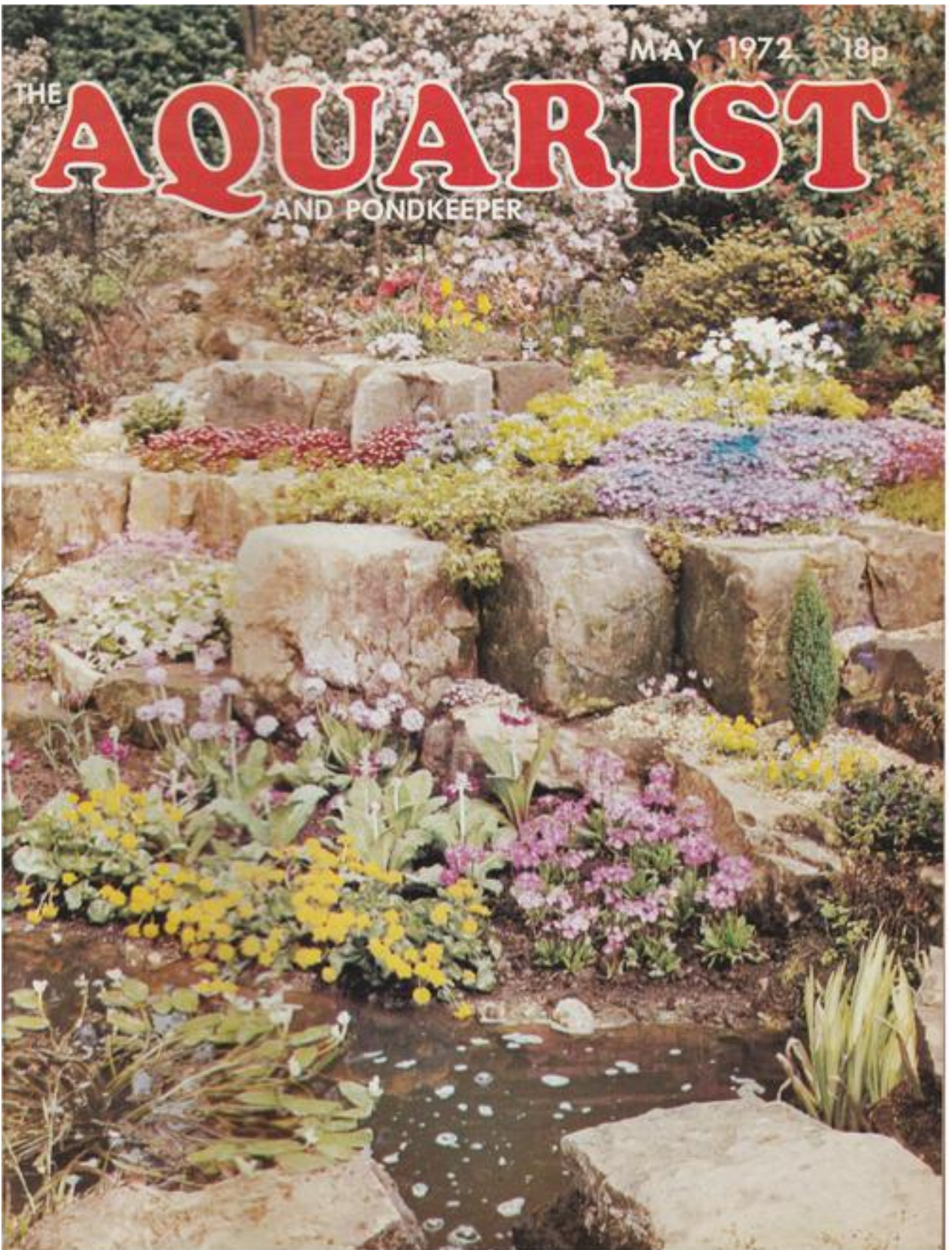


MAY 1972 18p

# THE AQUARIST

AND PONDKEEPER







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#### Our Cover

A colourful example of a Water  
Garden and Rock Garden  
combination.

May, 1972

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The Editor accepts no responsibility for views expressed by contributors.

# WHAT IS YOUR OPINION?

by B. Whiteside

*Photographs by the Author*



OUR FIRST LETTER this month comes from 13-year-old Peter McCartney, and he lives at 33 Warrington Road, Ryehill West, Newcastle-upon-Tyne, 4NE4 6RP. Peter writes: "I find *The Aquarist* a very good buy for the price, and my favourite feature is W.Y.O.? In my opinion artificial plants are a waste of time and money and the scene they create is unnatural. They serve no function towards the benefit of the 'balanced' aquarium and therefore are entirely ornamental. The satisfaction of watching assorted live plants flourish and propagate is much more attractive than a bunch of 'Nature's nightmares' bunged in the compost." Master McCartney ends by asking for readers' experiences of moving pond-plants into an aquarium.

Mr. K. R. Grayling, of 8 Goolton Road, Clapton, London, E5 8HA, considers that artificial plants are a contradiction of what an aquarium essentially is: a container of living things, and he thinks that the logical conclusion should be plastic fishes or colourful photographs. Mr. Grayling disagrees with a previous writer's views on "natural" aquaria, and he points out that in nature fishes swim in a river—the water of which is continually being replaced, the swirl of which carries away all dirt, and the movement of which aerates the water. For these reasons he does not feel that filtration is out of place in an aquarium, although he admits that lake fishes might be quite happy in an unfiltered tank. To deal with a leak at the front glass of a fully planted and stocked aquarium he would try to push the glass from the inside in the hope of forming a seal, or he would attempt to reseal the tank using a silicone sealant on the outside. If the tank could be emptied, he would reglaze the front pane of the tank. Commenting on another article in the March edition, in which a young aquarist described how he lost a brood of fighter fry by feeding *Liquifry*, Mr. Grayling points out that such fry do not need feeding until they are free-swimming, since they derive their nourishment from their yolk-sacs until this stage. He informs us that these instructions, if followed, will not lead to the bursting of bubbles in bubble nests.

I've received several more copies of *Aquascope*, the magazine of Belle Vue Aquarium Society, and have found them to be, as usual, most interesting. They were sent by the society's chairman, Mr. S. A. Heap, from 108 Aldwyn Crescent, Hazel Grove, nr. Stockport, Cheshire, SK7 5HX, who writes: "Recently you

published one of my letters in W.Y.O.? I thought that you would like to know that as a result I have made a number of new friends, learned a few new tricks, and received articles for our magazine. I have also been able to help other aquarists who have 'phoned me. All this is a result of one letter published by you, and shows how great an impact a column like yours has on our hobby. You seem to have a sort of 'postal society'." Mr. Heap goes on to say that he thinks Mr. Bartlett-Love's idea (February issue) is good, but he warns him that many club magazines could be dull and boring for non-members; however, he says that friends are worth a lot, and these would more than compensate. His club has an annual subscription of 50p for the magazine *Aquascope*, but postage would have to be charged on large numbers. This would bring the cost to 86p. Mr. Heap considers that a better idea would be a "swap" system for club magazines, and he will make a start if other club members contact him. "Swapped" magazines could be passed round each club member interested, but the result might be that one member of a given club would hold on to a magazine for too long, or that the same articles would appear in many magazines. What do club members think? If interested, contact Mr. Heap. (Let me know how things evolve, Mr. Heap.)

Mr. R. Reynolds, whose home is at 41 Trelawney, Madron, Penzance, Cornwall, has a 5 ft. x 2 ft. x 2 ft. tank which is quite some size for an aquarium, and houses a varied collection of very large fishes including gouramies, eels, angels, cat fish, etc. Some of these fishes are up to 18 in. in length. The tank is densely planted with *Cryptocorynes*, Amazon swords, etc., and the large fishes are hand-fed with large Tetramin flakes, garden worms and *Tubifex*. The tank is lit by a 40-watt warm white strip light, and red and yellow bulbs, and the plants flourish. Mr. Reynolds asks if other readers have had any interesting experiences with keeping unusual community fishes.

Photograph 1 shows a fish which I recently kept for the first time—not very successfully I must admit. It's a *Monodactylus argenteus*, sometimes called the Malayan angel, and was given to me in exchange for several swordtails. The fish resembles the ordinary angel in shape, has tiny silvery scales which produce a shimmering effect, has two black vertical bars—one



passing through the eye, and orange-gold dorsal and ventral fins. The fish is a very fast mover in the aquarium and, being rather shy, can spend long periods hiding. The fish which I was given had been kept in fresh water, and I also kept it in a freshwater tank, but it is a species which inhabits salt or brackish water in nature. My own specimen survived for about three weeks, but then developed a disease which did not respond to treatment; it died two days later. What have been your experiences with the "mono," especially when kept in fresh water? I would be interested to know.

In the February edition Mr. E. Bartlett-Love suggested that fish which are shown are short-lived. This suggestion brought a reply from Mr. J. G. Robertson, whose home is at 3 Riding Barns Way,

in its tank. The fish did not eat and became more and more "hollow-bellied." Thinking that the tank's water might be the cause, although there was no evidence to this effect, Mr. Wielogorski removed the Oscar, and completely stripped down the tank, washing the gravel under almost boiling water. The tank itself was scrubbed clean, and set up again using warm water. About two drops of methylene blue were added, tinging the water a very light blue, and the Oscar replaced. In two days there was a visible improvement and in three days the fish had eaten two live guppies. The fish is now back to normal and its owner is very pleased at the success of his treatment. Mr. Wielogorski asks if any other readers have had any such trouble with Oscars. (Yes, indeed; I have. My own Oscar has had cloudy eyes several times and these



Sunnyside, Newcastle-upon-Tyne, and he states that he has been an aquarist for over a dozen years, and a local judge. It is his opinion that if fish are shown in adequate sized containers, transported in properly insulated boxes, and not shown more than once every two or three months, no losses will be sustained. While he is proud of his living-room tank, and gains great rewards from breeding various fishes, without doubt the "high spot" of his hobby is the open shows. To be able to compare his fishes with those of other aquarists, and sometimes take home a trophy, but above all to mix with people with similar interests and hear their problems and triumphs, is "just great" for Mr. Robertson.

Mr. T. Wielogorski sends his letter from 44 Wilton Crescent, Wimbledon, London, SW19 3QS, and he has a single Oscar which is 4½ in. in length. A few weeks ago the fish's eyes clouded over completely—so much so that it could not see any of the food placed

have been cleared using Liquisil; however, in the past two weeks I have noticed that my Oscar has been getting thinner and thinner, although its eyes are clear, and there are no external signs of disease: in fact, the fish is now so thin that, each morning when I first look at it, I expect it to be dead. It is often not interested in food; at other times it takes in great mouthfuls of food and either spits it out or passes it out through its gills. If I have time I'll try out the water change suggestion. A photograph of my Oscar appeared in the February issue, but he has not grown very much in the month since then.)

Mr. Wielogorski thinks that a lot of nonsense is talked about keeping tank temperatures steady—except in the case of very delicate fish. His Oscar's tank only has the heater turned on during the day; at night the whole tank is switched off at the plug and the temperature drops dramatically; he sleeps with the window open! His fish thrives on this treatment, as do



his other fishes, and he points out that in natural waters there must be a large temperature drop at night: thus he is only reproducing natural conditions. He hopes to set up a marine aquarium in a few months time, and asks if readers have ever used an ultra-violet filtration unit. He also asks about the effects of U.V. radiation on live corals.

One of the most interesting of aquarium plants—and one of the most expensive—is the lace plant, *Aponogeton fenestralis*; thus, when I managed to get one to flower in one of my school tanks, I was quite excited. The plant produced two flower heads, one of which is shown in photograph 2. If you look carefully at the photograph you will see that the upper flowers have not yet opened, and that the lower flowers have been fertilized and have developed into the plant's fruit—a dark-coloured "blob" with a pointed end.



A few days after the photograph was taken, the lower fruits burst open and released their seeds. These floated on the water surface for some time and then sank and were lost in the gravel base of the aquarium. I kept a daily watch on the gravel and now notice that about a dozen seeds have germinated, producing tiny little lace plants. I'm keeping a close watch on them and hope that I'll be able to raise some of them to adulthood. If they continue to grow, I'll photograph some of them for you to see in a future feature.

(I'll break off here to remind you to print your name and address on letters; add the date too, please. I've recently received a couple of letters requesting information but am unable to reply because no address was given. Was one of them yours? Do please include a S.A.E. if you require a reply—and don't make your letter too long.)

Going back to the subject of Aponogetons brings me

to a letter from Mr. T. Barr, and he lives at 40 Oxford Close, Mitcham, Surrey. His 36 in. community aquarium is almost overgrown with *Cryptocoryne affinis*, but it also contains four *Aponogeton* plants: two *A. crispus* and two *A. hybrids*. The former two plants grow very well and flower fairly regularly, but the hybrids are very slow growing and have never flowered. The majority of plants have grown prolifically since Mr. Barr abandoned "Gro-Lux" lighting and installed warm white fluorescent tubes. A layer of duckweed on the water surface is the best *algae* controller he has ever experienced. Mr. Barr likes showing his fishes and considers that showing fishes opens up a new element of interest in the hobby; he thinks that all keen aquarists should join their local society and take part in shows and other club activities. He would like to see some good book reviews in *The Aquarist* and says

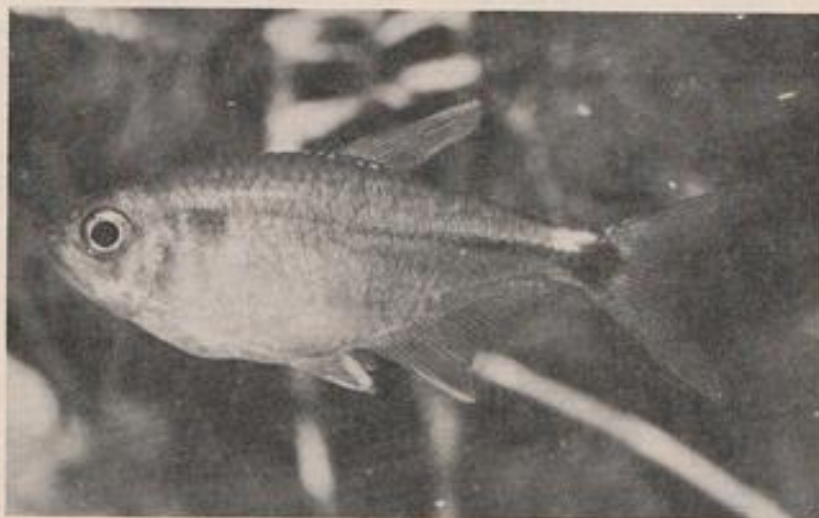
that there is a "spate of American literature on the market at present, most of which is prettily illustrated rubbish!" (I presume Mr. Barr means reviews of good books. Some publishers are not very keen to supply new books for reviewers—possibly because some of such new books may not be very "good" books and, hence, would not get very good reviews. The alternative is for the reviewer to purchase the book himself and, as you know, books are now quite expensive items. Unfortunately, the fee which one would receive from the average magazine for a published book review would only cover the cost of a small, cheap book; thus reviews of more expensive books are restricted to the rich, to those who are supplied with free copies for review purposes, or to those who actually buy a book because they want it and write a review of it for the interest of other readers.) Mr. Barr ends his letter by asking about my injured left



hand. (It's now well over two years since I injured my hand while re-glazing an old aquarium, and it has now reached the stage where further improvement is unlikely. I can use my left hand fairly well, I have some remnants of the sense of touch although these are greatly distorted, sensations of hotness and coldness are greatly exaggerated, and the circulation in the affected part of the hand is rather poor—resulting in it feeling (and being) very cold for long periods each day; however, I still live in the hope that the circulation may yet improve, despite what several surgeons have said. Needless to say, I still have a decided fear of broken glass!!!)

Mr. D. Tetley's home is at 54 Harris Street, off Leeds Road, Bradford, Yorkshire, and he has a copy of "Waterlife," dated September, 1958. The prices of fishes advertised included: white clouds, zebras,

he was twelve. Regarding the planting of an aquarium with a single species of plant, Mr. Aslett considers that this practice is ideal for smaller tanks, where a collection of different plants causes a cluttered appearance; but for tanks of over 24 in. in length he considers that at least six different plant species are needed to achieve an attractive visual effect. He quotes prices from the June, 1954, edition of *The Aquarist*: tiger barbs 2s. 6d.; mollies, angels, red swords, cherry barbs and harlequins 3s. 0d. Vallis., Sag., *Ludwigia* and *Elodea densa* cost 6d. each. Coldwater fish in 1954, when compared with today's prices, were very cheap: veiltail goldfish, calico and scaled—2s. 6d., 5s. 0d. and 7s. 6d. each; orandas, lionheads and bubble-eyes—5s. 0d. and 10s. 0d.; Bristol shubunkins, "show strain," 2s. 6d. and 3s. 6d. All of these fishes were English bred. Mr. Aslett is, primarily, a coldwater



harlequins, cherry barbs, dwarf gouramies and thick-lipped gouramies at 2s. 6d. and 3s. 0d. (12/p and 15p). He says that some of the photographs of tanks are old fashioned by today's standards.

Photograph 3 shows one of a pair of beacon fish which I was recently given. Unfortunately, since the photograph was taken, the fish has had parts of its tail bitten off. It shares its tank with golden and tiger barbs, Australian rainbows and guppies. I suspect that the "biter" is one of the tiger barbs, although I have never caught it in the act. Would you agree that the tiger is the most probable suspect, and have you had any experiences with the breeding of beacons?

"Congratulations!—not only for the excellent series, but also for finally arousing me into offering my opinions," writes Mr. P. C. Aslett, from 26 Millais Road, Itchen, Southampton, Hants. Mr. Aslett is now thirty years old and has been keeping fish since

enthusiast, and he experiences great difficulty in obtaining decent stock at any price; he also says that he hasn't seen a *real* veiltail or oranda, as specified by the G.S.G.B., for years.

To cultivate *Hygrophila* Mr. Aslett recommends the following conditions: good lighting, fair depth of water, temperature 70°—74°F, and regular pruning to reduce legginess. In answer to my question about what new feature readers would like to see included in *The Aquarist*, Mr. Aslett would like to see a revival of a former feature: "Aquarist at Home," and the introduction of a new feature called: "The Decorative Aquarium," dealing exclusively with decorative, furnished, home aquaria, in all their facets. The series would contain articles by regular contributors and by readers. He would also like a short series from regular contributors such as Mr. Boarder, Mr. Hems, and myself, etc., giving a personal "life-history" as an

aquarist. Mr. Aslett ends by saying: "Many thanks for your excellent magazine!" (I must say I like Mr. Aslett's suggestions for new features very much. What do you think of them? Let me know if they would interest you and I'll get our Editor's views on the matter.)

