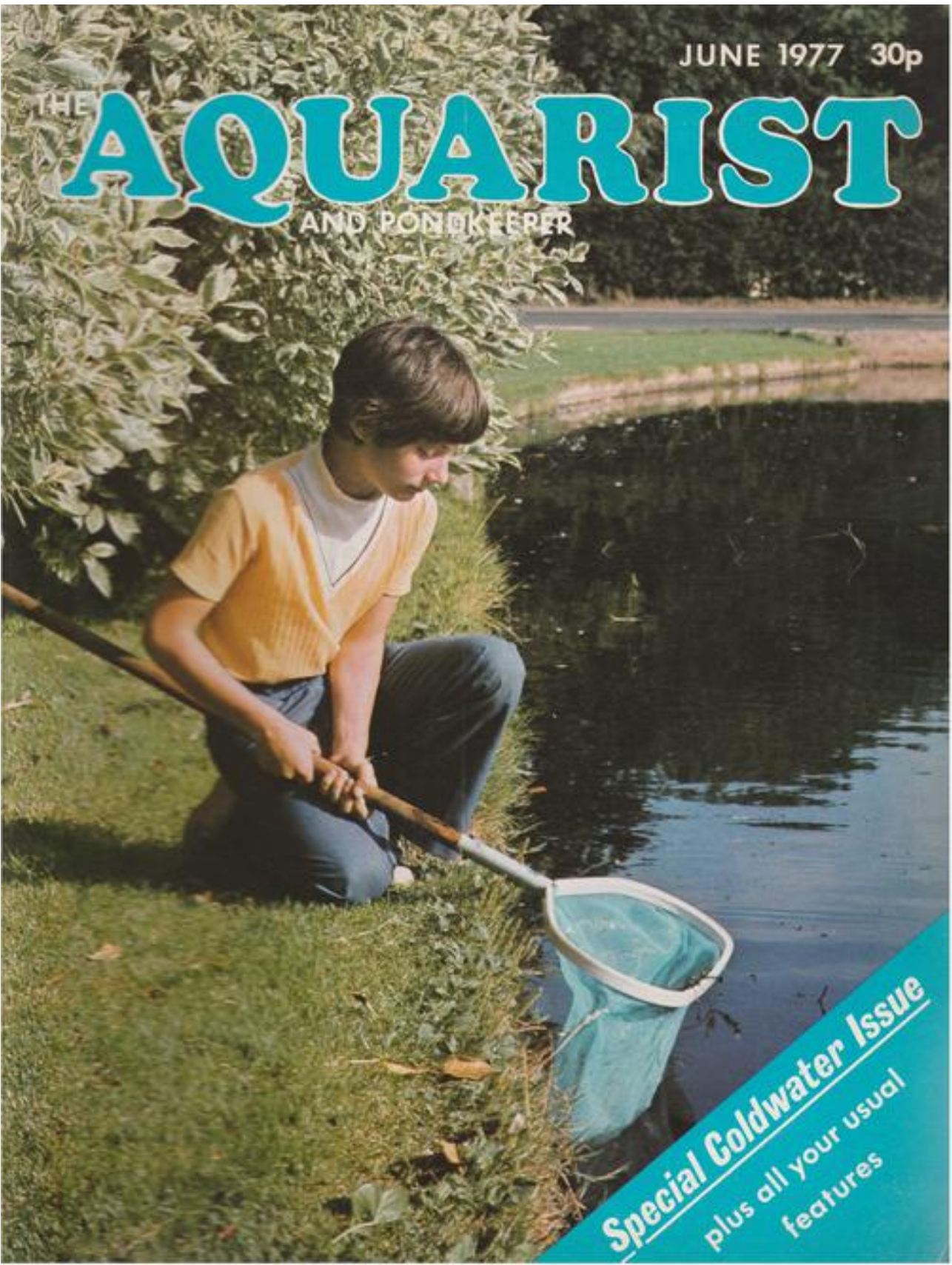


JUNE 1977 30p

THE **AQUARIST**  
AND PONDKEEPER



**Special Coldwater Issue**  
plus all your usual  
features



# THE AQUARIST

AND PONDKEEPER

The Aquatic Magazine with the Largest Circulation in Great Britain

*Published Monthly 30p*

## Contents

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	PAGE
What is Your Opinion?	78
Our Readers Write	84
Our Experts Answer: Tropical Queries	85
Coldwater Queries	88
Koi Queries	91
Sexing Goldfish	92
A Pond for Koi	94
A Garden Pond	98
Coldwater Fishkeeping: Breeding Goldfish	106
The 5th Scottish Aquarists' Festival, 1977	110
Nymphoides	112
From a Naturalist's Notebook	114
Spawning the Dwarf Gourami	116
Whirligig Beetles	117
Product Review	118
News from Societies	119



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# WHAT IS YOUR OPINION?

by B. Whiteside, B.A., A.C.P.

Photographs by the Author



A NUMBER of letters offering congratulations on the tenth anniversary of *W.Y.O.* arrived too late to be included in last month's issue. One of these reached me from Mr. Dick Mills, of the Federation of British Aquatic Societies. Mr. Mills, whose home is at 70 Lee Road, Perivale, Middlesex, writes: "Very many congratulations of ten years' continuous enjoyment and of constructive news and views expertly put together. Like all success stories, *W.Y.O.* is fine example of the simplest of ideas being the best and Mr. Whiteside has all our admiration for the conception and execution of what has proved to be perhaps the most popular article in the aquatic press today.

"Over the years, topics and arguments have waxed and waned and the two perennials heading the list seem to be 'plants and U/G filters' and 'showing or not.' Whilst the former is largely an individual's matter, the second is of concern to us all and there seems to be no one who has realised that both parties actually need each other. The showing fraternity provide the impetus to the hobby and also bring the hobby to the attention of others; but often the information needed about their prize specimens regarding culture and breeding is more than likely gathered by the 'stay-at-homes.'

"The 'non-showing' side would soon find themselves restricted to keeping 'bread and butter' fishes and thus lose interest if new specimens were not seen around the country in the shows to stimulate interest and throw up challenges. Can we call an 'honourable' truce in this war no one needs, least of all the hobby? Remember, extremists are usually, thankfully, in the minority. Well, that's my opinion anyway. What is your opinion?"

