUMBSCREWS 3 ALONG EACH EDGE 8 IN ALL REQ.
1½" x 1/4" STEEL FRAME
SOFT RUBBER STRIP
1/4" THICK PERSPEX TOP
SOFT RUBBER STRIP
TANK FRAME
1½" x 1/4" STEEL FRAME
POINTS 'x' DRILL 17/64"
SOFT RUBBER STRIP (FOAM CAN BE USED)
POINTS 'x' AGAIN 17/64"
1/4" PERSPEX TOP
POINTS 'x' AGAIN 17/64"
GLUE SECOND RUBBER STRIP TO TANK FRAME
POINTS 'Y' DRILL AND TAP 1/4" WHIT.

From a Naturalist's Notebook

by Eric Hardy

Does the swan feed on the common swan-mussel *Anodonta cygnea* in our ponds and lakes, and play any part in pearl-formation as a host to the parasitic worm? The recently-published Wildfowl Trust monograph on *The Swans* (Michael Joseph, £4·20) doesn't include it in their diet, though I was taught otherwise. The specific name *cygnea* means swan, and *anatina* for a smaller form means duck; but these names may have been given because of their relative sizes. Molluscs are a minor part of the diet of several swans and I have seen open mussel-shells left after swans have eaten the contents; but they don't appear to deliberately fish them out.

The White Fish Authority's experimental introduction of 3,000,000 giant Japanese Pacific oysters *Crassostrea gigas* to Menai Straits, North Wales (Tal y Foel), after rearing them at the Conway research station, will be interesting to watch. Flat native oysters have bred there since pre-Roman times but, like the angular Portuguese oyster, this will probably breed only occasionally in the wild here, relying upon plantations of "seed" (young) for fattening. It has been established from Alaska to California and from Tasmania to New Zealand. In its most thriving condition it can grow a foot in length; but this is unlikely here.

The 277-page biological report by John Corlett to the National Environmental Research Council, in the Morecambe Bay Barrage study, contains an interesting netting of aquatic insects and other invertebrates at the outflow of Lake Windermere and at Low Wood Bridge further down the Leven, to see what might colonise the future freshwater lagoons or polders. The first insect colonisers of the new reservoirs are most likely to be biting midges, until the fish-population controls them. Phantom midge larvae, most numerous invertebrates at the outfall, were not found three miles down river at Low Wood (Haverthwaite). The water-hog-louse and the common mud-snail *Limnaea peregra* alone shared the outfall and Low Wood regions. The freshwater shrimp *Gammarus pulex* of the outfall was replaced lower down by its brackish relative *G. zaddachi;* but the reverse could be the position in future reservoirs in the bay, though the salt-water *G. duebeni* could survive in the bordering polders. But the Leven river's dominant running-water insects: the stonefly *Amphinemura sulcicollis* and the Large Olive mayfly *Baetis rhodani* of May, and the Blue-winged Olive mayfly *Ephemerella ignita* of June-July, with the caddis or creeper *Hydropsyche instabilis*, are unlikely to colonise the still waters of the reservoirs. Trout, perch, minnows and pike are expected to be the first colonisers, followed by roach and rudd, then, later still, bream and tench. Eels would also become common. Trout would take a minor place.

A gilthead bream (*Sparus auratus*) trawled off Scarborough last year and recorded in the Yorkshire *Naturalist* as the first North Sea specimen, is not so, according to Travis Jenkins standard book on the *Fishes of the British Isles*.

The pipewort *Eriocaulon aquaticum* (*septangulare*), our only British member of its genus, is really an American plant and not found elsewhere in Europe. It covers the wet, peaty ground around its shallow waters with its flattened, jointed leaves and tiny, button-like, greyish-white flower-heads. Growing at Roundstone in Galway, it shares the isle of Gunna near Coll with other Irish plants and may be another relic of the former junction of New and Old Worlds, of which we have heard more lately. It grows also on Skye and its first Scottish mainland haunt has been located at Loch Caorach in the inland hills of Westerness, south-east of the Point of Ardnamurchan, and sharing Lochan Dubh with shoreweed, a mile west of Faskadale in the north of the peninsula.

The so-called fringed water-lily, *Nymphoides peltata*, is really a relative of bogbean, not a water-lily at all. It is native to Norfolk. As well as haunts given for it in R. S. R. Fitter's excellent and recent book on *Finding Wild Flowers* (the Broad Pool on Gower, South Wales; Llangorse Lake; and The Fens), it has been found in south Lancashire at Pennington colliery-flash, Leigh, and a pond at Astley, near Tyldesley, as well as in the disused Shropshire Canal at Eyton, near Wellington. It is named from its small, water-lily-like floating leaves and its funnel-shaped yellow flowers in late summer, fringed at their edges. It often shares still waters with true white and yellow water-lilies, as in its Gower and Tyldesley haunts, but seldom sets seed, spreading more by its thin, creeping, underwater stems.

Among recent research in amphibians, C. E. Valerio has made an interesting study in America of the ability of several frog and toad tadpoles to survive without water. They are: *Leptodactylus pentadactylus*, *L. poecilochilus*, *Smilisca phaeota*, *Phyllomedusa callidryus*, the tree-frog *Hyla ebraccata*, *Bufo marinus* and species of *Prostherapis*. Another example of delayed implanta-

tion as a slowing down of breeding, probably for seasonal weather advantages, is shown by Marynick's recent work on the long term storage of sperm in the salamander *Desmognathus fuscus* in Louisiana rivers. Equally interesting is Hans Fricke's study of the adaptation of the skink-lizard *Cryptoblepharus boutoni cognatus* for life in the intertidal zone, and the collection by Clyde Jones (of the American National Museum) of the hairy frog in the Rio Muni of West Africa, *Trichobatrachus robustus*. In India, H. Chaudhuri has induced Indian carps to spawn with pituitary-injections. Fertilised eggs of the northern sennet, *Sphyraena borealis* (a barracuda fish) collected by E. D. Houlde in the Florida Current near Miami, have been reared in the marine laboratory there.

One has to be careful about fish-names in American literature. On reading an account of the Virginia Institute of Marine Science's "Studies of Herring Spawning Sites," as it was titled, I discovered that the fish were not herrings, but alewives and shad. Americans call this the "river-herring." Of course, freshwater aquarists are equally at fault with some of their "sharks" and "salmon," which are not such fish at all. It is in marine fishes that most Anglo-American confusions arise. Their whiting is a hake, their pollack a coalfish, their dab a halibut, and among crustaceans their crayfish is a crawfish and they constantly duplicate "shrimps" and "prawns."

I notice a recent issue of the English *Journal of Fish Biology* refers to the common whiting as *Gadus merlangus*, its old name, in one part, and as *Odontogadus merlangus merlangus*, its more modern name, in another part of the same number. It also refers to *Lophius piscatorius* as the "goose-fish" though 99 per cent of literature, naturalists and fishermen call it the angler or frog-fish.

Nevertheless, the Americans are doing much good fieldwork in aquatic life. Recent investigations by Rosenthal and Chess of the Westinghouse Ocean Research Lab at San Diego suggests some form of associative learning by the leather-starfish *Dermasterias imbricata* which has developed a habit of feeding on the purple sea-urchin *Strongylocentrotus* off California though elsewhere along the Pacific coast sea-urchins are avoided in its diet. The sea-urchin's defence is by depressing its spines, gaping and erecting its globiferous feet and moving away. The starfish locates the prey in holes or depressions, where escape is thwarted. Rosenthal and Chess state: "Possibly before leather stars prey on live urchins there is a learning process involved before the sea-star recognises or associates specific stimuli with food"—like Tinbergen's proposed learning by insect-feeding birds faced with unfamiliar forms.

PRODUCT REVIEWS

I WOULD like to preface these reviews by an opinion which I am not specifically applying to any of the products in the reviews which follow, but I feel that it is about time that someone made the point—and I am sure that many aquarists would agree with me. The point is: Why are manufacturers of electrical equipment, for use in, on, or about aquaria, so mean with the lengths of wire with which they fit their equipment? I think that I could honestly say that of all the pieces of electrical equipment which I use in connection with my fishkeeping, very few indeed have been fitted with a sufficient length of electrical wiring for me to make use of them without joining on extra lengths of wire. As we keep our animals and plants in an aquatic environment, and electricity and water can "mix" with fatal results, having to extend electrical leads is a dangerous essential which would be unnecessary if manufacturers would only fit longer leads—even if it did put the cost of a product up somewhat. If the aquarist has to extend the leads, he will be involved in extra expenditure anyway, and the result is much less satisfactory and much more dangerous. I feel that a minimum length of 1 yard of wire lead should be a standard, and certain specific items could have 2 or 3 yards of leads without these being excessive. It's easy to shorten a lead if it's too long; it's very different if a lead has to be extended! Readers' and manufacturers' views on this point would be interesting to hear. Having made my point I'll move on to my first review.

ORCON AUTOMATIC FEEDER MK. II, for fish and birds, made by the Orcon Manufacturing Company, Lodge Lane, Langham, Nr. Colchester, CO4 5NC, Essex.

I do not yet know the price of this new product.

This new product, which is electrically operated, will be of interest to aquarists who are unable to feed their fishes as often as they would like, or to aquarists who are unable to get someone suitable to feed their stock while away on holiday. The Mk. II model also operates aquarium lighting, switching it on for eight hours in every twenty four, and will operate a load of up to 750 watts. The Mk. I model does not have the automatic lighting switch.

The compact little unit is well designed, being only about 4½ in. × 3½ in. × 3½ in. The outer case is made of white plastic, has black rubber feet, a clear plastic hopper and delivery tube, and a clear perspex base housing. It is designed to take most types of fish foods, but not large flakes intended for hand feeding fishes. It has two three core electrical leads, uses 2-3 watts, and has a 24 hour cycle.

Protruding from the top of the unit is the plastic tube into which the supply of food is put; it holds enough food to last for four days, but the unit is supplied with three extra tubes which fit into each

other and extend the length of the food storage tube. With the three extra tubes fitted, the unit will feed fish automatically for up to 42 days—depending upon the amount of food fed per day. The rotor at the base of the unit has four openings through which food passes. Three of these are blocked by plastic plugs, and the fourth allows food to pass into the tank once every 24 hours. If it is wished to feed the fish more often per day, one, two or three plastic plugs can be removed, increasing the amount of food fed proportionally. The delivery from each opening is 4-4½ grms. per week, using flake food, and 8 grms. using granular food. With the three food extension tubes fitted, and one food exit in use, the filled tube complex will feed the fish once daily for 42 days; with two exits in use food will last for 21 days; and with all four apertures in use the food will last for 10 days, giving four feedings per day. (This sounds very complicated, but is very simple in practice.)

In use, the unit is placed on top of the aquarium cover, and only requires a 1 in. diameter hole to allow the food to fall into the water via the delivery tube. To operate the unit, it is fitted with the appropriate number of extension tubes, and these are filled with the chosen food. The mains lead is connected to a three pin plug, and the tank's light leads are connected to the lead marked "lights" from the feeding unit. The rotor on the unit is then adjusted to feed the fish at the approximate time required, and the unit placed on top of the tank's cover. When plugged in, and switched on, the rotor begins to revolve very slowly—once in 24 hours, to be exact. The unit can be set so that the lights come on just before the first feeding of the fishes; the lights are switched off 8 hours later.

For use in feeding cage birds, the unit can be fitted with a special funnel, a wire bracket, and a seed receptor, which can be obtained from dealers—but I need not discuss its use for bird feeding in this aquarium review.

When switched on, I found that the unit operated very satisfactorily, omitting no more noise than some types of electric clocks do. It would certainly be ideal for the aquarist who is going on holiday, or for use with the school aquarium during holiday periods, etc. One of the attractions of the unit is that it operates outside the aquarium, and therefore is not affected by condensation which could cause food to "cake." (The makers state that food will not coagulate even after 42 days.) The Orcon Automatic Feeder is guaranteed for one year.

I have only one reservation about this feeder and it concerns the amount of food delivered at one feeding. Although the total amount of food delivered for one feeding does not all fall into the tank at once, but gradually falls in, in varied amounts, over a period, the total amount for one feeding was, I found, sufficient to cover over half of the water surface of a 30 in. × 15 in. × 15 in. tank, and I feel that it would take a large number of hungry fishes to consume all of the food inside a reasonable period; however, I must admit that there was a low fish population in the tank on which I tested the unit. B.W.

GUSSIE AIR PUMPS, the single 240 volt, 3 watt model costing £1·20, and the twin-pump model of 4 watts costing £2·10, both marketed by Armitage Brothers Ltd., Armitage House, Colwick, Nottingham, NG4 2BA.

Both of these new pumps have an outer casing of rigid, yellow plastic, and a solid, moulded rubber base complete with rubber feet on which to set the pump. The rubber base also has a rubber extension, with hole, at both ends, and either can be used to suspend the pump from, say, a piece of elastic, to cut down the noise level—although, on test, I found both pumps to be very acceptably quiet in operation even when set down.

The pumps work on the "trembler" principle, and have moulded diaphragms which are said to be long-lasting. The pump's bases have four screws which ensure that the bases fit tightly to the upper parts, an the larger of the two has a small felt air filter set into the base. The air outlet in the single pump is at the side, and the twin-pump has twin outlets at one end. In my opinion both pumps are soundly constructed and, having considered the air output, are both good value for money. Spare diaphragm kits are available when necessary, although I do not know the cost of these.

Comparing the smaller pump with another make which costs slightly more, I found that the Gussie single pump gave a better air output under similar test conditions. I found that it would operate a very large outside filter with ease—something which the similar brand was unable to do. The Gussie single worked three simple air-lift filters with ease; and operated a fairly large filter—which operates using an air-stone—with ease and efficiency. The noise level was reasonably low.

The twin-pump produced approximately double the amount of air of the single one, and also had a reasonably low noise level. I tested it using each of the two outlets separately, and then used two short lengths of airline and a "T" piece to channel the air into a single outlet. I found that I could operate more filters using the outlets separately than I could when they were united using the "T" piece. A photograph of the larger pump appeared on page xiv of the March 1972, issue.

In conclusion I would say that these two, new pumps are good value for money, are well designed, give a good output of air for their respective costs, and are reasonably quiet in operation. The smaller

pump gave more air than a similar pump which cost slightly more, and the larger one gave at least as much air as a pump which costs over £1·00 more. If your old pump is past its best, or if you are considering buying your first air pump, I feel that you should be pleased with either of the above pumps—the particular choice being governed by the number of air operated pieces of equipment which you require to have in use.

B.W.

BOOK REVIEWS

The Cichlid Fishes of the Great Lakes of Africa. Their Biology & Evolution by G. Fryer and T. D. Iles. *Published by Oliver & Boyd at £12·00.*

This is a large and very specialised work dealing not just with the large family of cichlids, not just with those of Africa but only with those found in the major lakes of Africa. Readily comprehensible to the layman, the book is the result of many years of scientific research which has brought us a fascinating account of the many extraordinary features peculiar to these fishes which cannot be found anywhere outside the lakes in which they were discovered.

Lake Victoria, a vast stretch of water nearly as large in area as Ireland, fosters over 170 species of cichlid found nowhere else. Lake Malawi contains an even greater number of species common only to its waters and the count exceeds 200. Lake Tanganyika follows with at least 126 species. These species are endemic to the particular lake in which they are found and even though Lakes Tanganyika and Malawi are only 200 miles apart, they do not have a single species in common.

Covering a wide variety of aspects concerning the diverse cichlid species peculiar to each of the lakes, chapters deal with: Environmental Background of the African Lakes, Introduction to African Cichlids—their structure and habits, Feeding Habits, Breeding Habits, Language of Cichlids, Predators and Parasites, Genetic Polymorphism, Growth Phenomenon, Cichlids as a Natural Resource. There follow four chapters on Evolution dealing separately with the History of the African Lake Cichlids, Adaptive Radiation, Speciation and Controversial Aspects of Speciation.

In the opening paragraphs of the chapter on the history of the Lakes we are told that the greatest contribution to biological knowledge made by African Lake cichlids is in respect of evolution. The authors go on to state that one must conclude "that the many endemic species of the various lakes must have originated where they occur today" and that while the development of a single species under similar conditions is not unusual, "the development in a single lake of dozens or more than 200 (Lake Malawi) endemic species belonging to a single family demands close scrutiny."

Under feeding habits we find classifications such as Phyloplankton Feeders, Deposit Feeders, Leaf-Choppers, Mollusc Feeders, Insect Feeders, Scale Eaters, Egg, Embryo and Larval-fish Eaters and detailed descriptions of the wide range of dental and mouth structures are supplied to illustrate the modifications many species have undergone to adapt to local environmental conditions.

Under Specialised Habits we come across *Haplochromis livingstoni* which realistically shams death to the extent of changing its coloration to resemble that of a partly decayed fish. Lying on its side upon the sandy bottom, and remaining motionless, it is assumed that small fishes swim near to investigate and quickly fall a prey to "Kaligono," or the Sleeper, as this fish is known to the natives.

Breeding Habits. Mouthbrooding is common to many species of cichlid but it can take specialised forms such as Maternal Brooding or Paternal Brooding according to the prevailing strength of Women's Lib. Other species are classified as Substratum Brooders or Guarders since the young are denied the sanctuary of the parental mouths.

Males of many species of African Lake cichlids carry what are described as egg-spots on their anal fins. These comprise yellow, egg-shaped markings approximating to the egg-size of the species. Separated from the general colour of the fin by a surrounding circlet of clear tissue, the illusion of eggs in the vicinity of the male's genital orifice is completed. The cycle of events in the case of most mouth brooders when spawning is triggered off by the female depositing her eggs. This is followed by her speedy endeavours to gather them all into the safety of her mouth and while she is thus engaged the male swims closely past her face. She tries to collect the "eggs" on the male's anal fin and it is then that he ejects his sperm and fertilises the eggs in her mouth. One of several variations on this theme involves a male appendage known as a genital tassel. *Tilapia variabilis* from Lake Victoria is a species thus equipped. Specimens of 20 cm. in length have been found with genital tassels of 6 cm. length. The tassel "consists of a mass of soft pliable tissue drawn into numerous bright orange lobules" which may simulate a cluster of eggs.

The Language of Cichlids describes a complicated and changing range of colour patterns in some species coupled with a signalling system incorporating posture and fin-movements. In other species audible communication was detected. The sound, described as a deep-pitched crack, was produced by courting males kept in an aquarium and was so intense as to be distinctly audible to the human ear at some distance from

the tank. Seemingly, the sounds are accompanied by fin-spreading, opening of the opercula and violent jerks, the operation being so quickly and vigorously executed that the observer said he "feared the fish would break asunder" and it is concluded from these observations that the sound may stem from the rubbing together of parts of the head skeleton and the vertebral column.

The chapter on Cichlids as a Natural Resource runs into 170 odd pages and may bring the aquarist back to earth with a thud as he digests the fact that 600,000 tons of fish from Africa's inland waters were harvested for food in the mid 1960s and that among these were some species highly rated as aquarium fish but, as C. M. Younge says in his Foreword: "Unique prospects were presented to young zoologists of working in this field laboratory of evolution and at the same time dealing with a natural resource of immense importance to local African peoples. The scientific imagination could be satisfied while information was being gathered of the greatest significance in relation to the exploitation and conservation of this major source of food."

A reference in the Introduction to the names of some of the African lakes may be regarded as superfluous and, in part, erroneous. It is suggested that names were inflicted "which are not only alien but so devoid of that poetic or descriptive element which characterises indigenous names that one uses them with reluctance and distaste. Such are Edward and George, Albert, Victoria and Rudolph, unimaginative names which commemorate certain royal personages who once allegedly controlled the destinies of these remote areas." With respect to those who subscribe to the current cult of disappearing British colonisation, it could be mooted that without it such research as that carried out to produce this book may not have been possible.

This is certainly not a picture book and although there are black and white and colour plates, the illustrations, in the main, comprise carefully executed line-drawings. Serious aquarists interested in cichlids and African cichlids in particular, will find a great deal to absorb them in this book on which the authors have expended a prodigious amount of research and labour.

Dr. Fryer, recently elected Fellow of the Royal Society for his work on African freshwater fishes, spent seven years in Africa researching Lakes Malawi, Bangweulu and Victoria. He is now at the Freshwater Biological Association.

T. D. Iles did eight years research on Lake Malawi and is now at the Biological Station at St. Andrews, Canada.

Aquarium Fishes by Elsi Lodi, *published by Orbis Publishing Ltd. and distributed by The Bodley Head at* £1·25p.

Illustrated with 89 excellent colour photographs by Carlo Bevelaequa, this slim volume measuring 12 in. × 9 in. is, in essence, a picture book. Admittedly it commences with fourteen pages of text which provides some of the information required by the tyro floundering into the realms of aquarium-keeping but thenceforth the reader becomes absorbed in the beautifully reproduced plates of freshwater, tropical freshwater and tropical marine fishes, each of which is described in a longish caption.

THE HAMBURG CROSS

by Jorgan & Pamela Hansen

In 1939 Myron Gordon collected 8,000 wild platies in Southern Mexico and took them back to his genetical laboratories in the United States. From these 8,000 he picked 125 differently coloured black types, out of which he chose eight characteristic types as basic material for a series of crosses in an attempt to understand the genes involved.

The various types of black colouring in *Xiphophorus maculatus* are caused by two different types of black pigment cells, independent of each other, small ones called micromelanophores and large ones called macromelanophores. In only two of the eight types Gordon chose was the black colouring due to macromelanophores, the Spotted *maculatus* with the gene called Sp, and the Nigra *maculatus* with the gene called N.

When the genes responsible for macromelanophoric colouring of a species is, through hybridisation, combined with genes from another species, the expression of the genes can be quite altered and can produce a quite unpredictable characteristic. For example, the Co gene giving the Comet pattern in *maculatus*, when combined with the E gene common in *hellerii* but alone giving no visible characteristics, produces the distinctive wagtail characteristic. A similar combination of genes from two different species gave rise to the following two crosses: the Berlin cross and the Hamburg cross.

The cross between a red *maculatus* male with the Sp gene and a green or red *hellerii* female produced a red swordtail heavily spotted with black, and as this cross was first made in Berlin, it was named the

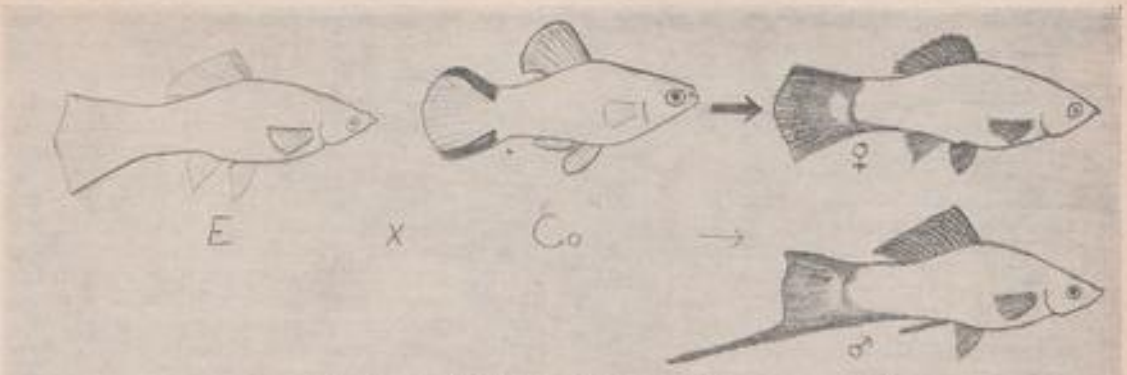


Figure 1. The cross giving sagittal characteristic

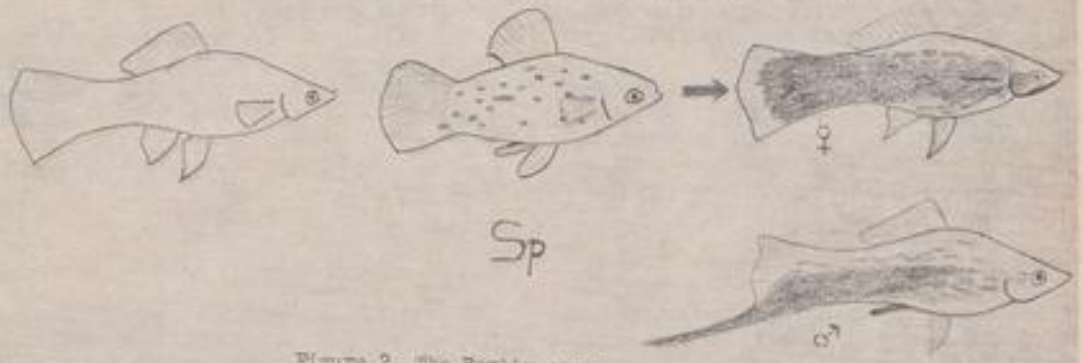


Figure 2. The Berlin cross

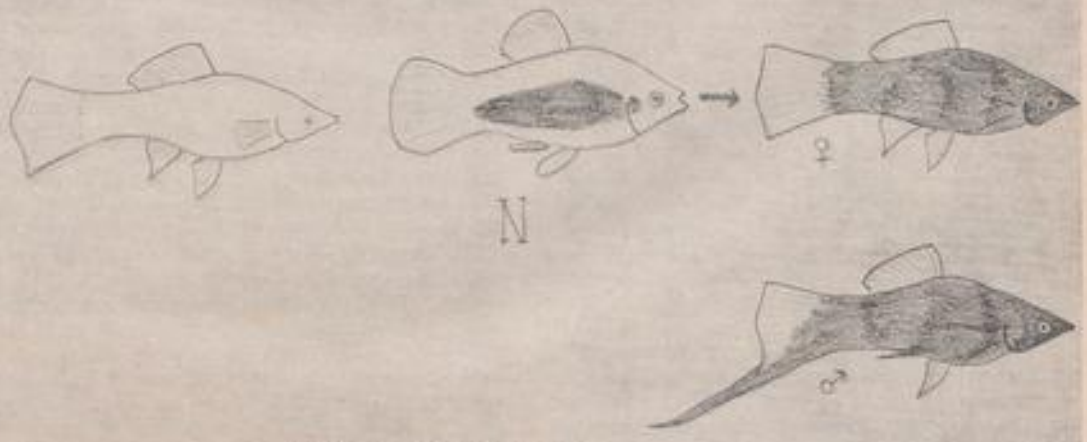


Figure 3. The Danish cross

Berlin cross.

The cross between a *maculatus* male with the gene N and a green *hellerii* female produced one of the prettiest of all, the Hamburg cross, or black swordtail. A black body, speckled with green and blue iridescent guanophores, transparent fins, and eyes with black pupils and white rims giving an effect as if the fish wears glasses.

In both the Berlin and Hamburg crosses the offspring are stronger in colour than the male platy used for the cross. If these hybrids are crossed again with swordtails, strangely enough an even stronger black colour results. This is the opposite of what occurs, for example, with the all-black guppy, which if outcrossed with a non-black strain produces offspring whose black colouring is reduced in intensity.

This back-crossing into the *hellerii* strain can result in destruction of the skin cells through cancerous growth of the macromelanophores. This leads to the destruction of fins, muscles, and vital organs, and eventually kills the fish.

If another type of platy with micromelanophores only is crossed with *hellerii*, growth of the pigmentation cells will be quite normal and no damage to the offspring will occur. It has been postulated that the abnormal growth is caused by an imbalance of genetical material from the two species, but similar growths have been known to occur even in the wild form of *hellerii*, the green swordtail.

It is quite rare for dealers to stock the black swordtail, but when they do it disappears fast from their tanks, since selection is limited. We saw them for the first time in August, 1971, in Hälsingborg, Sweden, and didn't think too long before buying a pair. We also happened to buy a red lyretail wagtail swordtail female.