I can't remember when I last had a letter from a young lady, but Miss Christine Boyes, residing at Little Potterns, Hazel Grove, Ashurst, Southampton, has the last word on prices in previous years. Her information comes from *The Aquarist* of February, 1938—a good number of years before Miss Boyes was born—and she notes that the magazine itself then cost 1s. 0d. Her list includes golden guppies at 2s. 0d. per pair, swordtails from 1s. 0d., fighters from 2s. 0d., and Vallis at 2d. each.

I'll end now by asking for your opinions on any of the questions in the main body of the text, and on the following: (a) What have been your experiences of

keeping and breeding *Apistogramma ramirezi*, and what foods suit them best? (b) What reasons would you give as to why all *Cryptocoryne* plants in a given tank may lose their leaves for no apparent reason? (I have asked this question before but have not received any convincing answers.) (c) What have been your experiences with breeding golden barbs? (d) Does "Gro-Lux" make your plants grow very much better than other forms of lighting? (e) What do you intend doing with your fishes during the summer holidays? (f) Would coldwater fishes interest my school pupils as much as tropicals, and if so, what kinds would you suggest I try to obtain? Which plants grow best in coldwater aquaria? (g) Finally, to add a touch of humour to the next edition: What is the most amusing story of which you know associated with fish-keeping?—either jokes or true stories. I look forward to receiving your opinions.

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## *Labidochromis coeruleum*

### An interesting Malawi Cichlid

by S. & A. Cass

WE FIRST BECAME acquainted with this fish on an "expedition" to the London fish dealers. Exactly what made us decide to buy a pair is still a mystery as they were hardly very striking in the dealer's tank. However, we decided to take a gamble and we are now pleased that we did. The price, incidentally, was quite reasonable for Malawi cichlids being £4.00 for the pair (some of these beauties from the East African Lakes can cost up to £15.00 per pair).

After completing the long journey home, both fish were placed in a 30 gallon tank measuring 24 in. × 25 in. × 15 in. which had been set up for any new arrivals which may have been purchased. Then the male (he was showing a faint tinge of light blue which enabled us to tell the difference) decided to prove that he came from Lake Malawi. He gave the female no peace whatsoever and so a glass had to be inserted to allow the female to settle down. Both

fish were conditioned on glass worms, shrimp, sheep's heart and earth worms.

As they began to settle down the male began to justify his purchase by showing his true colours. His body developed a silver blue colour, while his dorsal fin became a powder-blue edged with silver. Just beneath this silver colour a black line added a striking contrast. The pelvic fins were again powder blue edged with black while the caudal fin was transparent. The anal fin was almost identical to the dorsal fin with the exception of one large yellow egg spot. The female was dull by comparison remaining the same greyish-brown colour she was when we bought her. These fish, it seems, do not grow very large. When bought last August both fish were only about 2 in. long and they are now only about 3 in. long. Like all Malawi cichlids they have terrific appetites and it seems impossible to fill them. Despite this, as



previously mentioned, the rate of growth did not seem all that rapid, indicating that they, the female especially, needed a lot of conditioning. The reason for this may be the fact that because the female is so small in comparison with fish like the *tremasae*, *auratus*, etc. she needs to be at her best to undergo the strain of incubating the eggs for such a long time.

During the conditioning period algae developed on the sides of the tank owing to the very nice weather most of the country experienced in September. The tank has our usual set-up caves made from clay plant-pots. In the middle of September the female was seen to have a mouthful of eggs but these were infertile because the male was unable to get to his mate. Despite their sterility she carried them for seven days before she devoured them. So back to the proverbial drawing board.

The female was again brought into condition and we tried to spawn the pair without any success at the end of September. The attempt ended in the usual way with the female, who was not quite ready, being chased about by her mate. So the partition was replaced and the female left to recover from her wounds. About five days later it was noticed that the male had got into the female's half of the tank. He was not causing her any serious injury, just occasionally chasing her about the tank. Just how he had got in was a mystery as the partition was still in place. However, he was promptly returned to his own half of the tank. Then two days later, it was observed that both fish had swapped halves, the male was in the female's half and vice versa. Seeing that both fish were all right we left them and turned our attention to the other fish. When we looked at them again about five minutes later they had both returned to their own halves of the tank, i.e. the sides they were placed in at the time of purchase. Very confused, to say the least, we decided to find out just how they were doing this. A few minutes later we got our answer. It seems that after the last attempt to spawn them which failed the hole which had been cut in the glass to allow for the long heater to pass through was not sufficiently blocked either by the heater or by the plant-pot and the fish were swimming through it. Because no harm had come to either fish we decided to leave things as they were knowing that the hole could easily be blocked off if necessary.

As the fish got used to this "doorway" they used it quite frequently and it actually became rather interesting because nearly every time anyone went into the fish-house both fish were together, one of them having swapped sides. Then, when one's back was turned, the one who was in the wrong would return to the correct side. This may seem very amusing on the outside but when it is considered scientifically the great intelligence of these fishes is appreciated.

Then on the 8th October, 1971, it was observed

that the female and male were again together; nothing unusual, they had been together before, but then we noticed that the female was incubating a mouthful of eggs; not only unusual but very welcome. Of course as soon as the male saw us he immediately returned to his own half making the task of separation a lot easier as no net had to be placed in the female's half of the tank. Only a planting stick was placed in the water to push the heater back, thus closing the door between the two compartments. The female at this time seemed very excited and it was plain to see that she was trying to conceal her egg-pouch as she turned away when anyone looked into the tank. At this point she was left to brood.

Unfortunately, we were as usual unable to observe the actual spawning but in the only other account we know of it states that unlike the majority of "mbuna" or Malawi cichlids, the *Labidochromis coeruleus* lays all its eggs in an orderly fashion and fans them for about 30 seconds before the female picks them up in her mouth for incubation whereas the other Malawi cichlids lay a few eggs at a time and then pick them up in their mouths. The fact that the male was discovered with the female seems to support this fact about the fanning to a certain extent. However, it may be that he was just trying to continue mating against the female's wish and she was trying to avoid him.

For the first 12 days of brooding the female very rarely strayed from her hiding place, during which time the male was taken out and the partition removed—an event which did not seem to bother her at all. About the 14th day of incubation it was very noticeable that the female spent less time hiding and more time exploring. An increase in the size of her throat indicated that something was going to happen in the very near future. Happen it did, but not in the very near future. The wandering increased and her throat began to blacken along with her gills but it was not until the 3rd November, 1971, that the fry were seen, all two of them at that time, darting about the tank. However, it was not until she had carried out a detailed examination of the area that she finally released all her charges. Newly-hatched brine shrimp was placed in the water to feed the new arrivals who measured about  $\frac{1}{8}$  of an inch long and were coloured a light brown which blended very well with the surroundings. On the night of the third the female took all her offspring back into her mouth where they stayed until the following day. When she released her young, about 25 altogether, she was netted and placed in another tank for conditioning. After a couple of days the fry began to group and act like ordinary cichlid fry. Like the parents, they seem to eat a terrific amount but do not grow very quickly. Despite this they are, in our opinion anyway, very intelligent and very interesting fish to keep.





# THE DEMON FISH

(*Geophagus jurupari*)

by Jack Hems

CICHLIDS of the genus *Geophagus* are quite easy to identify. They have large eyes placed high on the long curved profile of the head, a compressed body that tapers to a narrow tail, and nearly straight underparts. Another characteristic feature of these fishes is the habit they have of picking up a mouthful of sand, chewing it round, and spitting it out again. This they do, every so often, as they move, head down, over the bottom. Yet only where large species of *Geophagus* are kept, or the compost is shallow, will the plants be uprooted or loosened from their bed.

It is common to think of species of *Geophagus* as typical cichlids, that is pugnacious fishes quite unsuited to a community aquarium. When, however, it comes to *G. jurupari*, this is far from the truth; for, in general, this charming species limits its displays of anger or

pique to threatening attitudes rather than actual attacks. (Surprisingly, it shows little or no interest in smaller species.) In the main its aggressive actions, which take the form of sudden rushes, are directed at fishes near enough its own size. As the first reaction of a rushed-at fish is to back into the plants—plants are essential to provide a retreat—the effect is unchanging. *G. jurupari* stops short in its tracks and then proceeds to eye its surroundings with equanimity. "What's all the fuss about?" it seems to say.

The basic colour of *G. jurupari* is olive-yellow to grey-green. The lower half of the snout and the gill-covers are adorned with lines and spots of silvery blue. The front of each scale on the sides is marked with a shining blue spot, forming a horizontal series of lines.



Above the two incomplete lateral lines the spots are less bright. The long-based dorsal fin and the short-based anal fin are spinous anteriorly and soft-rayed posteriorly. The spiny rays are spotted with black; the membranes are spotted with blue. A dark grey to black spot is present in the upper base of the caudal fin. The rest of this fin is marked with blue and pale brown. The first rays of the rather elongated pelvic fins are blue shading to white. The largish pectoral fins are clear. The species is widespread over Guyana and north-eastern Brazil and, in the aquarium, attains a length of about 5 in. In its native waters, however, it reaches almost twice this size.

When *G. jurupari* is not busying itself on the bottom, it will be found nosing about in the middle to upper levels of the water. It asks for nothing special in the way of food, but clearly thrives on a mixture of swallowable worms, small crustaceans, meat, and well-balanced flake foods. In the matter of temperature a range of about 72°F (22°C) to 80°F (26°C) appears to its liking.

One good feature of this fish is that it does not demand a certain type of water or involved apparatus in order to stay alive and well. Ordinary matured tap-water is as good as any. Further, provided the tank it lives in is not overcrowded with other fishes, no artificial aeration or filtration is necessary.

There is no easy way of telling the sexes apart, except by the fact that in well-grown fish the male has slightly better developed and more pointed fins than the female.

Also, as in all female fish in breeding condition, a ripe female *G. jurupari* assumes swollen sides.

This species is a mouth-brooder with a difference; for whereas in most mouth-brooders a female will store away the fertilized eggs during or immediately after spawning, in *G. jurupari* the eggs are left, though not unguarded, where they have been deposited (usually on a stone) for several hours (though not always) before being moved. Then the female, and not infrequently the male, takes them into the mouth for hatching. Ordinarily the eggs incubate inside a fortnight. In cases where the male turns spiteful towards his mate, then the sensible thing to do is to transfer him to another aquarium.

After the fry are roaming free (but always ready to return to the parent's mouth at the first sign of real or imaginary danger), they need small live food such as brine shrimp, sieved *Daphnia*, or divided red or white worms until they are large enough to get on to bulkier food.

*G. jurupari* is popularly known as the demon fish, or devil fish. Both common names are quite off the mark. There is nothing devilish or demon-like about this fish, except perhaps its rather Mephistophelean facial expression. Interestingly enough, though it was described for science by the German ichthyologist Heckel as long ago as 1840, it did not reach the tanks of tropical aquarium keepers on the mainland of Europe until 1909.

## BOOK REVIEWS

### **Tropical Fish as a Hobby. Revised Edition.**

By Herbert R. Axelrod, Ph.D., published by George Allen & Unwin Ltd., London. £3.25.

The obvious question to ask about this revised edition of a book written some twenty years ago is: Why has so much careless writing and misleading information been left in? For instance, we are told (p. 64) that *Macropodus opercularis* has "an easy temperament" and is "a very desirable fish for a community tank." Also, that the male "will seldom attack the female after she has spawned." Yet on p. 267 we are told that the fish is wild and vicious. On p. 86 we are told that Texas cichlids should be kept by themselves. No one will dispute this fact. But on p. 279 we read that Texas cichlids are peaceful. Under the heading Disposition we are informed that *Cichlasoma tetra-caanthus* is "rough on plants" and *Tetraodon fluviatilis* is "very active." True. But would not the experienced aquarist be better served by being told that both species are persistent bullies and snappish? Dealing with the uncomplicated love-life of *Xiphophorus helleri*, Dr. Axelrod records (p. 37) that the male displays before the female "with his swordlike tail erect." A male swordtail with the ability to raise the extended rays of

his caudal fin towards the surface must be a new development not seen over here.

The publishers, in their blurb on the inside flap of the shiny dust-cover, inform us that "this book details the habits and peculiarities of thousands of different species of colourful tropical fish." In actual fact, not more than a couple of hundred species, freshwater and marine, are dealt with in the text.

JACK HEMS

### **Your Aquarium, by Jack Hems, illustrated by Laurence Perkins. 32 pages, Colourmaster, 22p.**

It was long before the war that I began reading articles by Jack Hems in *The Aquarist* and other fishkeeping journals. No better partnership than with the present editor could have been made for this very readable and comprehensive introduction to setting up a home aquarium, and keeping it successful. Excellent value, free from technicalities, yet accurate and with just the information a beginner requires, it covers coldwater, tropical and tropical marine fish-keeping. With 22 beautifully-reproduced colour-photos, it gives all that can be expected at the price and is well recommended for any amateur, adult or young, who may be in doubt about setting up a fish tank and feeding and caring for its inmates. Schools in particular will welcome it.

E.H.





## 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

It is my intention to set up a tank for a pair of sail-fin mollies and their young. Therefore I should appreciate some advice on the size of the tank I should buy and the best temperature, type of water, and food for these fish.

A 3 ft. to 4 ft. tank is about right for a pair. For breeding and normal maintenance a temperature of about 75°F. (24°C.) is perfectly satisfactory. It is desirable for the water—ordinary tapwater—to be made salty. A teaspoonful of seasalt or non-iodized cooking salt to every gallon of fresh water is advised. The natural food of mollies is tender greenstuff (algal growths), the larvae of insects, and tiny crustaceans. In the aquarium, mollies thrive on the regular live foods, wheat germs, and the like, chopped and scalded lettuce, and duckweed.

**Please tell me the maximum length of *Aequidens curviceps*, and would this cichlid be suitable for a community aquarium?**

*A. curviceps* grows to a length of about 3 in. Except when it is breeding, this fish is neither a bullying nor an interfering species.

**Is it true that tiger barbs are such fin-nippers that they should be kept out of a community tank?**

It is true that tiger barbs are fin-nippers, but two or three of these fish in a tank are more likely to do damage than six or seven. You see, a small shoal of tiger barbs in a tank are so taken up with one another's company that they have little or no time to spare to chase about after other species.

**When I bought my two *Corydoras aeneus* catfish they had noticeable fleshy barbels. Now, six months later, all they have left are raw-looking stumps. What has brought about this ugly disfigurement?**

In all probability you have a very coarse and abrasive grit in your aquarium. Sharp grit will wear down

the barbels of species of *Corydoras* in next to no time. In other words, *Corydoras* catfish should be provided with a fine sandy floor.

**I should like to know the scientific name of a cichlid called the Gafsa mouthbreeder?**

The fish you refer to is *Haplochromis desfontainesi* which is found in the warm pools of Gafsa, an oasis in the sandy wastes of North Africa.

**I wish to experiment with Australian rainbow fish in a small outdoor pool. Which species do you think are most suited to the English climate?**

*Melanotaenia nigrans* is the Australian rainbow fish most suited to living in an outdoor pool from about the middle of May to late September. But do make certain you accustom the fish to the lower temperatures of a garden pond before you try the experiment. The best way to do this is in an indoor aquarium.

**Is the four-barred tiger fish suitable for a community aquarium?**

The four-barred tiger fish (*Datnioides quadri-fasciatus*) is quite safe in a community tank so long as the other fish sharing it are about its own size.

**Please recommend some fishes for a brackish water aquarium.**

*Monodactylus argenteus*, *Scatophagus argus*, *Tetraodon somphongsi* and *T. schoutedeni*, which are peaceful, and of course, archer fish (*Toxotes*), mud-skipper (*Periophthalmus*), and the handsome *Therapon jarbua*.

**I have been told by an expert aquarist that there is no such thing as a warmwater hornwort. Is this correct?**

It is not correct. The genus *Ceratophyllum* is widespread over the world. Several years ago I bought some hornwort from a famous grower of aquatic plants resident in the West Midlands. It flourished



exceedingly under warm white fluorescent light and a water temperature in the mid-seventies (°F.). Obviously this *Ceratophyllum* had come from a subtropical or tropical country. But hornwort taken from our native freshwaters seldom lives long in a tropical tank.

**How many cardinal tetras can I keep in an 18 in. x 10 in. x 10 in. tank not provided with artificial aeration or a filter?**

About eight to ten fish providing the tank is kept clean and there are plenty of oxygenating plants present.

**I have been advised to disconnect my air-pump and filter while I am trying to raise a few hundred dwarf gourami fry to saleable size. Please give me a reason for this piece of advice?**

Dwarf gourami fry are delicate little things and do

not take at all well to being buffeted about in the water. Also, being so tiny they could be sucked into a filter. Further, they feed on minute live food and this would be trapped in a filter. I doubt you will raise a few hundred fry to saleable size unless you have a large aquarium, and quite a bit of experience with anabantid fry.

**I should appreciate some information on the care of a pair of *Pseudotropheus auratus* in a 2 ft. tank?**

Give this species water on the hard and alkaline side. Next, a temperature in the middle or upper seventies (°F.). In the matter of food, supply green, cereal and flesh food (lean meat, guppy fry, chopped earthworms, and the like). Presumably your fish have the 2 ft. tank to themselves. I hope so, because they are bullies and fighters.

## GOLDWATER QUERIES

**By taking out of my pond plants with eggs adhering, I can breed goldfish with ease. Why do my eight-inch long golden orfe appear to lay no eggs?**

There is no doubt that it is far more difficult to get golden orfe to breed in the average pond than it is to do the same with goldfish. I kept some golden orfe many years ago and they were fairly large fish but they never bred. I got rid of them as my pond water got too hot for them in summer and they were in dire trouble. I know of two personal friends who have bred golden orfe, one had a small lake with fish at least eighteen inches long and the other had a large garden pond with a waterfall often running and his fish were well over a foot long. To breed these fish I think that one must have a very well oxygenated water, with either an often running waterfall or a fountain. These fish like cold water as they are essentially river fish. The fish with which one expects to breed should be at least a foot long and, of course, be in excellent condition. They should be fed often on all forms of live foods and they can even take live wasps as a treat.

These fish spawn in a manner similar to that of goldfish; the eggs are adhesive and larger than those of goldfish. They are laid on water plants or roots of trees, especially suitable are the roots of willow trees. Watch must be kept when spawning is observed as these fish can eat their eggs and so will other fishes in the pond.

**I have noticed a fish in my pond with protruding eyes, but I had not seen this before. Is it a disease?**

## by Arthur Boarder

As you state that the fish appears quite healthy there may be nothing to worry over. Some strains of fancy goldfish have telescopic eyes when the eyes protrude from the head. If your fish was a cross-bred one, there may have been some of this strain somewhere in the parentage and the eyes would show this peculiarity perhaps after a number of years. If the eyes are not inflamed and the fish does not seem to be in distress, leave well alone, but if inflammation is seen then isolate the fish in a weak sea salt solution and bathe once a day with equal parts of iodine and glycerine.