No. 27 Cuttsfield Terrace, Chaulden, Hemel Hempstead, Hertfordshire, is the address of Mr. Keith Puleston, P.R.O. of Hemel Hempstead Aquarist Society. He writes: "Why has your feature retained its popularity for such a long period? Simple! You allow the ordinary aquarist to state his or her views without corrupting the original letter, and you totally avoid slick answers or dogmatic criticism when you reply. This means your readers know that turning to your pages, as I am sure most of us do first, will result in interesting reading of any and

every aspect of fish-keeping unsullied by commercial interests or autocratic opinions. So keep up the good work!" (Mr. Puleston kindly sent me the latest edition of his society's magazine. It's an excellent production containing a wide variety of interesting items—including articles on protein in fish foods, coldwater native marines, 'apparent' dropsy, etc. It also contains a classified ads. section and some touches of amusing humour. Well done, H.H.A.S.!)

I've received letters from readers in many parts of the world but the following is the first to reach me from a Turkish reader. It was written—in excellent English—by Mr. Celik Cesuroglu, of Ziya Gökalp Caddesi, Cemre Sokak No: 7/10, Yenisehir-Ankara, Turkey. He writes: "First of all may I express my cor gratulations for the good work of your information. I am a 27 years old Turkish aquarist who has nearly a dozen tanks and reads your column first each month. I have been following the discussions on how to kill sick fish without hurting them. Why do you want to kill a creature which has a chance of living—although not much? However, I want to tell one way which I found accidentally. A fish can be killed instantly by being given strong liquid drugs—for mankind, like fungus cures—to its gills while being held in your hand. I think you have noticed how I found it.

"The exhibition of tableaux displays in your shows seems strange to me because in my opinion the original idea of keeping aquariums is to create a part of nature in your home, and it doesn't mean much to make artificial surroundings around them. In the March issue you asked for the aquatic plant that grows best for us. For me it is *Cryptocoryne balansae*. It is very beautiful and I succeed in propagating it by simply leaving it alone without disturbing its roots for years.

"Why is your magazine being pressed in insufficient numbers? They couldn't provide me with certain former issues when I applied for a subscription in September 1976. I will be very pleased if you can provide me with these issues listed below." (Unfortunately I'm unable to help you, Mr. Cesuroglu, as I live in N. Ireland and have nothing to do with the printing of *The Aquarist*. Indeed, only once did I visit the offices of the magazine—and that was when

I happened to be on holiday in London. Could any readers help Mr. Cesuroglu by providing him with a copy of any of the following issues: 1975—January, February, March, April, May, July, October, and November; 1976—January, March, October and November? If so, send him a note direct.)

Am I gullible enough to be taken in by flattery? Judge for yourselves by reading the opening comments in the following letter, written by Mrs. Edna M. Thornton, of 'Apsley,' 41 Crooks Lane, Studley, Warks. "May I first say how much I enjoy *The Aquarist* magazine, particularly the W.Y.O. section, and not least what a smashing person B. Whiteside sounds!" (The adjective, in its literal sense, could well have been applied to me several weeks ago when, while visiting a friend in hospital, I managed to knock over and smash, on the floor, a bottle of blackcurrant cordial. It was evening, and just getting dark in the ward, and the splattered pool on the floor looked as

in the mid-day sun. I found him very distressed and foaming from the mouth. I cooled him down by squirting him gently with cold water, which made his shell steam.

"He learned his lesson and I learned mine. I provided more shade for them for the rest of the summer.

"Kennedy weighed in at 30ozs. and measured 22cm. in length and 35cm. in girth. By mid-July he weighed 37ozs. Towards the end of September the tortoises began to lose both appetite and weight. They became rather torpid. After worming them I popped them into a straw filled tea-chest during the first week of October. Wilson then weighed 26ozs. and was 34cm. in girth. Kennedy weighed 34ozs. and was 36cm. all round. I checked on them each day and at the end of a week they had burrowed down and true hibernation had begun. I kept the tea-chest in a cool, spare room, with the radiator



if a pint of blood had been spilled. I got quite concerned when I saw the reaction of a lady visiting another patient and felt forced to say, rather loudly, "How careless of me to smash your bottle of BLACK-CURRENT cordial!" Thank goodness no one fainted as spare beds were in short supply; than goodness it was dark enough for my blushes to remain unseen!) Mrs. Thornton continues her letter: "Re category (g) in the March issue, last April I bought two tortoises, at a cost of £4.10, from our local aquarist shop, and named them Wilson—Sir Harold, and Kennedy—J. F. Wilson, the smaller of the two reptiles, weighed in at 17ozs. with a carapace measuring 18cm. in length and 30cm. in circumference. By mid-July his weight had risen to 28ozs. and he was 19cm. long and 32½cm. all around. At this time he was very active; but he nearly died of heatstroke one day in the long hot summer. Kennedy had sensibly gone into the hutch, but Wilson stayed out

turned off. On warmer days I kept the windows open.

"Around the first week of March they were trundling around their tea-chest and on 13th March I got them out and gave them both a bath and clean up. Their eyes needed bathing but their beaks were clear. Wilson had been chewing straws. I discovered that Wilson's weight had dropped to 24ozs. and Kennedy's to 31ozs. I was disappointed to note that the piece of shell chewed off poor Kennedy by our excessively motherly wire fox-terrier bitch, Cindy, had not regenerated.

"It is now 36 days since they came out of hibernation and both are eating fairly well. Neither is very active yet, but the elimination processes are normal. Wilson now weighs 26ozs. and Kennedy 33ozs. I plan to worm them again when appetites are stronger. Is there such a thing as typical tortoise behaviour I wonder? My two are completely different in their habits, degree of tameness, choice of diet, etc.



I haven't found tortoises to be the simple, cheap and easy to keep pets that some so-called experts would have us believe. During the drought, and when we could not get discards from a local market, I paid 25p each day for fresh lettuce. Now that my husband and I are planning a short vacation in June, we have to prevail upon relatives to board Wilson and Kennedy, complete with hutch and pen.

"May I add a further note: tortoises do respond to gentleness and kindness. Handled roughly they will hiss their disapproval. Gently treated they become quite tame and will eat from the hand. They recognise bright colours and certain objects. They quickly learn the warm spots in the kitchen and make a bee-line for them. Could I recommend the most informative book I've read about these fascinating creatures? It is *Tortoises, Terrapins and Turtles* by Ivor and Audrey Noel-Hume. I must mention though that the book that made me want to keep pet

for swimming? Is there any connection between keeping fishes and enjoying swimming?