We placed the black swordtail female, which was 6 cm. in length, into a 25-litre breeding tank, well-stocked with *Sagittaria* and floating plants, where she remained for eight weeks without any sign of offspring. She was therefore returned to the male for two weeks and then moved back to her breeding tank; 31 days after first being placed with him, she gave birth to her brood. This indicates very strongly that the black male we bought was the father of the brood, but *Xiphophorus* females have been known to carry sperm for long periods without giving birth at all.

It might also be indicative of late maturation, which is perhaps the origin of some reports that the black female is infertile.

The brood was 47 in number, composed of 34 black and 13 green young. Of the 34 black, six were considerably blacker than the others: one had black eyes and black fins, and the other five had partly black fins. All the other fish had transparent fins. None of the fish were partly black: they could all be clearly divided into black or green.

Among the six blackest fish, the black fins began to be destroyed after a couple of weeks, starting with the dorsal and caudal fins. In the very blackest individual a typical malignant growth appeared at the root of the caudal fin which killed the fish before it attained the length of 2 cm.

The fish from this brood are now five months old, measure 6 cms., and except for the blackest ones, are in good health. Four of the original six died of melanophoric growth, and one is dying, but the remaining one is still healthy though half the size of the other fish. It was the rule all along that those with the greatest black colouring grew more slowly than the rest. The young were fed for the first two weeks with brine shrimp and micro-worms, and thereafter with trout fodder moulded with agar-agar and *tubifex* once a week. The green fish matured much earlier than the others, as was also the case when we made golden swordtails.

We obtained no more broods from our original pair as the female died, not from the aforementioned disease. Instead we mated the black male with the beautiful red lyretail wagtail swordtail purchased on the same occasion.

This female had previously given birth to a brood composed of:

¼ red wagtail without lyre
¼ red wagtail lyretail
¼ plain red without lyre
¼ plain red lyretail.

The eggs for this brood had been fertilised with sperm stored in the female for at least 70 days.

Only 10 survived of the first brood resulting from the cross between black male and red lyretail wagtail female. While we peered for the young among the floating plants at the top, the mother was discovered to be rapidly devouring young at the bottom, among the *Sagittaria*. The black young seemed to seek the bottom whereas the others made for the top.

A week before the expected delivery of the next brood from this cross, we moved the female to a 12-litre breeding-tank. One morning she jumped out through the small feeding-hole and fell a distance of 5 feet to the floor. When found she was almost dried up, but was replaced in the tank, and delivered her brood in the course of the day, before dying.

This brood was 102 in number and composed of the following:

36 black (10 with lyretail and reddish fins)
32 red wagtail (12 with lyretail)
34 red (11 with lyretail).

Now imagine a black lyretail swordtail with bright red fins, the dorsal fin large and wavy. That is what we hope to get if we cross a red Hi-fin Simpson swordtail with a black lyretail female. The possibilities are endless: one could experiment with swordtail crosses forever.

Breeding Goldfish

by Arthur Boarder

REASONS FOR LOSSES IN YOUNGSTERS

MANY breeders of goldfish write to me each year and complain of heavy losses among the fry of their goldfish. It is not always easy to say with any certainty what has caused these losses. If detailed descriptions are given of all the salient factors it is often possible to diagnose the trouble. Very often my enquirers give so little information about the conditions under which the fish have been kept that it would be like asking your doctor from what disease your grandmother died in Australia. Usually it is possible to trace something which has been done or not done which has caused the trouble. There are two main causes of failure, pests and diseases.

Under pests come a variety of creatures, both large and small which could have been introduced accidentally to the rearing tank. Many such pests can come with *Daphnia*, mosquito *larvae* and *Tubifex*. Any live foods which have bred in water can be dangerous if one is not sure from which waters they have come. I am sure that *Daphnia* are a good food if one can breed them under controlled conditions to ensure that there are no pests present. Many of these pests can be included in the water with live food in the form of eggs or such tiny creatures as to be almost invisible to the naked eye.

Some of these pests, either as young ones or eggs, are leeches, *larvae* of many insects such as dragonflies and water beetles; tiny mosquito larvae; water boatmen; water lice; young of fish lice; various flukes and disease-carrying snails. Some of these troubles can be introduced into the rearing tank with plants or water from the breeding or garden pond. It is not easy to see any of these pests during the hours of daylight, but I have found that it pays to inspect the fry tanks at night with a strong torch. It is then easy to see many of the pests, especially as they grow, and as they appear to be near the top at night they are easier to catch.

As for diseases I suppose that the most common one is the dreaded fungus disease. The spores of this appear to be in most outdoor waters and it only needs a fish to get slightly out of condition for it to be attacked. To try to keep the fry in good condition is then one of the most important factors for the successful rearing of the fry. There is no doubt that the state of the water at all times is the main point to examine every day. If it smells or has a dirty colour it is sure to be going foul, and such a condition is sure to cause the death of the fry before long. Most breeders of fancy goldfish keep their fry tanks at a higher temperature than that of the pond. This is good practice as it ensures that the fry are more active, eat more food and so grow far more quickly than they would do at a lower temperature. An ideal one for hatching and rearing is 70°F, for the first six months or so, and then to reduce it to the lower

sixties (°F), throughout the winter.

Warm water holds less oxygen than does cold and so it is an advantage to use aeration for such tanks. This not only tends to keep the water more healthy but it also moves the small particles of food around and this encourages the fry to feed. What can one do to ensure that the water does keep in a healthy condition? I am certain that one of the surest methods of improving the state of the water is to remove a fair amount at least once a week. Even if the water appears to be in good condition you will improve the health of the fry by a partial change of water. It must be realised that in many fry tanks there are a large number of fry which are feeding most of the time. In doing so they must void the waste matter. This remains in the water and so after a few days it can build up to become dangerous and foul the water. Once the water becomes slightly foul it loses some of its oxygen and then the fry go off their food. If more is given then look out for trouble. One day can be enough to kill off some of the fry if the water becomes foul. It will foul more quickly if it is warm than when cold.

It is possible to change quite half of the tank water once a week, and even more often if there are a large number of fry in the tank or the water looks wrong. With very small fry it is possible to lower a nylon net in the water and scoop up water with a small saucepan. To change the water for fresh, one can use some from a garden pond if it is in good condition. When doing so always pour the water in gently through a fine nylon net to make sure that there are no pests introduced into the tank. Do not worry if the temperature of the fresh water is ten degrees (F), lower than that which has been removed. The fry appear to relish the change and will be feeding again better than ever in a few hours. If you let the fresh water run in at one end it will sink to the bottom and the warmer water will rise up to the top. If the fry wish to do so, and they usually do, they will swim up into the warmer water at the higher level.

When feeding the fry do not at any time give any food which is too large for them to take. This is what can cause trouble, as this uneaten food can soon pollute the water. Also, once the fry get over a month old, be careful to exclude the very fine dust-like food which they may have eaten avidly previously. They will not trouble to eat this powder form if they can find something bigger. Test this for yourself by dropping some varied sized food into a fish tank. It is almost certain that the fish will go for the largest pieces first, passing through plenty of small pieces on the way.

The state of the water is so important when rearing fry that it is a good policy to ensure that no more food is given at any time than can be soon cleared up. Some aquarists see their fish eating well one day and so give an extra amount. Some of this may not be eaten and then, especially if the water is warm, it can start to pollute the water by the next day. If another large amount of food is then given the fry will soon be in trouble. When feeding at any time, never give a large amount, even if you have a good number of fry in the tank. Just give a pinch first and then if the fish immediately rise to take it, a little more can be given. If no fish rises to take the first lot offered then it is foolish to give any more that day. This is also a danger sign, as the water may need changing, and I would suggest that if no fish appear to take the food within a minute, the water needs a change. More fry are lost every year by breeders who fail to take sufficient notice of the state of the water. Also one must regulate the amount of food not only as to the number of fry in the tank, but also their age or size.

When all appears to be going well and the fry are growing, it will be necessary to move some of them to fresh quarters if the tank gets overcrowded. Space is most important once the fry become real fishes instead of tiny fry, more like mosquito larvae. If a few fry have grown much larger than the others it is important to move them to another tank. I have seen forward youngsters trying to eat their brothers and sisters when they got too big.

Although I have mentioned some of the pests which may be introduced into the tank from the wild, there are others which can do a great deal of damage, and birds must not be ruled out. Most pondkeepers are well aware of the trouble which can be caused by kingfishers and herons, but there are many other birds which can eat your fish, either from the pond, or tanks if the house is open during the day-time. Owls, crows, magpies and jays can eat fish but the bird which did the most damage to my stock last year was the blackbird. I had a number of rearing tanks in an outdoor frame and this frame had lights which were opened for air during the daytime. A number of blackbirds were seen in and out of the frame and I thought that they were eating the flying ants which had come out during a hot spell. However, I was soon disillusioned as the birds ate one-hundred-and-fifty of my young fantails. These were the picked ones and the others had been placed in outside tanks with a glass cover. Of course all the unwanted ones were left but all my best ones were eaten. I have now had to make plastic wire frames to cover all my hatching tanks.

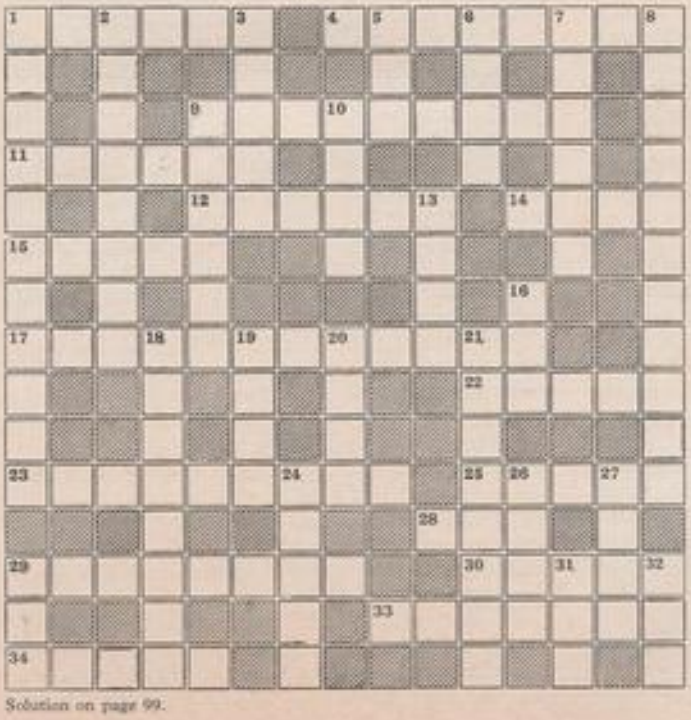
If any of the fancy varieties are being bred, then it is useful to start to sort out the better young ones as soon as possible. There is no doubt that you can grow on the better fish much faster if they can be given a little extra space. I have often said that to be successful at breeding the fancy types one must be able to supply food, oxygen, warmth and space. Without any of these factors the fish will not thrive. At all times one must watch for any diseases among the youngsters. Any fish which spends much of the time mouthing at the surface is to be removed and isolated. It may be that it is attacked by flukes. These tiny creatures can

move about on a fish with a looper-caterpillar movement, and suck the juices to such an extent that the fish eventually dies. It is almost impossible to see them with the naked eye but a strong glass will show these almost transparent pests. The usual signs of an attack are that the fish, when about a month old, will go off its food, start to mouth at the surface and gradually become thin in the body. It can appear almost all head, and its breathing is hastened. A further development is the appearance of blood streaks on the body. The fish will then die and it is practically impossible to effect a cure unless it is taken in good time. I had a bad attack among my fry many years ago which I put down to using *Daphnia* from a local duck-pond. The only cure I found was to immerse the fish in a solution of a half-teaspoonful of Dettol to a quart of water. I only left the fish in for a minute or two and removed it to fresh water if it turned over. It soon recovered from this treatment. I think that T.C.P. in solution, about the strength of a gargle, would also be effective. I have been informed that the latter makes of Dettol are stronger than when I used this disinfectant and so one would have to be careful not to overdo the strength of the solution.

Should any fish show signs of fungus disease the usual salt treatment can be tried. Sea salt is the best to use, and if no other can be obtained then Tidmans will do. I found that some of the fry in a tank where hard-boiled egg had been used as a food were attacked by a form of fungus around the gills. I know that some breeders have used this food with success but on the two occasions I had tried it it caused trouble and so I never use it now. Without doubt the surest way to rear many fry is to make sure that the water in the fry tanks is always in a pure condition.

The AQUARIST Crossword

Compiled by M. W. CLARKE



Solution on page 99.

CLUES ACROSS

1. Robin Hood's fish ? (6).
4. Cabbage type capital (8).
9. At least a sixpenny gratitude is expected from the fish (9).
11. Acidic Fruits (6).
12. Feed your bumblebees this for good results (6).
14. Larva or nympha (4).
15. They never deliver ale in these by the Drays (5).
17. —*spotsimmus* can make 3 down (12).
22. Such fire is dangerous (5).
23. Region of the brain responsible for smell (9).
25. Aquarium water should be so (5).
28. To a fighter another fighter is treated as such (3).
29. *Hyrophis maculatus* is the orange one (8).
30. Opening which supplies 23 across (5).
33. Frog larva (7).
34. The ones from Canterbury are stale (5).

CLUES DOWN

1. A Giant Danio's smaller relatives (11).
2. *Synanoma trifloriam* (8).
3. Caused by vibration (5).
5. Is it made of ore ? (3).
6. Place for a building (4).
7. Territory which an Emperor Tetra occupies (6).
8. The fish buoyancy bag (4, 7).
9. Play of the late afternoon (6).
10. You are free to do so in a democracy (4).
13. Cry from a lioness (4).
16. Home of *Jordanella floridae* (3).
18. Small worms which often cause interal troubles (8).
19. Owls do so (4).
20. Animal often found in reeds if you are careful (4).
21. World's largest snake (8).
24. It's wedged between class and family (5).
26. It's wise to look before you do so (4).
27. In a knife fish this is the main fin (4).
29. Injury from a member of the *Notopteridae* (3).
31. Male offspring (3).
32. A fish certainly does not have one for support (3).

OUR READERS WRITE

A Poor Show?

After reading Sonia Robert's article in the March issue of *The Aquarist*, we decided to visit Brighton Aquarium, some 90 miles journey, and must say were most disappointed and upset at the condition of most of the display tanks and fish contained therein; many were dirty and overcrowded, the fish as a result, being in poor condition. In particular there were two tanks, one containing Koi carp and goldfish varieties, and another containing black moors, these were grossly overcrowded to the extent of the fish literally not having enough room to swim around freely, and there were quite a number of dead ones in the tanks.

We complained to the Administration Manager before leaving the premises, who admitted he knew very little about fish, and he was unable at that time to contact the person in charge of the tanks.

One would have thought there should be enough profit from the proceeds of admission fees to have sufficient staff to keep the tanks clean and free from overcrowding to enable the fish to lead healthy and happy lives.

In conclusion I would add that the Dolphin show was very good, and there are no complaints in that direction.

We would however like to feel that some improvement could be made so far as the fish are concerned.

M. Wood and
R. K. Greece,
103 Thors Oak,
Stanford-Le-Hope, Essex.

Ubiquitous Duckweed

Mr. B. Fry writes in your March issue that the ivy-leaved duckweed (*Lemna trisulca*) does not occur in Africa and South America.

Actually this species does occur in the following East African states: Kenya, Uganda and Tanzania (Tanganyika), and also in north-west Mexico (lower California). One cannot be too dogmatic about the distribution of cosmopolitan species as they are likely to turn up anywhere.

John L. Gilbert,
12 Bushwood Road,
Kew, Richmond,
Surrey, TW9 3BQ.

Early Spawning

On 12th March I looked into my garden pond—5 ft by 6 ft by 13 in. deep—to find no less than nine frogs evidently having their seasonal annual sex orgy. They were wallowing amongst the largest batch of frog spawn I have ever seen. It measured 24 in. by 18 in., consisting of about twenty separate clusters of eggs, each the size of a large grapefruit. Eight days later—possibly due to the exceptional mild weather—they started hatching and there is now a seething mass of tiny tadpoles; there must be thousands. Is this a record?

In passing I might mention that one frog was continually croaking—the first time I have heard one.

Yours faithfully,
B. Moore,
77 Sebastian Avenue,
Shenfield, Brentwood, Essex.

Editor's Note.

According to *The British Amphibians and Reptiles*, by Malcolm Smith, "In Southern England breeding usually begins at the end of February or the first fortnight in March, although in severe winters it may be delayed until the end of March."

Colour in Goldfish and Koi

Arising from the article about colour in Goldfish and Koi as printed in the February copy of *The Aquarist* I would like to put forward a few points.

At this time it would be best to consider pigmentation by chromatophores as distinct from guanine distribution and/or amount. For example the series metallic, nacreous, matt is primarily a difference in guanine. Even if the controlling factor for one is linked to the other this would be a second stage search. As I understand the article the controlling agent for both is suggested as being a virus like in some plants (e.g. tulips). This matter needs biometric checking or perhaps the relevant work can be quoted.

Some of my recent notes in the G.F.S. bulletin have outlined ways in which blue may be seen in the body of the goldfish. At present work is being done to resolve a few of the possibilities. Now the virus idea needs attention too. Any programme to test any such theories can be shown to be logistic "mountains." Volunteer "climbers" are wanted.

One must keep an open mind about such ideas as the virus effect. History warns that it is not sufficient to transpose one set of explanations to a different creature without careful biometric checks. But research into this matter could lead to exciting new facts concerning these fish.

Variability could still account for the difficulties experienced in breeding these fish for colour—a difficulty which is increased by the lack of "pure bred" lines for single colour or colour pattern. Heterogeneous

forms arising from crossing pure and not so pure lines usually range from one homogeneous type to the other and often show a bias within the range towards the dominant type. For example, nacreous fish resulting from a Matt × Metallic mating, referring to guanine not colour. Such a ranging variation is recognised in animal farming and has led to "progeny testing" methods to improve breeding results. Whereas the colour change (de-colouring; loss of one pigment; retention of another colour) shown by some fish, wild colour to orange, is reasonably distinct, and in the field of guanine type the metallic fish compared with the matt fish is fairly distinct, not all factors are so clearly observed. Therein lies one challenge in keeping Goldfish.

J. H. BUNDELL,
Technical Co-ordinator,
G.F.S.

Fish Diseases

With reference to Mr. Cooke's article about fish diseases we would like to make a few points. Being practical aquarists as well as aquatic dealers we feel we must add practical experience to Mr. Cooke's extensive literary blockade.

In his treatment of white spot with "Magicure" the effect of this cure on some Tetras especially Neons and Rummy Nose Tetras were not mentioned. We have found by accident and experimental design that "Magicure" is an excellent Neon killer even at one drop per gallon. The action of "Magicure" is specific and can be removed by diluting the "Magicure" out before the Neons die. In one experiment Neons were very distressed after only 20 minutes. The repeated use of "Magicure" with one tank of fish has led to the build-up of a resistant strain in one case. This was removed by combined cures of "Halamid" and "Aureomycin" (100 mg/gall.).

Mr. Cooke did not mention three diseases which are more common than some of the diseases listed; Dropsy is experienced by most aquarists sometime, Popeye is common with Mollies in my experience and less common is Saddleback (perhaps the most dangerous of all diseases).

Yours sincerely,
M. W. CLARKE, B.SC.,
(for Nene Valley Aquatics),
3 Victoria Road, Rushden,
Northants.

Piranhas

I have read with great interest the articles about piranhas and I would like to hear from someone who has tried to breed these fish.

I have a pair of *S. nattereri* and have spawned them three times; each time the eggs did not hatch but turned white. These fish were 1 in. long when I bought them 3½ years ago, they are 7 in. long today.

As a matter of fact, I bought three, and after a year, I discovered I had two females, one male.

The extra female I let a friend have, and he still has it.

They are very ferocious fish and eat goldfish, the same way as a child eats sweets.

My fish are fed every two days on goldfish or raw meat.

The only time these fish attacked me, was when they had eggs in the tank.

I has taken me a long time to understand these fish, and I would not advise anybody to put their hand in a tank, because like humans they have nasty moments, and they can move that fast, your finger would be missing before you knew it. The colour that they don't like is red but they will get used to it and are even more ferocious than before, so don't put red lights in the tank.

If you put a flowerpot in your tank, they will stay away from it. If you have a flowerpot in and goldfish, the goldfish will survive by hiding around the flowerpot.

If anyone has any idea why the eggs of these fish don't hatch out, please write and let me know.

R. MILLWARD,
26 Cox's Lane,
Mansfield Woodhouse,
Notts.

North American Fishes

I have read carefully Mr. Hems excellently written reply to my letter in the March issue of *The Aquarist* and I apologise for the misinterpretation. Also I was responsible for a rather costly omission, the word "Northern" in referring to the fishes of North America. To suggest that fishes native solely to the southern states of that continent can possibly exist in an unheated aquarium where there is no central heating in the room is ludicrous.

I do however say this in my defence. I did not, in my letter advocate the introduction of imported North American fishes to an outside pond or its equivalent and furthermore did not openly suggest that they are equally hardy as our own native fishes. On the other hand the climate of this country hasn't necessarily any real governing factor in the case of unheated aquaria. The whole business of keeping foreign fishes of this nature lies with good common sense and an idea of the climatic conditions of their natural environment. It stands to reason that Northern American carps, sunfishes, darters, etc., will live quite well in fish tanks ranging from 34 degrees F to 75 degrees F in temperature throughout the year. I have so far kept twelve different species from this particular part of the world, with no ill effects. Indeed, I possess four fliers (peacock eye bass CENTRARCHUS MACROP-

TERUS) which I have had for five years, during which time they have been under ice on occasion. The red shiners I mentioned in my original letter have since been down to 33 degrees F and at the time were the most active fishes in their particular aquarium. There were also young crucian carp and golden rudd in the same tank. The water temperature is now 52 degrees F, the shiners double active, well nourished and in good colour. I am thankful for the hood on the aquarium or else they would jump out. According to Sterba this species shouldn't be wintered below 57 degrees F. Incidentally these fishes are in superior condition to when I first acquired them.

If Mr. Hems considers it wrong to keep these North American fishes in unheated acquaria what is his alternative, to keep them in temperatures ranging from the upper to lower seventies of the tropical tank throughout the course of the year. He criticised the unheated room though I feel sure he would prefer to lengthen a fish's life than shorten it, particularly if it is an expensive one, difficult to obtain and not easy to breed. One perfect example of "life shortened" fish is the white cloud mountain minnow. I read in one magazine where it stated that this species will live for as long as two years provided the conditions are good and to its liking. Many experienced aquarists will know that these fishes will live for four years on average in unheated aquaria. One of mine died at the ripe old age of seven.

I agree with Mr. Vinden on the statement of black-banded sunfish being of a less hardy disposition. It is not the temperature but a sudden change in the character of the water which can be so damaging to its well being, however small. I am sorry but I must again disagree with the view that this species mustn't be kept below 50 degrees F. If my black-banded sunfishes can "suffer" two consecutive winters in really cold conditions (average 35 degrees F during January) and still be alive and in good condition with no apparent discomfort in between little can be wrong in keeping them this way.

I certainly agree on the usefulness of Mr. Samuel Eddy's very good book "The Freshwater Fishes" which I do possess, along with some other excellent publications on the subject of fishes from Northern U.S.A. and Canada. I couldn't agree more with the statement that sunfishes thrive best above 75 degrees F—for breeding. This temperature is necessary for these fishes to propagate their kind, however, generally speaking the unheated aquaria with the temperature range I quoted earlier is quite acceptable for all of the sunfishes with the exception of the pygmy sunfish ELASSOMA EVERGLADEI which will not tolerate temperatures below 40 degrees F under any circumstances. I can hardly imagine rock bass AMBLOPLITES RUPESTRIS, pumpkinseed sunfish LEPOMIS GIBBOSUS, blue-spotted sunfish ENNEACANTHUS GLORIOSUS and fliers CENTRARCHUS MACROPTERUS to be happy in the tropical aquarium or indeed a fish room with central heating.

One person I know has actually kept blue-spotted sunfish in an outside pond two winters running and as yet I haven't seen more superior examples of this species on the show bench. I hasten to add, however, that I considered he took a considerable risk and personally I wouldn't push a fish this far. The fact remains the fishes survived.

There you have it. Mr. Hems took me to task in no uncertain manner and I have replied in the way he must expect me to for after all, said and done, the proof in the pudding is in the eating. A perfect example of practice over theory. Incidentally I am not the only person who isn't the careful reader of the printed word.

I mentioned a species of fish somewhat resembling the bitterling in my letter of the March issue. I have since found out that it is a tanago bitterling RHODEUS OSCELLATUS and it comes from Japan. The person who presented me with the information was a member of the Roehampton Aquarist Society who went to the trouble of taking a live specimen to the Natural History Museum and having it identified.

Descriptively it is much deeper bodied than the bitterling we know and more compressed. The dorsal fin tends to be higher with a somewhat greater curvature. In colour it has a beautiful greenish iridescence on the dorsal contour directly above the head. The fins tend to become redder than the Europpean counterpart, in season. There is an unmistakeable red blotch on the caudal peduncle of the male which also develops a lovely reddish hue throughout its body during the summer. Behind the operculum there is a dark "saddle" reminiscent of the red shiner. A truly colourful little fish.

V. B. Hunt,
"Caeglas," 120 London Rd.,
Widley, Nr. Portsmouth,
Hants., PO7 5EW.

Jack Hems writes: I do not dispute the fact that certain freshwater fishes native to the U.S. are very hardy, and will sometimes overwinter in a temperature of 40°F., or even less, with no harm done. And that Mr. Hardy has managed it is nothing remarkable. But always the practice is fraught with danger as I discovered for myself more than forty years ago. Apparently Mr. Hunt's argumentative strategy is to attempt to overwhelm his opponent with a torrent of words. Much in his letter is confusing and confused. The tanago reached England in the late spring or early summer of 1939. I first saw specimens in Les Taylor's showroom in Greenwich, and soon afterwards a few of these bitterling-like cyprinids

turned up in Pope & Robertson's elegant establishment in the heart of Mayfair. At this time the tanago, that is native to Japan or China or both, went under the formal name of *Pseudoperilampus typus*.

THE PEARL GOURAMI

(Trichogaster leeri)

by Jack Hems

AS EARLY AS 1852, P. Bleeker had described this species for science. But it was not until 1933 that it was first seen in the tanks of tropical aquarists in Europe and in America. Its natural home is Indonesia, the Malay peninsula and Thailand. Both in the wild and in the aquarium it attains a length of about 4 in.

Indubitably, it is the handsomest member of a handsome genus. For the strongly compressed body, olive on the back shading to silver lower down, is adorned with numerous pearly dots all overcast with a silky sheen that reflects the pastel tints of a rainbow. A narrow black band, irregularly indented or jagged along the edges, extends from the tiny mouth, through the large eye, to the tail. Like the sides, the dorsal, anal and caudal fins are marked with early dots, but the pelvic or ventral fins are prolonged into thread-like extensions, white near the body but yellowish to red at the tips. These fins are extraordinarily manoeuvreable and are waved like the sensitive antennae of certain insects when the fish moves through thickets of vegetation or is courting. The pectoral fins are clear. The well-grown male has a broader anal fin and a longer and more pointed dorsal fin than the female and his under fins and ventral parts are flushed with red.

Shallow water is advised for breeding. That is water not more than about 7 in. deep. A tank no larger than 18 in. by 12 in. by 12 in. may be used, but a much larger one is better. It should be matted with plants at both ends and over much of the surface.