**I have just added to my aquarium five black moors. Can you tell me a little more about them. They have twin tails and rather bulging eyes?**

In the first place the fish should be called moors as they are all black and so this adjective is superfluous. There are two distinct types of moors, fantails and veiltails. The former are shaped as for fantail goldfish, with oval shaped bodies and double tails which are held out in a line with the body and each part is well forked. The veiltail type has a deeper body, almost spherical in shape with larger finnage. The dorsal is large and the caudal fin, although double, hangs down in graceful folds. The ends are not forked and the fin should be at least as long as the body. Both types have telescopic eyes and should be of a sooty-black colour. Any sign of bronze is a bad fault and would go against a fish at a show. Both types should have paired anal fins.

**Can you give me a list of suitable fish which I could add to my goldfish aquarium?**

Before doing so I must stress that you must not add



any extra fishes if the tank will be over-stocked if you do so. You must allow 24 inches of surface area for each inch body length of fish. This gives you 12 inches of fish to a 24 x 12 inch surface area of tank. Any of the varieties of fancy goldfish can be kept together, as well as common goldfish. Besides these it is possible to keep tench, both green and golden, as long as they are small ones and are removed if they grow too large. Golden rudd or ordinary rudd can also be kept. Although there are several other British coldwater fishes which can be kept in a tank, it is not wise to try to keep too many kinds together. Such predators as pike and perch must not be with smaller fishes. Some of the others prefer running water and unless the tank was well aerated it would be asking for trouble to include these. Therefore such fishes as minnows, dace and bleak are not recommended, and of course small trout would be very difficult to keep without a strong air stream and filter working most of the day and night.

**I have kept fish for 25 years and have a garden pond which is well stocked with water plants. There is now about six inches of mud or mulm at the bottom of the pond. Do you think that this is the cause of my losing a twenty-year-old goldfish; it did not show any signs of disease or damage when I found it?**

Your twenty-year-old goldfish had probably lived its span, as many goldfish never reach this age. Although many well kept goldfish can live some years longer than this, it depends on how the fish have been kept during the whole of their lives as to how long they live. This age is comparable with a ninety-year-old human being. The mud at the bottom of the pond could certainly cause trouble as it can give off foul gases and if the oxygen content of the water falls to a dangerous level it is usually the larger fish which die first. You must realise that the larger the fish the more oxygen is needed. During the warmer months of the year the water plants are very active and they can use up much of the waste matter from the fish or neutralise the effects of decaying fallen, or dead, leaves, etc. Once the winter approaches the water plants mostly die down and become inactive and so they do not carry out one of their helpful functions. Also, they cannot give off oxygen during the winter to assist in re-oxygenating the water. You should get rid of this mud at the bottom either by dragging it out or by emptying the pond completely and cleaning it out properly.

**In my garden I have a moulded plastic lined pond which is dark grey in colour. Is there any paint, preferably blue, with which I could paint it, and if I did how long must I leave it before putting any fishes back?**

You could paint the liner with one of the newer

types of paint which are on the market with "polyurethane," which are quick drying and have a high hard gloss. However, I would not go to this trouble as before long the liner will take on a greenish colour and will look more natural. Whatever colour you use I feel sure that by the end of the season this colour will have been covered with *algae*. If you cannot wait for this and decide to use the paint, you must make sure that the pond is quite dry before you start to paint and if you do this on a warm day, the paint will be dry enough after about twenty-four hours and ready for a wash round before you restart.

**I have a 36 x 12 x 14 inch tank with two goldfish, two comets, two shubunkins and two catfish to clean the bottom. My trouble is that the plants are a dirty-looking colour covered with a jelly-like film. I would like the plants to look green and wonder if I could use one of the advertised cures for *algae* in the tank?**

The state of the plants is caused by wrong conditions in the tank. It may be that there is not enough overhead light, that you have been over-feeding or that you do not carry out the weekly cleaning operations correctly. A tank the size of yours will function properly with two forty-watt lamps overhead. If too much food, especially dried, is given then this tends to pollute the water and the plants will not thrive. Once a week the front glass should be cleaned and most of the mulm in the front half of the tank siphoned off. In doing this you will remove about a third of the water which should be thrown away and replaced with fresh. If you do this and then refrain from giving too much food the fish should be alright. You must watch the catfish as they are carnivorous and can eat or damage any other fish in their tank. Goldfish are just as good scavengers as any catfish providing they are not overfed by their owner.

**I am very interested in breeding "Bristol Blues" but cannot find much information about them. I have read all I can find about other goldfish but I would like more detailed information. Is there a club which would help me? Most clubs are only interested in tropicals and information from the British Goldfish Society on them is practically nil.**

In the beginning perhaps I can clear up one point. There is no such variety of fancy goldfish as the "Bristol Blue." This name can be very misleading as it implies that the fish should be all blue. This is quite wrong as the proper colour of a shubunkin, for exhibition purposes, is as follows: Blue ground splashed with black, interspersed with violet, red, brown and yellow. This description is according to the standards issued by the Federation of British

*Continued on page 53*



# LOBSTERS, CRABS, AND CRAYFISH

by Henry Tegner

ALONG the shores of England, Scotland and Wales I have, at various times, come across nearly all the different species of British crabs and there are quite a lot of them. They are fascinating creatures and to the marine biologist just as interesting as birds are to the ornithologist. Although it is generally known that the birds of the air moult at regular intervals and thus provide themselves with a completely new dress, it is not so well known that such forms of life as lobsters, crabs and crayfish do the same. The freshwater crayfish, for example, during its first year will moult eight times, in its second year it goes through this arduous process five times. Once adult the male crayfish moults twice annually, while the females do so only once. During the period when the shellfish has shed his hard armour and while he is waiting for his new skin to harden, he is very vulnerable and mortality during this stage is high. At the time of their change of coat a heavy toll is taken of all the crustaceans by birds and fish. In many parts of the world soft-shelled crabs are considered great gastronomic delicacies. At one time these soft-shelled crabs were thought to have been a different species whereas it is now well known that such specimens are simply crabs which were taken during the moult period.

There are, throughout the world, an enormous variety of crabs and in Britain, along our coasts, we have such species as the Spanish, or swimming crab, which is green in colour with paddle-like legs with which it can propel itself very rapidly through the water unlike most other kinds which scuttle and crawl among the rocks and the sea bottom. The edible crab most generally seen on the fishmonger's slab does not swim.

The spider crab, or slender-beaked crab, is well described by its name for this is an ungainly creature with long spindly legs out of all proportion to its body size and it has a decided snout or beak. Off our shores this crab attains but a small size, spanning a few inches; however, in some foreign seas the spider attains a breadth, when its limbs are outstretched, of over four feet. In the seas of Japan I have come across individuals of this size with a body which resembled, to a marked degree, a human skull.

The tiny adder crab is common along our beaches and is a very useful bait for such sea fishes as pouting,

hake, whiting and the shark-toothed wrasse, or seaperch.

The so-called edible crab, which is taken all along the coasts of Britain in pots and traps baited with scraps of fish, is a most succulent morsel full of meat in body and claw. *Cancer pagarus* is an extremely pugnacious animal and a terrible fighter. Maimed crabs are caught as often as whole ones for during battle, legs and claws are frequently lost. When caught they can bite severely and once having taken hold they will hold on like the proverbial bull-terrier. As one might expect, the claws of the males are generally larger than those of the females and they are consequently regarded more highly in the market-place. Crabs can survive for a considerable period out of water and the common crab, which is usually green in colour and is more of a tide-line crustacean than the edible form, is frequently to be met with on the beach when the tide has retreated. The edible crab figures in the signs of the Zodiac denoting the unity, or tenacity of that brotherhood. As all forms of crabs are fighting-folk nature has provided them with a remedy whereby their wounds are quickly repaired. Crabs, lobsters and crayfish who have lost a leg or claw in combat have the remarkable ability to grow a new limb which replaces the lost one. Lobsters when taken from the sea are usually an emerald blue speckled with yellow ochre and a good specimen may weigh over ten pounds; when boiled for human consumption they turn a brilliant scarlet. Crayfish are to some palates the supreme form of all sea food. They are usually taken at night in freshwater canals and meres; the old method of burning the water with lighted flares, or luring the fish by light, is often resorted to but today instead of flaring torches of pitch, electric torches are used. The fishermen of the Mediterranean seas have their boats equipped with fixed acetylene lamps in the bows with which to attract the denizens of the deep.

The chief enemies of the freshwater crayfish, in this country, are otters and eels and the former appears to be as fond of this delicacy as man. Crayfish will sometimes turn cannibal and devour their own kind; nevertheless, in spite of this unpleasant habit these crustaceans still hold a very high place on the menu of the gourmet.



# From a Naturalist's Notebook

by Eric Hardy

NAMING FISH has often puzzled zoologists who aren't sure of their classification. When a specimen of *Lucanus imperialis*, one of our rarer visitors from warmer Mediterranean waters, was left by the tide on the island of Bryher in the Scillies last year, it was heralded as a "five foot long pink tunny fish". Some zoologists do classify this with the mackerels and tunny, others with the sea-breams which it may link with the sunfish. It looks as pug-nosed as Ray's bream, with a similarly small mouth, but then its body tapers away like a tunny's to a well forked tail.

The *Lucanus* is usually stranded around Cornwall, southern Ireland or the Channel Islands when it drifts here. Little seems to be known about it, excepting its unusual appearance, a metallic ruddy orange with almost vermilion fins.

Working with the gulf croaker fish on the other side of the Atlantic, biologists have brought adult fish to maturity by abundant feeding plus longer (16 hrs.) controlled light and warmer (22°C) temperature. Then they got them to spawn out of season by suitable hormone injections of salmon pituitary gland, conveniently removed from spawning fish in quantity at salmon-hatcheries. Carp-pituitary can be used equally well, providing the gland is removed from the brain case, at spawning time, when it has a high content of spawning hormones, or chemical secretion. The glands have to be removed quickly after the source is killed, within 15 minutes, because the severing of the head artery to bleed the salmon may destroy the pituitary.

Eggs from hormone-induced spawners are in all respects normal, and even the time of spawning may be predicted. This injection of hormones is obviously for hatchery-rearing of sea-fish; but by feeding the hormone with food in lochs, or even the open water, it has a much wider application. In the case of the croaker, spawning was induced 1 to 3 months earlier than in the local seas. With adequate light periods, the fish were kept in spawning conditions for two months, and were thus "spawned" a second or third time. The fish didn't respond to this hormone treatment if the water was too cold.

\* \* \*

"First Aid for Fishermen," a very helpful new educational leaflet issued by Australian fisheries, includes some practical information not generally

available to fishermen in Britain. "Marine stings, for example may be dangerous from yellow *Cyanea* jellyfish to sting-rays, lesser weevers, the rarer yellow greater weever, the drifting Portuguese man o'war, drifting like a bluish pink polythene bag, and some sea-urchins. The remedy is to clean the wound with water, removing any foreign bodies, then immersing the wound in hot water, and treating the victim as for shock. In the case of tentacle stings (as in the *Cyanea* jellyfish), the remedy is to pour or dab methylated spirits or alcoholic spirit (even dry sand if the vessel is tectotal) over the stung part to destroy any stinging cells remaining active, then scrape off the remainder, but don't rub the wound. Severe stings need medical attention.

Our native little weever injects a venomous fluid from its erectile black dorsal fin and its gill-covers, and deaths from it are recorded in Fries' "Scandinavian Fishes". Its painful wound is well known to shrimpers. As it's an intravenous poison, I once saw its effects on a bare foot thwarted by immediately sucking the wound and spitting away; but this would be dangerous if the mouth or lips had any cut to receive it. Too much unskilled squeezing to force out the poison might make it worse. A warm room, rest and sweet tea should conclude any treatment not severe enough for medical aid. Many spiny fish like the dragonet, believed to be poisonous, are not so. Suppuration or pain has been caused by their neglected wounds being scratched, or infected by dirt. Even soap can be scrubbed in if there's no disinfectant available.

Shark attack is unlikely to occur in British waters, but severe bites can occur when handling conger and dogfish. The immediate action is to check any severe bleeding by pressure, or a tourniquet just above the spurting point of the wound to avoid haemorrhage. Maintain the pressure until a firm bandage is applied, and elevate the injured part while awaiting medical aid.

Though a tagged Australian king prawn has travelled 400 miles, no such distances are known to be travelled by British shrimps. Their burrowing and swimming habits are very localized. Recent Gemini space-craft photography has been interpreted by Lindner and Bailey, American biologist and oceanographer respectively, to show a relationship between the distribution of Gulf of Mexico brown shrimps



(*Penaeus*, a different genus from ours) and turbid water. This was caused by the build-up and eventual release of waters in the Galveston area, with sediment providing the contrast. Large volumes of sediment being carried from lakes into the gulf are immediately transported southwards alongshore by a current. Suspended material causes movements of discoloured water elsewhere. The best fishing grounds for brown shrimp were consistently in the area of suspended material.

The patterns of movement in the common white American Atlantic shrimp *Penaeus setiferus* vary in different areas, but they are generally cold weather moves from inside waters to outside waters. Only two tagged in the outside waters returned to inside waters of areas other than the original home water, so that they appear to be localised breeding communities. The larger the shrimp, the more such movements it makes. Most of the movements of our native brown

shrimp, *Crangon vulgaris* out of our estuaries is prompted by osmotic changes when rain or snow-water dilutes the salinity of its haunts.

It is now agreed that last autumn's extensive death-roll to nearly all lugworms in the area from North Wales and Liverpool Bay to Walney Island and Morecambe Bay was caused by the extensive algal plant bloom, caused by the warm, calm weather and encouraged by the increasing phosphates from sewage effluent in the estuaries. According to our sea fisheries committee laboratory it was apparently a species of *Gyrodinium*, a toxin-producing, single-celled dinoflagellate which has caused deaths to shellfish and fish in other seas. Sand urchins (*Echinocardium*) were also affected at the Isle of Man; but shrimps, shore-crabs and *Hydrobia* snails were unaffected, though clams and a spider-crab *Maia squinado* suffered.

*Continued from page 50*

Aquatic Societies in 1947. Some years later a fresh set of standards was introduced when the colour read: A bright combination of blue, violet, red, yellow and brown, overlaid with scattered black markings. If you refer to the front cover of *The Aquarist and Pondkeeper* for the month of March, 1972, you will see that the lower shubunkin is a very fair representation of the colour which is required. It is not easy to get the exact colours on such a cover but it will be noted that the ground colour is blue with the other colours added. When I was judging I liked to see a fish with a good rich blue groundwork with the red a good red and the black a jet black. One often found fish with a brownish black and the red so pale as to be pinkish-orange.

There is nothing different about breeding these fish from the methods used for breeding any other fancy goldfish. The skill comes in the sorting and pairing for future breeding. I know of no society which deals in shubunkins solely and, as you state, most of them only cater for tropicals. I suspect that this is because the breeding of exhibition fancy goldfish requires so much more skill and patience than that needed for breeding most species of tropicals. Take away from them those species which have been altered from nature like most of the live-bearers, the angels and Siamese fighting fish, nearly all the others reproduce their young like peas in a pod. The breeding of exhibition fish from any variety of fancy goldfish not only takes a long time, but patience and skill are required to choose the right fish as parents for later breeding.

**I intend to build a fish-house in my garden with a large concrete pool about 7x5x5 feet in size. I would like to include a glass panel in the front so that I could see the fishes. How can I do**

**this and heat the tank as well?**

Unless you are an experienced craftsman with concrete construction, I am afraid that you are letting yourself in for a lot of trouble and disappointments. I suggest that you make your tank with the top at ground level and forget about the inspection panel. The weight of water in such a tank would be very great and could be in the region of 10,500 pounds. If you had a panel the glass would have to be about three-eighths of an inch thick. To insert the panel you would have to have a metal panel let in a rebate which could be removed when the concrete set. The top of the front frame and ends would have to be very strong and reinforced to stand the pressure. You could be more likely to succeed if you had a small glass panel only in the front. As for heating, this could be done with immersion heaters and if let in the ground the tank would be easier to keep warm than if it was above ground level.

**Should water-lilies be in baskets or floating with their roots at the top of the water?**

The roots should be properly set in suitable containers and these should be on the bottom. The best type of container is the plastic openwork type, like netting, which allows the roots of the lily to spread out over much of the base of the pond. These roots can then help to use up waste matter in the pond. Once a lily floats up to the surface its beauty is lost and it is not likely to flower properly, nor look at its best. If some lilies get very large and their container is too light, they are inclined to float up from their container, so it is well to secure the root stock to the container with plastic string to prevent this from happening, and to secure a weight, say a piece of concrete, to the container to keep it anchored on the bottom.



**THE AQUARIST**  
& PONDKEEPER  
**FISHKEEPING**  
**EXHIBITION**

# The Fishkeeping event to be held in London

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

## Schedule of Classes

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

Show Schedules available from:  
 G. Greenhalf,  
 Show Secretary,  
 39 Garth Close,  
 Morden, Surrey

or from the Show Organiser.



#### Awards and Trophies

The First, Second, Third and Fourth in each class will receive *The Aquarist and Pondkeeper* Fishkeeping Award Cards. The first three in each class will also receive a souvenir trophy. Leading members of the trade and hobby have kindly donated Challenge Trophies for presentation at the Show.

#### Show Stewards

The Show Secretary will be pleased to hear from anyone who is interested and would be available to assist during the run of the Show. Some enthusiasts have already offered their services but more are needed.

#### Admission Charge

The charge for adults will be 30p and children under the age of 16 years, 10p (payable at the door). Special concession rates are available, i.e. 25p per head for parties of fifteen or over. Apply to the Show Organizer.

#### Technical Advice

You will once again have the opportunity of meeting those well known authorities on fishkeeping, Mr. Arthur Boarder and Mr. Jack Hems. Both will be available to give advice on *The Aquarist* Stand.

### NOW AVAILABLE!

#### *This years attractive two-colour car sticker*

Applications to:- THE SHOW ORGANIZER (address at foot of page)  
plainly marked "CAR STICKER"



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.

### DON'T FORGET THE DATES!

**SATURDAY JULY 15th 10.00 a.m. - 9.00 p.m.**

**SUNDAY JULY 16th 9.00 a.m. - 5.00 p.m.**

at

**ALEXANDRA PALACE, WOOD GREEN, LONDON, N.22**

Situated in acres of Beautiful Parkland - Free Parking

### TRADE STANDS

All enquiries to:- THE SHOW ORGANIZER  
The Butts, Half Acre, Brentford, Middlesex, TW8 8BN





### Sexing Koi

Once again the ignorance of the "masses" were shown.