Mr. J. E. Thomas writes to us from 54 Riversdale Road, Collier Row, Romford. "I believe the majority of your readers are people who have more than one tank and are potential fish-house owners. I would like an article each month dealing with a tour of people's fish houses or collections. One could go into the economics of costs, savings and any novel ideas. What about an article on making an aquarium out of fibre-glass, using just one sheet of glass? I think people in this country are content with very small tanks. One reason is the weight factor and fibre-glass or some alternative would be a great help. Let us hear what the Dutch and German aquarists do. A lot of people have trouble growing plants. Why not pick the brains of the commercial growers and see how they do it. I have, in turn, been swamped by different plants; and then they have declined and



tortoises was a section in Maxwell Knight & Will Green's *Keeping Pets*. . . I hope that some of my remarks will be of interest to you. Thanks for a much looked forward to magazine."

Photograph 1 shows a *Monodactylus argenteus* or "mono." Please send me details of your experiences with this interesting species.

Recently I purchased six glass, aquarium thermometers. Out of interest I decided to test them against my accurate photographic thermometer. Only one of the six gave an accurate reading; the others varied by up to 8-9°F. One wouldn't need to require an exact temperature if one were depending upon the brand in question for an accurate reading! Fortunately, after keeping fishes for a good many years, I can gain a fairly accurate idea of water temperature by dipping a finger into a given body of water—from the volume contained in a polythene bag to that contained in a swimming pool. As a matter of interest, do many other aquarists share my passion

others reigned. For some years *Vallisneria* held sway; but now it will not grow vigorously. One writer advised that gravel should be changed. I think plants use up essential minerals particular to their needs. I think every able fish keeper should concentrate on breeding one or two species that are considered difficult. The time will come when most countries will stop the export of their native creatures. Of any group, I think the reptile keepers' record is the worst as regards breeding and, therefore, conserving particular species. I would also like to see an article about the Zander. How are such alien species as a pike and perch crossed, and why? Why is there such consternation in angling circles when one is caught? (Our Editor, Mr. L. E. Perkins, supplied the following information: "The pike-perch is not a hybrid or pike/perch cross. It belongs to a separate genus—*Stizostedion*, perch being *Perca* and pike *Esox*." Sterba's tome *Freshwater Fishes of the World* contains further information. If I remember

correctly, this magazine carried articles about various aquarists and their fish houses, many years ago. The main problem at the moment would be to find someone who could travel round the country to visit various aquarists and interview them and photograph their tanks, etc. If readers with interesting or original set-ups would care to send me details I would try to include such information in this feature. Would your fish house or collection interest other readers? If so, why not send me details. I don't know any commercial plant growers but should imagine that, understandably, some of them might not wish to disclose their methods of cultivating specific plants—particularly more expensive species. After all, if we could all grow plants perfectly the commercial growers would soon be out of business. On one occasion I did ask a commercial grower if, while on holiday in England, I might visit his plant house and make a few observations for a future article for *The Aquarist*. He didn't take the trouble to reply to my request so I assumed he did not want me to see his plant house or pass on any of his methods.)

While in London last week I made an anonymous visit to one of the larger retailer's premises, i.e. shop. There was a fine selection of fishes on view and I would have liked very much to bring a few specific species home with me; however, the strict security system operating at the airport precluded me from attempting to transport any fish home with me. Gone are the days when I transported a couple of bags of young discus home, in a brief-case, on my knee. Such hand luggage is now a thing of the past. I was interested to note that fish prices in London were rather higher than I had thought they would be in certain cases. One thing that did disappoint me somewhat in one particular shop was the fact that despite there being a good selection of live plants on sale in the shop, an attractive show tank was decorated with a collection of plants the vast majority of which were plastic; and the few live plants in the tank in question looked none too healthy. Obviously the plastic plants required little or no attention; but it seemed rather sad to me that a show tank in such a shop could not, apparently, be decorated with flourishing live plants. I do not think that the fishes in the tank in question could have been blamed for the paucity of healthy water plants. Does the show tank in your dealer's shop—if he has a show tank—sport living or plastic plants? I had a careful look at the selection of coldwater fishes on sale in one shop and was disappointed at the general quality of the more exotic species on sale—with the exception of the koi. Possibly the fish I saw were those that were left after the best ones had been purchased by earlier visitors. What is the quality of coldwater fishes like in the shops in your area?

Several of my adult Amazon sword plants continue to reproduce vegetatively; one in particular, growing

in ordinary gravel in a 30 in. × 15 in. × 15 in. tank lit by three 40 watt tungsten bulbs, has to date produced nine young plantlets—and the runner continues to grow. When large enough I'll separate the young plants and set them in the gravel. By the way, I still have a thriving growth of Java moss. If you'd like a small piece to start you off, please send me a couple of 8½p stamps to cover postage and packing. It'll have to be a case of first come first served. Do any others have spare plants they'd like to give away or exchange? If so, send me details and I'll publish them in a future feature.

#### Misfortune

I was pleased to receive the following letter from a reader who lives in N. Ireland. Mr. Patric Baird's address is 59 Bladon Drive, Belfast 9, and he writes: "I wish to tell you about certain unfortunate happenings that have taken place during the last month. To begin, my red-eared terrapin died—although this was expected as it was off its food and was also blind. Then the heater in my guppy tank broke and my guppies were all lying dead on the surface of the water; I lost over 60 fish. Luckily I had bred them all myself. Then, while at a tropical fish shop, I saw some angels—a species that I have never had much luck with. I decided to get two young ones at 35p each. Soon it started to happen. That night I noticed that one of the angels had got a very red and swollen face and protruding eyes and was staying very near the bottom of the tank. Needless to say it was dead the following morning, with all the other fish having a good feast from it.

"Next, my 1½ years old neon died—old age, I thought; then my other, younger neon died. I consulted my book and discovered that angels killed neon tetras. Ah, that was it! Now that both my neons were dead there would be no more deaths; but I was wrong. My large black neon died. So far none of the fish had shown any sign of disease. Next my two best and most expensive fish died; they were my silver and marbled hatchet fish. The silver one had got signs of an ailment on it. Just above the anal fin there were small red marks in a vein pattern. The hatchet fish was also swimming on its side and so I thought I had better destroy it—using a method I had read about in *The Aquarist* some months previously. (I put the fish into a bag of aquarium water and placed this in the deep freeze.) This is an excellent method and I can certainly recommend it to others. Next on the list was my *A. kuhlii* loach; followed by eight male guppies and a cherry barb that had a big blood smear on its side. Then a fat glowlight died. On removing the corpse from the tank I noticed, through the hole in its side eaten by the other fish, that it was full of eggs. Soon the death rate slowed down: a platy here, a guppy there.