If a pair of *T. leeri* are ripe for spawning both sexes will parade around with waving fins and intensified colours. Every so often the male will take time off to blow the typical bubble nest of the nest-building anabantids. Soon the egg-distended female will signal her bursting need for a closer relationship by hovering near or directly under the nest. Embracing follows as a matter of course. In short, the male wraps his body round her's in a tightening circle, and the result is a shower of eggs. At once the fish break apart, gather the eggs that have not floated up into the nest in their mouths, and blow them out again in the right direction. This performance is repeated more than a dozen times until the female is spawned out. Then the male will turn spiteful and if the tank is a small one, it is best to take the female out.

The eggs hatch out in about a day, but the tiny fry do not become free swimming until two or three days later. Free swimming fry make the most satisfactory progress on a diet of infusorians dripped *via* a wick or clamped down siphon tube from a pint-size jar raised above the tank. If infusorians are not available, then a substitute for this ideal first food is called for and among the most suitable alternatives are cloudy infusions of baker's yeast, hard-boiled yolk of egg, or dried milk. As this sort of food will pollute the water very rapidly if fed to excess particular care is needed not to overdo it. A quarter-teaspoonful at a time is about right.

As the fry increase in size, they should be got on to larger food such as mosquito larvae, brine shrimps, and micro worms. Powder-fine dried food may also be given. The water surface should be kept clear of any film or scum. What is important, too, is to keep the top well-covered with a sheet of glass to exclude the passage of cooling air. Also, as no one can predict the behaviour of an adult fish in an unnatural environment, it is a wise precaution to remove the male from the aquarium before the fry have made much headway.

T. leeri, commonly known as the pearl or mosaic gourami, rarely, or hardly ever, molests other fishes (except when protecting a nest) and is therefore quite suited to a community tank. In good conditions it will live for upwards of five years and is quite comfortable at a temperature of 72°F (22°C) to 80°F (26°C). It haunts the upper and middle levels of the water and takes most of its food from the surface. It will eat almost anything small including fry-devouring hydras.

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.

TROPICAL QUERIES

by Jack Hems

Can you name a few 3in. to 4in. fish that would live peacefully together in a 24in. × 12in. × 12in. tank?

Melanotaenia nigrans, *Danio malabaricus*, *Rasbora elegans* and *Barbus conchonius* would prove satisfactory, but bear in mind that not more than four or five fish of medium size can be accommodated in a 2ft. tank.

Please fill me in on the temperature, food, maximum length and general requirements of the catfish known to science as *Schilbe marmoratus*.

S. marmoratus thrives best at a temperature in the neighbourhood of 75°F (24°C). It attains a length of about 6in. and eats anything accepted by non-faddy fish. It feeds at night. It likes a well-planted aquarium and is comfortable in any sort of water provided it is neither markedly acid nor markedly alkaline. It is non-aggressive, but in its larger sizes it can, and does, swallow much smaller species which it may come across after dark.

I am worried about a fluctuating pH value in my aquarium. It varies from 7·0 to 6·8 according to the time of the day I test the water. Will this fluctuating pH value kill the fish?

Forget all about it. The pH value of aquarium water alters slightly in every twenty-four hours. It is affected by light, and the build-up of certain gases during the night.

I am a young aquarist and my mother does not like to see a smelly jar of *tubifex* **worms standing under a dripping kitchen tap. What other method can I use to keep my weekly purchase of** *tubifex* **worms alive?**

The next time you purchase *tubifex* worms give them a good swill round in a jar of clean water. Empty this first lot of water away. Now, put only enough water in the jar to cover the worms. Stand the jar outdoors (except in frosty weather) or in a sunless porch. Before you feed any of the worms to the fish repeat the cleansing operation. If you adhere to this practice a goodly number of *tubifex* worms will stay alive for at least a week.

Soon after I set up my aquarium a lot of the fish died and my plants refused to grow. My dealer told me to put twenty teaspoonfuls of bicarbonate of soda into the tank. This I did but things have now gone from bad to worse. What should I do?

Ignore any similar nonsense handed out by your dealer. Next, empty your aquarium of its contents and start up again with washed compost and ordinary water from the coldwater tank. But before you buy fish and plants, I do suggest that you read a few books on fishkeeping by authors such as D. McInerny, Wm. T. Innes, A. Evans, and Cust and Bird.

Please give me some information about setting up a community tank for cichlids.

Not unnaturally, a tank for cichlids—a community of cichlids—should be large. Nothing smaller than 36in. by 15in. by 12in. should be considered. It is of importance to choose the different species with care, for most cichlids are pugnacious. Among the most suitable species are *Cichlasoma severum*, *C. meeki*, *C. cutteri*, *C. festivum*, *Geophagus jurupari*, *Aequidens maroni*, *A. curviceps* and *Nannacara anomala*. Non-calcareous rockwork should be used to provide a play area and retiring places. Only the strongest-rooting plants should be used, or, better still, throw in a tangle of *Elodea densa* or *Najas* to grow floating.

I have just obtained a 2½in. orange chromide. I would very much appreciate some advice on the care of this species.

By and large, the orange chromide (*Etroplus*

maculatus) flourishes well in slightly salty water maintained at a temperature in the middle-seventies (°F). It is peaceful, and can be kept with other fishes of about its own size. The regular live foods and tiny slivers of red meat should be given.

I have added two *Ephippicharax orbicularis* to my community aquarium. At the shop where I bought them, I was told that this species is impossible to sex, stays small, and is not at all aggressive. Are these statements correct?

Not quite. Both sexes do look alike in finnage and coloration, but *E. orbicularis* can reach a length of about 4in. and though it is safe to keep it with other fishes of about its own size, it does nibble at the plants.

I have an old but strongly built glass-sided tank with a sheet-iron bottom. Could you tell me what to do with this tank to make it suitable for freshwater tropicals?

An inexpensive way out of your difficulty would be to cover the iron floor with about a quarter-inch thickness of cement and sand. After this has set and been given a good scrub to remove the dust and a lot of the free lime, paint it over with two or three thin coats of black bituminous paint. Before stocking the tank with fish soak it for a few days in several changes of water to get rid of the smell and traces of oily scum.

I have been told that the pair of *Tilapia* mouthbrooders I own may be native to Hawaii and not from Africa at all. As I cannot trace a cichlid mouthbrooder from Hawaii in my books, I should be grateful for any information you can give me on this point.

There are species of African *Tilapia* in Hawaii just as there are *introduced* species of *Tilapia* in many other parts of the world where the climate is kind enough to support them outdoors; for *Tilapia* mouthbrooders are fecund, fleshy and provide a good food for the native populations. In all probability, the *Tilapia* species bred for the table in Hawaii is *T. mossambica*.

Would you say that species of *Pterophyllum* make satisfactory occupants of a community tank?

To be perfectly honest, the answer is no. As angel fish increase in size they become increasingly bad-tempered and pick on smaller fishes and their own kind. Therefore it is advisable to house angel fish on their own or with species too large to be bullied around.

Please give me the scientific name of a killifish popularly known as the herring-bone. Furthermore, I would like to know its country of origin and its maximum size.

I guess you mean *Rivulus strigatus*, a small (1¼in.) fish characterised by a reddish brown herring-bone pattern on the sides. It is native to Brazil.

COLDWATER QUERIES

by Arthur Boarder

In a recent article on goldfish breeding you stated that you use two thermostats to control twelve tanks. This could mean that one thermostat alone could be over-loaded. Is this not dangerous?

I forgot to mention that the thermostats I use are a heavy-duty type and can deal with the load adequately. Also, I rarely use more than six tanks heated at a time and so there is not the need for a multiplication of thermostats. However, anyone who uses several tanks would be safe to use one thermostat to each tank unless a special type was obtained. There was one point in the article which I would suggest could be altered. I stated that I had the two thermostats in one tank. I now find that it is better to have them in separate tanks as if the heater failed in the tank with the two in, then all the other tanks could get overheated, whereas with one in each of two tanks the danger is lessened. It is always a good policy to test the temperature of every tank each day to make sure that a thermostat has not stuck in the "on" position which would cause over-heating.

I wrote about blood streaks on my fish and thought that it was through flukes. However, I have been told that the type of fish I keep are liable to get fin congestion which shows up as blood streaks. Is this so?

It is a fact that fin congestion shows up as blood streaks and it is often found on the caudal fin of the large finned varieties of fancy goldfish such as the veiltails. It is often brought on by a decreased water temperature which could give the fish a chill. That is why I do not recommend this variety for the garden pond. I know that some fishkeepers get away with this procedure but a lot depends on the locality as to how much cold can be experienced in the district. It is difficult to cure this fin congestion, but one almost sure method is to raise the temperature of the water to about 70°F. Many of the fancy goldfish sold

today have been raised under tropical conditions and if they had not been gradually brought down to a lower temperature, the trouble could occur.

I had a pair of fantail goldfish which developed what I think to be swim-bladder trouble. I have had them in salt water for some time but they do not appear to be getting any better. What treatment should I give?

While it is possible to cure some fancy goldfish which are suffering from this complaint, I feel certain that there are cases where it seems impossible to effect a cure. The trouble usually occurs in the short-bodied varieties of fancy goldfish, such as veiltails and orandas, although it can happen to other varieties but in less numbers. When a very young fish shows the signs it is probable that the fish has come from a strain which has been affected by this complaint and so the trouble can be caused by heredity. Some fishes are troubled with swim bladder trouble when they have had a chill by the water losing warmth suddenly. The chances of a cure are better if a fish develops the trouble when it is a few years old. It is, in my opinion, no use trying to cure this complaint with salt. To keep goldfish in a salt solution for too long could cause trouble, and in any case much of the protective mucus covering could be destroyed. The best treatment I know is to keep the fish in shallow water, just deep enough to cover the extended dorsal fin, and to raise the temperature of the water to near 70°F. After a cure the fish should be gradually acclimatised to the usual lower temperature.

I have four shubunkins in a tank, 24 in. by 12 in. by 12 in. and for some time they have been very healthy. Now one of them has started to lie on its side and after feeding it appears to swell up and be in trouble. After a time this seems to clear up and the fish can swim normally. Do you think it has some internal trouble?

When only one fish in a tank shows signs of distress or illness it is usually that this particular fish has some weakness or has some disease. Such a fish should be isolated. There are many pests which can cause trouble if they get inside a fish. After all, human beings, although perhaps living under exactly the same conditions, can very considerably in their make-up and some are more liable to catch diseases than others. The same can be said about fishes. In nature such fishes would soon be eaten by others which is nature's way of ensuring that the species continues in a strong and healthy condition. I do not believe in trying to cure or patch up an ailing fish. If I know the trouble and that I can make a permanent cure I might have a go, but if the fish is obviously a weakling, or one which is subject to recurring complaints then I have no hesitation but to destroy the fish forthwith. My method is to dash the fish smartly on a concrete path. It might sound cruel but it is quick and effective. After all, why try to cure a fish which could most probably pass on the weakness to more fish? If more fishes which are badly infected were destroyed there might not be as many weaklings about as there are.

I am soon to retire and move to Norfolk where I shall have seven or eight acres of land. I would like to make a large pond or lake so that I can stock it with fishes and then be able to fish for them. How can I make a start?

I envy you your opportunities but must say that you may find some difficulties. It will be well to make enquiries from the local council to see if there are any restriction in force. You will also have to have the sub-soil tested or it may be too porous to hold a large amount of water. I do not think that you would be able to construct a lake or very large pond in concrete as it would be very expensive and complicated. I suggest that you have a series of smaller ponds, joined by channels with perhaps a waterfall to improve the appearance. Even a pond of no more than ten by ten feet could allow you to fish. I used to fish regularly in my pond, not large, for green tench. I had great sport with them, using a stout worm tied on my line—no hook, of course. By using a fly rod I could play the fish for some time with the rod bending spectacularly. I could never get the head out of the water. The fish would either let go or take the worm. This never worried the fish as they would go for the next worm in seconds after having fought strongly for minutes. As you have no experience with keeping coldwater fishes I suggest that you get my book, "Garden Ponds" published by Foyles at 30p.

I have two fancy goldfish in a tank 24 in. by 12 in. by 12 in. and keep it at a temperature of 70-74°F, and would like to add some tropical fishes to go with them. Which can I use, and am I keeping fancy goldfish at too high a temperature?

As your tank is at the usual temperature as used for tropical fishes there is no reason why you cannot keep any species you like as long as you consider some of the probable problems. If very small fishes were used the goldfish could eat or worry them. Do not use any fishes with trailing or very thin fins, or appendages, such as Angels, Gouramies and the like. It would be better to keep to fish about the same size as your goldfish. As for feeding the fish, there is no problem here as goldfish will eat any of the foods as given to tropical fishes. As for your query as to whether you are keeping the fancy goldfish at too high a temperature, the fish will not mind this as long as

THE AQUARIST & PONDKEEPER

FISHKEEPING EXHIBITION

SHOW SCHEDULE

Saturday 15th–Sunday 16th July 1972

Sponsored by The Aquarist & Pondkeeper and organised with the co-operation of the Federation of British Aquatic Societies.

Palm Court, Alexandra Palace, Wood Green, London, N.22

Open to the Public: Saturday, 15th July, 10 a.m.—9 p.m. Sunday, 16th July, 9 a.m.—5 p.m.

Schedule of Classes

Aa	Society Furnished Aquaria Tropical 24" x 12" x 15"
Ab	Society Furnished Aquaria Coldwater 24" x 12" x 15"
Ad	Individual Furnished Aquaria Tropical 24" x 12" x 15"
Ae	Individual Furnished Aquaria Coldwater 24" x 12" x 15"
Af	Individual Furnished Aquaria Marine 24" x 12" x 15"
Agh	Junior Furnished Aquaria Coldwater or Tropical 18" x 10" x 10"
Am	Individual Aquascape (exhibitors may supply their own tank) 24" x 12" x 15"
B	A.V. Barb
C	A.V. Characin
Ca	Hyphessobrycon, Hemigrammus and Cheirdon
Da	A.V. Angel
Db	A.V. Apistogramma, Pelmatochromis and Nannacara
D	A.O.S. Cichlid
Ea	Betta Splendens
E	A.O.S. Labyrinths
F	A.V. Egglaying Toothcarps
G	A.O.S. Tropical Catfish
H	A.V.Corydoras and Brochis
J	A.V. Rasbora
K	A.V. Danio and W.C.M.M.
L	A.V. Loach
M	A.O.S. Egglayer
O	A.V. Guppy, Male
P	A.V. Guppy, Female
Q	A.V. Swordtail
R	A.V. Platy
S	A.V. Molly
T	A.O.S. Livebearer
Za	A.V. Rooted Plants (one plant will comprise an entry)
Zb	A.V. Plant Cutting (three cuttings of same species or variety will comprise an entry)
Zc	A.V. Floating Plants
NB	A.V. Barb Pairs
NC	A.V. Characin Pairs
ND	A.V. Cichlid Pairs
NE	A.V. Labyrinth Pairs
NF	A.V. Toothcarp Pairs
NGHLM	A.V. Catfish, Loach and A.O.S. Tropical Egglayer Pairs
NJK	A.V. Rasbora, Danio and W.C.M.M. Pairs
NOP	A.V. Guppy Pairs
NQRS	A.V. Swordtail and Platy Pairs and A.V. Molly Pairs
NT	A.O.S. Livebearer Pairs

In addition to the competitive classes above there will be displays of fishes representing specialist society interests.

ENTRY FEES: Furnished Aquaria Classes Free
All other Classes 10p per entry

One free pass will be supplied to any exhibitor with four or more entries

CLOSING DATE: FOR ENTRIES WILL BE STRICTLY ADHERED TO — 8th July, or before if sufficient entries have been received for a particular class

BENCHING: from 12 noon, Thursday, 13th July to 12 noon, Friday, 14th July

JUDGING: 1 p.m., Friday, 14th July

PRESENTATION OF AWARDS: 4 p.m., Sunday, 16th July

BREAKDOWN: from 5 p.m., Sunday, 16th July

SHOW SECRETARY: Mr. B. Baker, 59 The Ridgeway, Ruislip, Middlesex. Telephone: 71 32950

A

General Information

All lighting, heating and tanks will be provided by the organisers.
Aquarium gravel may only be used in the Furnished Aquaria, Aquascape and Plant classes (Aa-Am) & (Za-Zc) and is to be supplied by the exhibitor.
Classes Za and Zb must be exhibited in black or terracotta pots.
Dividers will be permitted in all Pairs Classes (Prefix N), but must be of clear glass and be supplied by the exhibitor.
All classes will be judged to current F.B.A.S. Show Rules and Standards by Federation Approved Judges.
JUDGES: Classes **O, P, NOP**—G. Goodall (F.G.A.), **Za, Zb, Zc**—B. Pye (F.B.A.S.),
All other classes—Messrs. D. W. Ellis, F.B.A.S., D. Emery, M.A.A.S., C. W. Gorwill, F.B.A.S., J. Stillwell, F.B.A.S., F. C. Tomkins, F.B.A.S., H. Towell, F.B.A.S., C. Walker, F.N.A.S., R. S. Wigg, F.B.A.S., E. Wood, M.A.A.S.

Awards to Sixth Place

The Aquarist and Pondkeeper Fishkeeping Award cards will be given to the First, Second, Third, Fourth, Fifth and Sixth in each class. The first three in each class will also receive a souvenir trophy.
The Aquarist Gold Pin and Special Trophy will be awarded for the Best Fish in Show.
Challenge trophies are being donated by leading members of the Trade and Hobby.
F.B.A.S. Championship Class Trophy for Best Plant. Classes (Za, Zb, Zc).
F.B.A.S. Assembly Cup for Best Cichlid. Classes (D, Da, Db).

FBAS Open Show Rules

Relating to The Aquarist & Pondkeeper Fishkeeping Exhibition

All advertised classes and awards shall be in open competition.
All sections of the Show shall be run in accordance with the F.B.A.S. Show Rules.
All exhibits shall be shown and judged to F.B.A.S. Show Rules.
Exhibits shall be the property of the exhibitor.
In all fish classes there will be nothing in the container other than the fish and water. Aeration may be used in an emergency.
Fish will not be fed on the Show Bench prior to judging.
An exhibit can only be entered in one class and will automatically qualify for any special class or award without further fee.
Advertised classes can be divided.
Advertised classes will not be amalgamated or awards withheld.
Exhibitors will not interfere with their entries after the show has commenced, without the permission of the show manager.
No exhibit will be removed before the end of the show unless written permission is obtained from the show manager.
Fish will be shown singly in their classes unless otherwise stated.
Show organisers have the right to refuse any entry from an intending exhibitor.
Whilst reasonable care will be taken of exhibits, the show organisers will not be held liable for loss or damage in whole or in part of any exhibit.
Only judges recognised by the F.B.A.S. will be employed.
During judging only stewards on duty and F.B.A.S. officials may enter the benching area and then will remain clear of the judges.
Class labels will be fixed to the front top left of the container and any award labels to the front top right.
Award labls will either be coloured or printed, 1st Red, 2nd Blue, 3rd Yellow, 4th Green.
Juniors are those under sixteen at the time of the show.
Submitting an entry implies acceptance of all the show rules.
With any complaint regarding an open show the person with the complaint should approach the show manager who will try to resolve the matter with all the parties concerned. If this does not satisfy the person complaining they can then write to the F.B.A.S. Judges and Standards Committee who will investigate and make a report to the Council who will give a verdict. A final appeal can be made to an F.B.A.S. General Assembly.
Only shows conforming to the F.B.A.S. rules will be sponsored and advertised.
Any exhibitor who fails to comply with the F.B.A.S. Show Rules will have his exhibit disqualified.
Providing a copy of the F.B.A.S. Open Show Rules are openly exhibited at the show it is sufficient to state on the schedule "The show will be run in accordance with F.B.A.S. rules."

Furnished Aquaria and Aquascape Rules

Only Furnished Aquaria and Aquascapes of the size stated on the show schedule will be used.
Furnished Aquaria and Aquascapes of differing sizes will not be classed together.
The minimum size of Furnished Aquaria will be: Club 24 x 12 x 12 in.; Individual 18 x 10 x 10 in.; Junior and miniature 10 x 8 x 6 in., plus or minus one half-inch.
The minimum size of Aquascapes will be: Club 24 x 15 x 12 in.; Individual 18 x 10 x 10 in., plus or minus one half-inch. The container may be constructed of any suitable material and may be open fronted to any degree. The back and sides may be either transparent, coloured or decorated in any way.
Fish, plants and/or rockwork will be supplied by the exhibitor. Gravel may be supplied by the show organisers. Choice of gravel rests with the exhibitor.
Choice of fish rests with the exhibitor.
Only plants which flourish under aquatic conditions will be used in Furnished Aquaria.
Where any model is used in an Aquascape this will automatically class it as a Novelty Aquascape.
The lighting of each class of Furnished Aquaria and Aquascape will be uniform. Coloured lighting is prohibited.
No appliance will be used in conjunction with a Furnished Aquaria, heaters and thermostats excepted. (Excluding marine aquaria which may use water conditioning appliance).
In marine classes the specific gravity of marine exhibits will be taken in the presence of the Show Organisers and will be displayed on the container class labels. Exhibits containing water of less than 1·016 Specific Gravity will be disqualified.
Furnished Aquaria sides and back may be covered with a monochrome material only.

there is plenty of oxygen in the water. Remember that warm water holds less oxygen than cold and unless you use an aerator you may have trouble if you stock up with several fishes. Goldfish appreciate warm water at any time but will require more food and will grow much faster than when in cold water. They are likely to get very large in a year or two and may out-grow their space in the tank.

Although I am very keen on breeding some good quality fancy goldfish I am getting disheartened by not being able to find any really good Lionheads and Veiltails. I have a pond full of what I term rubbish and would so like to breed some good specimens. Where can I get some good fish, please?

This is a request I get only too often and it emphasises the difficulty of procuring good specimens of fancy goldfish. You also state that you are the only member of your Society who is interested in cold-water fishes. This is not unusual, I am sorry to say. Most clubs have a preponderance of tropical enthusiasts and the coldwater man is usually out in the "Cold." My usual contact for Veiltails will not have any for disposal for some time and I do not know anyone else who can supply really good specimens. There appear to be very few veiltails sent to this country from abroad. I have just had a list of fancy goldfish sent to me from Kowloon, Hong Kong. In it there are nineteen different varieties of fancy goldfish but not one true veiltail is listed. The list includes various types such as are rarely seen over here, expecially types of Orandas in chocolate, silver, red and white and silver with a red cap.

I hope that you will be able to find the fish you require and help to swell the coldwater enthusiasts as no one who has not tried breeding show-type specimens of fancy goldfish knows the pleasure and thrill of producing a winner. It is so different from breeding many of the tropicals where they all turn out like peas in a pod. Note that I quoted, "many" as I am sure that the tropical fanciers will be at my throat over this. However I speak from experience as I also bred tropicals over thirty years ago.

Would it be possible to use an 18 ft. by 10 ft. greenhouse, with small brick walls, as a fish-house. What would the layout be for preference and are there any books on fish-houses?

I know of no book dealing exclusively with fish-houses. You can convert your greenhouse quite well for fishes. If there is tbe possibility of too much sun and warmth, you can always shade out that which is not needed. On the other hand you cannot get sunshine in if there are insufficient windows in a fish-house. I suggest that you construct small ponds down each side of the house to come to floor level. They need be no more than eighteen inches deep.

Special Announcement

In view of constantly rising production costs, and recent wage awards within the printing industry it is inevitable that the price of many publications will have to be increased. Unfortunately "The Aquarist" is no exception and we regret that as from July, your favourite aquatic magazine is going to cost 20p. Only a small additional outlay for the individual, but it will assist us in our constant efforts to maintain and improve the present high standard for our ever increasing number of readers.

You can incorporate a few divisions to assist in separating fishes when breeding operations take place. Then you can have some metal staging at each side with a table at the end opposite the door. This can have shelves under for storing accessories and will come in useful in many ways. Try to make use of a standard size of tanks so that they can be interchangeable. Always allow sufficient space above each row of tanks to give easy access to them. Concrete your path in the middle to save much mess later on. In the winter you could have some hardboard sheets to fit inside the house to help keep out some of the cold.

Crossword Solution

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

THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 3)

by Andrew Allen

5. The Marbled Newt (*Triturus m. marmoratus*).

Description.—This is one of the most attractive and distinctive of the European newts. Length may be up to 16 cms, and in general it is rather smaller than the Crested newt. In season the male has a high dorsal crest on the body, separated from a similar tail crest by a depression. Both are absent in the female. The dorsal surface is in a variety of shades of green, with heavier, or black, marbling, and this is the only European newt to show such a coloration. The ventral surface may be grey, or a dark brown, with both black and white stippling, but shades of red do not occur, again a sure test in identification.

Distribution.—Found throughout Spain and Portugal, and in much of France, notably the West and Centre. Entirely absent from North-East France and other European countries.

Care in Captivity.—This species can be treated almost identically to the Crested newt. It takes similar food, requires the same conditions, and will prosper amidst the same communities. Breeding habits are identical to those of the other true newts, and were dealt with in the preceding article. If this species is kept in company with the Crested newt it should be noted that interbreeding may take place, though the resulting hybrids will be infertile both with respect to the parent species and to each other.

In conclusion, the Marbled newt is an undemanding inmate of vivarium or aquarium, and a gracious and beautiful addition to any collection of Amphibians.

There is one major sub-species, the smaller *T. m. pygmaeus*, which comes from the Southern parts of the Iberian Peninsula.

This deals with the five most important species of true newt in Europe, and their sub-species. The following are also hardy, and would require similar conditions, but are unlikely to come the way of the amateur in this country:—

T. montandoni, from the Tatra, Black and Carpathian mountains, is a small species (up to 10 cms in length) that is restricted to montane habitats.

T. boscai, from limited parts of the Iberian Peninsula grows up to 9 cms in length, and has a poor reputation in captivity.

T. italicus, from Central and Southern Italy, is the smallest European newt, and closely resembles *T. vulgaris*.

The remaining members of the order *Urodela* are commonly called salamanders as opposed to newts, and characterised by the fact that they inhabit more terrestrial habitats.

6. The Spotted or Fire Salamander (*Salamandra s. salamandra*).

Description.—This is a distinctive species with a heavy, plump body, and a fairly short, oval tail. Though commonly it attains a length of 20 cms, to the South of its range it may grow to about 28 cms. The skin is smooth and shiny, but there are longitudinal rows of warts down the back, vertical warts along the flanks, and prominent parotid glands. Basic colour is pitch black, with bright yellow, orange or (rarely) red spots. In this form the spots are irregularly scattered, but there are a large number of varieties intermediate between the spotted and the striped sub-species.

Distribution.—Occurs in the Benelux countries, West and South Germany, much of the Alps, the Apennines, and South-East Europe. It favours areas of medium altitude (below about 1,000 ms), in damp and heavily shaded woodlands, particularly near streams and pools.

Breeding Habits.—These differ in most major respects from those of the true newts. Courtship takes place on land, and is a particularly clumsy performance. The male "lays" a spermatophore which the female takes up into her cloaca. Some time later the larvae are born alive in shallow water. Around twenty larvae are produced, each ready equipped with a pair of gills. Metamorphosis takes place in the water, they eventually produce lungs, and finally leave for the land as miniatures of their parents. Of great interest is the fact that birth may be delayed for considerable periods after mating, up to two years in some recorded cases.

Care in Captivity.—This is a fascinating creature, requiring substantially different treatment from the true newts. As long as its fundamental needs are complied with it will live happily for many years in captivity, demanding a minimum of attention. Basically it prefers a cool climate, a small piece of open water, moist or wet surroundings and a varied diet.