After I rushed into print to condemn Mr. F. L. Vanderplank for "cross breeding Koi with Goldfish just to see what could be produced." I must now hasten to thank him for writing an article specially to correct my mistaken beliefs. How I wish more articles like this were written and hope more will be. Also, that as the "trade secrets" become common knowledge we may be let into them. It is understandable that as so much money has been spent on research this knowledge will not be made available as soon as some of us would like.

However, I have still not solved my original problem of how to sex Koi in spite of many interesting letters from quite a few people who were kind enough to write with suggestions. I can sex goldfish, and up to now have had good results with golden orfe, at least if I pick out a "pair" or "trio" they have produced fry.

J. F. GREGORY,  
18 Barnard Grove,  
Jarrow,  
Co. Durham.

### Hardy *Xenopus*

Mr. Vanderplank, in his article on "Controlling free swimming algae," states that both *Xenopus* tadpoles and "frogs" are killed when the water temperature falls below 50°F (10°C). This is not so, although most of the textbooks on the subject keep on repeating the error.

In this school we have used *Xenopus* for classwork for some six years and three years ago released newly metamorphosed *Xenopus* toads into a pond which adjoins the biology lab. Some two years later during pond draining and cleaning we found six *Xenopus* adults which had obviously survived two winters. The pond is only some 9 in. deep, and each winter had 4 in. of ice on it. These adults bred spontaneously (the first record I have of this) and produced several thousand tadpoles in two broods.

Some of these metamorphosed and the young toads have been seen this winter (February) swimming actively with a water temperature of 5°C (41°F).

Similarly, the remaining tadpoles survived until the first ice appeared on the pond, when they fell into a torpor, but many recovered when the ice melted later in the day. A second occurrence of ice apparently

killed off the tadpoles, but this will have to be confirmed later by their reappearance or otherwise as the water warms up.

From my experience, therefore, it can be seen that *Xenopus* can and do overwinter, at least in the adult stage. Pondkeepers would therefore be well advised not to introduce this creature into their ponds as its appetite is enormous. One adult *Xenopus* kept in the lab. here consumed six adult earthworms in rather less than 10 minutes. The adults in the ponds can catch goldfish up to 1 in. long and can consume large numbers.

G. MYTON,  
Head of Biology Department,  
County Grammar School,  
Market Harborough.

### Another West Country Aquarium

As a keen reader of your excellent publication, I was very interested to read "A day out for the Aquarist" by Soniar Roberts; an excellent and very useful article but there was one small omission.

Not my two three-foot tanks containing one-inch morsals but the "Westward Ho! Aquarium" containing some really fishy specimens! This is a brand new salt water fish house on the grand style, 500 gallon tanks upwards. Under the careful eyes of the proprietors "the Wise Brothers; the fish are kept in beautiful condition winter and summer.

As the M road comes closer to the North Devon border day by day it should not be too long before Sonia can watch a 30-lb conger eel at feeding time in Westward Ho!

NICK LANS,  
Newsagent,  
Westward Ho,  
N. Devon.

### Rabbit v. Angel Fish

My wife has just visited me in hospital and given me some bad news. I must be the only person who keeps fish, to have a rabbit kill them. I only bought this house in November, and the gardens and land have not been fenced off yet.

It was my son's birthday on 1st January, so we got him a rabbit. I made a hutch, and then found I had nowhere to put it, so we now have a rabbit hutch in the hall, with an angel tank as well. Anyway, the rabbit bit straight through the wire on his hutch and spent the night chewing the electric cable to the tank. How it did not get electrocuted I don't know; it bit all the black wire, but did not touch the live one. But it fused the plug, and killed three large Angels and a small Discus. Does anyone want a piece of rabbit pie? It's a good job I am in hospital and not at home, for the rabbit's sake.

MR. I. ROWBOTTOM,  
30 Legh Drive,  
Woodley, Cheshire.



### The British Koi-Keeper's Society

As a result of the increasing popularity of Nishiki Koi during recent years, a few stalwarts, anxious to exchange views on successfully keeping these beautiful Japanese fancy carp formed the British Koi-Keeper's Society.

From a very modest beginning less than two years ago, and evident of the wide interest aroused by enthusiasts, the membership of the Society now exceeds one hundred; and it may well be one of the largest specialist societies in the country.

Newsletters are sent to all members, these contain articles on quarantining, feeding, breeding, etc. and many useful ideas are exchanged.

At least two meetings are held annually. The Annual General Meeting will be held at the "Aquarist Fishkeeping Exhibition" at Alexandra Palace in July.

New members are welcome and details of membership will be sent upon application to:

The Secretary,  
MRS. H. ALLEN,  
1 Anthony Close,  
Francis Gardens,  
Peterborough, PE1 3XU.

### Notice

O Come all ye faithful  
To G.K.N. Open,  
O Come ye, O Come ye  
To Salisbury Street  
Bring all your fish on  
Sunday June the fourth  
We're giving very good prizes  
We're giving very good prizes  
We're giving very good prizes  
For best in the class.

Yea, we will greet thee  
With great hospitality,  
And make you very welcome  
Wheresoever you go  
Details of benching  
Are obtainable from the Show Secretary  
So rush and buy your *Aquarist*  
Rush and buy your *Aquarist*  
Rush and buy your *Aquarist*  
It's all in there.

The address for directions  
Is in the *Aquarist* Calendar  
That of the hon. show secretary  
Is in there too,  
You'll see good displays there  
And trade stands, three in number  
With fish and all accessories  
With fish and all accessories  
With fish and all accessories  
We just need YOU.

So bring anabantids,  
Cichlids and Gouramies,  
Danios, Rasboras and  
White-Cloud Minnows,  
Bring Cats and Gobies,  
Characins and killis  
There are twenty-seven classes  
There are twenty-seven classes  
There are twenty-seven classes  
I'll see you there.

GUEST, KEEN &  
NETTLEFOLDS (MIDLANDS)  
LTD.,  
Sports Club,  
Darlaston.

### M for Marine

The British Marine Aquarists Association would like to know how many of this year's Open Shows will be including marine classes in the schedule.

To this end, perhaps Show Secretaries could insert a capital M if they are including marine entries when notifying *The Aquarist* of show dates. In turn perhaps *The Aquarist* will be kind enough to print this letter M alongside the show information in its diary of forthcoming shows.

This will help the B.M.A.A. no end if asked to provide a judge.

JOHN HAYNES,  
Chairman Judges and Standards  
B.M.A.A.,  
6 Cleveland Road,  
Paignton, Devon TQ4 6EN.

## What Are We?

By Hilary Maynard

My first is in SAUCER but not in PLATE;  
My second is in WEDNESDAY but not in DATE;  
My third is in BACON but not in PIG;  
My fourth is in BURROW but not in DIG;  
My fifth is in WINDY and also in DRY;  
My sixth is in TEARFUL but not in CRY;  
My seventh is in BATTLE but not in FIGHT;  
My eighth is in VISION and also in SIGHT;  
My ninth is in WISHFUL but not in HOPE;  
My tenth is in WASHING and also in SOAP.

Answer on page 61.



## THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 2)

by Andrew Allen

### 3. The Alpine Newt (*Triturus a. alpestris*)

*Description.*—Length between 7½ and 11 cms, with the female larger than the male. Tail may be slightly shorter than the head and body. The tail has both dorsal and ventral crests, the former continuing on to the body in the male, but not in the female. The dorsal surface may be a slate-grey, or a less distinctive tone of brown, often with heavier markings. The blue-grey shade is apparent also in the dorsal crest, which may be banded with black and yellow. The male has a deep blue longitudinal stripe, and in both sexes the flanks may be flecked with a silvery-white. The undersurface is almost totally unmarked, and is a deep and beautiful orange.

*Distribution.*—This is far from solely an Alpine newt, though, as its name implies, it is widespread in the Alpine countries. It is also found in the Carpathians and South-East Europe, Greece, Italy, Spain, North-East France, Belgium, Luxembourg, Holland, Germany and Denmark. Though it favours the mountains, it will often be found in low country also.

*Care in Captivity.*—The Alpine newt is a distinctive species, rather less familiar to most of us than the Smooth and Palmate newts, and less often encountered for sale. It has similar habits to these newts, and its treatment in captivity should be similar. It makes an attractive denizen of indoor or outdoor vivarium.

There are at least six recognised sub-species of this newt, but the differences between them are not major, and need only worry the taxonomists.

#### Breeding Habits of the True Newts

All the European newts normally encountered by the amateur breed readily in captivity, especially in the outdoor vivaria.

The general breeding habits of all the newts are dealt with here because, unlike most other groups,

there is little variation from species to species. Vigour of courtship may vary a little, as may the duration of the mating season, but these are only slight differences in degree. Mating usually commences in March, and is preceded by an interesting courtship dance from the male. He raises himself on his toe-tips, arches his back into a crescent, and curves his tail like a bow; the tip of the tail vibrates rapidly the whole time. He produces a spermatophore package, and this is taken up by the female into her cloaca. The entire sequence takes place in the water, and is highly rewarding to watch, though this is only possible in the indoor vivarium, for obvious reasons. The female subsequently lays several hundred eggs singly on the leaves of water plants or other submerged objects. These hatch after two or more weeks, and the larvae undergo metamorphosis, which may occupy another nine or ten weeks according to conditions. The process resembles frog metamorphosis in several respects, but there are also important differences in the sequence of development and the manner in which the process is governed by hormones. In frogs and toads the supply of controlling hormones proceeds throughout development, but in newts it must be triggered at a certain time. If this metabolic trigger fails then the neoteny condition results. This is why neoteny is far more common in newts and salamanders than in frogs and toads. After mating has finished the adults leave the water and spend the remainder of the year on land, and the male loses his distinctive breeding garb.

### 4. The Great Crested Newt (*Triturus c. cristatus*) also called the Warty newt.

*Description.*—Length is between 13 and 18 cms, with the female larger than the male. This is the largest common European newt. The tail may not be as long as the head and body. The skin texture is



distinctive, being heavily granulated and warty. In season the male has a high dorsal crest which is clearly separated from that on the tail. The dorsal surface is black, but there are fine white speckles on the flanks, and there may be a silvery stripe down the side of the tail. Ventral coloration varies between yellow, orange and red, with differing amounts of heavy black markings.

*Distribution.*—This newt is widely distributed in the British Isles, though it is absent from Ireland. It is found in much of Northern and Western Europe, deep into Russia and up into Scandinavia. See also notes on the sub-species.

*Care in Captivity.*—In most respects the Crested newt will demand similar treatment to its smaller cousins, but allowance must be made for its considerably greater size. Similar indoor vivaria and similar habitats can be used, but these vivaria must be larger in size, and the water may have to be deeper, and the whole scale of design may have to be modified.



Great Crested Newt Tadpole

Feeding must be governed by this same consideration of scale. The basic foods are identical, and the Crested newt can deal with food every bit as small as can the Smooth newt, though it does not always choose to do so. But it will also readily consume earthworms and the like that are far beyond the capacity of the smaller newts. As a result the range of food that can be offered is somewhat wider, and so feeding in general is a little easier. Strips of raw beef are an acceptable substitute that can be employed in times when live-foods are scarce.

Communities must also be modified to take into account the size of this newt. Because of its bulk and the nature of its skin and unpleasant secretions, it is less likely to be molested than a smaller newt, and thus can be safely associated with Clawed-toads, Edible frogs, Common frogs and Common toads. Terrapins and snakes are still taboo, though not all of them consider this newt to be a tasty morsel. The

Crested newt is himself a confirmed cannibal, and should be kept apart from the smaller newts in all but the most spacious of conditions. In general it makes a better community animal than its smaller cousins, and indeed there are very few Reptiles and Amphibians whose care is more simple.

*Note.*—As with the other British newts, the Crested newt is on the decline and subject to fierce pressures, notably destruction of ponds or their pollution. The amateur herpetologist should not remove them from any ponds unless, of course, these are due to be filled in, or destroyed in some other way. In this event they should be transferred to another pond where these dangers do not threaten. We should do nothing to jeopardize the status of this species, and everything possible to protect its interests. If captive newts breed, and this is very possible, the larvae should be transported to a suitable pond, preferably one where the species already exists.

Various sub-species may be encountered in dealers'

lists or while on holiday. In each case treatment in captivity will be just the same as for *Triturus c. cristatus*.

*T. c. dobrogiensis* is found in the Dobrudja.

*T. c. danubialis* is found in the lowlands of the Danube valley, eastwards from Vienna. There appears to be some confusion between this and the above sub-species, and the position is considerably lacking in clarity. It is smaller than the great Crested newt, growing to between 12 and 13 cms, with a slender body.

*T. c. carnifex* is an important sub-species that is often encountered on dealers' lists. It grows as large as the type, with a compressed body and broad head, and is olive or brown in colour dorsally, with heavy black spots. It is largely a montane species found in Yugoslavia, Italy, parts of Switzerland, the Austrian Alps and Wienerwald.

The next article will deal with the highly attractive Marbled newt and the European Fire salamander.



# BREEDING THE HALF-BANDED BARB

(*Capoeta semifasciolatus*)

by T. D. Kearsley (aged 15 years)

STRANGE AS IT may seem, a successful breeding of the half-banded barb had started out as an attempt to breed the cherry barb!

It all began a week or two before Christmas. We (my brother and I) had decided to have a bash at spawning the cherry barb. We had conditioned the pair, set up the correct breeding tank, fed them well and, as we thought anyway, had done everything correctly. Alas, despite several attempts to achieve a successful mating, nothing came of the escapade. So regrettably we decided to forget the cherry barb, for the time being anyway.

After a rather disappointing and off-putting few days, our thoughts turned to another barb, the half-banded barb. We felt we had a particularly good chance with this fish as we possessed a beautiful pair in a 24 in. × 12 in. × 12 in. community tank. The female was a large plump fish (full of eggs we hoped!) and she had a small, ever attendant male companion. There were two other half-banded barbs in the same tank and one thing which struck us was the wide variation in number of bars or bands exhibited by these fish. Two had 4 full bars, one had 3 full bars and a small black spot and the last had 2 bars and 5 or 6 small scattered black spots on the rear half of its body.

Now, to return to the breeding. We set up an 18 in. × 10 in. × 10 in. aquarium with about 1-2 in. of ordinary gravel on the bottom. Several good-sized bunches of *Gabomba* were floated in the water (we did not bother to plant them). The water was 6 in. deep and had a reaction of 7 pH and was a mixture of equal parts of rainwater and local tap-water (DH 11<sup>7</sup>). A medium top-light was provided and the water was kept at a temperature between 75° and 77°F (24-25°C). The female was put into the breeding tank in the morning and the male was introduced at night. (Incidentally, we gave them no

previous conditioning but transferred them straight from the community tank into the breeding tank.)

Immediately after the male had been introduced that night, the light was switched off and the fishes and us retired for the night. We vowed to be up next morning at 7 o'clock to see what had happened.

Next morning, at 9.30 a.m. I opened the fishhouse door and eagerly looked into the tank. My disappointment at seeing no eggs was only surpassed by my surprise at the sight of the fish. I have never seen two fish supposed to be in breeding condition look so ill. Almost all of their formerly beautiful lustre had gone; gold had turned to pale brown, black faded into indistinct grey. Our hopes of a successful breeding between these two fish died a quiet, natural death. Nevertheless, despite our disappointment, we decided to leave the fish in the tank, basing our actions on the "nothing to lose" theory. We did not know at the time but this proved to be the best decision we could have made. During the day the fish failed to improve much in appearance and by nightfall we reckoned we stood more chance of winning a fortune on the pools or "Ernie" than getting these fish to even look at each other!

So, even though both of us had got out of bed by a reasonable time it was nearly 10 o'clock before either of us looked casually into the tank. As we had fully expected, not a thing; pale fish looking frightened and nervous, and not a sign of an egg; our eyes roved, and it was then that my brother, Dick, saw something that was the last thing we expected—one single, solitary, lonely egg. The reaction which that drew from us was laughter. One single egg, because, believe me, all either of us could see was this one egg. We reckoned that we had looked in too late on the fish and that most of the eggs had been eaten. Anyway, we thought it was only fair to the potential half-banded barb to give it a chance and so the parents were duly removed.



We looked in the next morning and found the egg still in the same position and in fact it remained there for the rest of the day. On peering carefully into the tank the next morning we both had quite a pleasant surprise. Instead of that one egg hatching, we could see at least six or seven minute black threads clinging to the glass panels of the tank. We hoped to see more but the maximum number we could count was 11.

The following day was New Year's Day and unfortunately my brother was "indisposed." I looked into the tank that morning and could see rather more fry hanging on the glass and also one or two on the leaves of the *Cabomba*. It was on the third day after we had first seen the fry that they became free-swimming. Some of the more adventurous moved around in a series of short violent jerks. Now that there were some swimming about the count increased again and at least 20 fry were apparent. Our pleasure and surprise grew by the minute.

It was at this point that feeding became necessary.

We used Liquifry for egg-layers for a start as we have always found this to be an excellent food. As the days went by and the fry grew, the daily count increased slowly until by the end of a week we estimated at least 50-60 fry were present. I wondered where all the eggs had been hidden.

After a week on Liquifry the time had come to try out the fish with some brine shrimp. We were, in fact, a bit premature with this but in a day or so the fry had learned to accept these and soon their little bellies bulged and glowed a wonderful healthy pink. We were still not confident as to the number of fish present as the thickets of *Cabomba* occupied a large portion of the tank, and it was not until a few days ago, when we moved the ever-growing fry into a larger tank, that we discovered the true total. We had obtained no less than 150 baby half-banded barbs. Not bad, we thought as we reflected on that day when we had seen that one egg.

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## Some Interesting Live Foods (3)

# *Bosmina and Cypris*

by S. M. H. Loquens

Two extremely small crustacea, and therefore very suitable live foods for young fish, are *Bosmina* and *Cypris*. Both names may well sound foreign to the aquarist but the creatures themselves may not be. In size they are little more than a twentieth of an inch and considerably smaller than their close relatives *daphnia* and *cyclops*.

*Bosmina*, if viewed under the microscope, is not unlike *daphnia* in appearance, having a similarly shaped body and appendages. *Cypris*, on the other hand, has few parts attached to its body and propels itself relatively smoothly through the water, unlike its jerky cousin. Both of these crustacea are to be found in similar haunts to *daphnia*, namely still bodies of water such as ponds. The zone fringing a pond is the place where these creatures congregate in the largest numbers. They tend to get right in among the stems of marginal plants and to collect them one really needs to move about among these reeds and sedges, parting them gently and examining the water around the stalks. *Bosmina* and *Cypris* will show up as fine dark specks, not unlike a suspension of black pepper.