"At the time of writing I have not lost a fish for five days; but I'm left with only 14 fish out of a stock of 39. The 25 I lost cost me exactly £11.59. I am saving up my money frantically to buy mates for my single cherry barb, angel fish, black neon, guppy, black molly, scissors-tail and *Corydoras*. One fish I'm glad I didn't lose was my banjo catfish—*Bunocephalus*—which I like very much. I would be interested to hear from any other readers who keep this species; details of habits, length, feeding, etc., please. All the deaths of my fish did, at one point, make me consider giving up my hobby, but I'm sure that in years to come my fish will give me endless hours of pleasure." (That's certainly a sad tale. I hope Mr. Baird's luck has now changed for the better.)

Photograph 2 shows a green sailfin molly. Please send me details of your experiences with the keeping of this species.

No. 15 Trelawney Road, Newquay, Cornwall, heads a letter I received from 14½ years old Master Ian Boreham. He says: "I noticed in the March issue that you asked about the breeding of neons. I have noticed neons and glowlights spawning in my 27½ in. × 15 in. × 12 in. community tank. The tank also houses harlequins, cardinals, platties, guppies, a pair of honey gouramies and a marbled *Boria*. The glowlights have been spawning on and off now for a month and the neons have been spawning for about a week. I'll tell you first about the glowlights' spawning. Last Christmas I introduced three young glowlights into the tank. Since then one glowlight grew fatter. One evening the other glowlights chased her frantically in and around the plants. They then stopped in amongst the plants. One of the males locked fins with the female and did a barrel roll. About 20 eggs were released at the time. These eggs were quickly eaten by the other fish. During the period of spawning the colour of the orange stripe on the female greatly intensified—especially around the eyes.

"Also at Christmas I purchased three neons to keep the two older ones company. One of the younger neons had black tipped fins. Is this unusual? This turned out to be a male. One day he started to chase another neon, much older than himself, around the tank. He swam with his lover into the plants. He then swam by her side and quivered. About ten or more transparent eggs were laid at a time. These were eaten quickly by the other inmates of the tank."

Please send me details of the conditions which you find are best for the cultivation of Amazon sword plants. I note, from my feature published in the April issue, that someone printed photographs 2 and 3 in the wrong order. Observant readers will have noticed that the second photograph was of a "ram" and the third of a "kribensis."

Mr. A. W. McCabe resides at 26 Gruttenden Road, Great-Moor, Stockport, and he has the following to

say: ". . . One reason why I think this feature has lasted such a long time is that in all probability there may be more aquarists who are getting interested in this fascinating hobby. I don't think that it would improve your feature if you included more photographs; on the contrary, it would reduce the amount of writing space available, thus reducing the number of opinions. Dare I suggest that it would be better if there were no photographs at all; or perhaps one month have none and the next month include some which relate to the opinions of whoever has written in at the time . . . The one thing that I would like to see in your column would be more opinions about African cichlids—Lake Malawi/Tanganyika. I cannot remember the last time that anyone wrote in with an opinion about these fish. There must be people other than I who would like to hear from others who have bred—or tried to breed—them. I don't think the time is appropriate to say which fish I have been able to breed, but if my suggestion gives you food for thought I would very much like to give an account of my breeding experiences with these fish. I am sure that there must be other cichlidophiles like myself who would be interested in hearing their opinions. PS. Do readers know of any dealers who run a scheme similar to the Rail-a-Marine as there are very few dealers in my area who have any choice of Lake Malawi and Tanganyikan cichlids?"

#### Dropsy

"I have been a reader of *The Aquarist* for a couple of years now and I find it an excellent magazine; but I can't remember reading anything about the disease dropsy," writes Mr. Tony Hancox, from 20 Farndon Avenue, Sutton Manor, St. Helens, Lancs. He continues: "About a year ago I discovered that a couple of my black mollies had it, so knowing of no cure I destroyed them. These mollies, along with eight or so more, were kept in an 18 in. × 12 in. × 12 in. tank. I always keep and breed mollies in a tank of their own as I find they do better. Of course there were plenty of young and as the young grew up I found one or two now and then that had dropsy; and to this day, many generations later, dropsy still appears. I have come to the conclusion that it must be inherited. I would be grateful if you or someone else who reads your feature could give me help. I know of no cure. Is there one?" (Dr. Rolf Geisler, in his book *Aquarium Fish Diseases*—a T.F.H. Publication, states that dropsy is caused by bacteria of the genus *Pseudomonas*. He states that injections of antibiotics have cured the disease—but this treatment would only be suitable for large fishes such as angels or discus. He suggests immersion in solutions of penicillin or aureomycin—at rates as high as 250 to 500 mg. to each five litres of water. In the U.K. such drugs can be obtained only from doctors or vets. The problems of obtaining such drugs, and the cost,



might make it cheaper to kill ailing fish such as mollies and replace them with healthy stock. The injection of expensive, ailing discus might well be worth a try—although I have not tried either drug myself to treat fish diseases. I did use chloromycetin bought from my vet, to treat successfully another disease that I was unable to identify; however, the relative cost was high and, if I remember correctly, the antibiotic had a peculiar effect on the growth of some plants. I published my findings in an aquarium magazine some years ago. In my opinion it would probably be kinder to put a fish suffering from dropsy out of its misery—unless it were an expensive specimen. Do other readers have advice to give on the treatment of dropsy? If so I'd be pleased to hear from them.) Mr. Hancox states that he has since changed the tank, water, rocks and gravel but still the disease appears. He goes on to say: "I have a couple of old angle iron tanks that have gone rusty around the top edge. Is this poisonous to any fish that could be kept in the tanks? I keep an albino *Clarias* catfish. I had never seen one until I went to Belle Vue last October. There was a large one in the Champion of Champions section; it was about 20 in. long. It really took my fancy and, on seeing a few on sale on one of the trade stands, I bought one of  $\frac{1}{2}$  in. in length for 25p. Now, in February, it is 5 in. long and eats anything from peas and dog meat to cold rice pudding. He or she—I can't tell which—is kept in an 18 in.  $\times$  12 in.  $\times$  12 in. tank on its own. I think it is a beautiful fish. As soon as I walk into the room it swims to the surface and bobs in and out of the water until it's fed. Someone told me it is poisonous. Any comment?" (I've kept various fish in angle iron tanks with rusty tops and have never noticed any fish having been harmed by the iron oxide. Sterba does not mention anything about the *Clarias* species he covers—in the 1966 edition of his authoritative tome—being poisonous.)