These conditions can be readily supplied in the indoor vivarium or aquarium. This should be placed away from the sun in a cool, but not a cold, room. A shallow water bowl should be provided, surrounded by a deep layer of moist soil. Suitable hiding places in the form of broken clay flowerpots or cork bark can be acattered around, and the entire area planted with thick mosses and shady ferns. The opportunities for constructive design are endless, and the results can be highly attractive.

This species presents fewer problems than most during the winter months, for it will over-winter fairly comfortably, or hibernate contentedly in a deep pile of leaves, sphagnum moss and general light organic litter placed in the vivarium, which should then be moved to a cool, dark corner of a frost-proof garage or shed.

Neither greenhouse nor cold-frame constitutes an ideal home for any salamander, for temperatures are liable to rise beyond the limits of tolerance of these animals. Much better is the outdoor reptiliary with its more equable climate and exposure to the rain. Provided this has a low wall (salamanders are no great escape artists), a reasonable pool, and a few shady corners with hiding places and dense foliage, they will potter along very happily. They will hibernate in their own good time, choose their own range of food, and, with a shade of luck, present you with a few junior slamanders. They are nocturnal, and hence are rarely in evidence during daylight hours, but may emerge after a refreshing shower of rain (or an artificial shower with a watering can). A late-night stroll with a torch will enable you to see them better.

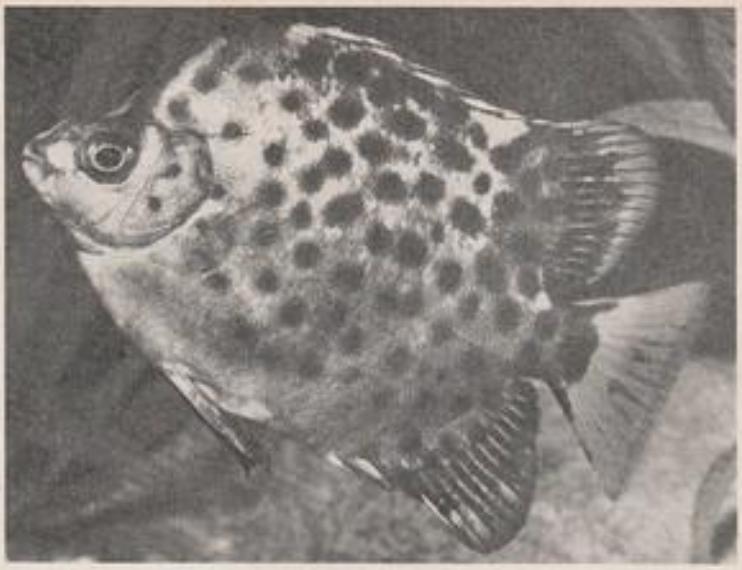
Feeding presents very few problems. Earthworms, woodlice, slugs, whiteworms (*Enchytrae*) and a variety of insect larvae will all be taken with relish. Livelier fare, such as spiders, should be avoided, as this salamander is not the speediest thing on four legs. Its ponderous movements require that all prospective prey should stay put, and even a humble beetle is likely to outdistance it over a short course. In lean times these animals will even accept raw meat, though this should always be treated strictly as a last resort.

The Fire Salamander is an admirable member of most communities in the vivarium, chiefly because few larger species will be foolhardy enough to molest it. Some snakes may eat it, as may a few courageous terrapins, but otherwise it carries its immunity in its warning colours and its milky poisonous secretion. This is harmless to humans (though it should not be allowed near exposed membranes like the eyes, or near open cuts) but is highly virulent by Amphibian standards. Because of this it can be associated with animals like the Green lizard or the Marsh frog that would enjoy a small newt or the like. But please note that juvenile salamanders are likely to be treated with considerably less respect. Within its humble lights it is the perfect community animal, colourful, with interesting habits, molesting none of its companions (unless they are small enough to be mistaken for a worm), and immune from all attack. It can be whole-heartedly recommended to the amateur herpetologist.

There are numerous sub-species of varying importance. The Striped salamander (*S. s. terrestris*) differs only in the arrangement of its markings, which tend to form separate stripes along the body. It is a montane animal, found in West Germany, Benelux, France and Switzerland. The two forms are difficult to distinguish, and interbreeding certainly takes place in many areas. Both sub-species will be encountered with equal frequency on price lists, and they require totally identical treatment. *S. s. corsica* comes from Corsica, whilst *S. s. almansoris*, *S. s. bejarae*, *S. s. bernardezi*, *S. s. bonnali*, *S. s. gallaica*, *S. s. hispanica* and *S. s. molleri* all come from Spain or Portugal.

The Alpine salamander (*S. atra*) inhabits the Alps, Albania and Yugoslavia. It is a uniform, glossy pitch black in colour, grows to a length of 16 cms, and is completely independant of free water, producing live young on land. Little is known about its care in captivity, other than that it is very demanding in its requirements and short-lived. Unless highly specialised treatment can be provided this fascinating Amphibian should be avoided as an inmate for the vivarium. But it is well worth a visit to the high Alps to observe these animals in their natural habitat.

There are several other European salamanders belonging to the genera *Salamandra*, *Proteus*, *Hydromantes*, *Pleurodeles*, *Salamandrina*, *Hynobius*, *Chioglossa* and *Euproctus*. None of them are likely to be imported into this country, and very little is known about their care in captivity.



A PERSONALITY IN MY AQUARIUM

by Peter Mepham (aged 15 yrs)

ABOUT A YEAR AGO I was visiting one of my local aquatic stores. The first tank I set my eyes on, as usual, was the shop's "rough fish" tank. There was the usual crowd, a handful of tiger and rosy barbs, half a dozen largish angel fish in various colour varieties plus a few others. Then I saw him or is it a her? Chasing an old flame (flame tetra).

I asked the price of this attractive two-inch long spotted scat. The proprietor replied "51p sir." As smaller specimens at this time were selling elsewhere at 87p, I immediately snatched at this offer. While the dealer was trying to catch the *Scatophagus*, he told me that earlier that morning the scat had been brought in by a customer who had complained that this wolf in sheep's clothing was bullying his poor neon tetras and other small fish. That was the reason for the scat being temporarily out of a home. After a bumpy bicycle ride home and a trouble-free quarantine, it was installed into one of my two-foot community tanks, already occupied by some large livebearers, a pair of barbs, some fair sized gouramis and a female firemouth cichlid.

Scats originate from the East Indies where they are found in brackish water often near sewer outlets, but can be kept in either fresh or salt water as long as they are gently acclimatised to the required conditions. Most brackish water fish prefer a temperature around 27°C, slightly alkaline, fairly hard and heavily aerated water and the scat is no exception; luckily my tapwater conforms almost to these standards.

Scatophagus argus is the scientific name and they grow to a foot in length, but tank specimens rarely exceed five inches, usually remaining at a stunted three inches. The shape of a scat is similar to that of the angel fish minus fins but having a very large head.

The colour varies from bronze to yellow, liberally covered with black/brown spots; the forehead is green. There is another variety which has red markings, commonly known as the tiger scat and sometimes thought to be the male. Sexing, however, is almost impossible short of dissection. I would doubt if these fish have been bred in captivity, especially as they do not reach maximum size in aquariums.

As I am just finishing this article, I look up and see scat at the top of the tank wagging his tail and looking at me with his large eyes and comical expression.

It's time for his dinner, which consists of anything capable of fitting scat's mouth.

Undoubtedly he/she is a personality in my tank.

IN DEFENCE OF TUBIFEX

by N. S. Murfitt

I KNOW that the main argument against *tubifex* is not against the actual worms themselves, but what is carried with them. There have been many reports of how fish have suffered all sorts of diseases after being fed *tubifex*, and I am not trying to dispute these statements, but I have been feeding my fish on these worms for two years now, and the only disease that occurred since then has been white spot in one of my tanks and this did not claim any victims. Anyway, I am pretty sure that the *tubifex* were not responsible, but that I had accidently introduced an infected fish into my tank, as the attack occurred less than twenty hours after the introduction.

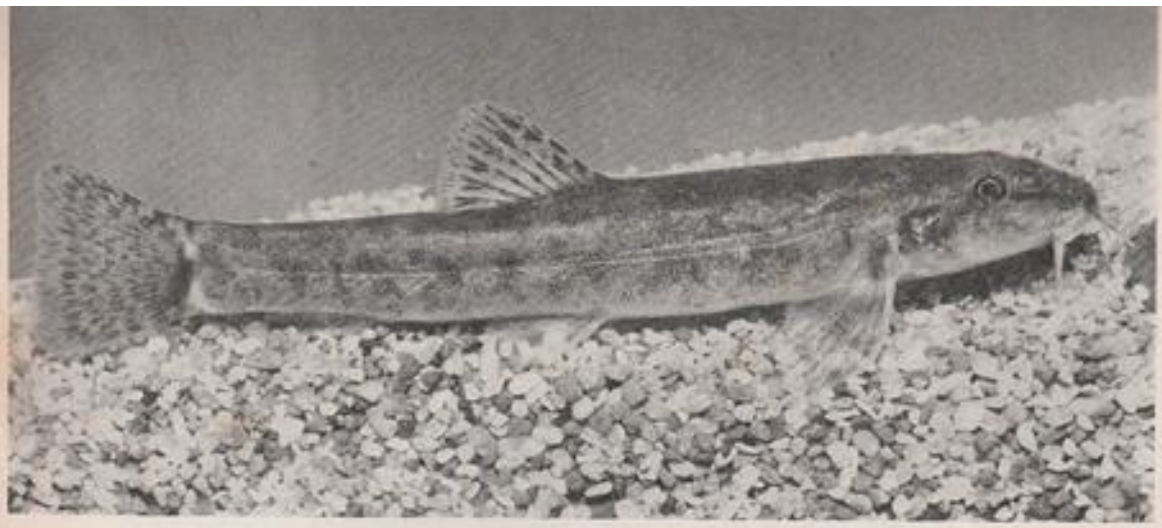
People are probably saying by now that I either sterilize the *tubifex* first or put them in three weeks' quarantine. I can assure you that I do neither. I usually buy a portion of *tubifex* for five new pence from my local pet shop once a week. When I get home I rinse them out a couple of times, then feed a *small* quantity to my fish. This could be one of the secrets—that is to make sure it *is* a small amount. A portion lasts me through the week, feeding the fish once a day in the evenings.

I have about forty fish, and I can say that anyone who has seen my fish go at the worms would say they nearly go mad. I suffered a little while ago through feeding too many *tubifex* too often. I have two tanks, one with larger fish such as firemouths in the other with just guppies. The larger fish cannot seem to get at the worms fast enough, and scatter them all over the tank bottom. This does not matter as they always "clean up" afterwards. Unfortunately, the guppies are not so civilized as they never bother with this chore. The result . . . *tubifex* inhabiting the gravel. If this is found, about the best cure is to buy a pair of catfish, as they will soon grub around and find them.

I overcame this problem quite simply by making my own *tubifex* feeder. This consisted of an old plastic food container. In it I drilled several holes in the bottom and two in the top. Through the top holes I threaded a piece of nylon and with the container in the tank I hung the nylon outside the lid. The guppies learnt quickly that that contraption supplied food, and were soon enjoying themselves. I tried this idea in the other tank, but the fish refused to use it.

One thing that I do find, and that is that the water they live in becomes foul pretty quickly if not changed frequently. The ideal situation is to have water running on them all the time, but I find that changing the water about four times a day suffices. I always buy my *tubifex*, as I know that there can be many more unwanted visitors by collecting them from the wild, but if they are washed carefully I cannot see any major problems. Anybody who has fed their tropicals with *tubifex* will know that the colours seen when the fish are feeding are truly magnificent, and the growth rate increases fantastically.

In general, if *tubifex* are treated with respect by changing their water, and if they are fed in small quantities to the fish, I am sure that they will cause the minimum amount of trouble.



The Stone Loach

British Freshwater Fishes

By A. Boarder

THE LOACHES

THERE ARE two Loaches found in Britain, the Stone Loach and the Spined Loach. They may be distinguished from one another by the size of the barbels. Both have three pairs but whereas those of the Spined Loach are small and practically of equal length, those of the Stone Loach are with pairs of unequal length. The Stone Loach can reach a length of five inches and the Spined Loach not more than four inches.

The Stone Loach (*Noemacheilus barbatulus*) is almost eel shaped having a very elongated body which is rather cylindrical to the front but is compressed towards the rear. The scales are very small and the body is slimy. There is often a variation in colour according to the locality where the fishes are found. The body colour is a pale brown to olive with many blotches and spots of darker brown The fins are pale with many small brown spots, especially the dorsal and caudal fins.

It is not easy to distinguish the sexes and the best way is to compare a number of fish and the males will be those with the slimmer bodies, near to spawning time, and with a brighter colour. The spawning period is usually in April and May. Eggs are strewn on water plants, stones and pebbles. The eggs are adhesive and are said to be laid at night. The fish usually feeds and moves about mainly at night and so, as a tank specimen, this fish may not be seen very much during the hours of daylight. The eggs are fairly large in proportion to the size of the fish and hatch in about ten days. The fry keep near the bottom for a time and soon grow as they feed well once the food bag has been absorbed. Growth can be quite rapid as long as plenty of small types of

food can be obtained.

The food of the Stone Loach consists of small aquatic creatures and soft vegetation such as *Algae* which it sucks from stones, etc. The fish are mature and can breed at an early age. These fish are able to live in rather polluted water as they are capable of coming to the surface and taking in a bubble of air. This passes through the body and releases oxygen as it does so. In the winter or when the water dries up and leaves only wet mud behind, it is possible for the Loach to exist in the mud for long periods when they can obtain their oxygen without passing water through the gills. They are often referred to as "Weather fish", as it is claimed that they become very active when thunder is about. Although this may not have been proved it seems that they do react to air pressure and rise to the surface to take in air when the atmospheric pressure is changing.

As this fish is inclined to burrow into the compost at the base of a tank it is not to be recommended as a tank fish where tender water plants are grown. In captivity the Stone Loach will eat plenty of garden worms but can also be fed on most of the foods given to goldfish.

The Spined Loach (*Cobitis taenia*), besides being smaller than the Stone Loach, has two small spines in front and just below the eyes. These are capable of being erected and so can be used as a defence against predators. The colour is somewhat similar to that of the previously described species but the brown markings are less distinct and smaller. This fish can be kept in a tank but likes cool conditions and is said to breed only when it has experienced a cold temperature throughout the winter. It is advisable to use fine sand for the base compost as this fish likes to suck up the sand and blow it out through the gills, at the same time straining out any small animal life as food. *Algae* can also be eaten. These Loaches like to almost bury themselves in the sand with only the head showing.

The Loaches are interesting fishes which should be kept apart from other coldwater species and can be bred as long as conditions are right, especially with regard to the cold wintering.

PERSONAL EXPERIENCES WITH THE *Botia* LOACHES

by F. A. Lewis

THE LOACH FAMILY, Cobitidae, is made up of several genera and among these can be numbered the genus *Botia*. It is this genus with which I became enthralled some time ago when I visited an Open Show in the Bristol area and was very impressed by a magnificent Blue Modesta which took "Best Fish in Show." That evening after the show I pored over many of my tropical fish magazines, books and journals, which I have collected during my years as an aquarist, with the intention of finding as much information as possible about these fishes. In truth I was rather disappointed since my search did not reveal a great deal at all. Very little seems to have been put in print concerning the *Botia* species—they are, in many respects, similar to catfish in that they all carry barbels, all are armed with a very sharp spine situated just below each eye which is erected at right angles to the cheek whenever the fish are alarmed, all have a very shy and retiring nature and all are bottom-grubbing fishes. So far about thirteen species of this genus have been found, most of which inhabit Thailand or Sumatra with one exception, *Botia lohachartа*, which hails from India and Pakistan.

Armed with such little information as this I resolved to purchase any Botias which were on sale at local aquatic retailers. Thus, over a period of six months, I have managed to obtain eleven species of this genus some of which were found for sale as far away as Birmingham and my home town, Blackpool. I am sure also that all the local traders know me as "that man who collects Botias," and are always asking me to identify the red-finned, yellow-tailed, candy-striped, tiger and skunk Botias which are advertised on their trade lists.

Inevitably I also gathered first hand experience of the likes and dislikes of this very interesting species of loach. I have had my share of losses and injuries through disease and feuds. Since there never has been a breakthrough in the breeding, commercial or non-commercial, of these species by hobbyists, all Botia offered for sale are imported from their native land and often carry disease from such lands. For this reason I think it most important that all new acquisitions be quarantined for 10-14 days before introduction

into a non-quarantine set-up. To me, although I have many species of *Botia*, they are all individualistic fish; some carry out Cichlid type excavations of tank gravel, some don't. Some fight, some don't. Some hide whenever the aquarium lights are switched on, some don't. Some shoal, most don't. Much of this information can only be gathered by actually keeping the species and I hope, by means of this article, to put in print much previously unrecorded observations regarding Botias.

Since, as I have said previously, the Botias are individuals, I propose to devote a separate paragraph to each species, starting with what is probably the most popular *Botia*, although it is also the most expensive, the Clown Loach (*Botia macrocanthus*).

Botia lohachata

Botia macrocanthus: This I consider to be the most beautiful of the species and can easily compete with marine fishes as far as coloration is concerned. All the fins are bright red, apart from the dorsal which normally carries a black stripe. The body is yellowish orange and has three broad black vertical stripes, one of which runs through the eye. This species is very peaceful and is best kept as a school, although their price normally rules this out. I managed to afford three specimens about 2½ in. long and they are a constant source of amusement as they cavort amongst the plants and rocks of the aquarium. They soon become accustomed to captivity and are not as light-shy as the other species; however, they are very prone to attack by white spot—a problem about which I think I should say more. Since the *Botia* genus are not protected by scales and rely on a body slime for protection, it is not advisable to treat white spot with heavy doses of dyes such as malachite green or methylene blue. To treat white spot, I have developed a technique whereby I add 1 drop of a 5 per cent solution of malachite green for each gallon of aquarium water, switch off the aeration for 12 hours, switch back on for 12 hours then repeat the procedure adding 1 drop per gallon again. This I carry out until all trace of white spot has gone from the fish and then for a further three days to ensure that the parasite is removed from the tank. I have also had a good deal of success using "Halamid" tablets as recommended by the makers. As some way to preventing any outbreak of this disease, I maintain all my *Botia* tanks at 82°-85° F—a temperature which seems to suit them very well.

Botia strigata: This species, often called the "candy-striped *Botia*" by importers, is my personal second favourite. Growing only to 3½ in., this attractive black and cream striped *Botia* always reminds me of a popular Christmas song since it has a distinctive red nose—you may even say it glows. Again, these are best kept as a school; I, myself, have six. They are very peaceful and spend most of their time foraging for *tubifex* and whiteworm of which they are particularly fond. They are not shy but must not be kept with large fish, otherwise they will spend all their time hiding and will eventually starve to death.

Botia sidthimunki: This is the smallest of the Botias, growing to only 1½ in., and is nicknamed the "golden chain *Botia*." As the nickname suggests, this fish has a black "chain" which runs across the upper part of the fish's body, the remainder of the body being a golden brown with a silver belly region. Probably the most active of the Botias, this fish is definitely best kept as a school. I purchased a dozen *sidthimunki* and as a

result paid only 10p each for them. Nine of the original 12 survived and seemed to spend most of their time swimming vigorously back and forth across the tank, reminiscent of tetras and barbs rather than loaches. Imported specimens are usually very small, measuring no more than ¾ in. on arrival at the dealers, and usually look terribly under-nourished. However, a good feed of sifted *daphnia* or brine-shrimp whilst quarantining the fish will soon remedy this. Definitely a community tank fish.

Botia modesta and *Botia pulchripinnis:* I have included these two fish together since the only difference between them appears to be the fact that the *modesta* has fins which are yellow, whereas those of the *pulchripinnis* are red. Both grow quite large. I have two 5 in. specimens. Both have a pale blue body with a region which is darker than the rest of the body crossing the end of the caudal peduncle. These fish are certainly "loners" and are light-shy. My specimens are housed in an 18 in. by 12 in. by 5 ft. tank, containing about fourteen holed flower pots in which the Botias make their home, venturing out only to eat the beef heart or chopped earth worms which they are fed daily. Each fish has its own personal flowerpot from which it vigorously routs all intruders—a procedure which is accompanied by a very loud, distinctive clicking sound which I can only compare with the noise made by scissors closing on empty space. All the large species make this noise when annoyed. Both these species must be housed with larger fish.

Botia horae: Nicknamed the skunk *Botia*, this fish is essentially cream-coloured with a thin black line running from the tip of the snout right over the top of the black and terminating by completely encircling the caudal peduncle. The tail fin is spotted, the remaining fins being clear. This is not a large fish, the largest I have seen being only 3½ in. Again the fish is peaceful, shy and retiring, and not a particularly interesting species.

Botia almorhae: Larger than the *horae*, growing to 4½ in., and could easily be confused for the *horae* if it wasn't for the absence of the black line running across its back. This *Botia* I find the least interesting and the most vicious. I bought two only to find one nearly dead two days after purchase as a result of attacks by the other. Very retiring, rarely seen free-swimming in the aquaria, makes its home under a rock, venturing out only to feed on gnat *larvae*, *daphnia* and earth worms.

Botia lecontei: Often confused with *Botia pulchripinnis*, this fish is sold as the red-finned *Botia*. All its fins are red but, unlike the *pulchripinnis*, the body of the *lecontei* has a much greener sheen and also there is a rather indistinct dark blotch at the base of the caudal peduncle rather than a line as has the *pulchripinnis*. This fish also only grows to 3 in. and always seems to be "pinch-bellied" despite the fact that it is fed large quantities of food. Peaceful, colourful and at home amongst small fish.

Botia hymenophysa: This fish is one of the largest of the species, growing to 7 or 8 inches in aquaria and up to a foot in the wild. Often seen for sale under the nondescript named of striped *Botia* as is a very similar *Botia* with which it is regularly confused, that is *Botia lucas bahi*. *Hymenophysa* has a greenish yellow body colour with broad yellow transverse bands crossing the body, those nearer the front of the fish, however, do not extend fully across the body, giving way to large dark spots in the region between the pectoral and ventral fins. These fish have a very long snout (my wife nicknamed ours "longnose") and they are the demolition experts of the *Botia* genus. With their long snout they push into the gravel, pushing it along with their nose yet not taking it into their mouth as do the Cichlid gravel-shifters, and in this way they can completely change the bed of the aquarium until it resembles the moon's surface. The species fights amongst its own kind and for this reason I recommend that three or four are purchased so that a "pecking order" may be established between themselves and they spend their day chasing each other rather than other fish.

Botia lucas bahi: Similar in shape to *Botia hymenophysa* but only growing to about 4 in. This fish has a body which is cream coloured and has many spots dotted about the sides, faint transverse yellow bars cross the body but these disappear as the fish matures, dark black lines extend from the snout across the back to finish just before the dorsal fin. The dorsal fin is edged with red, all other fins being clear. Again, this fish is a great gravel shifter. Quite shy, spending their time under rocks, very fond of chasing each other madly about the tank and to be recommended for keeping only in company with large fish.

Botia lohachata: I have left the description of this fish until the last since it was the last of the genus which I acquired and then I was only able to obtain one from a colleague of mine, Mr. Rueben Giles, to whom I am most grateful. This is the only *Botia* which hails from India and Pakistan and is only rarely imported. The fish grows to 4½ in. and has a silver-cream body with intense black markings extending transversely across the length of the body, these black markings assume the shape of a Y or V and it has been suggested that this may be a sex distinction but nothing has been proven to date. This species is very desirable and peaceful, making a pleasant addition to any community tank, very fond of tubifex and white worm. Not light shy.

If I may be allowed, in the closing paragraph of this article, to ask for anyone with any of the Botia species, particularly *lohachata*, which they may be willing to exchange or sell to contact me at the address below, I will be only too pleased to hear from them.

18 Champion Road, Kingswood, Bristol, BS15 4SU.

PRODUCT REVIEW

THE DIATOM FILTER

THIS NEW power filter from America will no doubt be regarded by most aquarists as a challenger to the already well-established Nuova and Eheim filter from Germany. However, the Diatom filter is different from the German products in two important respects as follows:

(1) *The water circulating impeller is directly-coupled to the electric motor by a stainless steel shaft.*
In both the European filters the plastic impeller encapsulates a ceramic magnet which turns as a result of the rotation of a similar motor-driven magnet separated from physical contact with the impeller magnet by a thin plastic dividing wall. Thus the vulnerable electric motor and its associated circuitry are protected from contact with water. The great problem with the use of direct, shaft-driven impellers is that salt water may work its way past the shaft seals and up into the electric motor with devastating results. There was no indication whatsoever that any such breakdown of the seal had occurred during the four-week test period that the Diatom filter was examined. In any event, the manufacturing techniques and materials used seem to be of a high enough standard to ensure that such a theoretical failing has been anticipated and eliminated.

(2) *The Diatom filter does not use granular charcoal and synthetic filter wool as the filtrant media.*
In the conventional power filter, the charcoal serves the purpose of a coarse filter medium in that it removes gross particles of excretum, detritus and mulm, etc., before they have an opportunity to clog the much smaller spaces within the compacted filter wool. In this new filter there is no coarse pre-filter such as granular charcoal and the filter wool is replaced by *diatomaceous earth* (D.E.).

For saltwater aquarists, anxious to avoid the evil side effect of "yellow-water" on marine life, the Diatom filter could be charged with *powdered* charcoal after the initial coating of D.E. has consolidated on the fabric of the septum element (filter-bag).

Diatomaceous earth (D.E.) or Kieselguhr as it was once known was originally used as a polishing powder and fine abrasive. Later on its use was extended considerably in the manufacture of explosives (dynamite). Today, much of the D.E. mined and processed is used as a micro-filtrant medium in such diverse places as public swimming baths and breweries. The powdery white solid (D.E.) which comes with your Diatom filter is actually the skeletal remains of microscopic unicellular plants—diatoms—belonging to the *algae* family. One important difference between these one-celled organisms and other plants is that the cell wall contains very large amounts of silica. When a diatom dies and sinks to the ocean bed, the organic parts of the tiny plant are decomposed by bacterial action, leaving the beautiful and intricate silica skeleton. Over the course of millions of years, these beds of diatom skeletons have built up to enormous thickness and now have considerable commercial value in several parts of the world.

The value of D.E. as a filtrant material lies in the fact that each diatom skeleton is perforated with hundreds of minute holes. The smallest of these holes may not be much larger than one micron (one thousandth of a millimetre) in diameter. Thus, when the D.E. is sucked on to a porous surface (or "septum" as it is referred to in the manufacturer's instructions) it rapidly builds up to form a fairly stable "cake." Initially the filter spaces in this layer of D.E. are relatively large, but as the cake becomes clogged by ever-smaller particles in the water, so the filtration efficiency increases. Eventually crustacean parasites and their larvae, nematodes, trematodes protozoa and ultimately even the larger bacteria are removed from the water.

Therefore, the claim of Vortex Inner-Space Products, the agents for the Diatom filter in Great Britain, that this new filter will, if used according to the instructions, actually aid in the destruction of certain pathogenic (disease-causing) organisms is true. One should remember, however, that even by using the finest grade of D.E. available, it is most improbable that viruses such as those responsible for Lymphocystis disease, will be extracted from water by this filter.

The instructions provided with the filter are complex and lengthy—so complicated in fact that they may render the relatively simple process of charging, cleaning and back-washing almost incomprehensible to a non-technical aquarist.

The filter's good points are:

(1) Silence in operation.
(2) High turnover rate—up to 150 gallons per hour after first coating the septum.
(3) Long periods between recoating after the initial suspended solids have been taken out of the water.
(4) The probability of disease control and its possible cure without addition of drugs to the water (marine aquarists maintaining fish-invertebrate communities please note!).