An extremely fine net is required to capture these creatures and this should be drawn slowly through the water so as not to scatter them. Once captured they may be treated like *daphnia* or *cyclops* and transported in a bucket of water and then transferred to a clean container of fresh water for inspection for any pests which may be present.

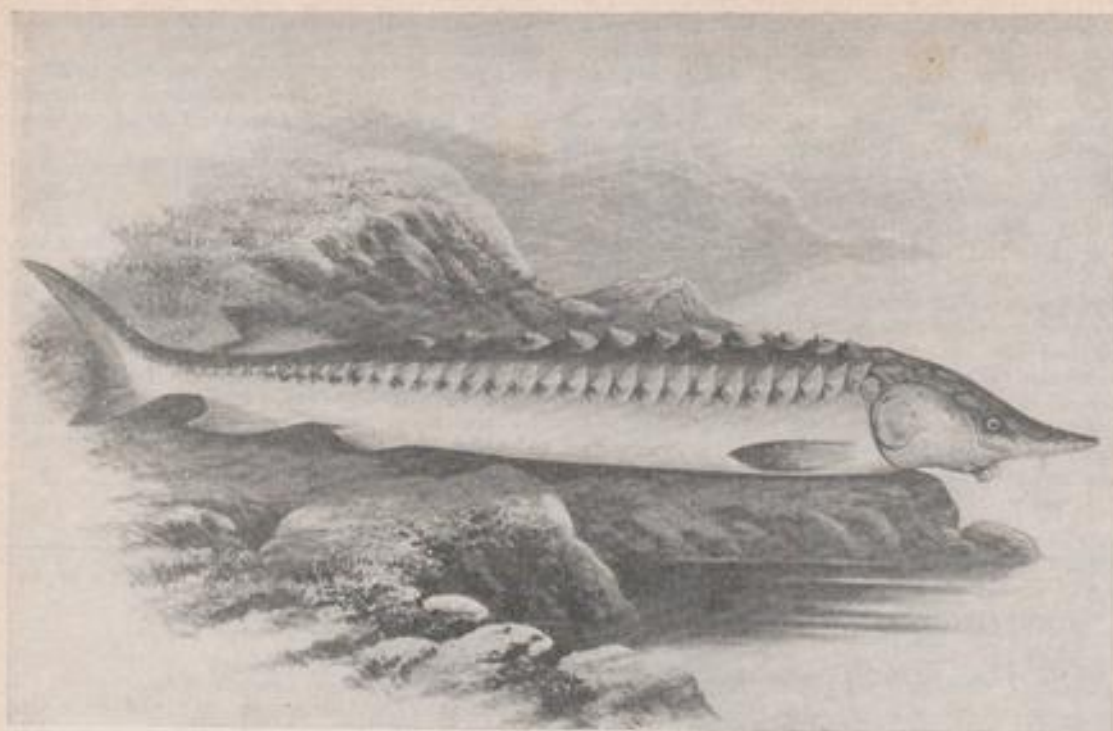
Both of these crustacea are excellent for young or small fish and when used in conjunction with other live and dried foods, will help to swell the aquarist's larder during the summer and autumn months. It may well be possible to rear these crustacea like daphnids or *cyclops* but I have not attempted this; it would be interesting to know if anybody else has, and under what conditions.

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ANSWER TO WHAT ARE WE?

### SWORDTAILS

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British Freshwater Fishes

by A. Boarder

## THE STURGEON

ALTHOUGH this fish is essentially a saltwater type it is not unknown for it to enter our freshwater rivers and move up to a considerable distance from the sea. Specimens have been reported from the rivers Severn and Trent but so far as I am aware the fish is not known to have spawned in British rivers.

The Sturgeon is almost Pike-shaped with its sharp nose and pointed head. Also the elongated body is somewhat similar to that of the Pike. The dorsal fin is situated far back like that of the Pike but is rather small and pointed, unlike the rounded fin of the other fish. Along the back of the Sturgeon are a number of protrusions almost like pointed scales. The colour is a darkish-green with an almost white belly. The caudal fin is shaped something like that of a shark, having a large upper lobe with a small lower one. There are four barbels under the mouth which indicates that the fish is mainly a bottom feeder.

The food consists of creatures found on or near the bottom, such as snails, mussels, worms and *crustacea*. Older fish will eat other fishes of a smaller size than themselves. The females are renowned for the exceptionally large number of eggs which they carry and it is from them that the expensive caviare is made. The flesh is considered of good quality and isinglass is made from the swim-bladder which is large. Spawning takes place in early summer when the fish swim well up into freshwater rivers. The eggs are laid on a gravelly bottom for preference.

The Sturgeon is an old established fish as there are many fossil traces of it having lived two hundred million years ago. This fish can grow to a length of from ten to fourteen feet although most caught are in the lower range. It is a 'Royal' fish and when caught in British waters it is the prerogative of the Crown.



# Breeding Goldfish

## REARING THE YOUNG FISHES

by Arthur Boarder

IN MY PREVIOUS article on rearing goldfish varieties I had brought the aquarist to the stage when the fry were taking *infusoria* and Liquifry. However, there is one point which I feel I must stress. That is the amount of Liquifry to be given and the frequency. This is something about which it is quite impossible to be dogmatic. No-one could estimate how much to give to a tank unless one was in possession of certain facts, one being the size of the tank and another the number and age of the fry. A 24 x 12 x 12 in. tank could be holding a hundred or more fry and another tank of the same size could have only twenty fry in it. Obviously then, one would need much more food in the tank containing the larger quantity of fry. Any beginner is usually mystified as to how much Liquifry to add and how often. Much of this knowledge can only be learned by practice and experiments. Also, it is necessary to test some of the water almost every day to see if there are any *infusoria* actually in the water before adding any more Liquifry.

It is recommended to add a few drops a day, but this is far too vague according to the above statement about the numbers of fry present. It is then necessary to use discretion and to watch the actions of the fry to see if they are moving well and appear to be taking any food. It is usually possible to see the fry making sudden darts in the water, and although one may not be able to see if anything is taken, it is probable that the fry are feeding when making these actions.

The time to discontinue feeding with *infusoria* or Liquifry depends on the rate of growth of the fry. Obviously such food is not sufficient for them as they grow and so something more must be added. This can be in the form of flake foods, which have been

reduced to a powder. The worm shredders were ideal for this purpose but as they are not now available one must crush the food in some other way. I have one of the old-fashioned coffee mills with which I can reduce dried foods to a powder. This is then sifted so that only the dust is used, the larger being fed to older fish. Some of the dried meaty foods such as used for cat and dog foods can also be reduced to a powder but I find that the best way to use such foods is to soak them first. The liquid is then sifted so that the larger portions can be kept from the fry tank. Besides such dried foods it is possible to reduce white worms and garden worms to a soupy-like consistency. The mashed worms are a good food for fry once they are about a fortnight old. One must be careful to see that no large tough pieces are allowed to stay in the water, the sieve again being used to remove any large pieces.

Some breeders use the yolk of a hard-boiled egg, and sift this through the water, but I have tried this method on two occasions and have not found it to be successful. I discovered on both times that the fry developed a type of fungus at the gills and so I never use egg yolk now. Once the fry are a month old they can take many types of foods, always making sure that no food which is too large is given. When mashing garden worms only use the very small ones as large ones can have such tough skins that most of them must be wasted. The use of *daphnia* and *Tubifex* must be left to the individual choice but unless you are sure that the live food has come from a safe source I do not recommend their use. However, as there are freeze-dried foods on the market I see no danger in the use of these and if soaked first they should be an ideal food, if somewhat expensive when a large number of fish are being reared.

Whilst the fry are in their first few weeks of life it is most important to make sure that the water in the tanks remains pure. Where there are a fair number of fry it is imperative to change some of the water at least once a week. One may think that it is difficult to do this without removing some of the fry, but the task is quite simple with the aid of a nylon net and a small saucepan. The net is gently lowered into the water and the saucepan is inserted to remove some water without any danger of catching any fry. Fresh water can then be introduced. If the fry tank is kept warm then one may be afraid to add colder water, but as long as there is not too much difference in the temperatures there will be no danger to the fry. If cooler water is gradually introduced to the tank, this will run to the bottom and the fry will swim up into the warmer water higher up in the tank.

Although it is quite possible to hatch and rear fry without any artificial warmth, there is no doubt whatever that the fry will thrive much better with a temperature of about 70°F., for the first month or two of their lives. They can feed much better and so will grow much faster. Some aeration will also be an advantage, especially where there are a lot of fry in the tank. It is quite possible to keep far more than the usual number of fish in a tank when they are very small than would be possible with larger fish. The moving of some of the fish when they get to about two months old will be the next stage. At the same time it will be possible to sort out the good ones from those which are never likely to be much use. When any of the fancy varieties of goldfish are being bred, it is essential to sort them out at an early date. Some kinds are easier to sort than others, but any which should have a double or divided tail can be picked out from single-tailed ones when quite small. It is even possible to do this with a magnifying glass when the fry are only a few days old.

Although it is easy to pick out all the fry which are not likely to make good specimens, it is not possible to pick out those which will all make the top grade. This will take time, but at least if one removed those which are never likely to be of much use, then food and space can be given to the better ones. Any scaled types which do not show the colour change very early in life will have to be kept longer than the shubunkin types which can show their colour much earlier. Any of these which turn almost white are not of much use and it is usually the darker ones which turn out to be the better-coloured fish, that is, those with plenty of blue in the ground colour with black markings.

The orandas and lion-heads will not be easy to sort when young as the hood does not usually develop until the fish are a year or two old. Also one must

not be too critical when sorting any of the double-tailed varieties as a caudal fin may appear to be webbed (not divided), for a time but later on it may then show the required division. Some fish hold the two parts very close together so that it is almost impossible to tell if the tail is divided or not.

If the goldfish have not spawned by late May, the pondkeeper may get rather disheartened and think the fish will not spawn at all. This is especially so when one's friend's fish have spawned well in a pond which appears to be similar in every way. However, of all the reasons why fishes do not spawn in a garden pond, I feel sure that the main one is the oxygen content of the water. Time and again I have found that my fish will spawn very soon after the water in the pond has been changed for fresh. Usually within two days the fish are chasing well, and this is not always when they have not done so for some time. The presence of plenty of oxygen in the pond certainly encourages the fish to spawn. If your goldfish show no signs of doing so then the first experiment to make is to change most if not all the water. During the times when fish can be expected to spawn, I have never known this trick to fail.

Much has been written about the need to feed up the fish to get them in breeding condition and the garden worm is usually recommended for this purpose. I have no quarrel with this, as few fishes will refuse to take an earthworm if in anything like a healthy condition. It may not be easy to get earthworms for anyone living in a town with a small or no garden at all. If a garden is available it is possible to encourage worms to multiply in a certain section of it. Any garden with a lawn will usually have some worms as well and these may be caught by several means. During the warmer months of the year, especially after a shower, it is possible to go quietly to the lawn at night with a torch and see worms on the surface. A quick grab near the tail end (that still in the earth), will enable one to draw the worm gently from the ground. Also it is possible during the daytime to make the worms come to the surface. The worm casts will indicate where there are plenty of worms and if one pushes a fork into the ground and wriggles it about for a few minutes the worms will hurry out of the ground.

Should there be a spare patch of the garden it will be possible to keep this damp by covering it with an old sack. Any waste vegetable matter can be placed there as the worms will feed on such matter and congregate in the damp soil. I have never been able to breed worms under artificial conditions but can usually get all I require from my fairly large garden. The keeping of them alive for some time is no easy task. I have never been able to keep them for any length of time in earth. I am only successful with decaying, damp leaves. Even then the container



has to be kept in a dark position and as cold as possible. I can keep worms all through the winter in a metal can filled with dead leaves and the worms can feed on them and remain healthy. As for breeding them I imagine that this would be a long job and I prefer to catch them whilst digging the vegetable garden.

It is possible to water the lawn with a fairly strong solution of permanganate of potash. The worms come to the surface quickly, but when gathered they must be washed at once to remove the solution. During hot, dry weather the earthworms keep well down in the earth and can sometimes even tie themselves into a knot. Fair-sized goldfish can eat a whole worm of a good size but I always break them

in two or three pieces before feeding to the fish. These worms will live in water for a couple of days or more, and if unbroken could burrow into the mud at the bottom of the pond. As a bait for trapping newts, I know of nothing better. The trap I made with a preserving jar with a funnel in the top is still working well, and a fresh worm every two or three days never fails to catch any newt in the pond.

Small worms can be chopped up for young goldfish with a pair of scissors or chopped with a razor blade on a piece of board. Even month-old fry can eat these pieces if they are reduced finely enough, and if sifted the large pieces can be fed to older fish.

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## POWER FILTRATION

### Without the A.C. Mains Supply

by P. A. Hickling, B.Sc.

THE COAL MINER'S strike, which took place recently, inconvenienced all of us and the resulting power cuts have, no doubt, caused the deaths of many freshwater and marine fishes in aquarists' tanks.

Electricity supplies three of the basic needs of a fish, i.e. light, heat and air, and whilst the absence of artificial light during a power cut is not critical, both warmth and oxygen are. We are, therefore, presented with two problems, namely to supply heat and air (including filtration) during a power cut. If the aquarium is situated in, for example, a warm lounge where the temperature differential between the tank and the room is not too large, then it would take a considerable time for the aquarium water to acquire the temperature of the room. Further, if the room can be heated by means independent of electricity, for example by a paraffin heater, then we are left with only one problem, i.e. the supply of oxygen to our fishes. The purpose of this article is to present practical solutions to this problem and, in particular, to describe one system in detail.

To maintain the oxygen content of the aquarium water several techniques may be tried with varying effectiveness:—

- (a) Blow air into the tank by mouth. Expired air contains about 17 per cent oxygen so it is sufficient for this purpose. The method, however, is crude and tiring.
- (b) Change the water frequently. This method requires a constant supply of warm water and this may not be available during a power cut. It also is tiring.
- (c) Pump air in by hand or foot pump.
- (d) Operate a piston pump using the flow of cold water from the tap. This method is a good one but ideally, the tap needs to be fairly near the tanks. An unlimited supply of flowing water is also needed.
- (e) Use the spare tyre from the car. Pump the tyre up to high pressure, slowly release the Schrader valve and, by means of a rubber tube, allow the escaping air to bubble through the aquarium water.
- (f) Use a gas cylinder of air or pure oxygen under high pressure. This method is expensive and is not available to most people.
- (g) Operate an a.c. mains-powered air pump from an alternative supply of a.c.



Method (c) has been used by the author to good effect but the tyre needs to be pumped up frequently. It was decided that (g) was the best and most reliable method in that it requires no supervision or manual work or great expenditure of money.

The air pump most commonly used by amateur aquarists is of the diaphragm type. Alternating current is passed through an iron-cored coil. The flow of current induces a magnetic field within the coil former and this is used to attract and repel a vibrating arm during each successive cycle of the current flow. In turn, the vibrating arm pushes against a diaphragm mounted over a valve-block containing two opposed valves. The effect is to supply puffs of air at twice the mains frequency. The inherent disadvantages of the system are the 100Hz "hum" and the fact that the electrical supply must be alternating. In order to operate this type of pump during a power cut we therefore need to generate an alternative supply of a.c. There are three simple ways of achieving this:—

- (1) Use a petrol powered a.c. generator. A 1.5kW model costs at least £60 and must, therefore, be considered as something of a luxury.
- (2) A carefully selected relay (as used in a gong-and-striker type door-bell) is connected in series with the pump and an "electronic" dry battery of high voltage (about 300V). The relay must be capable of switching at a suitable frequency. If it is too low the pumping action will be feeble; if it is too high, the pump will not operate at all. Secondly, the inductance of the relay must be of a suitable value so that the voltage drop across the unit is not too great. Thirdly, the battery must be capable of supplying about 20mA for long periods. Generally speaking, these three conditions are not easily satisfied at the same time. The method, though sound in theory, is rejected.
- (3) Use a d.c./a.c. converter to give 240V using a low voltage d.c. source that is available to most people, i.e. a 12V (or 6V) car battery. This method was adopted by the author. The diagram shows the complete circuit.

Power transistors T1 and T2 form a stable multivibrator using inductive collector loads to generate a repetitive square wave of about 24V amplitude at a frequency corresponding to that of the mains. The inductive load at each collector causes the leading edge of each square pulse to overshoot, so Zener diodes ZD1 and ZD2 are incorporated to limit this overshoot to about 27V. The transformer steps this voltage up to 240V a.c. Since the power drawn from the unit must be less than the power applied the limiting factors are how much current we can draw from our low voltage d.c. source and, secondly,

whether the primary of the transformer can pass this current for long periods.

As an example, a Rena 100 vibrator pump draws 15mA at 240V, i.e. it consumes 3.6W of electrical power. To drive such a pump from this unit one would need to supply about 9W of power, i.e. 750mA from a 12V car battery. For a modest aquarium set-up of, say, two 3 ft. tanks, one Rena 100 pump would be enough to give both an emergency air supply. Using a 38A-hr. car battery (say), the pump could be expected to operate efficiently for at least 24 hours continuously. In the event of the mains being re-connected within this period, the battery could be recharged. Should the mains be cut off for an indefinite period, the battery could be recharged on the car during a good run at cruising speed, assuming a reserve battery is available to operate the pump while this is being done.

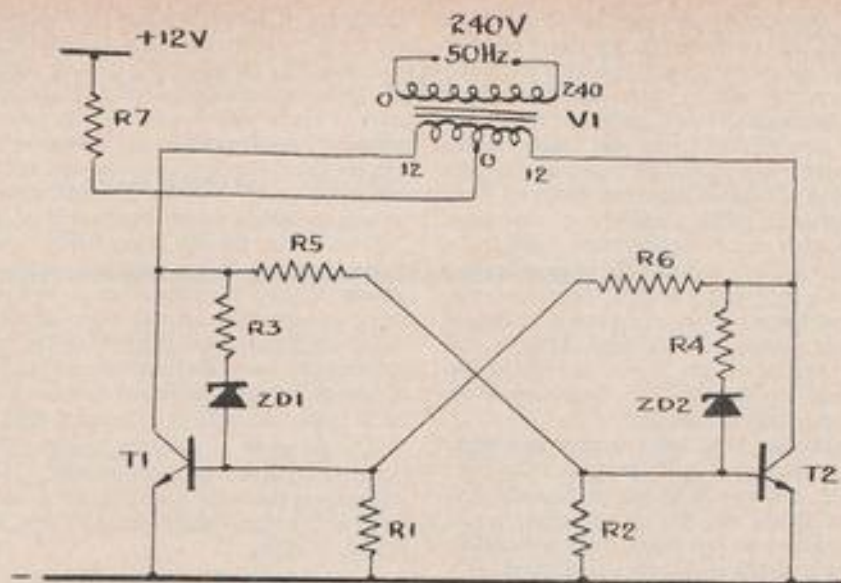
The primary of a modest-sized transformer is capable of passing about one ampere so a relatively small transformer would be adequate for one air pump. Should more air pumps be needed then a heavy duty transformer must be used as, for example, in a mains battery charger. In fact it is quite simple to use a battery charger transformer in a dual role, i.e. to charge a 12V battery whilst the supply is connected, and then, by means of two double pole/double throw switches, to generate a.c. from d.c. using the converter described above. Personally, I have a unit capable of operating one Rena 100 and two Petcraft Aquarius pumps drawing current from six 2V, 60A-hr. lead-acid cells. The air output from this unit is sufficient to operate eight under-gravel filters under normal conditions and, perhaps, twice this amount (under reduced pressure) in a real emergency.