#### Floating Plants

The final letter I have time to include this month reached me from Mr. John Gibbens, who resides at 117 Wootton Road, Gaywod, Kings Lynn, Norfolk. He writes: "I have had a lot of experience with the keeping of floating plants. I have tried most of those on the market and the majority have grown reasonably well in my tanks. I have experimented with different wattages of lighting, and hours, and I have found that water lettuce does very well in a medium wattage for about 12-14 hours daily. In the right conditions this plant is very prolific and it propagates by shooting runners horizontally along the tank and producing small plants on them. After about three weeks the runners deteriorate and drop off, leaving the young plants to float free. Once I had as many as five runners at the same time from one plant.

June, 1977

"One of my favourite floating plants is the Sumatra fern—*C. cornuta*. This plant, in my opinion, needs a good deal of light or unfortunately it turns yellow and rots. I find it to be the most prolific of them all. It can be propagated by breaking off one of its leaves and leaving it to float free. After a couple of days small plantlets begin to appear on the edge of the leaf. After about two weeks the old leaf rots away, leaving the young plants to float free or be planted.

"My favourite floating plant of them all is *Salvinia*. This plant has thick, oval shaped leaves which are in pairs. It needs plenty of strong light; I have found that 200 watts, for 14 hours daily, does the trick. In a good light it multiplies rapidly by adding pairs of leaves to its end. If left unattended for too long it quickly covers the aquarium. It has no roots at all; but what appear to be roots are actually finely divided leaves. In my tanks I tend to have floating plants for breeding purposes and decoration. I would recommend floating plants to anyone because in my view they are beautiful plants. May I congratulate you on your magazine; it is highly entertaining!"

For a future feature please send me your opinion on any of the number of topics raised in the body of the text—and on the following: (a) the use of peat in aquarium filters; (b) colourful cichlids; (c) sources of live foods; (d) the cultivation of Spatterdocks; (e) the reliability of heater/thermostat units as opposed to separate units; (f) conditioning fish for shows or breeding; (g) what you consider to be the ideal size for a display aquarium in a living-room; (h) garden pond problems in summer; (i) prices of tropical marines; (j) keeping native freshwater fishes in ponds or aquaria; and (k) foods for reptiles.

## BUT DON'T GIVE UP!

by Hilary Maynard

My 1st is in ACCOUNT but not in BILL,  
My 2nd is in QUIETNESS but not in STILL.  
My 3rd is in QUARREL but not in FIGHT,  
My 4th is in DAYLIGHT but not in NIGHT,  
My 5th is in WRONG-DOING but not in SIN,  
My 6th is in OUTGOING and also in IN.  
My 7th is in MASQUERADE but not in SHAM,  
My 8th is in SAUSAGE-MEAT and also in HAM.  
My 9th is in POMEGRANATE and also in GRAPE,  
My 10th is in MONKEY-HOUSE but not in APE.  
My 11th is in FAST-WORKER and also in SLOW,  
My 12th is in TROWEL but not in HOE.  
My 13th is in COTTON but not in REEL,  
My 14th is in COXSWAIN but not in KEEL.  
My whole are so good at their best,—but, ah me!  
Sometimes they're disastrous, a sad sight to see!

Answer on page 104



## OUR READERS WRITE

### Nomenclature was ever thus

In my article on *Julidochromis* (April 1977) I pointed out that up to 1972, and sometimes beyond, most pictures of *J. marlieri* published in aquatic hobby books were, in fact, *J. transcriptus*. It is unfortunate, therefore, that in the same issue Mr. Hems decided to use a drawing of *J. transcriptus* to help answer a query about *J. marlieri* in his 'Tropical Queries' column. The photo enclosed is of *J. marlieri*; the difference in body pattern from *J. transcriptus* is obvious. Another difference is that *J. marlieri* often grows to over 4 in. in length while *J. transcriptus* rarely exceeds 2 in.

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



*J. marlieri*

### *Xenotoca eiseni*

I was interested to read in Mr. Purdy's article, "The Family Goodeidae," (January edition) that all the *Xenotoca eiseni* originated from six fish smuggled out of Mexico five years ago. It may be of interest to readers to hear that eighteen months ago Mr. Brian Bailey of Indianapolis, U.S.A., sent twelve *X. eiseni* for the second International All Livebearer Open Show organised by the Newcastle Guppy and Livebearer Society.

After the show four young males and an adult pair were auctioned, with the adults being purchased

by Mr. K. Usher and taken to the south of England. The remainder stayed within our Society to be bred and distributed among our members. It is the policy of most of our members to spread rare fish around to ensure a wide distribution and the availability of outcrosses when needed from different areas.

With this in mind, *X. eiseni*, as well as many other species, have been sent to practically every major area throughout England, Scotland and Wales.

Anyone wishing to join our society as a corresponding member and receive our journal, or wanting information about our third International Show should write to me and I will be pleased to pass on the details.

DOUGLAS RENTON,  
Chairman,  
Newcastle Guppy and  
Livebearer Society,  
146 Chillingham Road, Heaton,  
Newcastle upon Tyne NE6 5BU.

### Holidays in Cornwall

As the holiday season approaches our thoughts invariably turn to the other aquatic interests like swimming and surfing. However, here in Cornwall we can enjoy both activities during the season and we are sure that many readers who holiday here may like to take the opportunity of visiting our society during their stay.

Our recently formed club, West Cornwall Fishkeepers meets on the 2nd and 4th Fridays of each month at the Community Centre, South Terrace, Camborne, and we can assure you of a warm welcome at any of our meetings.

We should particularly be pleased to hear from any speakers interested in giving our club a talk during the summer period and we cordially invite all readers interested to contact the undersigned for further details.

M. RAY ESQ., Hon. Sec.,  
West Cornwall Fishkeepers,  
40 Pendrea Park,  
Camborne.

### Hectare yields

I read in the March issue of the magazine a short, lucid and very interesting article entitled "Fishponds in Galilee" by Judy Carr.

However I feel that there must be a misprint in the article. A yield is quoted of "25 kg per hectare" presumably per year. Surely this figure should be in the region of 2500 kg/HA/year.

C. F. Hickling in his excellent small book "The Farming of Fish" quotes yields for many parts of the world including Israel, both for natural, wild freshwater and for intensively farmed fishponds.