The new filter's disadvantage in comparison with existing power filters is that whereas filter-wool can be washed and re-used repeatedly the D.E., once clogged with wastes must be back-flushed and a coating of new material employed. In addition I think that the manufacturers should consider offering a small Bourdon-type pressure gauge for attachment

to the filter. This would enable the owner to tell at a glance when his D.E. coating was clogged and re-coating had become necessary. Also, I feel that for only a few pence more a Tee-piece could have been supplied for the input water tube which would permit periodic slurry-feeds of D.E. to be made and thus greatly extend the filtration cycle by maintaining the porosity of the cake.

I can personally testify to the extraordinary efficiency of the D.E. filter in that while curator of Brighton Aquarium I used two very large D.E. filtration systems on the newly constructed Dolphin Pool in 1968. I wasn't satisfied with the fact that after running this filter for only 24 hours I could clearly see a sixpenny piece on the bottom of the pool in 10ft. of water. This may not seem unusual until one considers that the pool was occupied by two young dolphins, each consuming 10-14 lb. wt. of fish per day.

I decided to attempt to define the purity of the dolphin pool water scientifically by using well-known bacteriological techniques.

Taking the count of coliform bacteria in a known volume of seawater as a measure of its suitability to sustain dolphins in a good state of health, I began to culture these bacteria from samples of pool water taken at different times during the filter cycle. Looking up my records from this period, I see that the number of *Escherichia coli* bacteria present in each ml. of the seawater *was reduced to one eleventh* of the original number after only 4 days of D.E. filtration, and the *coli*-count continued to decline throughout the cycle's duration.

Although I cannot testify as to this filter's long-term durability after such a short test, I know that it has been a part of the American aquatic scene for some time now. I would therefore like to endorse the manufacturer's concluding statement and say that I "am sure that you will find the Diatom filter to be a very versatile tool once you have mastered its operating principles."

Cost of the new filter in the U.K. is £18-95 and it is already available from many aquatic dealers. In case of difficulty of supply, please writeto: Vortex Inner-Space Products, 43 White Hart Lane, Barnes, London, S.W.13.

G. F. Cox

Publicity Material

The Show Organizer would be pleased to hear from any aquarist who is willing to display posters or distribute handbills and car stickers, all of which are now ready for distribution.

Change of Show Secretary

Please note that the Show Secretary for the Alexandra Palace Show now is:—
Mr. B. Baker,
59 The Ridgeway,
Ruislip, Middx.
Tel.: 71 32950

PAINTED FROGS

(Discoglossus pictus)

Written & Illustrated

by H. G. B. Gilpin, B.Sc.

THE THREE Painted Frogs I have at present originally came from Malta.

I was spending a few weeks on the island towards the end of August 1970, having gone there principally with the intention of looking for lizards, and it was entirely by accident that I found the frogs. On the face of it, Malta is a most unpromising place for amphibians; in fact I understand that Painted Frogs are the only members of the order to be found there. Throughout the summer months the island is very hot and so dry that, apart from a very few protected areas, the foliage is yellowed and sparse.

One afternoon, with the temperature in the region of 85°F., I went to Chadwick Lakes. In the rainy season this is a waterway running between high banks and sheltered by overhanging trees, but at the time of

my visit no water was to be seen and the dried up bed of the river was covered with large stones, debris and scrubby undergrowth. Even the undersides of the stones were dry and apart from a host of insects, the occasional Moorish Gecko on the steep side of the sun-drenched bank and a snake (probably the black form of the dark green Whip Snake) glimpsed as it wriggled its way into a mass of desiccated plant stems, no sign of animal life was evident.

During a fairly intensive search of the area, I noticed a trickle of water emerging from a cavity, roughly twelve inches square, at the bottom of one of the banks. Closer investigation revealed a tiny pool, about six inches deep, just inside the entrance and fed from a larger and apparently deeper pool just visible in the darkness of the interior. Both pools were absolutely packed with Painted Frogs ranging in size from ½ inch to 2½ inches fron nose to vent. Curiously enough, the tiny frogs seemed to be confined to the smaller, lighter pool and the large ones to the dimly illuminated interior one.

My close approach threw them into complete confusion and they either dived to the bottom of the water or scrambled frantically towards the sheltering darkness. I was unable to reach the larger specimens but secured three small ones, two of them each ¾ inch in length and the third just over an inch. These travelled back to England quite satisfactorily in a plastic box packed with damp tissues and were transferred to their present quarters five days after capture.

Their vivarium measures 18 in. × 12 in. × 12 in. The floor is covered with a layer of small pebbles submerged in an inch and a half of water. One corner is built up with flat stones to form a platform on which stands a tray planted with low-growing vegetation. Another flat stone, resting across two more, provides an underwater tunnel into which the animals can retire.

Painted Frogs make excellent vivarium inmates and from the moment of their introduction they settled down. From the beginning they fed freely on small earthworms and tiny slugs, to such good effect that the largest one now measures 2½ inches from vent to nose and the others 1½ inches. They still feed mainly on slugs and earthworms but will take gentles and the occasional blowfly. Their food is placed on the planted tray. This enables the worms, etc., to survive until they are required and also makes it easier for the frogs to capture them.

My specimens are active little animals although they spend a considerable time submerged in the water, squatting on the bottom, with only their heads above water. Whilst lively on occasion, their jumping powers are much inferior to those of our common English frog. In this, as in other ways, they more nearly resemble their close relatives, the Fire-Bellied Toads.

Their pointed heads and rotund little bodies give them a pear-shaped appearance when viewed from above. Their colours vary greatly. Basically the dorsal surfaces are reddish-brown to dark grey covered with brown patches, often edged with a lighter colour. Ventrally, Painted Frogs are more or less white, sometimes speckled with crown. On occasion they can change colour surprisingly quickly.

Recently, wishing to examine the animals in detail, I took two of them out of their vivarium and placed them on the bench. Whilst in the water their upper parts were dark, olive brown, so much so that the patches were barely visible. Whilst on the bench they remained this colour, if anything the patches becoming even less discernable. After some ten minutes they were returned to the water when immediately their ground colours changed to greyish-white and the patches stood out clearly and distinctly.

My specimens are unenthusiastic about being touched and if a hand is brought near one when it is sitting on the bench it reacts in a characteristic manner, flattening itself as closely as possible to the surface, it points its head downwards, so that the whole animal forms a gentle arc from the tip of its posterior end to the front part of its mouth. If startled when in this position, the head is turned sideways with the near side lower than the far side, as though hoping that if it does not look, the unwelcome intruder will go away. Further provocation, such as touching it with a finger, results in the frog flinging itself on its back with all four legs held tightly against the body. It remains in this position for rather less than a minute, then quickly rights itself and with a vigorous, but not very effective hop, jumps to about twelve inches away from its fancied oppressor.

I imagine *Discoglossus* would make a satisfactory community animal in a vivarium devoted to amphibians of comparable size, judging from the way my three specimens live together and the close contact they showed with many others in their native pool.

Painted Frogs are, however, strongly aquatic and require a permanent supple of water, deep enough to submerge their bodies. Mine rarely leave the water voluntarily for any length of time. In spite of the considerably higher temperature of their native habitats, they do not require heated quarters in this country. Mine remain active and feed freely throughout the year at ordinary room temperatures.

Apart from being less lethargic, they seem to be far less vociferous than their English relations. Their normal croak is infrequently heard, soft and muted but when they are removed from familiar surroundings and placed somewhere strange they sometimes express resentment with a low, grunting noise.

Although not remarkable for vivid hues, Painted Frogs are worthwhile additions to a collection. They are interesting, easy to feed and their maintenance involves neither expense nor difficulty.

News from AQUARISTS' SOCIETIES

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

RESULTS of the **Hyde A.S.** show were as follow: Guppies: 1 and 2, Mr. and Mrs. Mitchell (Fleetwood); 3, L. Leadbetter (Blackpool). Platies: 1, L. Leadbetter (Blackpool); 2, C. Ward (Doncaster); 3, A. Thomas (Lucas). Swordtails: 1, F. Cooke (Huddersfield); 2, N. R. Gibson (Huddersfield); 3, B. Black (Blackpool). Mollies: 1 and 2, L. Leadbetter (Blackpool); 3, Miss A. Gregory (Nelson). A.O.V. Livebearer: 1, 2 and 3, J. S. Hall (Aireborough). Small Barbs: 1, Mr. and Mrs. Dawson (Osram); 2, Mr. Tempkinson (Glossop); 3, Mr. and Mrs. Wareing (Lytham). Large Barbs: 1 and 3, I. Rowbottom (Hyde); 2, Mr. and Mrs. Norris (Loyne). Small Characins: 1, B. Wilson (Merseyside); 2, P. H. Batchelor (Loyne); 3, N. West (Blackpool). Large Characins: 1, B. B. Booker (Morecambe Bay); 2, I. Rowbottom (Hyde); 3, P. H. Batchelor (Loyne). Fighters: 1, Mr. and Mrs. Cobb (Belle Vue); 2, Ashton and Atkinson (Chesterfield); 3, Mr. and Mrs. Kilvington (Doncaster). A.O.V. Anabantids: 1, D. Haddow (Hyde); 2, Miss A. Gregory (Nelson); 3, Mr. and Mrs. Kilvington (Doncaster). Dwarf Cichlids: 1, D. and L. Thorn (Northwich Dist.); 2, V. Platt (Osram); 3, K. Callow (Independent). Large Cichlids: 1, Mr. Bradbury (Huddersfield); 2, R. Dyson (Blackpool); 3, D. and L. Thorn (Northwich Dist.). Angels: 1 and 3, H. and R. McKenna (Nelson); 2, Mr. and Mrs. Milne (Doncaster). Corydoras Cats: 1, R. Holmes (Derby Regent); 2, R. Davis (Belle Vue); 3, Mr. and Mrs. Dawson (Osram). Loaches: 1, Mr. and Mrs. Norris (Loyne); 2, I. Rowbottom (Hyde); 3, A. Taylor (Kraft). A.O.V. Cats: 1, V. Wood (Kraft); 2, Mr. and Mrs. Wareing (Lytham); 3, B. B. Booker (Morecambe Bay). Sharks and Flying Foxes: 1, M. Frediani (Merseyside); 2, I. Rowbottom (Hyde); 3, R. Harlow (Derby Regent). Rasboras, Danios, Minnows: 1, Mr. Stone (Chesterfield); 2, R. Holmes (Derby Regent); 3, P. H. Batchelor (Loyne). Killie Fish: 1, S. A. Holland (B.K.A.); 2, Mr. and Mrs. Lofthouse (Huddersfield); 3, F. Cooke (Huddersfield). Pairs Egglayers: 1, Mr. Whitsey (Accrington); 2, Mr. and Mrs. Lofthouse (Huddersfield); 3, D. and L. Thorne (Northwich Dist.). Pairs (Livebearers): 1, Mr. and Mrs. Gabe (Chesterfield); 2 and 3, L. Leadbetter (Blackpool). Breeders (Egglayers): 1, R. Dyson (Blackpool); 2, Mr. and Mrs. Lofthouse (Huddersfield); 3, D. and L. Thorne (Northwich Dist.). Breeders (Livebearers): 1, N. R. Gibson (Huddersfield); 2, Mr. Hooton (Sand Grounders); 3, Mr. and Mrs. Clarke (Barnsley). A.O.V. (Not already listed): 1, D. R. Standen (Loyne); 2, D. Davis (Privateers); 3, P. H. Batchelor (Loyne). Mini Jars: 1, D. and L. Thorne (Northwich Dist.); 2, Mrs. Cobb (Belle Vue); 3, A. Moss (Huddersfield). Juniors: 1 and 3, A. Moss (Huddersfield); 2, F. Cobb (Belle Vue). Common Gold Fish: 1, J. S. Hall (Aireborough); 2, A. Ingram (Blackpool); 3, Mr. and Mrs. Cobb (Belle Vue). Fancy Goldfish: 1 and 3, J. S. Hall (Aireborough); 2, Mr. S. Walsh. (Accrington) A.O.V. Coldwater Fish: 1 and 3, J. S. Hall (Aireborough); 2, Clarke Bros. (North Staffs). Best Fish in Show: D. R. Standen (Loyne) Siamese Tiger. Competitor with Most Points: J. S. Hall (Aireborough). Entries totalled 489.

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THE management committee of the **Midlands Association of Aquatic Clubs (MAAS)**, held a buffet dance at Bedworth in April, the purpose of which was to foster social and educational activities within the Association, and this proved to be a great success.

During the interval presentations were made to the members who passed the examinations for the Class "A" and Class "B" Judges Courses. Of the fifty candidates who took the Class "B" Course, 20 were successful. They were: F. Ash; N. Furness; P. Massey; G. Roberts; F. Shaw; J. W. Walker; R. M. Wright; P. Clements; J. Goodman; B. Nicholls; J. Sanders; J. Tranter; R. W. Whitfield; D. Yates; D. L. Edwards; R. Marsden; Mrs. P. Nicholls; R. Shakespeare; R. Trippas; R. Woodward. "B" Class Judges who passed the examination for "A" Class Judges were: G. Parker; R. Shakespeare; A. Skinner; Mrs. A. Walker; P. Skinner.

It is the policy of MAAS to improve the standards of the hobby and it is to this end that courses are run for Judges. Judges are provided with all the latest information to help them judge to the very best of their ability at the various table and open shows in the Midlands. A speakers' panel of 26 is also in operation to help and provide information to aquarists.

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OFFICERS elected at the annual general meeting of **Scarborough and District A.S.** were as follow: Chairman: R. Ingamells; Secretary: Mrs. D. Ingamells, 33 Colescliffe Road, Scarborough; Show Secretary: A. Leighton, Colescliffe Crescent. Treasurer: J. Dodds. Meetings are held at the Talbot Hotel, Queen Street, Scarborough, on the first and third Wednesday of each month at 8 p.m. and all newcomers and visitors will be made most welcome.

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THE **Stevenage A.S.** met in April and heard F. C. Tomkins, "A" Class F.B.A.S. Judge giving a talk on Labyrinths. In May the members and visitors were given a very entertaining evening by A. Tuffs, Chairman of Hemel Hempstead A.S., who gave a talk and slide show on Livebearers. Mr. Martin was the winner of the raffle. The next meeting is on 7th June when A. D. Jeffs of F.B.A.S. will speak on Angels.

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AT the first meeting in April of the **Whitley Bay A.S.** the jar show was Barbs and Sharks. The trophy for Best Fish in Show, which was donated by Tropical Fish Centre, was won by R. Robinson. The rest of the meeting was devoted to club business, being a quarterly meeting. The next meeting featured a quiz slide show on various tropical fish. The prize was a medallion for most points, which was won by M. McCrystal. Jar Show for the night was Danio and Coldwater, the trophy for Best Fish in Show, which was donated by D. Glynn, was won by G. Emmerton.

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THE **Welwyn Garden City A.S.** which is a new society, having been constituted in January, is making steady progress. Already affiliated to the F.B.A.S. and a member of the British Cichlid Association, the society is attracting very solid support from new and experienced aquarists in and around Welwyn Garden City. Meeting attendances are averaging over 40 and interest has been maintained by the high standard of speakers who attended, giving slide illustrated talks. The society is indebted to Messrs. Ginger, Jeffs, and Brown from the F.B.A.S., Dr. Shaw, Toxicologist from the Water Board, Tuffs Chairman of Hemel Hempstead, and two local experts, Taylor and Haywood, who have set the pace.

A sub-section has now been set up to investigate photography in fish keeping, and hopefully a slide show will be constructed. The Society meets the first and third Mondays of each month at the Scout Hut, Great Dell, Welwyn Garden City, at 8 p.m. The next meeting on 5th June will have Peter Bird talking about Characins. Everyone is welcome, and further details can be obtained from Mrs. B. Nash, 33 Capenfield, Welwyn Garden City. There is a correction to the previous committee published. The Show Secretary is G. Ward, 4 Popple Way, Stevenage and the Programme Secretary B. Hancock, 43 Drakes Drive, Stevenage.

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RESULTS of the **Medway A.S.** open show held in April were as follow: Barbs: 1, Mr. Rook (Thanet); 2, J. Bellingham (Tonbridge); 3, Mrs. Cruikshank (Tonbridge); 4, T. Cruikshank (Ealing). Large Barbs: 1, Mrs. R. Coyle (Independent); 2 and 4, J. Bellingham (Tonbridge); 3, A. Kinsey (Independent). Characins: 1, T. Hine (Tonbridge); 2, P. Coyle (Independent); 3, J. Bellingham (Tonbridge); 4, A. Clack (Medway). H. H. and C.: 1, R. Bowes (Independent); 2, J. Richardson (Runnymede); 3, D. Adams (Bethnal Green); 4, R. Holman (Runnymede). Cichlids: 1, Mrs. Bellingham (Tonbridge); 2, K. Adams (S.L.A.D.S.); 3, R. Baker (Tonbridge); 4, B. L. Wright (Thurrock). Angels: 1, D. M. Dare (Independent); 2, Mrs. Nethesall (Riverside); 3, P. O'Bryan (Thurrock); 4, Mrs. Fletcher (Medway). Dwarf Cichlids: 1, R. Bowes (Independent); 2, J. Garrad (Runnymede); 3, T. A. King (Erith); 4, K. Adams (S.L.A.D.S.). Labyrinths: 1, D. Adams (Bethnal Green); 2, A. Kinsey (Independent); 3, C. Marsh (Medway); 4, T. Cruikshank (Ealing). Betta: 1, R. Bowes (Independent); 2, C. Wood (North Kent); 3 and 4, S. W. Applin (Independent). Egg-laying Toothcarp: 1, Mr. and Mrs. Fagan (Clapham); 2, D. Dare (Independent); 3, A. J. Clack (Medway); 4, C. Wood (North Kent). A.O.V. Cats: 1, Mrs. Lovegrove (Thanet); 2, T. Cruikshank (Ealing); 3, J. London (Thurrock); 4, R. Baker (Tonbridge). Corydoras and Brochis: 1, Mrs. V. Marsh (Ealing); 2, Mrs. Nethesall (Riverside); 3, P. Moye (Apex); 4, J. Parker (North Kent). Rasbora: 1, B. George (Mid Kent); 2, L. Derrick (Croydon); 3, F. Marsh (Ealing); 4, R. Bowes (Independent). Danio and W.C.M.M.: 1, R. Bowes (Independent); 2, P. Moye (Apex); 3, Mrs. Nethesall (Riverside); 4, C. Wood (North Kent). Loach: 1, J. Parker (North Kent); 2, Mrs. Bellingham (Tonbridge); 3, Mrs. Rood (Tonbridge), 4, R. Bowes (Independent). A.O.V. Egglayers: 1 and 4, D. Adams (Bethnal Green); 2, A. Kinsey (Independent); 3, Mrs. Garrad (Runnymede). Egglayers (Pairs): 1 and 2, D. Adams (Bethnal Green); 3, P. Cottle (North Kent); 4, F. Marsh (Ealing). Livebearers (Pairs): 1, S. Adams (Bethnal Green); 2, D. Adams (Bethnal Green); 3, P. Cottle (North Kent); 4, F. Marsh (Ealing). Male Guppy: 1, P. Cottle (North Kent); 2 and 3, R. Bowes (Independent); 4, P. Coyle (Independent). Female Guppy: 1, D. Moye (Apex); 2, R. Bowes (Independent); 3, R. Bowes (Independent); 4, P. Coyle (Independent). Swords: 1 and 2, P. O'Bryan (Thurrock); 3, P. Wright (Thurrock); 4, T. Cruikshank (Ealing). Platy: 1 and 2, Mrs. Cruikshank (Ealing); 3, D. Crowe (Freelance); 4, P. O'Bryan (Thurrock). Molly: 1 and 3, P. Moye (Apex); 2, S. Applin (Independent); 4, J. London (Thurrock). A.O.V. Livebearer: 1, S. Adams (Bethnal Green); 2, A. Kinsey (Independent); 3, R. Parker (North Kent); 4, R. Bowes (Independent). Egglayers (Breeders): 1, Mr. and Mrs. Fagan (Clapham); 2 and 4, A. J. Clack (Medway); 3, C. Wood (North Kent). Livebearers (Breeders): 1, J. Parker (North Kent); 2 and 4, J. Marshall (Medway); 3, Mrs. Fagan (Clapham). Single-tail Goldsmitt: 1 and 2, K. Adams (S.L.A.D.S.); 3, N. Woodward; 4, D. Dare (Independent).

A.O.S. Coldwater: 1, R. Parker (North Kent); 2, P. Cottle (North Kent); 3 and 4, N. Woodward. Plants: 1, J. Marshall (Medway); 2, P. O'Bryan (Thurrock); 3, C. Elliott (Medway); 4, N. Woodward. There were 500 entries.

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THE **Ilford and District Aquarists' and Pondkeepers' Society** enjoyed a lecture by Mr. H. Berger on Fish Pond Construction and Maintenance, and this was the main subject for the April meeting. Coupled with Mr. Berger's first-hand knowledge of the various methods of construction, were some excellent colour slides of existing ponds which had been entered into the club's "Pond Competition" over the years, and pinpointed the improvement which comes with maturity and age.

The results of the March and April Table Shows were as follow: March—Any Variety Egglayer: 1, Mrs. P. Reade; 2, 3 and 4, W. Rowe. Any Variety Livebearer: 1 and 3, W. Rowe; 2, Mrs. P. Reade; 4, F. Hattam. April—Any Variety Characin: 1 and 4, W. Rowe; 2, M. Perry; 3, Mr. Rendell. Any Variety Fancy Goldfish: 1, 2, 3 and 4, W. Rowe. Any Variety Platy: 1, 2, 3 and 4, W. Rowe.

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IN March the **East Dulwich A.S.** held their third Open Show and this was a great success. Entries totalled 860 and sincere thanks are due to Messrs. Baker, Brown, Nicholl, Stillwell and Towell, F.B.A.S. judges, who officiated.

The annual general meeting of the Society has been recently held and the next year's programme of table shows, lectures, etc., commenced. Special items contemplated are a jumble sale followed by a social and dance early in the new year. Meetings are held on the second and fourth Mondays in the month at Dulwich Baths Reception Hall, Crystal Palace Road, S.E.22, at 8.15 p.m. Further details may be obtained from the secretary, D. E. Sutton, 231 Friern Road, SE22 0BD, tel. 693 5397, or from the show secretary, K. Quennell, 43a Carden Road, SE15 3UB. All interested aquarists will be cordially welcomed. The Show results were as follow: Miniature Furnished Aquaria: 1, K. Appleyard; 2, D. J. Crucefix; 3, B. Bissoon; 4, Mrs. J. Twine. Barbs: 1, D. W. Armour; 2, T. F. Butler; 3, R. Brooke; 4, B. Bissoon. Large Barbs: 1, A. Kinsey; 2, D. Dare; 3, J. W. Gorvett; 4, R. Cooper. Characins: 1, J. A. Pollard; 2, T. R. Hine; 3, P. W. Cottle; 4, Mrs. J. Twine. Characins: Hyphessobrycon, Hemigrammus and Cheirodon: 1 and 4, R. Bowes; 2, M. Strange; 3, P. Coyle. Cichlids: 1, A. Kinsey; 2, R. Baker; 3, D. J. Howe; 4, L. S. Derrick. Cichlids: Apistogramma, Pelmatochromis and Nannacara: 1, R. F. Rumney; 2, R. Bowes; 3, R. Wright; 4, R. Weston. Labyrinths: 1, R. Wright; 2, D. Adams; 3, P. Coyle; 4, Mr. Dale. Siamese Fighters: 1, L. J. Brazier; 2, P. W. Cottle; 3, P. Watson; 4, R. A. Ott. Egglaying Toothcarps: 1, Mr. and Mrs. Pagan; 2, M. Collins; 3, R. Cooper; 4, P. Brenchley. Tropical Catfish: 1, J. M. London; 2, R. Wright; 3, L. J. Brazier; 4, F. G. Marsh. Corydoras and Brochis: 1, K. Dryden; 2, Mr. Sutton; 3, P. A. Moye; 4, F. G. Marsh. Rasboras: 1, F. G. Marsh; 2, S. Mason; 3, A. Kinsey; 4, D. J. Mackay. Danios and White Cloud Mountain Minnows: 1, Mrs. M. Nethersell; 2, J. M. Wood; 3, P. A. Moye; 4, C. Wood. Loaches: 1, A. Wood; 2, B. Bissoon; 3, R. Bowes; 4, J. M. Wood. A.O.S. Tropical Egglayer: 1, R. Ibley; 2, H. F. Mears; 3, D. Adams; 4, Mrs. J. Garrad. Pairs—Egglayers: 1, R. Wright; 2, P. J. Copper; 3, K. Quennell; 4, K. Adams. Pairs—Livebearers: 1, Mrs. M. Quennell; 2, S. Adams; 3, A. Blake; 4, D. Crucefix. Male Guppies: 1 and 2, Mr. Coyle; 3, A. Wood; 4, J. W. Gorvett. Female Guppies: 1 and 4, Mrs. M. Nethersell; 2, P. Coyle; 3, J. Mears. Swordtails: 1, S. Mason; 2, K. E. Saxby; 3, P. O'Bryan; 4, J. E. Connolly. Platies: 1, Mrs. D. Cruickshank; 2, P. O'Bryan; 3, Mrs. D. Barrett; 4, S. Mason. Mollies: 1 and 2, P. A. Moye; 3, J. M. London; 4, H. F. Mears. A.O.S. Livebearer: 1, B. Bissoon; 2, R. Bowes; 3, H. Watts; 4, Mrs. D. Barrett. Singletail Goldfish: 1, Mrs. M. Dudley; 2, K. Adams; 3, K. Appleyard; 4, R. Rich. Twintail Goldfish: 1, G. Winser; 2, R. Rich; 3, Mrs. J. Bellamy; 4, Miss B. Quennell. A.O.S. Coldwater: 1, V. P. Voysey; 2, D. J. Mackay; 3, Mrs. M. Dudley; 4, E. Binstead. Breeders (Egglayers): 1, R. A. Ott; 2, Master K. Bissoon; 3, W. E. Goodwin; 4, D. Putt. Breeders (Livebearers): 1, H. Watts; 2 and 4, S. Mason; 3, R. Peck. A.V. Plants: 1, P. O'Bryan; 2 and 3, M. Wood; 4, P. J. Copper.

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AN instructive talk by D. V. Jones of Southampton on Diseases of Tropical Fish was given to members of the **Littlehampton and Bognor A.S.** recently. Mr. Jones talked about his own experiences of curing all the wide range of diseases that can be encountered, and gave much helpful advice. At a more recent meeting, Roy Smith of the L.B.A.S. judged a very well supported Table Show. The results were as follow: Characins: 1, J. Devo; 2, A. Carruthers; 3, M. Lane. Barbs: 1, H. Maddison; 2, D. Humphires; 3, R. Devo, Jnr. A.O.V.: 1, H. Maddison; 2, B. Cookman; 3, A. Carruthers. During the holiday season (and at all times) visitors to the South Coast will be most welcome at the meetings which are held at The Crown, High Street, Littlehampton on the first and third Thursdays of each month at 8 p.m.

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THERE was a good entry for the **Dunmow and District A.S.** Table Shows in April. This time it was for Adult Pairs and the show was judged by Mr. Yates, F.B.A.S., Cambridge. The results were as follow: 1, 2 and 3, Mrs. E. Andrews; 4, M. C. De Cruze.

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OFFICERS elected at the annual general meeting of the **Isle of Wight A.S.** were as follow: chairman, J. Nolan; vice-chairman, F. Whitehouse; treasurer, W. Orman; secretary, T. Davison; show secretary, R. W. Chapman; publicity officer, R. E. Tolley; committee, R. Woodnutt, G. Ford, J. Sole, P. Minter.