The power transistors are rated at 115W for a case temperature of 25°C so for this application heat sinks are not required and the transistors may be mounted directly into the Veroboard. The only component which gets noticeably hot is resistor R7 so the unit may be enclosed in a small wooden or aluminium box. A list of the components needed is given below.

#### Components

T1, T2: Mullard 2N3055 npn power transistors (or equivalent).  
ZD1, ZD2: Mullard 400mW, 27V Zener diodes.  
R1, R2: 220 ohm, 1/2W resistors.  
R3, R4: 100 ohm, 1/2W resistors.  
R5, R6: 250 ohm, 5W wire-wound resistors.  
R7: 2 ohm, 5W wire-wound resistor.  
V1: Centre-tapped transformer with 12V tapplings. Small piece (5 cm × 7 cm) of Veroboard.  
Four 4BA, 1/4 in. bolts with nuts and washers.  
Two bolts for mounting transformer (size depending on transformer).





It should be noted that this unit is capable of giving an unpleasant shock so if it is not enclosed in a housing of some sort, care should be exercised when using it.

Whilst this unit will in no way solve the problems of a large aquatic dealer, it should prove invaluable to the amateur aquarist at home.

## LEARNING TO LIVE WITH THE TIGER

*by David Smith*

TIGER BARBS are often the subject of much argument, either you are for them or you just loathe the sight of them as they chase and tear, sometimes literally, about the tank scattering graceful angels and gouramies to all four corners in search of a few seconds brief respite.

This is the general conception but to me this is brought about by people failing to recognise that tigers are definitely shoaling fish. The common beginner's mistake seems to be that of buying one or two individuals and then wondering why they then proceed to make the lives of the other more slower-

moving occupants of the tank a misery. In my opinion you cannot beat the sight of these beautiful, active fish speeding around the tank playing and chasing after each other, always on the lookout for food.

I can always remember visiting one man's house when I was a beginner who had a 6 ft. x 4 ft. tank stocked with over 200 young tigers. This tank made a lasting impression on me and really was the start of my experience with the tiger. From this tank I obtained my first three specimens and I proudly put them in my show-tank at home along with my angels,

guppies, etc. The result was chaos, the three buccaneers had the time of their lives, ripping their way about the tank. In a very short space of time the angels looked terrible and in those few short days became near nervous wrecks, refusing food and spending their time in the corners and behind rocks. Soon the tigers were in a tank of their own and as they began to sex out it became apparent that two were males and one female. Chaos again; one male grew and chased the other which became stunted and spent most of the time hiding, and the big male made the female's life a misery. Here, I think, lies the answer in the keeping of tigers, never in ones, twos or three's but any number above. I have kept them in this way with lace gouramies and angels and whilst the latter would not exactly take the show bench by storm they are certainly no wrecks.

Being a flat-dweller, tank space is very restricted; if the landlady could get a quick peep in I feel sure she would think she was in Brighton Aquaria and, fish, tanks, the Misses and the illegal moggy would be out on the street, so my tigers share a four-foot community tank with the two species mentioned.

One can hardly mistake the male and female as the male possesses a rich red nose and more red to its fins, especially the dorsal, which has a bright red streak on its outer edge. When in breeding condition every scale seems to have rich black edges and the four black bars seem darker and more intense than ever.

For breeding I use a 24 in. x 12 in. x 12 in. filled  $\frac{1}{2}$  full with half tap and half rain water which is left to stand for a couple of days. I use no gravel as being a 9 till 5 merchant for five days a week, the fish have to be left in the tanks from morning until I return at night, irrespective of the spawning time. This was a constant drawback at first and I solved it by using a half inch plastic mesh raised a couple of inches off the bottom so at least some eggs would be saved from the parents' ravenous appetites. Into this mesh I placed three of the recently available plastic ferns at spaced intervals, never in a bunch as this tends to concentrate the eggs in one place and they nearly all adhere to the plants this making easy pickings for the parents.

I place one female in a couple of days prior to the male who I put in last thing at night, the temperature at this stage is about 75°F. During the time prior to spawning the fish are fed *tubifex*, fish, chicken and beef, in fact they get whatever we have for dinner, peas, cabbage, egg, the lot. On this varied diet the females soon fill with spawn and the males are always perky and gleaming.

Before leaving for work in the morning scheduled for spawning, I raise the temperature to 85°F, increase the aeration, replace a bucket full of water with fresh and pop off to earn my living. On arriving home I

check the plants for any eggs and then the bottom of the tank and if everything is OK remove the two breeders. I then set the temperature back to 75°F and at this temperature the eggs take approximately three days to hatch. After a further three days I add a few drops of Liquifry and by the fourth day from hatching the fry have absorbed their egg-sacs and jerk their way about the tank. Even at this tender age, if one looks closely, a faint red tinge can be seen on the developing tail fin. The fry are quite hardy but, as in most cases, susceptible to complete water changes and drastic changes of temperature. As soon as they are large enough they are fed brine shrimp and micro-worms and gradually, chopped *tubifex*, liver and white worm. Between the Liquifry and brine shrimp stage I have found egg yolk mixed in water prior to placing in the tank an excellent in between food.

The fry grow very rapidly and at the age of six to eight weeks should be ready for sale. During this time I change a bucket of water for fresh once a week and after about three weeks transfer them to a 36 in. x 12 in. x 12 in.

Some breeders I know usually like to use two males to every female but in the tigers' case I think this is unwise as the males are quite vigorous drivers and can kill or maim a female that is not quite ready to spawn. Even after a successful spawning I have taken the female out minus her anal and ventral fins; this is due, to a certain extent, to not being around after the spawning has been completed but quite a large percentage of the damage can be done during spawning. Some males seem to be worse than others in this respect. One thing I have noticed in the few spawnings that I have had the luck to witness, is that whereas the male's colours intensify during the act, the females' seem to fade. Maybe this is due to the light colour of the mesh or perhaps it is some sort of identification to help the males out during community spawning.

I have kept white-clouds, zebras, medakas and fighters out of doors during the summer months with some success and this year I am going to have a try with some tigers and rosy barbs. It will be quite interesting, at the end of the summer when I empty the pools, to see if the constant changes of our English climate have affected the fishes' spawning urge, and if they *have* spawned, to see if any fry have escaped the parents' hearty appetite. Even now I am still amazed at the amount of food they can get through before they start resting in that way, which worries all beginners, by lowering their heads till they are almost verticle, digesting their last meal before dashing off to find their next one.

To me, if kept properly and placed with other fish sensibly, tiger barbs will give one hours of enjoyment and pleasure and by their comparatively easy breeding can supplement the aquarists pocket money.





## 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.

RECENTLY the **Bournemouth A.S.** heard Mr. Fancy, of the Bournemouth and District Water Board give an excellent talk on the treatment and distribution of the local water supply, illustrated by a colour film on the subject. The Chairman, Mr. R. Coombes, welcomed Mr. J. Gibson and Mr. M. Abraham, Chairman and Secretary of the Pisces Aquarists Club to the meeting.

The Table Show of the month was judged by Mr. T. Hutton, of Weymouth, with these results: Danios, Rasboras and Minnows: 1, J. V. Jeffrey; 2, H. Earl; 3, L. James. Owner-Bred Pairs, Livebearers (except Guppies): 1, J. Scott-Morgan; 2, Mr. Daniel; 3, H. Greenhalgh.

RESULTS of the fourth annual open show of the **Keighley A.S.** were as follows: Guppies: 1, Mr. Shanks, Mount Pleasant; 2 and 3, Mr. Leadbetter, Blackpool. Swordtails: 1, F. Cooke, Blackborough; 2 and 3, N. R. Gibson, Huddersfield. Mollies: 1 and 3, J. Igoe, Sherwood; Mr. Leadbetter, Blackpool. Platies: 1, C. Ward, Doncaster; 2, Mr. and Mrs. Gates, Castleford; 3, H. S. Clowes, Castleford. A.O.V. Livebearers: 1, Mr. Heptinstall, Castleford; 2 and 3, J. S. Hall, Aireborough. Barbs up to Roay: 1, A. Barrett, Welbeck; 2, Mrs. Rhodes, Four Star; 3, Mrs. Dearden, Independent. Barbs over Roay: 1 and 3, Mr. and Mrs. Cohen, Castleford; 2, Mr. Rowbottom, Hyde. Characins up to Bleeding Heart: 1, Mrs. Smith, Keighley; 2, P. and H. Batchelor, Lymne; 3, Mr. and Mrs. Cohen, Castleford. Characins over Bleeding Heart: 1, H. Smith, Keighley; 2, I. Rowbottom, Hyde; 3, D. and R. Standen, Lymne. Rasboras, Danios, Minnows: 1, Mr. and Mrs. Booker, Morecambe; 2, A. S. Allison, York; 3, Mrs. P. Heptinstall, Castleford. Sharks and Flying Foxes: 1, P. and H. Batchelor, Lymne; 2, G. Thickbroom, Welbeck; 3, Mr. and Mrs. Gates, Castleford. Fighters (true colour): 1, Mr. and Mrs. Kilvington, Doncaster; 2, J. S. Hall, Aireborough; 3, J. G. Robertson, Mount Pleasant. Fighters (mottled-colour): 1 and 2, Mr. and Mrs. Roberts, Valley; 3, Mr. and Mrs. Kilvington, Doncaster. Anabantids up to three spot: 1, J. Whitley, Aireborough; 2, B. Sagar, Keighley; 3, Mrs. Rhodes, Four Star. Anabantids over three spot: 1, Master P. Beckett, Keighley; 2, J. S. Hall, Aireborough; 3, M. Woodley, Dukeries; Toothcarps: 1, Mrs. Atkinson, Harrogate; 2, Mrs. Beckett, Keighley; 3, Mr. and Mrs. Blades, Cresswell. Angel Fish: 1, Mr. and Mrs. Kilvington, Doncaster; 2, E. Milne, Doncaster; 3, Mr. and Mrs. Blades, Cresswell. Dwarf Cichlids: 1 and 3, I. and R. Heptinstall, Castleford; 2, B. Morrell, Praxetters. Cichlids over Kribia: 1, I. Rowbottom, Hyde; 2, Mr. and Mrs. Gates, Castleford; 3, P. Kenyon, Belle Vue (winner of the Best in Show, Aquarist Gold Pin, A.Y.A.S. Diploma, and Seven Seas Trophy). Corydoras: 1, A. S. Allison, York; 2, Mr. and Mrs. Waring, Lytham; 3, J. Mosley, Keighley. Loaches and Botias: 1, J. G. Robertson, Mount Pleasant; 2, Mr. T. Smith, Sheffield; 3, Mr. Coward, Independent. A.O.V. Catfish: 1, P. and M. Shipley, Gool; 2, Mr. and Mrs. Gates, Castleford; 3, A. S. Allison, Castleford. A.O.V. Tropical: 1, D. Kennedy, Keighley; 2, D. and R. Standen, Lymne; 3, P. and H. Batchelor, Lymne. Breeders (Livebearers): 1, G. Thickbroom, Welbeck; 2, Mrs. S.

Gibson, Huddersfield; 3, Mr. and Mrs. Cohen, Castleford. Breeders (Egglayers): 1, A. Curchin, Swillington; 2, Mr. Sonley, Middleborough; 3, Mr. and Mrs. Cohen, Castleford. Pairs (Livebearers): 1, Mr. Leadbetter, Blackpool; 2, Mr. Shanks, Mount Pleasant; 3, Mr. and Mrs. Ledhouse, Huddersfield. Pairs (Egg-layers): 1, I. and R. Heptinstall, Castleford; 2, E. and S. Clowes, Castleford; 3, Mr. and Mrs. Cohen, Castleford. Common Goldfish: 1, 2 and 3, J. S. Hall, Aireborough. Fancy Goldfish: 1, 2 and 3, J. S. Hall, Aireborough. Shubunkins: 1 and 2, J. S. Hall, Aireborough; 3, Mr. A. Kaye, Top Ten. A.O.V. Coldwater: 1, 2 and 3, J. S. Hall, Aireborough. Juniors A.V. Livebearers: 1, Master S. Harrison, Sherwood; 2, Miss Gregory, Nelson; 3, Master A. Barrett, Welbeck. Master S. Harrison won the Society Trophy. Juniors A.V. Egg-layers: 1, Master A. Thomas, Castleford; 2, Master P. Beckett, Keighley; 3, C. & G. Broadhead, Huddersfield. Junior A.V. Coldwater: 1, Master G. Thickbroom, Welbeck; 2, Master P. Beckett, Keighley; 3, Master A. Kaye, Top Ten. A.V. Marines: 1, C. Stewart, Nelson; 2, Mr. Lawson, Aireborough (only two entries). There were 747 entries to the show.

THE officers and committee for this year of the **Stone A.S.** are as follows: President: I. Brough; Chairman: J. Sanders; Hon. Secretary: B. Hughes, 4 Arbour Street, Hanley, Stoke on Trent, Staffordshire, ST1 2HP. Treasurer: A. Fell; Show Secretary: K. Evans; Asst. Show Secretary: P. Clements; Committee: C. Smith, J. Tucker.

ON 1st March, the **Brighton and Southern A.S.** held a table show for Cichlids. Results: Large Cichlids: 1, R. Smithers; 2 and 3, Mr. and Mrs. Corbin; 4, M. Whittington. Dwarf Cichlids: 1 and 4, M. Whittington; 2 and 3, R. Smithers.

During the evening the Chairman, Mr. A. Dawes announced that Mr. P. Ginger (F.B.A.S. Judge) had accepted the position of Vice-President. The speaker for the evening was Mr. Armstrong, B.K.A., who brought many specimens of Killifish along for the members to see, including Killifish eggs which were nearly ready to hatch. Mr. Armstrong pointed out that in his opinion there was no need to float a polythene bag of newly bought fish in a tank as fish going into warmer water would not be harmed. It is only when they are put into colder water that it is detrimental. He also brought along cultures of Microsorum and Praet fly and described in detail how to keep them multiplying. As Mr. Armstrong was so interesting, the Society have arranged for him to return in the year to continue his talk. Any further information on the Society may be obtained from the Secretary, Mr. C. P. Corbin, 80 Marlborough Drive, Burgess Hill 41632.

THERE was a record attendance with a number of welcome new members at the March meeting of the **Weymouth and District A.S.** Mr. P. Carter of Preston Aquarium gave an interesting talk on Catfish and the Table Show for Corydoras and any other Catfish was judged by Mr. Jack Jeffries of Bournemouth A.S. Winners were as follows: Corydoras: 1, M. Squibb;

2 and 3, T. Jones; 4, A. Worth. A.O.V. Catfish: 1, A. Worth; 2, M. Midway; 3 and 4, R. Peed. After refreshments, a panel of three club members, Messrs. T. Jones, A. Worth and C. R. Field, answered questions on fish diseases. There are a large number of fishkeepers in the Weymouth district, and this year the club is running a campaign in an endeavour to at least double the membership.

THE main discussion at the evening meeting of the **British Marine Aquarists Group** was a talk with two members of the Wulfrun Sub-Aqua Club regarding a visit with their club on a dive at the north coast of Anglesey.

THERE was a record number of entries at **Belle Vue (M.C.) A.S. Open Show** in March. The total number of entries was 721. The results were as follows: Section "A"—Guppies: 1, E. Smith (Sheffield); Section Winner, 2, L. Leadbetter (Blackpool); 3, S. Mitchell (Fleetwood); Swordtails: 1, F. Cooke (Blackborough); 2, Mr. and Mrs. Cobb (Belle Vue); 3, A. Derby (Hyde); Platies: 1 and 3, J. Murray (Salisbury); 2, C. Ward (Doncaster). Large Anabantids: 1, J. Igoe (Sherwood); 3, L. Leadbetter (Blackpool). A.O.V. Livebearers: 1 and 2, J. S. Hall (Aireborough); 3, N. Furness (Rubery Select). Section "B"—Characins (Small): 1, G. W. and A. K. Jackson (Belle Vue); 2, B. Wilson (Merseyside); 3, A. Thomas (Lucan). Characins (Large): 1 and 2, Mr. Atwood and Mr. Williams (Rubery Select) (Section Winner); 3, B. Smith (Merseyside). Section "C"—Dwarf Anabantids: 1 and 2, D. Charlton (Merseyside); 3, Mr. and Mrs. Kilvington (Doncaster). Fighters: 1, Mr. and Mrs. Lord (Widley); 2, Mr. and Mrs. Roberts (Valley); 3, J. S. Hall (Aireborough). Large Anabantids: 1, E. Charlton (Merseyside); 2, F. Mulla (Merseyside); 3, R. Whittingham (Stretford). Section "D"—Minnows and Killies: 1, Mr. and Mrs. Thorne (B.K.A.); 2, M. Tonge (Oldham); 3, B. Forrester (B.K.A.). Danios and Minnows: 1, E. Smith (Sheffield); 2, Master A. Kaye (Top Ten); 3, R. Holmes (Derby Regent). Rasboras: 1 and 2, D. Charlton (Merseyside) (Section Winner); 3, Mr. and Mrs. D. Stone (Cherterfield). Section "E"—Sharks and Foxes: Sharks: 1, Mr. and Mrs. Williams (North Staffs.) (Section Winner); 2, E. W. Carter (Merseyside); 3, D. Norris (Oldham). Foxes: 1, Mr. and Mrs. Frediani (Coburn Bay); 2, K. Parkes (Merseyside); 3, Mr. and Mrs. Cobb (Belle Vue). Section "F"—Botias and Loaches: Botias: 1, E. Smith (Sheffield) (Section Winner); 2, K. Thomas (Lucan); 3, Master M. Igoe (Sherwood). Loaches: 1, I. Berwick (Middleton); 2, J. Higham (Warrington); 3, Mr. and Mrs. D. Clarke (Morecambe Bay). Section "G"—Small Barbs: 1, P. E. Gregory (Oldham) (Section Winner); 2, A. Gregory (Oldham); 3, I. Bewick (Middleton). A.O.V. Barbs: 1, Master J. Williamson (Hyde); 2, Day Brothers (North Staffs.); 3, J. Higham (Warrington). Section "H"—Cichlids: 1, L. Leadbetter (Blackpool) (Section Winner); 2, K. Ankers (North Staffs.); 3, K. Walsh (Blackpool). Angels: 1, G. W. and A. K. Jackson (Belle Vue); 2, Mrs. M. Igoe (Sherwood); 3, L. Leadbetter (Blackpool). A.O.V. Cichlids: 1, D. Robertson (Derby Regent); 2, R. Dyson (Blackpool); 3, K. Parkes (Merseyside). Section "I"—Catfish. Corydoras: 1, Mr. Atwood and Mr. Williams (Rubery Select); 2, Mr. and Mrs. Cobb (Belle Vue); 3, K. McCoy (Middleton). A.O.V. Catfish: 1, P. Andow (Stretford) (Section Winner); 2, B. Bailey (Sherwood); 3, D. Charlton (Merseyside). Section "K"—Livebearers (Pairs): 1 and 2, L. Leadbetter (Blackpool); 3, Master A. Kaye (Top Ten). Egg-layers: 1 and 2, D. Charlton (Merseyside)