He quotes figures of 25 kg/HA/p.a. for yields from

*Continued on page 87*



## OUR EXPERTS' ANSWERS TO YOUR QUERIES

### READERS' SERVICE

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

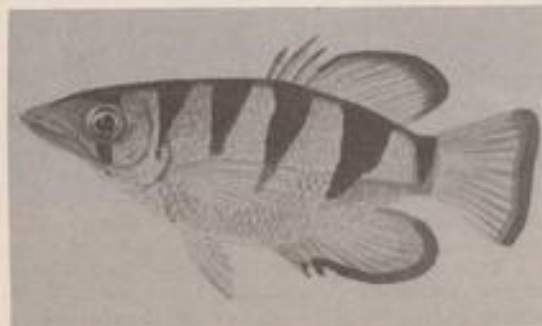
Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.

## TROPICAL QUERIES

by Jack Hems

I should be grateful for some information on the general requirements of the archer fish (*Toxotes jaculator*).

It is important that there should be sufficient space left between water level and a close-fitting tank cover to allow for the introduction of live spiders, flies, moths, beetles, and the like, for the fish to shoot down and eat. Among other foods taken from or near the surface are gnat larvae, whiteworms and woodlice. The water itself should be slightly brackish and maintained at a temperature in the middle to upper seventies (°F). Cured pieces of tree branch, driftwood or bog wood, as tank furnishing, make the fish feel more at home. Or at least we like to think so. Archer fish live longest when they are given a tank to themselves.

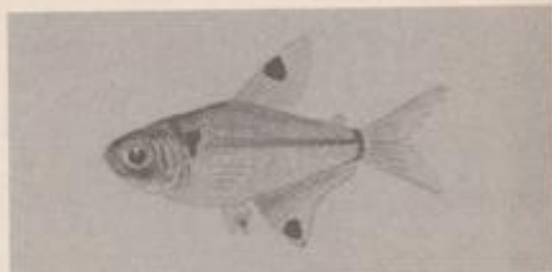


Archer Fish

The other day, I noticed some fish in a dealer's tank which he had labelled '*Pristella maxillaris*.' They looked the same as the enamel fin or pristella I used to keep years ago. Is *P. maxillaris* a new species?

*P. maxillaris*, for those who can get used to remembering a change in nomenclature, is the new name for our old friend *P. riddlei* of yesteryear. This new

name was brought to the attention of aquarists in a recent issue of a well-known American publication.



*Pristella maxillaris*

Recently I purchased some fish sold to me under the common name of apollo shark. They look similar in shape to *Hemiodus gracilis*, but have no adipose fin. What can you tell me about the apollo shark?

This fish has been dealt with in a recent issue, but under its scientific name of *Luciosoma setigerum*. It is a cyprinid, hence the absence of an adipose fin, and occurs in south-east Asia. There are more than one species of *Luciosoma*. They frequent the upper levels of the water and grow to a fair size. *L. setigerum* and its congener *L. spilopleura* attain a length of 10 inches to a foot, perhaps more in the wild state, and will prey on much smaller fishes that swim within striking distance. The reason why fishes of the genus *Luciosoma* are called apollo sharks by dealers has not been disclosed.

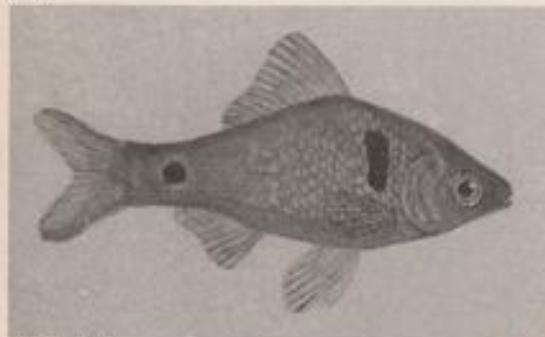
I recently acquired a tank size 24 in. by 15 in. by 12 in. and would like to know whether it would be possible to stock it with tropical and coldwater fishes if the water is kept well-aerated and not above a temperature of about 75°F (24°C)?



The short answer is no. It is true that goldfish are not put out by a temperature in the middle seventies (°F), but the higher the temperature of the water the more energetic they become and so need a great deal of food, living space, and oxygen. It is up to you to make your choice: a tank set up for tropicals or a tank set up for room temperature or coldwater species. In a word, it is not recommended to mix even the more accommodating of the coldwater species with tropicals.

**Is it true that the ticto barb can be accommodated in a tank maintained at ordinary living room temperature?**

*B. ticto* can tolerate quite a wide range of temperature provided the change is brought about very gradually. Ordinarily the species flourishes best at a range of about 72°F (22°C) to 75°F (24°C). It can, however, remain in excellent health, say, over the winter, at a temperature in the lower to middle sixties (°F).



Ticto Barb

**I have a *Heteropneustes fossilis* of about 8 in. How much larger do you think it will grow?**

The books inform us that *H. fossilis* can attain a length of more than 2 ft. I do not doubt they are right.

**I keep on trying, but I cannot keep fighting fish for long nor induce them to breed. Have you any good tips to give me on keeping and breeding this fish?**

I would need several pages to answer your queries. I suggest that you send 22p to our publisher's office for a copy of *The Fighting Fish of Siam*. This well-written and informative booklet will be of great help, and it is post paid.

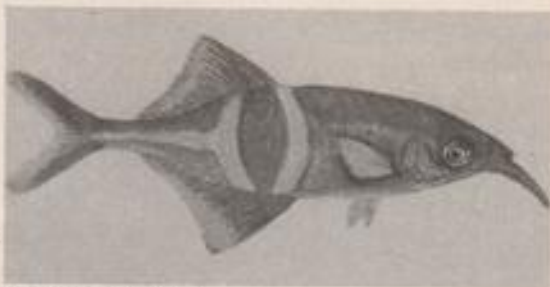
**I have four brown discus the size of a 50p piece, four neon tetra, one bristlenose catfish and one coolie loach in a 36 in. by 15 in. by 12 in. aquarium maintained at a temperature in the eighties (°F) and kept clean by a u.g. filter and an external power filter. Do you think it would be all right**

**to add a clown rasbora and an *Apistogramma ramirezi* to the above collection?**

I wonder how many weeks or months you have owned the baby discus; for if you care to take my advice you should hasten to give them a tank to themselves. Discus are too refined and temperamental to share their living accommodation with many different species of fish and after a few months of less than elite company, discus usually go off their food and die. The range of temperature and type of water you have provided for your discus appears to be about right. Bear in mind, however, that soft and peaty acid water suits them best.