Following the meeting, the annual dinner-dance and show awards were held on Saturday, and this was followed Sunday by a lecture and slide show which were both of great interest and enjoyment. Presentation of the trophies were as follow: Champion of Champions, R. W. Chapman; Points Challenge, 1, S. Stevens; 2, J. Nolan; 3, R. W. Chapman; Best Tropical, 1, B. Shuttlewood; 2, J. Nolan; 3, R. W. Chapman. Best Coldwater, R. W. Chapman; Guppy Cup, S. Stevens; Characin Cup, J. Nolan; Novice Tropical, J. Withers; Ladies Cup, E. Ford and J. Shuttlewood; Plant Cup and Hora Shield, E. T. Davison; Ladies Runner-up, O. Davison; Achievements Cup, D. Crisp; Medals for three firsts or more, S. Stevens, B. Shuttlewood and J. Nolan. A further presentation was made to D. Crisp, the retiring chairman in appreciation of all the services he has done for the club. The society is looking forward to yet another interesting year and would like to take this opportunity to invite everyone to all our club activities throughout the coming year, details of which can be obtained from our secretary at Shanklin Aquatics, High Street, Shanklin.

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AT the **Privateers A.S.** (Shipley, Yorkshire) April meeting, a question and answer competition between the members divided into two teams, was held. A very enjoyable evening was spent by a good attendance of both old and new members, and some of the answers were most ingenious.

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THE officers of the **Smethwick and District A.S.** are: president, L. Stokes; chairman, Mrs. M. Scott; secretary, E. Woodward, 7 Grange Road, Smethwick, Warley, Worcs.; treasurer, J. Harris; show secretary, R. Clarke; assistant, A. Layton. Meetings are held on the first and third Wednesdays of the month at 8 p.m. Arden Road School, Smethwick, Warley, Worcs.

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THE **Horsforth A.S.** held their annual general meeting recently, and the new Committee is now as follow: Chairman, S. Corns; hon. treasurer, M. Barker; show secretary, Miss J. Helm; social secretary, Mrs. J. Dickinson; librarian, Mrs. B. Helm; Catering, Mrs. J. Corns and Miss D. Midgley; secretary, P. J. Smith, 10 Wynford Rise, West Park, Leeds, 16. Mr. Ray Hampson gave a very interesting slide show and lecture on furnished aquaria, illustrating how to achieve a good balance between fish, plants and rocks. It is proposed to hold an open show this year and details will be announced later. Awards were presented to this year's winners of the table shows:—A.O.V.: C. Corns. Specified: C. Corns. Junior: Master I. Heerocks. The telephone number of the new secretary is Leeds 675712.

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AT the third meeting of the newly formed **Welbeck A.S.**, Castleford, held in April, a very pleasant evening was spent watching two very interesting films given by Mr. Ray Hampson of Horsforth, Leeds. There were 64 members present and there was also a small table show judged by Mr. Hampson. The Society would like to take this opportunity to thank Mr. Hampson for an entertaining evening.

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DURING April there were two meetings of the **Goole and District A.S.** The first meeting consisted of a social evening and table show for livebearers. The results of this show were: 1 and 2, R. Holt; 3, P. Walker (Mollie). At the second meeting there was another table show and a slide show on Livebearers. The table show was in two sections, one for Sharks and Flying Foxes and one for Barbs. The results were as follows: Sharks and Flying Foxes: 1, W. Bunnadge; 2, P. Walker; 3, A. Scaife. Barbs: 1 and 2, W. Bunnadge; 3, A. Scaife. W. Burnadge also won the Fish of the Month plaque with his Barb.

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GUEST speaker at **Bristol Tropical Fish Club** at the March meeting was Mr. W. Gorwell with an extremely well presented talk on his speciality, Lake Malawi Cichlids. The maintenance and breeding of these fishes was dealt with in considerable depth together with accompanying slides providing members present with a good understanding of the likely pitfalls to the new owner. The enthusiastic response from the floor was endorsed by a proposal that Mr. Gorwell should be highly recommended to the Severnside Association for inclusion in their list of speakers.

The April meeting saw the welcome return of Mr. Barry James of Cheltenham Aquatics, speaking on Tropical Aquarium Plants. The subject was very well received by club members, added interest being provided by the many exhibits brought along by the speaker to provide practical illustrations. In view of the interest shown in the talk it is hoped to encourage Mr. James to pay a return visit in the not too distant future.

The month of June brings to fruition the results of many months' planning by the Show Committee at the Club's annual three-day open show. This is to be held on 22, 23 and 24 June, and it is hoped many entries will be received from outside the Club's ranks. It may be of interest to note that each entry is individually housed in a heated aquarium and if necessary benching can be arranged for entrants unable to attend the Wednesday benching evening. In addition, providing prior warning is given to the Show Secretary, arrangements may be made for entries to be received by rail and subsequently benched. As in previous years each class is covered by a Silver Cup and a retainable trophy together with an excellent supply of prizes. Entry schedules are available from Mr. Bob Lawrence (Show Secretary), 26 Stonebridge Park, Eastville, Bristol, BS5 6RR.

IN April Mr. Dawes, Chairman of **Brighton & Southern A.S.** welcomed Mid-Sussex members to the annual two-way inter-club competition. The judge was Mr. Brian Baker, F.B.A.S., who awarded the points as follows: Brighton 1,336½ pts.; Mid-Sussex 1,332 pts. The classes of fish were Rasboras, Labyrinths, A.O.V. Catfish, Killiefish (DB)—Cichlids and Characins. While Mr. Baker was judging, the monthly auction of fish and equipment took place after which members and guests saw one of Brighton's own tape slide lectures called "Plants for the Aquarium." Any further information may be obtained from the Secretary, Mr. C. P. Corbin, 80 Marlborough Drive, Burgess Hill, Sussex. Tel: 41632.

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RECENTLY **Tonbridge & District A.S.** (F.B.A.S.) received a party of visitors from Hastings and St. Leonards A.S. (F.B.A.S.). The Hastings members formed a panel for questions while Mr. and Mrs. Carey also from Hastings judged the table show with the following results:—A.V. Coldwater: 1 and 3, Mrs. S. Soares; 2, Mrs. B. Taylor. A.O.S. Tropical Egglayer: 1, Mrs. D. Mathieson; 2, R. Baker; 3, J. Bellingham.

The Club has also held the annual general meeting at the end of its fourth year. The committee were able to claim another successful year and announce the first open show in August. The Society is now a member of the Kent Association of Aquatic Societies. At the annual prize giving and dance, the chairman of Kent A.A.S., Pete Cottle, presented the following awards:—Characin Plaque: W. Rood; Cichlid Cup: Mrs. Isobel Bellingham; Corydoras Trophy and Danio W.C.M.M. Plaque: I. Mathieson; Egglayer (Pairs) Trophy: R. Baker. Platty Trophy: W. Rood. Coldwater Cup: Mrs. Sheila Soanes. Egglayer Breeders: I. Mathieson. Livebearer Breeders: K. Shoebridge. 1970 Committee Cup, highest pointed lady member: Mrs. Dorothy Mathieson. Club Open Show Championship: 1, J. Bellingham; 2, I. Mathieson; 3, Mrs. Dorothy Mathieson. Club Championship: 1, I. Mathieson; 2, J. Bellingham; 3, R. Baker. The Society meets on the third Wednesday of each month in the Gardeners Arms, St. Stephens Street, Tonbridge.

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ONE of the members of the **Havant and District A.S.**, Mr. Stephen Crabtree, gave an excellent talk on reptiles and amphibians at a recent meeting. A number of live specimens were presented, in turn, for the scrutiny of the members who found them most impressive.

The rest of the evening's activity took the form of a table show for Characins and Barbs. The results are as follows:—Characins: 1, N. Fisher; 2, C. Fuller; 3 and 4, Diane Booker. Barbs: 1, N. Davis; 2, G. Lillicrap; 3, K. Forder; 4, S. Webster. The judge was Mr. H. Armitage. The Best Fish in the Show was a Serrasalmus Brandti, owned by Mr. N. Fisher.

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MONTHLY table show results of the **York and District A.S.** were as follows:—Large Cichlids: 1, 2 and 3, L. S. Hunter; 4, A. S. Allison. Angels: 1, J. T. Richardson; 2, Mr. Rees; 3 and 4, Mr. Berry. Danios: 1, M. Reynard; 2, R. Swallow; 3, J. T. Richardson; 4, Mr. Twydale. Juniors, Egglayers: 1, 2 and 3, R. S. Swallow; 4, J. Kerlew. Livebearer: 1, J. Kerlew. Best Fish of the Show: L. S. Hunter's Jewel. Earlier in April the Society was given a talk on Coldwater Fish by Mr. Boyes and Miss Wardlow who ran a fish farm in Driffield. A very informative talk on Angel Fish was given by Mr. G. B. Hawksby (the Society's chairman) at the end of April.

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THE **Sittingbourne and District A.S.'s** 1972/73 programme had a bright start at the Westlands School, Sittingbourne, in April, with a Table Show for Sharks, Catfish and Loaches. The results were as follow: Sharks: 1, J. Bennet; 2 and 3, C. Petts. Catfish: 1 and 2, Master L. Bean; 3, G. Eames. Loaches: 1 and 2, Master L. Bean; 3, G. Morris. There was a large entry and the evening finished with a successful plant auction.

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ENTRIES at the **Scunthorpe Museum Society Aquarist Group** second Open Show reached a total of 556. Results: Guppies: 1, Mr. and Mrs. Shipley (Goole); 2, T. Smith (Sheffield); 3, Mr. Andrews (Hull). Swordtails: 1, Mrs. B. Batch (Hull); 2, F. Cook (Huddersfield); 3, Mr. Dernie (Dukeries). Mollies: 1 and 2, J. Igoe (Sherwood); 3, C. Huckle (Sherwood). Platys: 1, Mr. and Mrs. Daines (Doncaster); 2, E. M. P. Hunter (Wellbeck); 3, C. Ward (Doncaster). Small Barbs: 1, Mr. Dernie (Dukeries); 2, Mr. and Mrs. Jensen (Grimsby); 3, A. Barrett (Wellbeck). Large Barbs: 1 and 3, Mr. and Mrs. Cohen (Castleford); 2, Mr. and Mrs. Stone (Chesterfield). Small Characins: 1, Mr. and Mrs. Blades (Creswell); 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. and Mrs. Pogson (Scunthorpe). Large Characins: 1, Mrs. Robertson (Independent); 2, J. Whitely (Aireborough); 3, R. Middleton (Gainsborough). Dwarf Cichlids: 1, H. Kuhn (Lincoln); 2, I. Heptinstall (Castleford); 3, J. Whitely (Aireborough). Large Cichlids: 1, Mr. Dernie (Dukeries); 2, Mr. and Mrs. Scarll (Goole); 3, J. Rawden (Lincoln). Angels: 1, Mr. Svendsen (Grimsby); 2, Mr. and Mrs. Blades (Creswell); 3, Mrs. M. Igoe (Sherwood). Corydoras: 1, H. Buxton (Sheffield); 2, Mr. Douglas (Hull); 3, Mr. and Mrs. Wells (Scunthorpe). A.O.V. Catfish: 1, Mr. and Mrs. Shipley (Goole); 2, M. and B. Bailey (Sherwood). Loaches: 1 and 3, Mr. and Mrs. Davison (Gainsborough); 2, T. Smith (Sheffield). Sharks: 1, G. Thickbroom (Wellbeck); 2, Mr. and Mrs. Scarll (Goole); 3, Mr. and Mrs. Boardman (Scunthorpe). Foxes: 1, Mr. Jewison (Thorne); 2, G. Thickbroom (Wellbeck); 3, Mr. Gillespie (Castleford). Small Anabantids: 1, J. Whitely (Aireborough); 2, Mr. and Mrs. Kilvington (Doncaster); 3, Mr. Stabiler (Hull). Fighters: 1, Mr. and Mrs. Toyne (Sheffield); 2, Mr. Dernie (Dukeries); 3, Mr. and Mrs. Milne (Doncaster). A.O.V. Anabantids: 1, Mr. Kirk and Son (Grimsby and Cleethorpes); 2, A. Robinson (Scunthorpe); 3, Mr. and Mrs. Cohen (Castleford). Goldfish and Comets: 1 and 2, Mr. and Mrs. Toyne (Sheffield). Shubunkins and Fancy Goldfish: 1, S. and A. Thomas (Castleford); 2 and 3, Mr. and Mrs. Toyne (Sheffield). A.O.V. Coldwater: 1, A. Barrett (Wellbeck). Rivulus: 1, I. and R. Heptinstall (Castleford); 2, Miss D. Bailey (Sherwood); 3, Mr. Warburton (Scunthorpe). Aphyosemion: 1, G. Thickbroom (Wellbeck); 2, Mr. and Mrs. Blades (Creswell); 3, D. Caldow (Scunthorpe). A.O.V. Killiefish: 1, I. and R. Heptinstall (Castleford); 2, T. Smith (Sheffield); 3, Mr. and Mrs. Blades (Creswell). Rasboras: 1, P. Heptinstall (Castleford); 2, Mrs. Robertson (Independent); 3, B. Downing (Sherwood). Danios and Minnows: 1, Mr. and Mrs. Blades (Creswell); 2, Mr. Jewison (Thorne); 3, J. Rhoades (Scunthorpe). A.V. Marine: 1, C. Asquith (Wellbeck); 2 and 3, Mr. and Mrs. Boardman (Scunthorpe). A.O.V. (up to 8in.): 1, I. and R. Heptinstall (Castleford); 2, Mr. and Mrs. Boyes (Privateers); 3, Mr. Kirk and Son (Grimsby and Cleethorpes). A.O.V. (over 8in.): 1, D. Caldow (Scunthorpe); 2, S. and A. Thomas (Castleford); 3, Mrs. I. McGrath (Scunthorpe). Pairs (Egglayers): 1, P. Heptinstall (Castleford); 2, Mr. Dernie (Dukeries); 3, Mr. and Mrs. Blades (Creswell). Pairs (Livebearers): 1, S. and A. Thomas (Castleford); 2, Mr. Dernie (Dukeries); 3, Shipman & Co. (Grantham). Single Female Egglayer: 1, Mr. and Mrs. Blades (Creswell); 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. and Mrs. Scarll (Goole). Single Female Livebearer: 1, A. Barrett (Wellbeck); 2, Mr. and Mrs. Gates (Castleford); 3, Mr. Warburton (Scunthorpe). Breeders (Egglayers): 1, M. Footit (Alfreton); 2, Mr. Dernie (Dukeries); 3, Mr. and Mrs. E. Wells (Scunthorpe). Breeders (Livebearers): 1, Mr. and Mrs. B. Clark (Barnsley); 2, Mr. Douglas (Hull); 3, Mr. Kirk and Son (Grimsby and Cleethorpes). Ladies Section Egglayers: 1, Mrs. H. Blades (Creswell); 2, Mrs. Gates (Castleford); 3, Mrs. Fotheringham (Goole). Ladies Section Livebearers: 1, Mrs Barrett (Wellbeck); 2, Mrs. Shipley (Goole); 3, Mrs. Blades (Creswell). Junior Section Egglayers: A. Thomas (Castleford); 2, Miss Thickbroom (Wellbeck); 3, D. Graham (Independent). Junior Section Livebearers: 1, Master S. Harrison (Sherwood); 2, J. Bailey (Sherwood); 3, Miss Thickbroom (Wellbeck). Mr. Dernie won the annual trophy for Best Fish in Show and was also awarded the Aquarist Gold Pin. Mr. S. Pogson was presented with a Rena 100 Air Pump for the most entries.

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OFFICERS elected at the **Independent A.S.** annual general meeting were as follow: chairman, E. Islip; secretary, T. Laughlan; treasurer, S. Applin; show secretary, B. Mason; vice-chairman and P.R.O., J. Kettle; assistant secretary, R. Bowes; assistant show secretary, T. Kinsey.

The second Open Show winners were as follow: Miniature Furnished: 1, D. Crucefix; 2, D. Dare; 3, S. Collins. Barbs: 1, B. Funnel; 2, B. Bissoon; 3, Mrs. R. Coyle; 4, T. Butler. Characins: 1, P. Coyle; 2, D. Reilly; 3, J. Kettle; 4, J. Pollard. Hyphessobrycon, Hemigrammus and Cheirodon: 1, M. Strange; 2, T. Kinsey; 3, R. Bowes; 4, R. Thompson. A.O.S. Cichlids: 1 and 3, D. Keeble; 2, J. Batts; 4, T. Kinsey. Angels: 1, J. Batts; 2, D. Date; 3, R. Michalidies; 4, P. Coyle. Apistogramma, Pelmatochromis, Nannacara: 1, R. Bowes; 2, R. Weston; 3 and 4, B. Bissoon. Labyrinths: 1, Mrs. S. Hedges; 2, Mrs. Sawford; 3, R. Piggins; 4, T. Laughlan. Siamese Fighters: 1, R. Ott; 2, P. Watson; 3, T. Laughlan; 4, S. Applin. Egglaying Toothcarps: 1 and 3, Mr. Goodwin; 2, M. Collins; 4, D. Dare. Tropical Catfish: 1 and 2, T. Kinsey; 3, D. Bundy; 4, J. Batts. Corydoras and Brochis: 1 and 2, R. Bowes; 3, M. Strange; 4, Mrs. S. Hedges. Rasboras: 1, B. Bissoon; 2, D. Mackay; 3, D. Bundy; 4, R. Bowes. Danios and W.C.M.M.: 1, R. Bowes; 2, Mrs. S. Hedges; 3, T. Kinsey; 4, B. Newman. Loaches: 1, B. Bissoon; 2, R. Machalidies; 3, M. Strange; 4, A. Wood. A.O.S. Tropical Egglayers: 1, J. Pollard; 2, D. Bundy; 3, Mrs. S. Hedges; 4, P. Page. A.S. Tropical Pairs: 1, L. Brazier; 2, D. Crucefix; 3, J. Howe; 4, T. Kinsey. Guppy (Male): 1 and 2, R. Bowes; 3, P. Coyle; 4, T. Ott. Guppy (Female): 1 and 2, P. Coyle; 3 and 4, R. Bowes. Swordtails: 1, A. Tuck; 2, M. Aldridge; 3, D. Lyne; 4, D. Crucefix. Platies: 1, D. Dare; 2, R. Peacock; 3 and 4, A. Wood. Mollies: 1, J. Igoe; 2 and 4, S. Harrison; 3, D. Lyne. A.O.S. Livebearers: 1, T. Kinsey; 2, M. Strange; 3, R. Bowes; 4, B. Newman. Singletailed Goldfish: 1, D. Reilly; 2, 3 and 4, Mrs. S. Hedges. A.O.S. Coldwater: 1 and 3, Mrs. S. Hedges; 2, D. Mackay; 4, R. Dudley. Breeder Tropical Egglayers: 1, R. Ott; 2, B. Newman; 3 and 4, Mr. Pimm. Breeder Tropical Livebearers: 1, D. Lyne; 2 and 3, B. Bissoon; 4, M. Strange.

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THERE were a few new members at the **Grimsby and Cleethorpes A.S.** meetings in April at their new club rooms, 77 Club, Cobden Street, Grimsby. At the first meeting members watched slides on breeding and feeding white worm. Table Show results: Large Cichlids: 1, E. Holmes; 2, R. Jennings; 3, G. Lill. Pairs (Egglayers): 1, B. Pulford; 2, A. Metcalfe; 3, K. Svenson. Breeders (Egglayers): 1, B. Pulford; 2, R. Jennings; 3, L. Evans. Best in Show: E. Holmes. For the second meeting there was an interesting talk on Cichlids, given by the new chairwoman, Mrs. O. Jennings. Table Show results: Pairs Guppies: 1, P. Atkinson; 2, J. Lill; 3, J. Grant. A.V. Egglayers: 1, D. Kirk; 2, E. Holmes; 3, E. Kirk. Sharks: 1, R. Jennings; 2, J. Grant; 3, B. Pulford. Best in Show: R. Jennings. The club suffered a sad loss recently when one of the prominent committee members, Charlie (Pop) Easton passed away. This will come as a great shock to the members. His name was frequently in the first three at most table shows. Both his presence and experience of the hobby will be greatly missed.

THE **Croydon A.S.**, F.B.A.S. Home Furnished Aquaria Competition had ten entries and was won again by D. W. Day, the second being a junior member, Adrian Haymes. A lecture was given at the last meeting by Mr. Kettle on Piranha and was very interesting. He has kept Piranha for ten years.

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ONCE again Rhondda A.S. came along in force to Port Talbot in April, bringing along some very good fish, clearly intending to keep their unbeaten record against **Port Talbot and District A.S.**, and once again they succeeded winning by 466 to 440 points. The match was not one-sided, the Port Talbot Junior member, Miss Carole Rupert, taking first three places in the Egglayers and also Best in Show. Judges for the match: W. Gorwell and C. Harding. Results: Livebearers: 1, M. Williams (Rhondda); 2, J. Pick (Rhondda); 3, H. Thomas (Rhondda). Egglayers: 1, 2 and 3, Miss C. Rupert (Port Talbot), also Best in Show.

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THE **Bracknell A.S.** (federated to the F.B.A.S.) is enjoying a full programme. The club has a Table Show every meeting with both senior and novice classes. In March the club had their first closed show with 79 entries. The first meeting in April was taken up by K. Purbrick speaking on Characins, assisted by the other Hendon members. At the second meeting there was a debate on sub-gravel filters.

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THE **Vauxhall Motors A.S.** concluded a successful year when over sixty members, wives and friends enjoyed an evening out which finished with a cabaret show. At the annual general meeting several changes in the committee took place. The Society will be shortly losing founder-member and treasurer, Mr. E. Martin, who is emigrating to New Zealand. He has always been a keen and successful showman, active in all the Club has done and members wish him every success and happiness in the future.

Plans and work are now well advanced for the display which the Society is presenting in association with the Vauxhall Motors Sports Day and Spectacular on 10th June.

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ABOUT twenty-five members attended the May meeting of the **Bournemouth A.S.**

The table show for Common Goldfish was won by H. Greenhalgh, who also took second place. The Class for Characins was won by Mr. Baldwin, second being N. Walker, and third Mr. Daniel.

After the interval, a raffle took place, and this was followed by an auction of plants and fish. The meeting then continued with further discussions of the hobby in general, with a reminder from the chairman of the planned coach trip to Alexandra Palace.

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IN a three-club, twelve-a-side match in April at Beeham Wood, between **Amersham & District A.S.**, Beecham Wood and Hemel Hempstead, the winners were Beecham Wood, second being Hemel Hempstead and third Amersham and District A.S. The judge was Mr. P. Ginger. Amersham lost again at home to Hemel Hempstead recently.

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THE **Hendon and District A.S.** is fortunate in having many trophies to cover all the usual events of an aquatic society. It is also customary to ask the President, Roy Skipper, of the House of Fishes, to award the two senior trophies at the annual dinner and dance which was held this year in March. These trophies have a serious set of rules which have to be satisfied. The Tromen Trophy, which is a beautifully carved replica of a Moor, is awarded to the member who has done most to further and benefit the hobby this year and was won by Sid Tarrent. The second trophy, known as the President's Trophy, is awarded in recognition of the service by a member of the Society which could have passed unrewarded—won this year by Howard Watts for his work as treasurer, lecturer, and his success at the shows.

On the occasion of the 21st dinner, Roy Skipper presented the Society with a new trophy, and it was a beautiful, lifelike Symphysodon Discus. The Committee for nearly a year, submitted several schemes; the final decision being to award this trophy for the best single achievement judged by the Committee. It was awarded this year for the first time to Tom Glass for his effort in taking Killifish to the International Show in Germany—he also was in the cards. Other awards are the Home Furnished Aquaria Cup and the Pond Competition Cup, both won this year by one of the oldest members, Frank Oliver. The Egglayers (Breeders) Cup was won by Tom Glass and the Pairs Trophy by Eileen Clarke.

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THE **Riverside A.S.** were hosts to the North-West London group in May in the second round and the results were as follows: Independent 53, Riverside 33, Hendon 23, Anson 21, and Hampstead 2. Best Fish of Show was a Cichlid from Independent.

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THERE was good support for the **Runnymede A.S.** first full open show and a very good attendance by various clubs resulted in 577 entries.

The Club holds its meetings at Ashford Community Centre, Chesterfield Road, Ashford, on the second and fourth Tuesdays of each month. Information about the Club can be obtained from either M. Clark, 12 Ferndale Road, Ashford, or P. Caira, 1 Muncaster Road, Ashford. Results: Individual—Mini furnished Aquaria: 1, J. Garrad (Runnymede); 2, P. Caira (Runnymede); 3, R. Joyce (Runnymede); 4, S. Shepherd (Runnymede). Barbs: 1, P. Bissoon (Basingstoke); 2, D. J. Mackay (Kingston); 3, B. Funnell (Uxbridge); 4, D. Reilly (Anson). Large Barbs: 1 and 2, K. C. Smith (Runnymede); 3, P. A. Grosvenor (Runnymede). Characins: 1, J. Batts (Ealing); 2, D. Norman (Runnymede); 3, J. K. East (Freelance); 4, Mr. and Mrs. Hudson (Roehampton). Hyphessi-Hemi-Cher: 1, J. Pullard (Kingston); 2, J. Richardson (Runnymede); 3, Mrs. J. Garrad (Runnymede); 4, A. P. Taylor (Anson). Cichlids: 1, J. Batts (Ealing); 2, M. Nethersall (Riverside); 3, M. Strange (Basingstoke); 4, J. Powell (Kingston). Angels: 1, J. Batts (Ealing); 2, J. Healey (Ealing); 3, M. Chapman (Basingstoke); 4, J. Mears (Basingstoke). Apist-Pel-Nann: 1, L. W. Jordan (Bracknell); 2, P. Bissoon (Basingstoke); 3, L. G. Little (Bracknell); 4 L. J. Brazier (Anson). Labyrinths: 1, G. Greenhalf (Kingston); 2, R. Wright (East Dulwich); 3, Mrs. C. Sawford (Kingston); 4, J. Healey (Ealing). Siamese Fighters: 1, L. J. Brazier (Anson); 2, Miss H. Grosvenor (Runnymede); 3, P. Caira (Runnymede); 4, R. C. Peck (Basingstoke). Egglaying Toothcarps: 1 and 4, D. A. Brooks (Hounslow); 2, M. Collins (Hounslow); 3, J. Mears (Basingstoke). Tropical Catfish: 1, G. Greenhalf (Kingston); 2, A. P. Taylor (Anson); 3, D. Lambourne (Roehampton); 4, R. Wright (East Dulwich). Corydoras and Brochis: 1, F. G. Marsh (Ealing); 2 and 4, R. Wright (East Dulwich); 3, B. Pratt (Hounslow). Rasboras: 1, D. J. Mackay (Kingston); 2, F. G. Marsh (Ealing); 3, R. Ilsley (Basingstoke); 4, D. Reilly (Anson). Danio-W.C.M.M.: 1, Miss M. Crowe (Freelance); 2, D. Norman (Runnymede); 3, K. C. Smith (Runnymede); 4, A. Blake (Basingstoke). Loach: 1, P. Bissoon (Basingstoke); 2, Mrs. S. Parrish (Hounslow); 3, D. Lambourne (Roehampton); 4, D. Armour (Riverside). A.O.V. Tropical Egglayer: 1, R. Ilsley (Basingstoke); 2, L. Monk (Roehampton); 3 and 4, P. Caira (Runnymede). Tropical Pairs: 1, R. Wright (East Dulwich); 2, S. Mason (Roehampton); 3, L. J. Brazier (Anson); 4, M. Aldridge (Hounslow). Male Guppy: 1 and 2, A. Wood (Anson); 3, M. Nethersall (Riverside); 4, A. P. Taylor (Anson). Female Guppy: 1, Gina Thorne (F.G.A.); 2, M. Nethersall (Riverside); 3, K. C. Smith (Runnymede); 4, K. Brooks (Hounslow). Swordtails: 1, S. Mason (Roehampton); 2, M. Aldridge (Hounslow); 3, A. P. Constantine (Hounslow); 4, J. Healey (Ealing). Platy: 1 and 2, Mrs. D. Cruickshank (Ealing); 3 and 4, L. G. Little (Bracknell). Molly: 1, D. Reilly (Anson); 2, K. C. Smith (Runnymede); 3, D. Lyne (High Wycombe); 4, J. Mears (Basingstoke). A.O.V. Tropical Livebearer: 1, A. Blake (Basingstoke); 2, M. Strange (Basingstoke); 3, R. Biggs; 4, P. Newman (Uxbridge). Common Goldfish-London Shubunkins: 1 and 2, Mrs. S. Hedges (Bethnall Green); 3, A. Loveday (Hounslow); 4, D. J. Mackay (Kingston). Single Tails and Comets: 1, B. Pratt (Hounslow); 2, Mrs. S. Hedges (Bethnall Green). Twintail Goldfish: 1, 2 and 3, Mr. Rich (Basingstoke); 4, Mrs. D. Lambourne (Roehampton). A.O.V. Coldwater: 1, V. Voysey; 2, Mrs. S. Hedges (Bethnall Green); 3, L. and R. Cook (Basingstoke); 4, D. J. Mackay (Kingston). Breeders, Tropical Egglayer: 1, Mrs. S. Parrish (Hounslow); 2, P. A. Grosvenor (Runnymede); 3, R. C. Peck (Basingstoke); 4, P. Newman (Uxbridge). Breeders, Tropical Livebearers: 1, D. Lyne (High Wycombe); 2, L. G. Little (Bracknell); 3, S. Mason (Roehampton); 4, M. Clark (Runnymede). A.V. Aquatic Plant: 1, 3 and 4, J. Parker (Uxbridge); 2, M. Chapman (Basingstoke). Best Fish in Show: P. Bissoon (Basingstoke). Highest Pointed Society: Basingstoke (30 points). Runner-up: Runnymede, 49 points.