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(Section Winner); 3, F. Martin (Alfreton).  
 Section "L"—Brooders, Livebearers: 1, J. and K. Barlow (Ashton) (Section Winner); 2, Master A. Kaye (Top Ten); 3, J. Higham (Warrington). Egg-layers: 1, A. Corchin (Swillington); 2, Mr. and Mrs. Wells (Doncaster); 3, R. W. Carter (Merseyside). Section "M"—Coldwater: Common Goldfish: 1, Mr. and Mrs. Cobb (Belle Vue); 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. H. Wareing (Lytton). Fancy Goldfish: 1, 2 and 3, J. S. Hall (Aireborough) (Section Winner). A.O.V. Goldwater: 1 and 2, Miss J. Miller (Independent); 3, Clarke Brothers (North Staffs.). Section "N"—Juniors. A.V. Livebearers (Tropical): 1, Master A. Williams (North Staffs.) (Section Winner); 2, Master J. Bailey (Sherwood); 3, A. Moss (Huddersfield). A.V. Egg-layers (Tropical): 1, B. Black (Huddersfield); 2, Master P. Cobb (Belle Vue); 3, Missy A. Gregory (Nelson). A.V. Goldwater: 1 and 2, Master A. Kaye (Top Ten); 3, Master I. and S. Joyce (Sheffield). Section "O"—A.O.V.: A.V. Female Fish: 1, J. W. and A. K. Jackson (Belle Vue); 2, K. Ankers (North Staffs.); 3, Mr. and Mrs. Cobb (Belle Vue). A.O.V.: Tropical: 1, D. and R. Standed (Loyne) (Section Winner); 2, P. and H. Batchelor (Loyne); 3, K. Ankers (North Staffs.).

THE annual meeting of the **Privateers A.S. (Shipley)** was very well attended, and the officers elected were as follows: president, B. Bowers; secretary, P. W. Cole, 18 South Hill Drive, Gilders, Ripley; treasurer, B. Stein. The Insect-Society Show, cancelled because of the electricity disconnections, will be held at a date to be published soon.

MEETINGS of the **Creswell and District A.S.** are held on the first Tuesday in each month at the Vine Hotel, Carlton Road, Worksop, Notts. Secretary, A. M. Deakin, 33 Sitwell Road, Worksop, Notts, S81 0EL. Tel: 6347.

THE Chairman of **Castleford and District A.S.** Mr. Clowes, welcomed Mr. Derrick Newman of "Aquaria International," Wakefield, as the Honorary President. Results of the table show were as follows: Small Cichlids: 1, 2 and 3, also Best in Show: E. and S. Clowes; Angels: 1, Mr. and Mrs. G. Lucy; 2, R. Charlton; 3, Juniors: 1 and 3, Denise Stevens; 2, Steven Clowes.

THE **Wrexham T.F.S.** have had two table shows this season under a new club-pointing system. In the lead so far for the Endeavour Trophy is the present holder, F. Oliver with 166 points followed by T. Pound with 161 points and Miss U. James with 155 points. A Junior table show was held with Miss U. James filling the first three places.

A talk was given by K. Halley of Chester on marine life which was very enlightening and the members showed keen interest by the questions asked.

Meetings are held the second and last Thursday of each month at "The Fellowship Hall," Bradley Road, Wrexham. All are welcome.

THE **Havant and District A.S.** has recently transferred to new premises, namely the "Emsworth Day Centre," South Street, Emsworth. Recent events that have taken place there include two very well presented slide lectures, one by P. Ginger of Uxbridge on Barbs and the other by C. Brown from North London on Egg-laying Toothcarps. Also there

has been a table show for livebearers. The results were as follows:—Mollies: 1, S. Crabtree; 2 and 4, A. Ford; 3, N. Davis. Platys and Swordtails: 1 and 3, M. Bluffield; 2, K. Johnson; 4, N. Davis. Guppies: 1, A. Ford; 2, K. Johnson. A.O.S. Livebearers: 1 and 2, S. Crabtree; 3, N. Franklin. The judge was D. Jones from Southampton.

CONTINUED progress is reported from **Haven A.S.** There are several new members at most recent meetings. After two years at 14 Pill Fold, there is now a new venue. By kind invitation of Mr. and Mrs. J. Buck, meetings are now held at their new Haven Tropicals' shop in North Road. As before, meetings are normally held every second Monday at 7.30 p.m. Meetings for May will be on the 8th (coldwater show), and the 22nd (subject to be arranged). New members and visitors are welcome at all meetings.

GUEST speaker in March at the **Bethnal Green A.S.** meeting was Terry Cruckshank and he gave a very interesting and informative talk on his experiences of keeping, breeding and showing livebearers.

MARCH was a busy month for the **Brentwood A.S.** On March 7th there was a talk by D. Edwards on livebearers. Mr. Edwards gave some tips on feeding livebearers and also some useful hints on breeding and raising the fry. On March 14th the Society invited by Billerica A.S. to their meeting to hear a very interesting lecture on plants by Dr. List. On March 17th there was an invitation to go to the East London A. & P.S. This time there was a lecture and slide show on cichlids. March 21st was the Society's own meeting again. This was with a difference. Instead of a speaker two of the members were persuaded by the Chairman to give a short talk on any subject to do with the hobby. I. Dwight started the ball rolling with a talk describing his experiences with spawning and raising Zebras and Angels. After tea R. Platford took over and spoke about his impressions of dealers he had visited on his travels as a lorry driver. The table show was for Danios and Whiteclouds and was judged by volunteers from the members.

MEETINGS of **Thurrock A.S.** for this year have been very well attended. The members have been presented with a varied programme, some highlights being—the return of Mr. Pye giving another of his interesting and knowledgeable talks on Plants T.A.S. members from London who provided a Crossword and Ed Nicol who gave his comments after an evening of Practical Judging by the members, and at each meeting table shows covering Flax's, Barbs, Fighters, E.L.T.C.s, and Cichlids.

The Officers and Members of T.A.S. would like to take this opportunity to thank Derek Durrant for his services to the Society, as a member, officer, and very competent aquarist. Owing to re-location of his job, Derek has reluctantly decided that he can no longer fulfil to his own very high standard the office of Show Secretary and indeed attend very many of the Society's meetings in future.

The main officers for 1972 are as follows:—Chairman: P. Hinchley; Secretary: J. Forber; Treasurer: Mrs. B. Nicholls; Publicity: K. Appleby; Show Secretary: R. Alborough; 5 Kingsman Road, Stanford-le-Hope, Essex. Telephone Stanford-le-Hope 6793.

AT the annual general meeting of the **Amersham and District A.S.**, the committee, which had worked so hard and achieved so much, was re-elected almost as before, the Chairman being K. North; Secretary: S. Thompson, 8 Windmill Wood, Amersham and Show Secretary: B. Jenop, 22 Oakley Lane, Highfield East, Tring. The meetings are held in the Community Centre on the first and third Wednesday in each month at 8 p.m. Everybody is made welcome.

RESULTS from **Sittingbourne and District A.S.** are as follows: Swordtail: 1, M. Scott; 2 and 4, Mrs. E. MacDonald; 3, Mr. Palmer. Guppy: 1, 2 and 3, Miss S. MacDonald, who is a Junior member. Characters: 1, Mrs. A. MacDonald; 2, 3 and 4, Mrs. E. MacDonald.

Mollies: 1 and 2, Mr. Palmer; 3, Mrs. E. MacDonald. Home Aquaria Competition: 1, J. Perry; 2 and 3, J. Welby; 4, Master G. Morris, again a Junior member. Anabantids: 1, Mrs. A. MacDonald; 2 and 3, Mrs. E. MacDonald; 4, Master P. Bean, Junior member. Fighter: 1, S. Williams, Joint 2nd, Masters P. Bean and G. Morris, both Junior members. Cichlids: 1, A. Scott; 2, J. Perry; 3, J. Bennett; 4, P. Floyd.

MARCH was a busy month for the members of **Grimsby and Cleve A.S.** At the first meeting 1—Stone answered members' questions on fishkeeping and the "Champion of Champions" table show was also held, the result being: 1, P. Jenson; 2, B. Pulford; 3, C. Easton. The annual general meeting was held at the following meeting the officers elected being Chairman: Mrs. G. Jennings; Secretary: M. Robinson; Treasurer: L. Evans; Show Secretary: T. Walker. Other committee members elected were: C. Easton, J. Howden, K. Svendsen, J. Slowson, J. Clovis, N. Prime and B. Pulford. On 17th March the annual Dinner and Dance and award night was held.

MORE than fifty people attended the March meeting of the **Chelmsford A.S.** when details of the club's events for the year were discussed by the chairman, Mr. Turner. Questions were answered by the Chairman and Mr. Henderson. The classes in the table show were Danios, W.C.M.M., and Rasboras. In the Danios class the winner was N. Muffitt; 2, K. Machin; 3, J. Henderson. W.C.M.M. class: 1, C. French; 2, Mrs. Beavis; 3, J. Henderson. Rasboras class: 1, S. Palmer; 2, R. Knight; 3, R. Machin. These classes were judged by four club members.

THE March meeting of the **Harrigate and District A.S.** was well attended, and there were a number of new faces. The main programme of the evening was to have been a taped slide show, but instead there was an Any Questions programme, which was appreciated by the members. Arrangements are going ahead for the society's annual trip, when this year it is hoped to visit Morecambe Marine Land. A visit to a local trout hatchery to see how trout are bred on a large scale is also being considered. Results of the Table Show at the March meeting were as follows: Advanced: 1, D. Taylor, A.O.V.; 1, D. Taylor, Livebearers; 1, P. Hornshaw, Juniors—A.O.V.; 1, M. Stothard, Mr. Cook was presented with a plaque for breeding and rearing fish for the bronze breeding award.

A NEW section of the **F.G.A.** has been formed in Lancaster. The headquarters are Grepton Institute, Moor Lane, Lancaster, and the meetings are held on the third Sunday in every month. Fancy Guppy open show 18th June, bending 2.30 p.m. Details from show secretary, J. F. Peck, 5 Ridge Street, Lancaster. Chairman, J. Snowdon; secretary, Mrs. J. Snowdon; treasurer, F. Nicholson; assistant show secretary, Mr. Peck; p.r.o., D. Tennant, M. Barnshaw.

EARLY in March **Torbay A.S.** were pleased to welcome Ron King, their coldwater judge and breeder, who gave a most interesting talk regarding the life cycle of Goldfish, ending with the latest creation, the Celestial. The Table Show results were as follows: Platys: 1 and 3, Mrs. Griffiths; 2, J. Voisey; 4, T. Woolley. Junior Section: 1, Master C. Bragg; 2 and 3, Master S. Ham; 4, Master R. Snow. Guppies (Female): 1 and 2, J. Bragg; 3, T. Woolley; 4, J. Davis. Junior Section: 1, Master C. Bragg; 2 and 3, Master S. Ham. Guppies (Male): 1 and 3, J. Davis; 2, Mrs. Griffiths. Junior Section: 1, Master M. Coleman. At the second March meeting, the society were entertained with a talk and slide show given by Lew Doubleday, B.M.A.A., on Marine Fish, which he divided into three types: Tropical, Semi-Tropical Mediterranean and Native.

THE annual general meeting of the **Littlehampton and Bognor A.S.** was well attended

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and the following officers were elected: Chairman, D. Humphries; vice-chairman, A. Carruthers; secretary, Mrs. G. Mingay; "Larshid", Worthing Road, Littlehampton; treasurer, R. Smith; membership secretary, R. Mingay; programme secretary, R. Cookman; show secretary, R. Newton. At the annual general meeting the chairman for 1971/72, D. Gallop, presented cups and trophies won during the previous year. These were as follows: Home Aquaria Cup, Mrs. Maddison; Pencate Plaque for best barb, A. Carruthers; Bill Davis Cup for best anabantid, Mr. Booth; Larshid Cup for best characin, H. Maddison; Habitué of the Year Trophies: 1, Mr. Maddison; 2, A. Carruthers; 3, D. Gallop. Visitors and new members will be very welcome at the meetings which are held on the first and third Thursdays in each month at 8 p.m., above The Crown, High Street, Littlehampton.

**RESULTS** of the quarterly Table Show of the **Bristol A.S.**, held in March, were: Goldfish: 1 and 2, W. Ham; 3, E. Bowden; 4, J. Phillips. Parrotfish: 1, 2 and 3, H. T. Jago. Cichlids: 1, A. Gilbert; 2, E. Bowden; 3, A. H. Morgan; 4, D. Saphier. Characins: 1, A. H. Morgan; 2, A. Gilbert; 3 and 4, J. Phillips. Guppies: 1, 2, 3 and 4, C. H. Truman.

At the **Keighley A.S.** meeting Mr. Cole spoke on "Genetics" and answered members' questions. The results of the monthly Table Show was: Fish of the Month—Cichlids: 1, Mr. Taylor; 2, Mr. Hart; 3, D. Moady. A.O.V.: 1 and 2, Mr. Sagar; 3, Master White. Novice A.O.V.: 1, Mr. Illingworth; 2 and 3, Mr. Hart. Junior A.V.: 1 and 3, Master Beckett; 2, Miss Sagar.

TWO very enjoyable meetings were held by the **Whitley Bay A.S.** in March. At the first they were fortunate to hear a talk on how to breed and raise cichlids by a local expert, Gordon Lowthian. At the second, John Robertson, who has judged fish at open shows throughout the country, gave a talk on the various aspects of judging fish. Mr. Robertson judged the jar show and the poster competition which was won by Miss Pauline Stocks of Cullinstown. The posters were to advertise the society. An auction of surplus fish and equipment was held, the proceeds of which went towards the cost of the forthcoming open show.

AN interesting talk was given to the **West Cumberland Aquarists Club** in March by Dr. G. Fryer of the Freshwater Biological Association, Windermere Laboratory. He presented a talk and slide show on the living and breeding habits of the African Cichlids. The talk was mainly based on his experiences while working in and around the African lakes.

THE Federation of British Aquarists Societies was well represented at the March meeting of the **Mid-Sussex A.S.** While F.B.A.S. chairman, Bob Isaacs, was giving an interesting talk on Goldfish, Frank Tomkins (chairman of the judges and standards committee) was judging the entries in the Sexed Pairs table show.

During the course of the evening show, secretary John Walker announced details of the society's new Breeder's Diploma Scheme which is being introduced this year. To win a Master Breeder's Award, members will need to raise to six months old ten fish of each of four different livebearers and eleven different egglayers, including danios, barbs, cichlids, killies, labyrinth, characins and rasboras. Quite a task for the dedicated man and beyond the resources of those with only one or two tanks. Table Show results: Egglayers: 1, Mr. and Mrs. Burdick; 2, C. West; 3 and 4, D. Soper; 5, J. Walker; 6, P. Ratcliffe. Novice Award, P. Banks. Livebearers: 1 and 2, A. Kwansowski; 3, C. West; 4 and 5, B. Slade. Novice Award, E. Parker. Best in Show: Mr. and Mrs. Burdick.

THE monthly table show of the **York and District A.S.** resulted as follows: Large Characins: 1, M. Reynard. Small Characins: 1, M. Richardson; 2, L. S. Hunter; 3, P. Rees;

4, A. S. Allison. Rasboras: 1, 2, 3 and 4, A. S. Allison. Juniors: 1, 2 and 4, S. M. and N. Booth; 3, Miss J. Kirtley. Best Fish of the Night: S. M. and N. Booth's Thicklip Gourami. Also in March the Society were given an extensive slide show (approx. 200 slides) by Mr. Shepherdson from Hull. The slides were of many fish, aquariums, fishhouse set-ups, etc., belonging to Mr. Shepherdson and his fellow members from Hull. Questions on photography were answered and the evening was a great success with the members.

THE **Rhondda A.S.** held their "Best Fish in Club" meeting in March and this was a good chance to see more fish bunched than usual. The winner of the tankard was T. Davies. The turnout for the meeting was excellent and during the judging, the members were given an excellent lecture by Gwyn Ellis, assistant keeper at the National Museum of Wales, his subject being on plants. The Rhondda magazine "Betts-Mag" had its second showing and due to the efforts of the members and the editor L. Davies is showing its worth to all concerned.

SUCCESSFUL meetings are still being held by **South Leeds A.S.** and they wish to announce that any rumours that the club may be closing or joining any other club are completely untrue. Meetings are held every first and third Wednesday in the month at Cockburn High School, Leeds, at 7.30 p.m. The new Committee is as follows: Chairman: Mr. Pearson; Show Secretary: B. Keighley; Treasurer: J. Sanderson; and Secretary: Miss A. Jackson, 119 Amberton Cres., Leeds, 8. All new members made very welcome.

VISITING societies to the **Chesterfield and District A.S.** fish auction made a most successful night for the funds of the Society. 178 fish 124 plants also accessories were auctioned by G. Simson (Judge). During the same month the final result of a two-leg inter-society show with **Grasswell** ended in a draw. The first open show will be held on 1st October at Clay Cross Social Centre, Chesterfield Road, Clay Cross, Near Chesterfield, Derbyshire. Exit 29 of M1, 4 miles to Clay Cross following signs. Details from: Show Secretary, D. Stone, 237 North Wingfield Road, Grassmoor, Near Chesterfield.

COMBINED efforts towards an open show are again being made by **Kingston and District A.S.** and **South Park A.S.S.** this year. This is the second year that the two societies have run a show together and this will be held at Ham Hall, Richmond, on 19th August.