**Could you please give me some information regarding the maximum size, adult coloration and general requirements of an elephant-nosed fish (*Gnathonemus petersii*) from West Africa?**

*G. petersii* grows to about 9 in. The sides are coloured in shades of brown, with two more or less creamy or ivory grey bars linking the anterior fullness of the long-based dorsal and anal fins. This species requires plant thickets to afford shade and shelter. Another necessary part of the tank furnishing is a soft bottom—no jagged-edged grit or chippings. It is a gregarious fish and likes the companionship of its own kind. If placed in a community tank, the other occupants must be quiet-living and peaceable. Suitable foods include whiteworms, tiny or chopped earthworms and flake food. A temperature in the middle to upper seventies (°F) suits it well.



*Gnathonemus petersii*

**I have just housed two *Cichlasoma nigrofasciatum* in my community tank until I can move them into a larger tank sometime in the future. I am aware that *C. nigrofasciatum* has a reputation for aggressive behaviour, but as my two fish are no larger than 2 in. do you think they could do any harm?**

I must warn you to keep an eye on your two young *C. nigrofasciatum*. Even small specimens can do damage to other fishes, especially those with slim bodies like neon tetras or male guppies. As for the flowing fins of male guppies and other species, *C. nigrofasciatum* will soon rip these to shreds.

I wish to set up a small tropical aquarium. Therefore I should like your advice on whether to go in for a lightweight and leakproof plastic tank or a much heavier and quite possibly non-watertight glass tank.

Go in for a glass tank, all-glass or glass in a rigid metal frame. A properly made all-glass tank will not leak; a framed tank can be made proof against leaks by sealing all internal seams with a silicone rubber aquarium sealer. Again, the sides of a glass tank can be scraped with a razor blade scraper or abrasive-coated pad to remove dark stains and algae. A plastic tank cannot be scraped or rubbed with a strongly abrasive surface for fear of creating a vision obscuring curtain of scratches. Also, after several months' use, a plastic tank loses a lot of its crystal clarity and becomes overcast with a yellowish or slightly cloudy bloom.

**Are albino swordtails found in the natural state in Mexico?**

I do not know; yet it would not surprise me to learn that they are. They would be very rare, however, for most albino creatures are soon set on in the wild. The true albino swordtail known to aquarists the world over was developed by a Brooklyn, New York City aquarist in 1934. It was first seen in this country a year or two later.

**I am a beginner and feel rather worried about the appearance and behaviour of one of a pair**

of opaline gouramies living in my community tank. The male fish has changed from a lovely sky blue, with some dark blotchings, to an almost overall inky blue. It keeps dashing about the tank and every so often bites at the body of the female. Please can you tell me what is wrong with this fish?

Your male gourami is in spawning condition and the change of colour and abnormal behaviour is all part of display and sexual excitement. Sooner or later, the fish will build a bubble nest. Meanwhile the female will come in for plenty of rough treatment. Make certain there is a good growth of plants for her to find cover in. Without adequate hiding places she runs the risk of being battered to death.

**Would it be possible for me to keep and breed livefoods and what would you suggest? I have a couple of 10 in. by 7 in. by 7 in. tanks and wonder whether I could use these to breed *Daphnia*?**

Forget *Daphnia*. To produce enough *Daphnia* to feed even a dozen medium-sized fish more than two meals a week you would need something nearer an old kitchen sink or a large tank. Even then, you would soon run short of *Daphnia* in the winter. Your best plan is to culture whiteworms. It demands little skill to farm thousands of whiteworms every week all the year round in nothing more commodious than an old plastic washing up bowl.

## OUR READERS WRITE continued from page 84

natural freshwater in Northern Europe and yields of 2053 kg/HA for the fishfarms of Israel for the year 1963.

I would recommend the already mentioned book (published by Pergamon under the auspices of the Commonwealth and International Library) to any aquarist wishing to take this matter a stage further. It is a small but eminently readable work by an author who has worked in this field and it has much to offer the aquarist.

J. S. COLLINGS,  
3 Pennmelen,  
Camelford, Cornwall.

### Satisfied Customer

I am writing to bring to your attention the excellent after-sales service provided by "Peterama," Waterhouse Lane, Chelmsford, Essex.

The reason for this is that after accidentally breaking a small part of the "Hykro" Protein Skimmer in my tropical marine system, I found out that the above-mentioned firm were main suppliers for this product.

Therefore, as this item was of prime importance to the health of my collection, I wrote to "Peterama" explaining my dilemma of not being able to obtain it locally.

Within a few weeks, "Peterama" had sent to me not only the specific item but the complete holder unit, all well packed, postage paid, and free of charge. A few days later, a letter arrived from "Peterama" apologising for their delay in sending the item, and wishing me trouble free, continued use of my "Hykro" Protein Skimmer.

You may wonder why I have directed this information to you, but I feel that in these times of mass production and the fast buck, it is refreshing to see that there is still such a thing as after-sales service and customer satisfaction.

To sum up, through experience I have found that the advertisement appearing in the *Aquarist* for Hykro products is reliable and true.

WILLIAM HUGHES,  
2 Kerryroy Street,  
Glasgow G42.



## COLDWATER QUERIES

by Arthur Boarder

**It is always recommended to use aeration for tropical fishes but you do not do so for coldwater fishes. Why the difference?**

It is all a matter of water temperatures. The warmer the water the less oxygen does it contain and as fishes must have sufficient oxygen the warmer tanks should have aeration to help to supply the necessary oxygen. The average tropical tank is kept at the middle seventies (F), whereas the coldwater one can be below 60°F. It is not correct to state that I do not recommend any aeration for coldwater fishes, as there are occasions when this is advantageous.

When hatching and rearing fry it is a great advantage to use aeration when warmer water is being used. I found out some years ago that the use of warmth with aeration when breeding fancy goldfish was well worth while. The rate of growth was doubled. I had never used artificial heating nor aeration when breeding fantails but I had a late spawning and to make sure of getting these fry through the winter in safety, I used a temperature of around 70°F. and so had to use aeration to supply the lacking oxygen. Also, if a fish is being treated for a complaint which necessitates warmer water, it is a good idea to also supply oxygen. When a heater is working from the base of a tank there is always a constant flow of water from the lower depths to the surface. This water then gets more oxygen from the atmosphere and so assists in re-oxygenating the water. This ceases when the thermostat cuts out the heater and so a constant supply of fresh air is the reason for constant aeration.