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IN April the **Brentwood A.S.** were extremely unfortunate with the guest speakers. At the first meeting this month the speaker was unable to come along but fortunately the chairman, M. Foley, managed to run a quiz to keep the members entertained. At the second meeting both the speaker and chairman fell victims to the railway strike. The Society were entertained by Gary Brozowski, one of the junior members, who spoke about his methods of breeding Blue Acaras. Also in April there was a visit to Billericay for a quiz contest between Brentwood, Billericay, Southend and Witham and Southend were the winners.

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RESULTS of the **Freelance A.S.** Open Show. Barbs: 1, R. Leslie (High Wycombe); 2 and 4, J. Parker (North Kent); 3, B. Bissoon (Basingstoke). Characins: 1, B. Coyle (Independent); 2, D. Lambourne (Roehampton); 3, P. W. Cottle (North Kent); 4, D. M. Dare (Independent). Cichlids: 1, R. J. Monk (Roehampton); 2, Mr. Kinsey (Independent); 3, L. G. Derrish (Croydon); 4, E. Stainer (Freelance). Dwarf Cichlids: 1, R. Bowes (Independent); 2 and 3, B. Bissoon (Basingstoke); 4, R. Wright (Dulwich). Labyrinths: 1, P. Coyle (Independent); 2, Mrs. Hedges (Bethnal Green); 3, J. W. Hughes (Roehampton); 4, Mrs. Scales (Erith). Egglaying Toothcarps: 1, D. M. Dare (Independent); 2, Mr. and Mrs. Fagan (Clapham); 3, C. Wood (North Kent); 4, P. Brentchley (Dulwich). Tropical Catfish: 1, 2 and 3, G. Greenhalf (Kingston); 4, D. Lambourne (Roehampton). Corydoras and Brochis: 1, R. Bowes (Independent); 2 and 4, R. Wright (Dulwich); 3, P. Moye (Apex). Rasboras: 1 and 2, W. Mason (Roehampton); 3, D. King (Kingston); 4, R. Bowes (Independent). Danio and W.C.M.M.: 1, R. Bowes (Independent); 2, R. Newman (Uxbridge); 3, C. Wood (North Kent); 4, J. Wood (Roehampton). Loaches: 1, B. Bissoon (Basingstoke); 2, B. Bowes (Independent); 3, R. Wright (Dulwich); 4, J. Parker (North Kent). A.O.V. Tropical Egglayer: 1, D. Lamborne (Roehampton); 2, D. B. Sale (Erith); 3, L. Monk (Roehampton); 4, E. Stainer (Freelance). Male Guppy: 1, R. Bowes (Independent); 2, P. W. Cottle (North Kent); 3, Mrs. M. Stamp (Freelance); 4, R. A. Ott (Haverhill). Female Guppy: 1, P. Moye (Apex); 2, D. M. Dare (Independent); 3, R. Greighton (W.A.D.A.S.); 4, R. Bowes (Independent). Swordtails: 1, J. East (Freelance); 2, J. W. Hughes (Roehampton); 3, D. Lyne (High Wycombe); 4, W.

Mason (Rochampton). Platys: 1, E. Stainer (Freelance); 2, B. Bissoon (Basingstoke); 3, T. Hewitt (Catford); 4, P. Brenchley (Dulwich). Mollies: 1, D. King (Kingston); 2, S. Martin (North Kent); 3, P. Moye (Apex); 4, J. East (Freelance). A.O.V. Livebearers: 1, M. Strange (Basingstoke); 2, C. Lamb; 3, Mr. Newman (Uxbridge); 4, Mr. Kinsey (Independent). Single-tailed Goldfish: 1, 3 and 4, Mrs. Hedges (Bethnal Green); 2, D. M. Dare (Independent). Twin-tailed Goldfish: 1, 2 and 3, K. S. Kadwell (G.S.G.B.). A.O.S. Coldwater: 1 and 3, Mrs. Hedges (Bethnal Green); 2, R. Parker (North Kent); 4, W. F. Woodward. Furnished Aquaria: 1, P. G. Scales (Erith); 2, W. F. Woodward (Erith); 3, Mr. Sales (Freelance). Juniors: 1, A. Martin (North Kent); 2 and 3, K. Bissoon (Basingstoke); 4, M. Crowe (Freelance). Breeders (Egglayers): 1, B. Bissoon (Basingstoke); 2, Mr. Strange (Basingstoke); 3, Mrs. O. Leslie (High Wycombe); 4, C. Wood (North Kent). Breeders (Livebearers): 1, W. Mason (Rochampton); 2, M. Strange (Basingstoke); 3, K. Bissoon (Basingstoke); 4, K. Quinell (Dulwich). Best Fish in Show: P. Coyle (Independent). Best Club in Show: Independent.

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THE **Uxbridge and District A.S.** open show attracted four hundred entries. Class winners were: Individual Furnished Aquaria: 1, D. Reilly (Anson); 2, D. Crucefix (Borcham Wood); 3, H. Thompson (Uxbridge); 4, M. Goss (Riverside). Barbs: 1, B. Funnell (Uxbridge); 2 and 3, C. Pike (High Wycombe); 4, Mrs. J. Garrad (Runnymede). Characins: 1 and 2, W. Bradford (Unattached); 3, P. Coyle (Independent); 4, R. Bowes (Independent). Cichlids: 1, J. Batts (Ealing); 2 and 3, B. Sargent (Bletchley); 4, M. Strange (Basingstoke). Apistogramma Nannacara Pelmatochromis: 1, F. H. Vicker (E. London) (A. Borrelli, Best Fish in Show); 2, F. Rumney (Boreham Wood); 3, L. Jordan (Bracknell); 4, D. Finch (Hendon). Labyrinths: 1, P. Coyle (Independent); 2, F. H. Vicker (E. London); 3, M. Chambers (Bletchley); 4, D. Parsons (Uxbridge). Egglaying Toothcarps: 1 and 2, M. Collins (Hounslow); 3, E. Holmes (Banbury); 4, C. Pike (High Wycombe). Tropical Catfish: 1, E. Tagg (Ealing); 2, J. Batts (Ealing); 3, A. Taylor (Anson); 4, M. Goss (Riverside). Corydoras/Brochis: 1, R. Bowes (Independent); 2, K. Pettit (Uxbridge); 3, M. Strange (Basingstoke); 4, R. Cox (High Wycombe). Rasboras: 1, D. Reilly (Anson); 2, R. Maynard (Hendon); 3, R. Bowes (Independent); 4, B. Bisson (Basingstoke). Danios W.C.M.M.: 1, D. Reilly (Anson); 2, R. Newman (Uxbridge); 3, W. Onslow (Slough); 4, R. Bowes (Independent). Loaches: 1, R. Bowes (Independent); 2, D. Armour (Riverside); 3, E. Leavey (Hemel Hempstead); 4, J. Burtles (Mid-Sussex). A.O.S. Tropical Egglayer: 1 and 3, Mrs. J. Garrad (Runnymede); 2, S. Cowell (United); 4, D. Armour (Riverside). Swordtails: 1, D. Crucefix (Borcham Wood); 2, K. I. Tuck (Unattached); 3, R. Newman (Uxbridge); 4, A. Taylor (Anson). Platys: 1, Mrs. D. Cruickshank (Ealing); 2 and 3, A. Woods (Anson); 4, L. Little (Bracknell). Molly: 1, T. Summers (Kingston); 2, B. Funnell (Uxbridge); 3, R. Sellers (Ealing); 4, D. Reilly (Anson). A.O.S. Livebearer: 1, B. Bisson (Basingstoke); 2, J. Batts (Ealing); 3, A. Kinsey (United); 4, R. Newman (Uxbridge). Single-tail Goldfish: 1, R. Dodkins (E. London); 2, Mr. Pinder (Unattached); 3, D. Reilly (Anson); 4, R. Maynard (Hendon). Twin-tail Goldfish: 1 and 4, W. Bradford (Unattached); 2, R. Dodkins (E. London); 3, Miss B. Baker (Unattached). Breeders Tropical Egglayers: 1, R. Cox (High Wycombe); 2, R. Newman (Uxbridge); 3, F. Vicker (E. London); 4, P. Grosvenor (Runnymede). Breeders Tropical Livebearers: 1, J. Butler (Anson); 2, H. Watts (Hendon); 3, R. Sellars (Ealing); 4, S. Cowell (United). Plants: 1, 3 and 4, J. Parker (Uxbridge); 2, H. Greenhalgh (Bournemouth). Special Class: 1, B. Funnell (Uxbridge); 2, M. Goss (Riverside); 3, B. Bisson (Basingstoke); 4, T. Summers (Kingston). The award for best fish over 9 in. long went to P. Grosvenor (Runnymede) with a Fire Eel.

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RECENTLY **Erith and District A.S.** were hosts to the North Kent A.S. at an inter-club Fish Show. The Erith Club are in the lead with 32 points against 28 points. Results: Barbs: 1, P. Cottle (N. Kent); 2, B. Stirk (Erith); 3, M. Steele (Erith); 4, J. Parker (N. Kent). Characins: 1, Mrs. B. Scates (Erith); 2, P. Cottle (N. Kent); 3, M. Steele (Erith); 4, J. Parker (N. Kent). Cichlids: 1 and 4, B. Sylvester (N. Kent); 2, Mrs. B. Scates (Erith); 3, B. Cook (Erith. Anabantids: 1, Mrs. D. Hunter (N. Kent); 2, Mrs. B. Scates (Erith); 3, P. Cottle (N. Kent); 4, R. Cullum (Erith). Corydoras and Brochis: 1, J. Martin (N. Kent) (Fish of the Show); 2, F. Squires (Erith); 3, Mrs. B. Scates (Erith); 4, G. Rolfe (Erith). Catfish: 1 and 3, K. Beadle (Erith); 2, B. Sylvester (N. Kent); 4, Mrs. D. Hunter (N. Kent).

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A TOTAL of 520 entries was received at **Southampton and District A.S.** Open Show. Best Fish of the Show was won by D. Haines of Gosport. The results were: Barbs: 1, A. Blake; 2, T. Jones; 3, M. Forrester; 4, S. Langdon. Hyphessobrycon: 1, P. Brown; 2, H. Armitage; 3, J. Rogers; 4, D. Putt. Characins: 1, N. Fisher; 2, H. Davis; 3, I. Goddard; 4, D. Jones. Cichlids: 1, D. Haines; 2, S. Webster; 3, R. Lane; 4, R. Adams. Apistogramma: 1, R. Weston; 2, A. Barker; 3 and 4, D. Jones. Labyrinths: 1, D. Lambourne; 2, D. King; 3, J. Lane; 4, J. Watts. Killies: 1, D. Jones; 2, M. Cott; 3, J. Mears; 4, H. Armitage. Cats: 1, R. Adams; 2, P. Hayward; 3 and 4, D. Lambourne. Corydoras: 1, P. Carter; 2, K. Ethbridge; 3, Mr. and Mrs. Pumford; 4, P. Lott. Rasbora: 1, T. Jones; 2, D. Haines; 3, D. Harding; 4, A. Blake. Danios: 1 and 3, J. Jefferys; 2, J. Seymour; 4, Mr. and Mrs. Pumford. Loach: 1, R. Ashton; 2, S. Webster; 3, N. Davies; 4, D. Lambourne. A.O.S. (Egglayer): 1, R. Ilsley; 2, Mr. and Mrs. Pumford; 3, D. Jones; 4, J. Mears. A.O.S. Pairs: 1, S. Webster; 2, A. Barker; 3, P. Hayward; 4, J. Rogers. Male Guppy: 1, J. Mears; 2, Mr. and Mrs. Pumford; 3, N. Jennings; 4, T. Jones. Female Guppy: 1, M. Mansbridge; 2, H. Greenhulph; 3, T. Jones; 4, J. Lane. Livebearers (Breeders): 1 and 3, A. Blake; 2, D. Jones; 4, M. Blofield. Egglayer (Breeders): 1, D. Jones; 2, D. Putt; 3, K. Johnson; 4, N. Davies. A.O.V. Livebearers: 1 and 2, A. Blake; 3, D. King; 4, M. Mansbridge. Mollies: 1, P. Brown; 2, M. Lane; 3, H. Bennett; 4, J. Mears. Platies: 1, D. Jones; 2, A. Blake; 3, K. Ethbridge; 4, Mr. and Mrs. Pumford. Swordtails: 1, A. Blake; 2, S. Langdon; 3, P. Lott; 4, R. Hemmings. Common Goldfish: 1, L. Menbenet; 2, J. Jefferys; 3, W. Ryder; 4, D. Harding. London Shubunkins: 1, D. Harding; 2, J. Gilbert. Single Tails: 1, R. Binstead; 2 and 3, R. Adams; 4, R. Ashton. Twintails: 1, R. Righ; 2, V. Hunt; 3, K. Johnson; 4, R. Binstead. Coldwater Breeders: 1, D. Stokes; 2 and 3, J. Gilbert. Rooted Plants: 1, V. Hunt; 2, D. Jackson. Floating Plants: 1, D. Jones; 2, J. Vincent; 3, T. Blanchard; 4, M. Mansbridge. Cuttings: 1 and 3, D. Jones; 2, V. Hunt; 4, T. Blanchard. Club Tropical Aquaria: 1, Portsmouth. Club Coldwater: 1, Portsmouth; 2, Southampton. Individual Tropical: 1, J. Vincent; 2, D. Booker. Individual Coldwater: 1, V. Hunt. Junior: 1, W. Jones.

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THE A.Y.A.S. has accepted the application of a junior member Ian Heptinstall, aged sixteen, to train as a judge. His first appointment was at York open show. **Castleford and District A.S.** are particularly pleased about this appointment as the aim has always been to encourage junior members and in fact their monthly meetings are held at Carleton Community Centre, Pontefract, because the accommodation at Castleford could not cater for juniors. Meetings are on the first Wednesday in every month at 7.30 p.m. Over thirty members attended the April meeting, when Mr. Denis Cohen gave a lecture on Tropical Fish diseases. Results of the table show were as follow: Livebearer (Pairs): 1 and Best in Show, S. and A. Thomas; 2 and 3, K. Walker. Egglayer (Pairs): 1, N. Ibbitson; 2, S. and A. Thomas; 3, E. and S. Clowes. Novices: 1 and 2, R. Charlton.

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THE full details of the **Hull A.S.** committee are as follow: President, T. Collingwood; vice-president, G. Rooms; secretary, S. Turner, 18 Haydock Garth, Wawne Road, Bransholme 822464; assistant secretary: Mrs. B. Batch; show secretary: G. Andrews, 4 Church Mount, Sproatley 811334; assistant show secretary: B. Stabler; chairman, T. Douglas; vice-chairman, A. Douglas; librarian, P. Burrows; treasurer, G. Batch. The correct details for the secretary are as above, not as given in the March issue.

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F.B.A.S. affiliated **Yeovil and District A.S.** entertained four local societies, namely, Taunton, Weston-super-Mare, Dorchester and Weymouth. The event was the annual inter-club quiz between Yeovil, Taunton and Weston-super-Mare, with Mr. Hatton and Mr. Worth from Weymouth acting as quiz master and adjudicator. The quiz resulted in a close finish between Yeovil and Weston-super-Mare. Results were, Yeovil 22 points, Weston-super-Mare 21 points, and Taunton 10 points.

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SOME of the slides he had taken of furnished aquaria were shown by Mr. G. Churchill at the April meeting of the **Bristol A.S.**, and he gave an excellent running commentary to an interested capacity audience. He also answered many questions. At this meeting one of the members who was celebrating a "special" birthday was made a life member. Miss A. H. Morgan joined the Society in 1955 and has been a most loyal and active member for seventeen years. She has given unstintingly of her time and help in the interests of the Society.

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AN extremely busy and interesting evening was enjoyed by sixty-seven people at the April meeting of the **Chelmsford A.S.**

The members appreciated a talk by Mr. Ron Dodkins on "Fish Breeding in General." His two colleagues, Mr. Vickers and Mr. Pearson, judged the inter-club table show which was Cichlids. The results were: 1, R. Kerridge (Harlow); 2, C. French (Chelmsford); 3, Mr. Waterfoed (Harlow). A vote of thanks was given by the chairman of the Harlow Club on behalf of the twelve members who attended the meeting.

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ELECTED officers at the annual general meeting of the **Hastings and St. Leonards A.S.** were: chairman, G. Pryke; vice-chairman, L. Rieder; hon. secretary, P. Martin; hon. assistant secretary, Mrs. C. Pollard; hon. treasurer, G. Chalcraft; hon. show secretary, A. McCormick; publicity officer, D. Hunt; bulletin editor, B. Funnel; and four committee members, Mr. and Mrs. J. Greig, G. Funnel, and P. Harboed.

The annual awards and trophies were then presented to the winners by the vice-chairman, L. Rieder, and are as follow: Member of the Year: A. Reed; Highest points in Table Shows: J. Greig; Home Aquaria Competition: A. L. McCormick; Junior Home Aquaria: A. Reed. Best Plants in Home Aquaria: A. L. McCormick; A.O.V. Table Show: A. Reed; Highest Points in Table Show: G. E. Chalcraft. Home Aquaria: G. R. Pryke. Best Junior Home Aquaria: A. Haymes. A.O.V. Table Show Trophy: R. Stevens. Mr. Barry Fanned has been made an honorary life member of this Society.

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EXCELLENT support given to the Open Show of the **Stockton-on-Tees A.S.** ensured its success. In all there were 326 entries. The results were as follow: Furnished Aquaria: 1, J. Benneton (S.T.A.S.). Furnished Jars: 1, Mr. Robinson (M.P.A.S.); 2, Mrs. Hardman (Cleveland); 3, Mr. Simpson (S.T.A.S.). A.V. Fighter: 1 and 3, Mr. and Mrs. Walker (S.T.A.S.); 2, E. W. and J. C. Robinson (Cleveland); 4, Mr. Bowman (S.T.A.S.). A.O.V. Labyrinth: 1, Mrs. Whiteley (Aireborough); 2, B. Fawcett (S.T.A.S.); 3, E. W. and J. C. Robinson (Cleveland); 4, G. Lee (S.T.A.S.). Cichlid (Large):

1, H. Peacock (S.T.A.S.); 2, Mr. and Mrs. Gates (Doncaster); 3, J. Lockwood (S.T.A.S.); 4, Mr. and Mrs. Milne (Doncaster). Barb: 1, Mr. Attwell (B.A.S.); 2, Mr. Barret (Welbeck); 3 and 4, G. Lee (S.T.A.S.). Characin: 1, Mr. and Mrs. Gates (Castleford); 2, Mr. and Mrs. Pattinson (S.T.A.S.); 3, Mr. Robertson (Mount Pleasant); 4, J. Whiteley (Aireborough). A.V. Platy: 1, Mr. Greenley (H.M.A.S.); 2, Mr. Ward (Doncaster); 3, Mrs. Simpson (Independent); 4, B. Fawcett (S.T.A.S.). Swords: 1, Mr. and Mrs. Welford (Cleveland); 2, Mrs. Batch (Hull); 3, Mr. Atherton (Hartlepool); 4, T. Douglas (Hull). Mollies: 1, Mr. Greenley (H.M.A.S.); 2, Mr. Milsom (Hetton); 3, A. Wilbury; 4, Mr. Ryan (H.A.S.). A.V. Scavenger: 1, Mr. and Mrs. Walker (S.T.A.S.); 2, Mr. Robson (Bridlington); 3, Mr. and Mrs. Pattinson (S.T.A.S.); 4, Mr. and Mrs. Kivingson (Doncaster). Corydoras: 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. Attwell (Billingham); 3, Mr. and Mrs. Kilvington (Doncaster); 4, Mr. Stabler (Hull). Guppies: 1, E. W. and J. C. Robinson (Cleveland); 2, Mr. Thomas (Castleford); 3, Mr. and Mrs. Kilvington (Doncaster); 4, Mr. Andrews (Hull). Cichlid (Small): 1, 3 and 4, L. and R. Hepinstall (Castleford); 2, J. Robertson (M.P.A.S.). Rasbora: 1, Mr. and Mrs. Attwell (Billingham); 2, C. Asquith (Welbeck); 3, Mrs. P. Heppinstall (Castleford); 4, Mr. Pearson (Cleveland). B.L.T.C.: 1, Mr. Hollis (Independent); 2, L. and R. Hepinstall (Castleford); 3, Mr. Johnson (Cleveland); 4, Mr. Hollis (Independent). A.O.V.: 1, Mr. Thomas (Castleford); 2, Mr. Atherton (Hartlepool); 3, Mr. and Mrs. Gates (Castleford); 4, Mrs. P. Heppinstall (Castleford). Breeding Pairs (Egglayers): 1, Mrs. P. Heppinstall (Castleford); 2, Mr. Thomas (Castleford); 3 and 4, Mr. Flett (Barton-on-Humber). Breeding Pairs (Livebearers): 1, Mr. Flett (B.H.A.S.); 2, Mr. and Mrs. Kilvington (Doncaster); 3, Mr. Andrews (Hull); 4, Mr. Bennington (S.T.A.S.). Fish Bred (Egglayers): 1, Mr. and Mrs. Wells (Doncaster); 2, M. Gillespie (Castleford); 3, Mr. and Mrs. Walker (S.T.A.S.); 4, Mr. Collins (S.T.A.S.). Fish Bred (Livebearers): 1, Mr. Whiteley (Aireborough); 2 and 3, T. Douglas (Hull); 4, Mr. Stabler (Hull). A.V. Coldwater: 1, A. and C. Skinner (Welbeck); 2, Mr. Whiteley (Aireborough); 3, Mr. Hickford (S.T.A.S.); 4, Mr. and Mrs. Gates (Castleford). Marine: 1, Mr. Atherton (Hull); 2, B. Steel (Hartlepool); 3 and 4, J. Gamesby (S.T.A.S.). Junior: 1, Mr. Milsom (Hetton); 2, Mr. Pattinson (S.T.A.S.); 3, I. Cooper (H.M.A.S.); 4, A. Thomas (Castleford). Sharks and Loaches: 1, K. Ross (S.T.A.S.); 2, Mr. Douglas (Hull); 3, Mr. Robson (Bridlington); 4, Mr. Robertson (M.P.A.S.). Best Fish in Show: K. Ross (S.T.A.S.). Best Livebearer: Kevin Greenley (H.M.A.S.).

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TABLE Show results at the April meeting of **Keighley A.S.** were as follow: Fish of the Month: 1, Mrs. Taylor; 2, D. Mosley; 3, Mr. Hart. A.O.V.: 1, Mrs. Heap; 2, Mr. Taylor; 3, D. Mosley. Novice A.O.V.: 1 and 2, Mr. Hart; 3, Mr. Carter. Junior A.V.: 1, Master Murray; 2, Master Luscombe. There was also a very enjoyable slide show 'The Portrait of a Guppyot' by Stan Saubels of America. The Society meet at Dean House, Russell Street, Keighley.

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RESULTS of the **Houghton and District A.S.** Open Challenge Show were: Furnished Jars: 1, R. Shanks (Mt. Pleasant); 2, R. Apperley (Houghton); 3, A. Duncanson (Priory). Guppies: 1, R. Shanks (Mt. Pleasant); 2, J. Laidler (Newcastle); 3, A. Sowerby (Newcastle). Mollies: 1, E. Smith (Mt. Pleasant); 2, J. and A. Edgar (Mt. Pleasant); 3, R. Newsorthy (Peterlee). Swordtails: 1 and 3, Mr. and Mrs. Sowerby (Mt. Pleasant); 2, M. Wolstard (Peterlee). Platies: 1, Miss A. Cook (Ashington); 2, A. Duncanson (Priory); 3, J. Robertson (Ashington). Small Barbs: 1, S. Smith (Peterlee); 2, I. Gardner (Houghton); 3, C. A. Enright (Houghton). Large Barbs: 1, L. Drummond (Houghton); 2, M. S. Gray (Mt. Pleasant); 3, A. Howe (Hetton). Small Characins: 1 and 2, A. Richardson (Houghton); 3, J. Hellens (Houghton). Large Characins: 1 and 2, F. Sonley (Int.); 3, B. Pickard (Mt. Pleasant). Small Cichlids: 1, G. Goodchild (Int.); 2, G. Nixon (Peterlee); 3, J. Watson (Hartlepool). Large Cichlids: 1, R. Newsorthy (Peterlee); 2, C. A. Enright (Houghton); 3, I. Gardner (Houghton). A.V. Fighter: 1, R. Newsorthy (Peterlee); 2, Mr. and Mrs. Lowe (Cleveland); 3, B. Cooper (Peterlee). A.O.V. Labyrinth: 1 and 3, B. Cooper (Peterlee); 2, R. Newsorthy (Peterlee). Sharks: 1, Mr. and Mrs. Brown (H.M. Billingham); 2, M. Turnbull (Hetton); 3, R. Shanks (Mt. Pleasant). Rasboras and Danios: 1, J. Walker (Houghton); 2, I. Gardner (Houghton); 3, R. Newsorthy (Peterlee). E.L. Toothcarps: 1, I. Gardner (Houghton); 2, F. Sonley (Int.); 3, R. Jones (Border). Corydoras: 1 and 3, H. Hubbard (Peterlee); 2, Mr. and Mrs. Cook (Ashington). Catfish and Loaches: 1, G. Lowthian (Priory); 2, A. Bebbington (Peterlee); 3, R. Newsorthy (Peterlee). Breeding Pairs (Livebearers): 1, R. Shanks (Mt. Pleasant); 2, H. Hubbard (Peterlee); 3, N. Clay (Peterlee). Breeding Pairs (Egglayers): 1, J. Morton (Houghton); 2, D. Turnbull (Peterlee); 3, M. Turnbull (Hetton). Breeders (Livebearers): 1, J. Laidler (Newcastle); 2 and 3, G. P. Hunt (Ashington). Breeders (Egglayers): 1, 2 and 3, F. Sonley (Ind.). A.O.V. Fish: 1, G. Fraser (Tyneside); 2, L. Drummond (Houghton); 3, G. Burton (Border). Coldwater: 1, C. W. Gregory (Jarrow); 2 and 3, A. Bebbington (Peterlee). Best in Show: G. Fraser (Siamese Tiger Fish). Competitor with the most points for the President Trophy: F. Sonley (Ind.). The Blue Riband Trophy went to Peterlee with 35 points and there were 360 entries. Trophies and prizes presented by Mrs. R. Apperley.