MARCH saw the annual competition for the "Renshaw Trophy" of the **Lincoln and District A.S.** The results were: 1, Mr. Bunnage with a Jack Dempsey; 2, Mr. Kuhn with a blue Siamese Fighter; 3, Mr. and Mrs. Stokes with a Leopard Catfish; and 4, Mr. Stiff with a Red Sword. The Society meets on the third Monday of the month at St. Swithun's Square, Lincoln, at 7.30. Anyone will be made welcome who comes along.

THE first of the **Midland Aquarist League** shows was held at Bulkington Parish Hall on 19th March, **Bedworth Aquarist and Pool Society** being hosts.

Results: Anabantid: 1, C. Pratt (Bedworth); 2, T. Parry (Loughborough); 3, E. Sheehy (Coventry). Livebearer (Pairs): 1, Mr. and Mrs. Hall (Nuneaton); 2, R. Tedds (Bedworth); 3, M. Lee (Bedworth). Loach: 1, P. Dewis (Coventry); 2, E. Sheehy (Coventry); 3, J. Aucutt (Nuneaton). Barbs: 1, S. Hartwell (Nuneaton); 2, Mr. and Mrs. Deakin (Nuneaton); 3, P. Hinds (Coventry). Best in Show: P. Dewis (Coventry). Cichlids: 1, R. Tedds (Bedworth); 2, S. Hartwell (Nuneaton); 3, Artwood and Williams (Rugby). League placings: Bedworth 45 points; Coventry 45; Nuneaton 41; Loughborough 30; Hinckley 13; Rugby 11.

**RESULTS** of the quiz and table show between **Northwich and District A.S.** and **Chester and District A.S.** were as follows: Points from quiz Northwich 17½; Chester 17½. Points from table show: Northwich 48; Chester 22. Total points: Northwich 65½; Chester 39½. Northwich therefore regain trophy. Results of table show: Platies: 1, C. Bowyer (Chester); 2, L. and D. Thorne (Northwich); 3, C. and K. Davies (Northwich). Barbs (under 3 in.): 1, L. and D. Thorne (Northwich); 2, C. Bowyer (Chester); 3, R. Dutton (Chester). Barbs (over 3 in.): 1, L. and D. Thorne (Northwich); 2, C. and K. Davies (Northwich). Dwarf Cichlids: 1, L. and D. Thorne (Northwich); 2, R. Dutton (Chester); 3, C. Bowyer (Chester). Killiefish: 1, L. and D. Thorne (Northwich). Catfish: 1, P. Hyland (Northwich); 2, R. Antonio (Northwich); 3, L. and D. Thorne (Northwich). Rasboras: 1, R. Dutton (Chester); 2 and 3, P. Hyland (Northwich). Garp and Minnows: 1, L. and D. Thorne (Northwich); 2 and 3, N. R. Thompson (Northwich). Swordtails: 1, L. and D. Thorne (Northwich); 2, C. and K. Davies (Northwich); 3, M. Jones (Chester). Pairs (Egglayers): 1, C. Bowyer (Chester); 2, R. Antonio (Northwich); 3, R. Dutton (Chester). Pairs (Livebearers): 1, L. and D. Thorne (Northwich); 2, B. Pearson (Northwich); 3, H. Buckley (Northwich). A.O.V.: 1, R. Connolly (Northwich); 2, M. Baxter (Chester). Furnished Mini Jar: 1, E. V. Stokes.

AT a recent meeting of the **Border A.S.**, D. James of Morcombe gave a very interesting talk and slide show about the life on the Morcombe shore. Also an inter-club show with the Whitehaven Society was held, which was won by Border A.S. The meetings take place in the Morton Park Community Centre, commencing at 7.45 p.m., and a welcome is extended to anyone interested in fishkeeping.

OFFICIALS elected at the annual general meeting of **Hartlepool A.S.** were as follows: Secretary, L. Willis, 80 Haswell Ave., Hartlepool; show secretary, J. Watson, 42 Sydenham Road, Hartlepool; chairman, J. Chamberlain; treasurer, J. Williamson; F.B.A.S. delegate, R. Atherton; press secretary, R. Newton. The Table Show for A.O.V. was won by J. Watson's "Razerfish." Meetings will now be held on the first Monday of each month at the "Travellers Rest," Stockton Road, Hartlepool. Any new members would be welcome to the club, beginners as well as established fishkeepers.

#### VENUE CHANGES

**Bishop Cleeve A.S.**: Labour Club, Royal Crescent, Cheltenham, Glos.  
**Grimsby and Cleo A.S.** now meet in the upstairs room of 77 Club, Cobden Street, Grimsby.

#### SECRETARY CHANGES

**Northampton and District A.S.:** R. J. Smith, 22 Bishops Drive, Kingsthorpe, Northampton.  
**Bishop Cleeve A.S.:** A. K. Viner, 10 Epney Road, Lower Tuffley, Gloucester, Glos.  
**Association of Manchester & District Aquarist Societies (AMIDAS):** D. Pratt, 20 Long Rushes, High Cropton, Oldham. This association is for any aquarist society within a radius of 50 miles of Manchester.  
**Sheffield and District A.S.:** Mrs. S. Ellard, 62 Altwick Road, Sheffield S12 5GE. The society now has a film show on Killiefish.

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**Cleveland A.S.:** S. M. J. Todd, 24 Pastland Ave., Kirkcubbin Estate, Redcar.

**Billingham A.S.:** D. K. Young, 85 Delaval Road, Billingham.

#### CHANGE OF NAME

The title of **Stocksbridge and District A.S.** has now been changed to **Don Valley A.S.** Meetings are still held in the Friendship Hotel, Stocksbridge and are held on alternate Thursdays. Please address any enquiries to G. A. Hoyland, secretary, 36 Haggstones Road, Oughthorpe, Sheffield S30 5GF.

#### NEW SOCIETIES

The **Bridlington and District A.S.** has been re-formed and the officials are as follows: Chairman, M. Lilly, 45 Cornfield Crescent, Bridlington; secretary, P. Robson, 84 Matson Road, Bridlington; treasurer, E. S. Baker, 78 Matson Road, Bridlington. The inaugural meeting was held on 3rd March, when the above committee was formed, with 25 members being present. Meetings will be held twice a month, the official meeting being the second Wednesday, and the fourth Wednesday will be just a social evening. The meetings will be held at the New Inn, 1 Prince Street, Bridlington, at 8 p.m. New members will always be made welcome.

**Ashington and District A.S.** Chairman, R. Davison; vice-chairman, E. Pryberick; secretary, J. S. Dodds, 12 Beatrice Street, Ashington, Northumberland; show secretary, G. Hunt; management committee, D. Smith and J. G. Dodds. This is a new society and the meetings will be held in the Lincolns and Woodhorn Social Club on every other Wednesday at 7.30 p.m. from Wednesday, 10th May.

**MEMBERS** from 27 Societies benched nearly 400 fish at the Open Show of the Nelson A.S. Results: Section A. Livebearers: Guppies: 1, S. Mitchell, Blackpool; 2, Mr. Baldwin, F.G.A.; 3, L. Leadbetter, Blackpool, Swordtails: 1, P. Cooke, Blackborough (Section winner); 2, A. Thomas, Lucas; 3, Mr. Beckenham, Oldham. Mollies: 1, L. Leadbetter, Blackpool; 2, M. Swain, Grimwood; 3, Mr. and Mrs. Waring, Lytham. Platies: 1, Mr. Leighton, Warrington; 2, Mr. Alcock, Warrington; 3, J. S. Hall, Aireborough. A.O.V. Livebearer: 1, 2 and 3, J. S. Hall, Aireborough. Section B. Characins: Up to and including Bleeding Heart: 1, Mr. and Mrs. Roberts, Valley; 2, Mr. West, Blackpool; 3, Mrs. A. Gregory, Oldham. Over Bleeding Heart: 1, H. Elongworth, Nelson (Section Winner); 2, Mr. Kennedy, Keighley; 3, L. Rowbottom, Hyde. Section C. Cichlids: Angels: 1, H. and R. McKenna, Nelson; 2, Mr. and Mrs. Kivington, Doncaster; Mr. and Mrs. Hunt, Independent. Dwarf Cichlids: 1, J. A. Whiteley, Aireborough (Section Winner); 2, Mr. Leighton, Warrington; 3, Mr. Higham, Warrington. A.O.V. Cichlids: 1, J. A. Whiteley, Aireborough; 2, Mr. Wood, Knaf; 3, R. Dymon, Blackpool. Section D. Sharks, Catfish and Loaches: Corydoras: 1, P. Batchelor, Lyrne; 2, Mr. and Mrs. Waring, Lytham; 3, Mr. and Mrs. Kivington, Doncaster. A.O.V. Catfish: 1, R. Walker, Morecambe Bay; 2, B. and B. Booker, Morecambe Bay; 3, Mr. and Mrs. Kivington, Doncaster. Loaches: 1 and 2, K. Thomas, Lucas (Section Winner); 3, Mr. and Mrs. Norris, Lyrne. Sharks and Foxes: 1, I. Rowbottom, Hyde; 2, Mr. Beckenham, Oldham; 3, P. Batchelor, Lyrne. Section E. Minnows: Barboras: 1, Mr. Hallett, Accrington; 2, B. and B. Booker, Morecambe Bay; 3, Mr. Greenwood, Nelson. Toothcarps: 1, P. Beckett, Keighley (Section Winner); 2, Mr. Tomlinson, R.K.A.; 3, J. Roberts, Nelson. Danios and Minnows: 1, A. Thomas, Lucas; 2, Master Kaye, Top Ten; 3, K. Thomas, Lucas. Section F. Barbs: Up to and including Nigger: 1, 2 and 3, F. E. Gregory, Oldham (Section Winner). Over Nigger: 1, Mr. and Mrs. Norris, Lyrne; 2 and 3, Mr. Rowbottom, Hyde. Section G. Anabantids: Fighters: 1, Mr. and Mrs. Kivington, Doncaster; 2, Mr. and Mrs. Clarke, Barn-

ley; 3, Mr. and Mrs. Roberts, Valley. A.O.V. Anabantid: 1, J. A. Whiteley, Aireborough (Section Winner); 2, Mr. and Mrs. Kivington, Doncaster; 3, Mr. Leighton, Warrington. Section H. A.O.V. Tropical: 1, D. and R. Stander, Lyrne (Section Winner); 2, P. Batchelor, Lyrne; 3, Mr. Kennedy, Keighley. Section L. Pairs: Livebearers: 1 and 2, L. Leadbetter, Blackpool; 3, Mr. Hesketh, Accrington. Egglayers: 1, F. E. Gregory, Oldham (Section Winner); 2, Miss A. Gregory, Nelson; 3, R. Turner, Miscenden. Section J. Breeders: Livebearers: 1 and 3, Master Kaye, Top Ten; 2, Mr. Higham, Warrington. Egglayers: 1, R. Dymon, Blackpool (Section Winner); 2, D. Beckett, Keighley; 3, A. Thomas, Lucas. Section K. Coldwater Fancy Goldfish: 1, J. S. Hall, Aireborough (Section Winner); 2 and 3, Mr. Walsh, Accrington. Common Goldfish: 1, Mr. and Mrs. Waring, Lytham; 2 and 3, J. S. Hall, Aireborough. A.O.V. Coldwater: 1, J. S. Hall, Aireborough; 2, Mr. Harris, Independent; 3, Mr. and Mrs. Waring, Lytham. Section L. Junior: Livebearers: 1, Miss A. Gregory, Nelson; 2, B. Black, Blackpool; 3, Miss Clarke, Barnsley. Egglayers: 1, Miss Higham, Warrington (Section Winner); 2, Miss A. Gregory, Nelson; 3, W. L. Booker, Morecambe Bay. Best Fish in Show: Checker Barb, owned by F. E. Gregory, Oldham.

#### AQUARIST CALENDER

1972

**7th May:** Roehampton A.S. First Open Show to be held at Alton Parish Hall, Alton Estate, Roehampton, S.W.15. Details from Show secretary: D. Lambourne, 7 Wheeler Court, Plough Road, SW11 2AX. Tel: 61-223 2630.

**7th May:** Dukeries A.S. Open Show at the Winfield Portland Technical Grammar School, Spaken Hill, Workop. Show secretary, M. Woodley, 20 Park Street, Workop.

**7th May:** Ashton-under-Lyne and District A.S. Annual Open Show. The venue, Dukinfield Town Hall, King Street, Dukinfield.

**10th May:** Southend, Leigh and District A.S. Open Show, St. Clements Hall, Leigh-on-Sea (not 20th May as previously stated). Show secretary, R. D. Orford, 8 Blenheim Chase, Leigh-on-Sea, Essex.

**10th May:** Trowbridge and District A. & P.S. seventh Annual Open Show will be held at the Nelson Haslem Giel School, Trowbridge. Schedules available from show secretary, W. S. Burton, 17 Redburn Road, Trowbridge, Wilts.

**10th May:** Hull A.S. Fifth Open Show.

**14th May:** Derby Regent A.S. Open Show, Sherwood Foresters Recreation Centre (Normanton Baracks), Normanton Park Road (A5111), Derby (follow R.A.C. signs). Show Sec.: R. G. Harlow, 180 Mansfield Road, Derby, Tel: 43222.

**14th May:** Gloucester A.S. first Open Show at the Education and Leisure Centre, Painswick Road, Gloucester. Schedules from secretary B. Walker, 41 Hales Road, Coney Hill, Gloucester.

**14th May:** Merseyside A.S. Open Show, The British Legion Club Ltd., Hobson's Hall, 2 Cranwood Avenue, Liverpool, L18 1BG.

**21st May:** Croydon A.S. Open Show at Sir Phillips Games Recreation Centre, Moorland Avenue, Croydon, Surrey. Details from show secretary, A. J. H. Smith, 3 Hindhead Way, Wallington, Surrey.

**21st May:** Yeovil & D.A.S. Open Show, The School Hall, Church Street, Martock, Nr. Yeovil. Show Manager: D. Phinn, 5 Hill Terrace, Boverhiton, Martock, Somerset.

**21st May:** The Leicester Fishkeeping Club will be holding a Fishkeeping Exhibition at St. Marks Church Hall, Belgrave Road, Leicester, the main object being for the recruitment of new members. Show Secretary: D. Freeman, 30 Sheffield Street, Leicester, LE3 0GX.

**21st May:** Northwich and District A.S. 4th Open Show, Hartford Secondary Boys School, off Chester Road, Hartford. Details from Show Secretary, Mrs. D. J. Thorne, 28 Whitegate Road, Winsford, Cheshire. Phone: Winsford 3380.

**27th and 28th May:** Fancy Guppy Association International Guppy Show at the Glebe Farm

Stochford, Birmingham, 33. Open to viewing Sunday, 28th, 3 to 5 p.m. Show secretary: D. R. Bosham, 17, Pedmore Close, Woodrow South, Redditch, Birmingham.

**28th May:** Community Centre, Glebe Farm Road, 28th May Corby and District A.S. Open Show, Sunday, Corby Civic Centre. Details and Schedules from the Show Secretary, A. Slow, 176 King Street, Kettering. Tel: 82929 after 6 p.m.

**28th May:** Boston A.S. Open Show, Blackfrices Theatre, Spayne Lane, Boston, Lincs. Details from S. Noble, 175 Wood Farm Road, Boston, Lincs.

**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 Galside 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 Abby Road, Loughborough, Leics.

**4th June:** Bournemouth A.S. Annual Open Show to be held at Kinross Community Centre, Pelhams Park, Kinross, Bournemouth. Entry forms and schedules available after 1st May from Show Secretary, J. V. Jeffery, 30 Brammar Avenue, Southbourne, Bournemouth, BH4 4JF. No entries will be accepted at the door.

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

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

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

**10th June:** Llanwit 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. Scriven, 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:** Warwick County Fire Brigade A.S. Open Show at the Town Hall, High Street, Colehill. Details will be available after 1st April from R. J. Tromans, 27 Moshull Road, Kingshurst, Birmingham, tel: 021-789 7543.

**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:** Haylake A.S. Third Open Show at Macdon's Hall, Salisbury Avenue, West Kirby, Wirral, Cheshire. Show Secretary, H. Rowlands, 3 Haig Avenue, Moreton, Wirral, Cheshire.

**17th June:** Riverside Open Show at St. Saviours Church Hall, Cobbold Road, off Askew Road,



London, W.12. Show schedules available at later date from M. Goss, 3 Boutlers Court, Plantation Road, Amersham, Berks.

**18th June:** South Shields A.S. First Annual Open Show. Details from G. Petersen, 234 South Eldon Street, South Shields, Co. Durham.

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

**18th June:** Swillington's Seventh Open Show. Details later.

**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: Flee 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:** 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 Charnwood Road, St. Albans, Herts.

**24th June:** Annon Aquatic Club Annual Show. Details later.

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

**24th 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, Haswood, NG16 3DQ.

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

**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 Staneway, 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, Ansdell, Lancs.

**2nd July:** Carlisle and District A.S. Annual Open Show at Carleton Community Centre, Carleton, Pontefract, Yorks. Details from secretary R. Stevens, 72 Falcon Drive, Love Lane, Carlisle, 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 Beswetherly Close, Exeter, EX2 9LB. Tel: Exeter 78936.

**2nd July:** North Warwickshire A.S. Open Show, The Settlement, Kingstanding Road, Kingstanding, Birmingham. Details from T. Snow, 108 South Road, Erdington, 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 Laddon 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:** Loynes 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.P.S. Third Open Show at St. John's Hall,

Oxford Street, Weston-super-Mare. Show Secretary is J. Clarke, St. Jude's, North Street, Cheddar, Somerset.

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

**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:** Teeside Show at Stewart Park, Middlesbrough.

**8th-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:** Provisional date—Tonbridge & D.A.S. First Open Show. Details to follow.

**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, Llanduff, 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, Blackfold 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.

**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, 30 classes judged to F.B.A.S. and G.S.G.R. 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, E. Birchwood, 20 Inverness Avenue, Blackley, Manchester, 9.

**20th August:** Stroud and District A.S. Open Show, Mid-Gloucestershire Technical College, Stradford 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 near door to the Great Clowes St. warehouse. Schedules from J. Lamas, 37 Beech Street, Lr. Broughton, Salford, 7.

**26th August:** Plymouth A.S. Open Show at Plymouth Y.M.C.A.

**26th 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 Centre, Yate, Nr. Clipping Sodbury, Glos. Schedules from show secretary, M. Emery, 134 Sundridge Park, Yate, Bristol. Tel: Clipping 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. Binchenor, 1a George Street, Wellingborough.

**10th September:** Peterlee and District A.S. Annual Open Show at Edenhill 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.P.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. G. B. Thomas, 2, Grove Park, Bristol, BS6 6PP.

**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:** 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.

**22nd 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:** Oram 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. Swarwick, 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. G. 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:** Chesterfield and District A.S. First Open Annual Show. Details to follow.

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