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INCREASED membership has caused **Weymouth and District A.S.** to change their meeting place to The Assembly Hall, The Waverley Arms, Abbotsbury Road, Weymouth. The result of the well-supported Table Show was as follows: Rasboras: 1, M. Medway; 2, R. Peel; 3, M. Squibb. Danios and Minnows: 1, E. Jones; 2, M. Squibb; 3, R. Sutherland. The main speakers of the evening were R. Peel, who spoke on "What to look for on buying fish," and K. Forrester, who gave a talk on "Garden Ponds." Both talks were very well received by the members.

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THE main item at the April meeting of the **Bournemouth A.S. (F.B.A.S.)** was a talk by Terry Gledhill, entitled "What's in a Name." Mr. Gledhill, of the Freshwater Biological Association, East Stoke, explained how fish were given names, what some of them meant, and spoke of some of the complex rules governing their use. The monthly Table Show results were: A.V. Guppy: 1 and 3, Mr. Coombes; 2, Mr. Greenhalgh. A.V. Plant: 1, 2 and 3, Mr. Greenhalgh.

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AT the April meeting of the **Harrogate and District A.S.**, the main programme of the evening was a slide show entitled "Tail of a Fish." This had to be brought in at the very last minute, as the Society were unable to get a lecturer. Table Show results were as follow: Juniors A.O.V.: 1, J. Lee; 2, D. Hutson; 3, S. Gardner. Danios: 1, S. Hall; 2 and 3, Mrs. J. Cook. A.O.V.: 1, J. Lumley; 2, P. Hoernshaw; 3, Mrs. J. Cook. Coldwater A.O.V.: 1 and 2, S. Hall. Advanced A.O.V.: 1, P. Hoernshaw.

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ACTIVITIES of the **Portsmouth A.S.** in March included a most interesting talk and slide show by J. Stillwell on F.B.A.S. Standards and the first Table Show of the year, which was for Livebearers. Mr. Armstrong also gave a talk on Breeding Killifish. Early in April members were given a most enjoyable and instructive talk on Biological Filtration by John Lambeth.

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RESULTS of the **Unique and Leeds Post Office Aquarist Societies** first Invitation Show were as follow: Guppies: 1, G. Kilvington (Doncaster); 2, S. Thomas (Castleford); 3, Mr. Pitchford (Castleford). Swords, Mollies, Platies: 1, R. Hislop (Swillington); 2, C. Ward (Doncaster); 3, Mr. and Mrs. Daines (Doncaster). **Barbs up to Rosy:** 1, Mr. and Mrs. Blizard (Sheffield); 2, Mrs. Heppinstall (Castleford); 3, Mr. and Mrs. Carr (Sheffield). Barbs over Rosy: 1, Mrs. Cohen (Castleford); 2, L. S. Hunter (York); 3, Mr. and Mrs. Stanton (Sheffield). Characins: 1, P. Reynolds (Swillington); 2, Mr. and Mrs. Gates (Castleford); 3, S. Carr (Doncaster). Cichlids (Dwarf): 1, M. Richardson (York); 2, P. Reynolds (Swillington); 3, L. and R. Heptinstall (Castleford). Cichlids A.O.V.: 1, J. A. Whitley (Aireborough); 2, K. Greenwood (Keighley); 3, L. S. Hunter (York). Anabantids A.O.V.: 1, J. A. Whitley (Aireborough); 2, G. Kilvington (Doncaster); 3, Mrs. Cohen (Castleford). Toothcarps: 1, K. Greenwood (Keighley); 2 and 3, J. Mosley (Keighley). A.O.V. Tropical: 1, Mr. and Mrs. Gates (Castleford); 2, K. Greenwood (Keighley); 3, J. Mosley (Keighley). Best Fish in Show: Rosy Barb: Mr. and Mrs. Blizard (Sheffield). Tankard from U.S.A., presented for most number of points: J. A. Whitley (Aireborough).

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MEMBERS of the **Hounslow and District A.S.** heard a very enjoyable and instructive talk given by Dick Mills. The subject was Water Chemistry, various methods of water testing were demonstrated by Mr. Mills and he had many questions to answer during the evening on the different aspects of this very complex subject.

Table Shows continue to be well supported and members taking a keen interest in outside shows. Several card awards and trophies have been picked up by members at open shows in recent weeks. In his capacity of show manager Erick Sheppard has been busy organising the annual open show which is to be held on September 16th and has planned well ahead for this, the major event in the society's year. A large number of entries in all classes are expected as this is one of the largest open shows in the West London area. Ron Allun, P.R.O., will be pleased to welcome any visitor at the Society's meetings and explain the aims and activities which take place throughout the year. Meetings are held at St. Stephen's Church Hall, Whitton Road, Hounslow, on alternate Wednesdays at 8 p.m. Secretary: H. Parish, 18 The Barons, Twickenham.

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OFFICERS elected at **The Federation of Guppy Breeders' Societies'** annual general meeting, were as follow: president, A. Wilkinson (Three Counties); vice-president, H. Gregory (Three Counties); hon. gen. secretary, J. E. Myers (Eastern Counties); hon. treasurer, L. Myers (Eastern Counties); provincial secretary, T. Irry (Three Counties); P.R.O., A. Baker (East Midlands); librarian, J. Carter (East Midlands); hon. show secretary, P. Bayntun (Three Counties).

Anyone interested in breeding guppies and wishing to join the Federation, should get in touch with A. Baker, 201 Sturdee Road, Leicester, who will gladly put them in contact with the section nearest to their house. Meetings and table shows are held monthly.

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IN April members of the **South Western Group British Marine Aquarist Association** had a double treat. First they were entertained by a film and talk given by Brian Fleetwood of Dudley. The films showed different set-ups of Midland members tanks and fish; the photographer, Malcolm Morris, although a beginner in the field of photography, had made a well edited and presentable film. The Group's monthly meeting was held at the home of John Haynes. Among the varied subjects raised was an amusing talk by Colin Paddock on how he wired his tanks. Mr. Doubleday showed a jar of Artemia salina (brine shrimp) which had been fed on Mikrozell; the shrimp were over one-eighth of an inch long, silver was Angu-

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A FIVE-A-SIDE quiz was the highlight of the May meeting of the **Chelmsford A.S.** This was arranged in haste, owing to the speakers being indisposed. Thanks are due to E. Gee for putting the quiz together and acting as quiz master. The Table Show, with full entries in the Guppy class and also Labyrinth class,

winners being: Guppy: 1, D. Bird; 2, P. Meadows; 3, K. Turner. Labyrinth class: 1 and 2, I. Fountain; 3, P. Meadows.

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FIFTY-SEVEN members and guests attended the April meeting of the **Wellingborough and District A.S.** This was the first monthly meeting at the Station Hotel, Wellingborough, and enabled members to enjoy the evening's entertainment in greater comfort than at previous meetings. The main entertainment of the evening was provided by Brian Baker, who gave a very interesting talk and slide show on Angel fish. The results of the monthly Table Show were: Platys: 1 and 3, D. Birchener; 2, R. Lawrence. Anabantids: 1, J. Phillips; 2, R. Lawrence; 3, Mrs. B. Phillips.

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THE April meeting of the **British Marine Aquarists' Association (West Midland Group)** started with a final talk on the outing to Portmadoc with the Wulfrun Sub-Aqua Club. Discussion also took place on the design for the Bingley Hall stand, which will be in the shape of the new cover on the B.M.A.A. Marine News. It will be made 10ft. by 10ft. and will be in the shape of a book. The front cover will have eight saltwater tanks and the fish will be Tropical and Temperate and also Native Marine. The night ended with some advice to a new member on how to set up a new tank.

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CHANGES OF VENUE

The **Trowbridge and District A. & P.S.** wish to announce their new meeting place is now at the Bradford-on-Avon Rowing Club, Bradford-on-Avon, Wilts. Meetings continue to be held on the second Tuesday of each month, commencing at 7.45 p.m. All enquiries to the secretary, Mrs. S. Scudamore, 45 Trowbridge Road, Bradford-on-Avon, Wilts.

The **Cambridge and District A.S.** has now changed its headquarters to the "Hopbine" Public House, Fair Street, Cambridge. The meetings are now held on the first Wednesday in every month. The secretary is F. J. Farrington, 10 St. Matthews Street, Cambridge, CB1 2LT.

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SECRETARY CHANGES

Tonbridge and District A.S.: K. Shoebridge, 17 London Road, Southborough, Kent.

Scunthorpe Museum Society Aquarist Group: D. Caldow, 5 St. Martins Road, Scawby, nr. Scunthorpe, Lincs.

Independent A.S.: T. Laughlan, 22 Rodney House, Cynthia Street, London, N.1.

Portsmouth A.S.: Mrs. T. Harvey, 158 London Road, Waterlooville, Hants.

Horsforth A.S.: P. Smith, 10 Wynford Rise, Leeds, 16, Yorkshire. Tel: Leeds 675712.

Tadcaster and District A.S.: R. M. Faircliffe, Stutton Lodge, Stutton Grove, Tadcaster, Yorks.

Gosport and District A.S.: P. Hayward, 226 Locks Road, Park Gate, Southampton.

South Leeds A.S.: T. Holdsworth, 30 Abbott View, Armley, Leeds, LS12 2JN. Tel: Leeds 635636. All show schedules to the secretary.

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CHANGE OF SHOW DATE

South Shields A.S.: Owing to the change of hall and other social events in the area, the new show date is the 23rd July. New show secretary, J. A. Cutting, 53 Dunelm Drive, West Boldon, Durham. Tel: Boldon 4259.

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AQUARIST CALENDAR

1972

3rd and 4th June: Lanarkshire A.S. Annual Show in Airdrie Community Centre, Airdrie, Scotland. Schedules can be obtained from A. Aitken, 36 Woodlands Drive, Drumpellier, Coatbridge.

4th June: Half Moon A.S. First Open Show to be held in Haverton Hill Pensioners Club, Haverton Hill, Billingham, Teesside. Schedules available, show secretary, Gordon Brown, 47 Gilside Road, Billingham, Teesside.

4th June: Lincoln & District A.S. fourth annual tropical fish show. Further details and programmes can be obtained from the show secretary, H. Kuhn, 44 Scorer Street, Lincoln.

4th June: Accrington and District A.S. Annual Open Show at St. John's Ambulance Drill Hall, Bull Bridge, Accrington. Show schedule and information from show secretary, S. Walsh, 133 Lammack Road, Blackburn.

4th June: Loughborough and District A.S. Annual Open Show will be held at the Loughborough Sports Centre, Granby Street, Loughborough. Show secretary, T. H. Parry, 447 New Ashby Road, Loughborough, Leics.

4th June: Bournemouth A.S. Annual Open Show to be held at Kinson Community Centre, Pelhams Park, Kinson, Bournemouth. Entry forms and schedules available after 1st May from Show Secretary, J. V. Jeffery, 30 Braemar Avenue, Southbourne, Bournemouth, BH6 4JF. No entries will be accepted at the door.

4th June: GKN Pond and A.S. Open Show at GKN Canteen, Salisbury Street, Darlaston, Staffs. Further show details available from Ken Rowley, hon. show secretary, 156 Wolverhampton Street, Darlaston, Staffs. Directions can be obtained from A. Wright, 94 Bloxwich Road North, Short Heath, Willenhall, Staffs.

4th June: South Derbyshire and District A.S. Members Annual Show, at the Good Companions Youth Club, Church Gresley Common, Nr. Swadlincote. Show secretary, R. Brabbins, 42 Westmead Road, Barton, Nr. Burton-on-Trent.

4th June: Priory A.S. Open Show, Mariners Lane Boys' Club, Tynemouth. Benching 12 noon-2 p.m. Show schedules from secretary, Mrs. E. McCrystal, 67 South Terrace, Wallsend, Northumberland.

10th June: Llantwit Major A.S. Annual Show. The address of the show secretary is A. Ibbertson, 84 St. Mary's Avenue, Barry, Glam.

11th June: Thorne A.S. Open Show is to be held in the Thorne Grammar School. All information to H. C. Jewison, 94 Hawthorne Road, Thorne, nr. Doncaster.

11th June: Bishops Cleeve A.S. Third Open Show at the Tythe Barn, Bishops Cleeve, on the A435, Cheltenham to Evesham Road. Show schedules will be obtainable from the show secretary, Mrs. M. Scrivin, 27 Warden Hill Road, Cheltenham, Glos.

11th June: High Wycombe A.S. Annual Open Show at Lane End Hall, Lane End, High Wycombe.

11th June: Bishop Auckland A.S. Fourth Annual Open Show in Y.M.C.A. Hall, Woodhouse Close Estate, Bishop Auckland. Schedules will be available from Show Secretary, B. Minto, 111 Craddock Street, Spennymoor, Co. Durham.

11th June: Hoylake A.S. Third Open Show at Macdona Hall, Salisbury Avenue, West Kirby, Wirral, Cheshire. Show Secretary, E. Rowlands, 3 Haig Avenue, Moreton, Wirral, Cheshire.

17th June: Riverside Open Show at St. Saviours Church Hall, Gobbold Road, off Askew Road, London, W.12. Show schedules available at later date from M. Goss, 3 Boulters Court, Plantation Road, Amersham, Bucks.

18th June: Warwick County Fire Brigade A.S. Open Show at the Town Hall, High Street, Coleshill. Details will be available after 1st April from S. Tromans, 27 Moxhull Road, Kingshurst, Birmingham, tel: 021-789 7543.

18th June: Glossop Open Show, The Education Centre, Talbot Street, Glossop. Details from Mrs. M. Brearley, 9 Waterside, Hadfield, Hyde, Cheshire.

18th June: Swillington's Seventh Open Show, John Smeatons School, off Barwick Road, Leeds, 14.

18th June: Billingham A.S. Second Annual Open Show to be held at the Billingham Community Centre. For further details please contact Show Secretary: J. Attwell, 34 Hatfield Place, Peterlee, Co. Durham. Tel: P'lee 4185.

22nd, 23rd and 24th June: Bristol Tropical Fish Club Annual Open Show to be held at the Congregational Church Hall, Newton Street (off Stapleton Road), Bristol 5. Details and schedules from show secretary, R. Lawrence, 26, Stonebridge Park, Eastville, Bristol, BS5 6RR.

24th June: Anson A.S. Open Show at St. Andrews Hall, Willesden High Road, Willesden, London, N.W.10. Details from R. Bullock, 6 Walton Close, London, N.W.2. Tel: 01-452 8505.

24th June: Mid-Herts. A.S. Open Show, held in conjunction with Cell Barnes Fete at Cell Barnes Hospital, St. Albans, Herts. Details from Show manager, Mr. C. S. A. Withers, 15 Charmouth Road, St. Albans, Herts.

24th-25th June: Littlehampton and Bognor A.S. Tropical and Coldwater Exhibition is open to the public. There will also be an inter-club show. Exhibition Secretary is R. Mingay, "Larshiel," Worthing Road, Littlehampton, Sussex.

25th June: Alfreton and District A.S. Annual Open Show to be held at the Adult Education Centre, Alfreton Hall, Alfreton. Details from the show secretary, B. Hickling, 15 Meadow Close, Eastwood, NG16 3DQ.

25th June: Gosport and District A.S. Open Show will be held at the Crofton Community Association, Stubbington.

25th June: Mount Pleasant A.S. Second Open Show at T.A. Drill Hall, Elm Grove Terrace, Gateshead. Show Schedules from W. H. Jackson, 81 Stanerway, Gateshead, Co. Durham, NE10 8LS.

2nd July: Lytham A.S. Open Show at Lowther Gardens Pavilion, Lytham, Lancs. All enquiries to show secretary, O. Wright, 13 Cambridge Road, Anadell, Lancs.

2nd July: Castleford and District A.S. Annual Open Show at Carleton Community Centre, Carleton, Pontefract, Yorks. Details from secretary B. Stevens, 72 Falcon Drive, Love Lane, Castleford, Yorks, or phone Mrs. Gates, Pontefract 3213.

2nd July: Exeter and District A.S. first Open Show, Kennford Village Hall, Exeter. Benching by 12 noon. Show schedules and entry forms available from the secretary, W. F. Bye, 14 Beaworthy Close, Exeter, EX2 9LB. Tel: Ilxeter 78936.

2nd July: North Warwickshire A.S. Open Show, The Settlement, Kingstanding Road, Kingstanding, Birmingham. Details from T. Stow, 108 South Road, Birdington, Birmingham, 23.

2nd July: Salisbury and District A.S. Open Show, City Hall, Salisbury. Show Secretary, C. Lennox, 15 Pauls Dene Cres., Salisbury.

8th July: Basingstoke A.S. Open Show. Carnival Hall, Basingstoke. Schedules from M. Strange, 10 Loddon Court, Neville Close, Basingstoke.

8th-9th July: Romford & Becontree A.S., Dagenham Town Show, Central Park, Dagenham, Essex. Schedules as soon as available, Show secretary, D. G. Kent, 74 Lynwood Drive, Collier Row, Romford, RM5 2QT. Tel: 70-67804.

9th July: Loyne A.S. Show, Lancaster University, Lancaster.

9th July: Grantham and District A.S. Third Open Show. Please note new venue this year, Walton Girls Secondary Modern School, Kitty Briggs Lane, Grantham. All on ground floor. Details and schedules from the Secretary, G. Platts, 85 Grantley Street, Grantham, Lincs.

15th July: Weston-super-Mare and District T.F.S. Third Open Show at St. Johns Hall, Oxford Street, Weston-super-Mare. Show Secretary is J. Clarke, St. Judes, North Street, Cheddar, Somerset.

15th and 16th July: Aquarist and Pondkeeper Fishkeeping Exhibition, Alexandra Palace, London, N. Show Secretary, G. Greenhalf, 39 Garth Close, Morden, Surrey.

16th July: Sandgrounders A.S. second Open Show, St. Andrews Hall, Part Street, Southport. Benching 12 - 2. FNAS and AMDAS Show. Details from P. F. Ground, 30 Norbury Close, Southport. Tel: 84398.

22nd July: Port Talbot and District A.S. Open Show at the Y.M.C.A., Port Talbot, under F.B.A.S. rules. Show secretary, M. John, 36 Golden Avenue, Sandfields, Port Talbot.

22nd July: Teesside Show at Stewart Park, Middlesbrough.

23rd July: South Shields A.S. Details from J. A. Cutting, 53 Dunelm Drive, West Boldon, Durham. Tel: Boldon 4259.

5th-12th August: Annual Open Show of Portsmouth A.S. at the Portsmouth Community Centre, Twyford Avenue, Portsmouth. Show schedules from J. Stillwell, 34 Salcombe Avenue, Copnor, Portsmouth, Hants.

6th August: Tonbridge and District A.S. First Open Show. Show schedules from I. T. Mathieson, 33 Nortons Way, Five Oak Green, Tonbridge, Kent.

11th-13th August: Cymric National A.A. Three-Day Open Show at the T.A. Drill Hall, Cardiff. Benching on 9th and 10th August. Further details from B. Gorwill, 21 Gabalfa Road, Llandaff, North Cardiff.

12th August: Bracknell Aquarist Society 11th Open Show, Priestwood Community Centre, Priestwood Court Road, Bracknell, Berks. Show secretary: L. Jordan, 62 Fernbank Place, Ascot, Berks. Tel: Winkfield Row 3400.

12th August: Harlow A.S. Annual Open Show. Show secretary, P. Murdock, 21 Brook Lane Field, Harlow, Essex.

13th August: Valley A.S. Open Show, Civic Hall, Ramsbottom, via Bury, Lancs. Details from show secretary, M. D. Berry, 8 Leyland Street, Blackford Bridge, Bury, Lancs. Benching 12 noon to 2.15 p.m.

13th August: North Staffs. A.S. Annual Open Show to be held at the Victoria Hall, Hanley. M.A.A.S. Rules. Schedules available from Show Secretary, John S. Booth, 536 Beverley Drive, Bentilee, Stoke-on-Trent.

13th August: Bedworth A. and P.S. Open Show, Nicholas Chamberlaine School, Bulkington Road, Bedworth. Schedules from T. Pagett, 74 Lister Street, Attleborough, Nuneaton.

16th-19th August: Midland Aquatic Open Show. Show secretary, J. E. Witts, 120 Franklin Road, Kings Norton, Birmingham, 30.

19th August: Kingston and District A.S. and South Park A.S.S. Second Combined Open Show at new venue, Ham Hall, Ham Close, Ham, Richmond, Surrey. 50 classes judged to F.B.A.S. and G.S.G.B. Schedules apply to G. Greenhalf, Show Secretary, 39 Garth Close, Morden, Surrey. Tel: 01-337 4042.

20th August: Oldham and District (A.S. Annual Open Show, at Werneth Park, Oldham. All enquiries to show secretary, R. Birchwood, 20 Inverness Avenue, Blackley, Manchester, 9.

20th August: Stroud and District A.S. Open Show, Mid-Gloucestershire Technical College, Stratford Road, Stroud. Venue, same as previous year, write to show secretary, M. Jones, P.R.O., C. Whittaker, 14 Erin Park, Lightpill, Stroud, Glos.

20th August: Salford A.S. Open Show at the Broughton Liberal Club in Great Clowes St., Lr. Broughton next door to the Great Clowes St. warehouse. Schedules from J. Lamas, 37 Beech Street, Lr. Broughton, Salford, 7.

20th August: Plymouth A.S. Open Show at Plymouth Y.M.C.A.

20th August: Plymouth District Aquarist and Pondkeepers Society Open Show at Y.M.C.A., Plymouth.

2nd September: Yate & D.A.S. Open Show at Newmans Canteen, Yate, Nr. Chipping Sodbury, Glos. Schedules from show secretary, M. Emery, 134 Sundridge Park, Yate, Bristol. Tel: Chipping Sodbury 313645.

2nd September: Bethnal Green A.S. Open Show at Bethnal Green Institute, 229 Bethnal Green Rd., E.2. Show Secretary, D. Bundy, 30 Eversham House, Old Ford Rd., Bethnal Green, E.2. F.B.A.S. Championship Trophy Class O—Male Guppy.

3rd September: Whitley Bay A.S. Open Show to be held in the Empress Ballroom, Whitley Bay. Show schedules will be available at a later date.

3rd September: Wellingborough and District A.S. Annual Show at the Drill Hall, Wellingborough. Show secretary, D. Bitchenor, 1a George Street, Wellingborough.

10th September: Peterlee and District A.S. Annual Open Show at Eden Hill Community Centre, Peterlee. Schedules will be obtainable from A. D. Bebbington, 40 Marlborough Road, Hastings Hill, Sunderland.

10th September: Weymouth & District A.S. Third Open Show, Small Sidney Hall. Details E. R. Jones, 11 Ludlow Road, Weymouth.

10th September: Brighton and Southern A.S. Open Show. Further details later.

10th September: Barnsley T.F.S. Open Show at the Mapplewell & Staincross Village Hall, Mapplewell, Barnsley.

10th September: Nuneaton A.S. Open Show, Friary Youth Centre, Abbey Street, Nuneaton. Details from show secretary, Mrs. P. Deakin, 1 Greenhill Drive, Barwell, Leicester. Tel: Earl Shilton 42788.

15th-16th September: Bristol A.S. Open Show, St. Michael's Parish Hall, Bishopston, Bristol. Details from H. C. B. Thomas, 2, Grove Park, Bristol, BS6 PP.

16th September: Havant and District A.S. Second Annual Open Show will take place at the Deverell Hall, Purbrook. The show secretary is V. B. Hunt, "Caeglas," 120 London Road, Widley, nr. Portsmouth, Hants.

16th September: Hounslow and District A.S. Open Show at Hounslow Youth Centre, Cecil Road, Hounslow.

17th September: Stone A.S. Annual Show. Walton Community Centre, Stone. Show secretary, K. W. Evans, 42 Friars Avenue, Walton, Stone, Staffs.

17th September: Cleveland A.S. Annual Open Show, details later.

17th September: West Cumberland Aquarists Club Second Open Show to be held in the Civic Hall, Whitehaven, Cumberland. Show details will be supplied later by the Club Secretary, J. Parker, 2 Southey Avenue, Oregill, Egremont, Cumberland.

23rd September: Rhondda Open Show. The hall will be decided at a later date. For further information please contact M. Williams, 122 Top Trebanog, Trebanog, Rhondda, Show Secretary.

24th September: Northampton and District A.S. Open Show. Details later.

24th September: Oaram Open Table Show, Recreation Hall, Refuse Street, Shaw, Oldham.

24th September: Torbay A.S. Annual Open Show will be held at The Torquay Town Hall. Full details will be advised later.

24th September: Hucknall and Bulwell A.S. are holding their Annual Open Show at Bulwell Youth Club, Coventry Road, Bulwell. Schedules may be obtained from G. P. Swanwick, 74 Westleigh Road, Strelley, Nottingham.

1st October: Baling and District A.S. Open Show at the usual meeting place: Northfields Community Centre, Northcroft Road, W.13.

1st October: Hetton County A.S. Annual Open Show at Stephenson House, Richard Street, Hetton-le-Hole, Co. Durham. Benching 12 noon to 2 p.m. Further details available from Secretary, Mrs. C. Wilkinson, 4 The Meadows, West Rainton, Houghton-le-Spring, Co. Durham.

1st October: Chesterfield and District A.S. The First Open Show will be held at Clay Cross Social Centre, Chesterfield Road, Clay Cross, Near Chesterfield, Derbyshire, Exit 29 off M1, 4 miles to Clay Cross. Details from Show Secretary, D. Stone, 237 North Wingfield Road, Grassmoor, Near Chesterfield.

7th October: East London Aquarists and Pondkeepers' Association Open Breeding Show, Ripple Road School, Barking, Essex. Schedules from show secretary, J. Vickers, 13 Irons Way, Romford, Essex.

8th October: Buxton and District A.S. Second Open Show, The Pavilion Gardens, Buxton. Full details later.

14th-15th October: British Aquarists Festival, Belle Vue Zoological Gardens, Manchester.

22nd October: Sherwood A.S. Details later. Show secretary, J. Igoe, 25 Marples Ave., Mansfield-Woodhouse, Notts.

29th October: Doncaster and District A.S. Third Open Show.

12th November: Creswell and District first Annual Open Show to be held at Worksop Sports Centre, Valley Road, Worksop. Schedules available from show secretary, Mrs. H. Blades, 13 Westminster Close, Worksop, Notts. Tel: Worksop 6563.

12th November: Hartlepool A.S. Open Show in the Longscar Hall, Seaton Carew. Schedules and details available from show secretary, J. D. Watson, 42 Sydenham Road, Hartlepools, Co. Durham, TS25 1PZ.