**I have a pond 22 ft. x 10 ft. containing Koi. Where can I get a pump and filter system to keep the water well filtered and aerated?**

Several firms advertising in the *Aquarist & Pond-keeper* supply these items. However, I will include the name of a firm which specialises in filtration of large ponds, such as swimming pools. As your pond is of a longish type I suggest that you use a pump drawing water from one end and then returning the filtered water through a plastic pipe to the other end. In this manner it is possible to create a steady flow of water from one end to the other.

**I have a heron problem and have been told that if I stand a plastic imitation heron at the pond-side this will keep a heron away as they are lone fishers. Do you think this will work?**

I cannot say whether this will work or not as I think that the presence of such an imitation could attract

another real heron. I shall be very obliged to any reader who has tried this out and found it useful. The usual procedure is to cover the pond with a very fine, green plastic netting, about a foot or so above the water. This does not look very conspicuous. A fine black wire run round the pond at about a foot high will deter a heron, too, as these birds usually land on the ground near the pond and walk into it and do not alight directly in the water.

**I have a small fibre glass pool and would like to know if I can extend it. If not would it be possible to make a clay pond? I have plenty of clay and could tamp it well down.**

I do not think it possible to extend a fibre glass pool. The easiest way to make a larger pond is to use a liner, but as you say the expense would be too great for you, you could try the clay pond. You could make a very small one first and see if this holds water. After a good soaking the clay pond should hold water but the difficulty will be the edges at or about ground level. You would need at least a foot thickness of clay at this point. Also you would have to watch that the level of the water did not drop during hot weather as this could cause the clay to dry and crack causing a leak. If the clay pond is made I do not recommend you to plant directly into the bottom as this could mean that the plants would become very rampant and would be difficult to keep within bounds. Plant in containers for preference. The pond must be left for some time for the water to clear of sediment before adding any fishes.

**I have a pond, 8 ft. x 5 ft. and about two feet deep. In it I put: a 6 in. Koi, four 3 in. golden orfe, three 3 in. goldfish, three 4 in. shubunkins and two 3 in. fantails. I also planted it with several baskets of oxygenators, water lilies and marginals. All went well for a time and then I lost the Koi and Orfe. Do you think there are too many fishes and what is the rule for stocking a pond?**

I think that you overstocked your small pond both with plants and fishes. It appears to me that your stocking would have been adequate for a pond twice the size of yours. You ask to what size the fishes you had are likely to grow and this varies according to the space available for growth and the amount of food given. The Koi and Orfe are not suitable for your small pond. The former can grow to over two feet long and the latter to at least eighteen inches. The

goldfish can grow to over 8 in., but the shorter bodied fancy goldfish are not likely to reach much over 5 in. For a pond the size of yours I think that six four inch body length of fish would be sufficient. One should always allow space for the growth of the fishes.

**I had two moors and a fantail of a good size in the garden pond and I brought them indoors for the winter and put them in a good sized tank. They did so well and looked very attractive that I decided to add some more fish. I added two fantails, 2 in., two shubunkins 3 in., some baby fantails and young goldfish, 25 in all. After a time the fish were rubbing themselves on stones, etc., and we think it could be white spot disease. How could this have occurred?**

It was a mistake to add so many fish to the tank and no doubt the new fish were not quarantined before they were added to the others. The tank was obviously over-crowded and in such crowded conditions it is easy for any pests or diseases to spread to all the occupants. One method of clearing white spot is to use two tanks and move the fishes to a fresh sterilised one each day. By this means the cysts which fall to the bottom are washed away before fresh parasites can hatch out.

**Are ants' eggs any use as a food for goldfish?**

These dried pupae are of little value as food for fishes although years ago this was the sole diet of most goldfish kept in homes. Men used to come round streets in outer London offering a goldfish in exchange for a jam jar. Few homes with children were without a goldfish in a bowl at some time or other. The bowl contained no gravel nor water plants and a 1d. packet of 'Ants' eggs would be the sole food. If 'Ants' eggs was mentioned the immediate associated reply would be goldfish. I remember watching my fish as a small boy apparently chewing the 'eggs' and spitting out the tough outer skin. Nowadays few people would use this form of food for their fishes and the flake foods have become the favourite today.

**I have an outhouse attached to my kitchen which does not receive any sunlight and the winter temperature drops to 46°F. Could I keep and breed Orandas and veiltails in it? I have several large tanks with Tubular lighting. Would plants grow as well?**

Surely it would be possible to supply some light in the outhouse, perhaps the insertion of a window in the door? First of all I suggest that you change the lighting for ordinary bulbs as these will give off considerable warmth and so tend to keep the temperature of the water up to a fair standard during the winter. The two varieties of fancy goldfish are not the easiest to keep during cold weather as both have flowing finnage which is often a source of trouble

through fin-rot and congestion. Your plants should grow all right but the amount of growth will depend on the hours in which the lamps are kept on. A temperature of 46°F., should not harm the fish as long as this is not brought on suddenly. Your tanks up to 24 in. long can have two 40 watt lamps and any over this length could have two at 60 watts.

**I recently bought three 2 in. fantail goldfish and now one of them keeps biting at and barging into the others. Why is this and how can I stop it?**

Your fish which keeps chasing the others is a male fish and is trying to encourage the others, no doubt females, to spawn. This is the usual method employed to get the female fish to lay their eggs. If your tank is small and the female fish are not ready to lay their eggs, some damage could be caused to them. There should be plenty of water plants in the tank so that the fish can hide away from the attentions of the male fish. If not you had better remove the male if it becomes too vigorous and later on try to get the fish to breed. Get a book on the subject to learn all about the breeding of goldfish.

**I would appreciate some information on Koi, such as sizes and conditions needed for healthy growth.**

One of the main points necessary for the maximum growth of Koi is plenty of swimming space in clean water. An adequate supply of food is also essential. With such conditions the Koi can grow to over two feet long. Some have reached three feet long in Japan. Most successful Koi keepers depend on an efficient system of filtration in the pond. If you wish to go in for keeping these handsome fish I suggest that you join the British Koi Keepers Society. A very useful magazine is sent out to all members each month and any information required is willingly given. Write to the membership secretary, 165 Woodside Road, Amersham, Bucks. HP6 6NR.

**We have a coldwater tank and our problem is brown algae. How can we get rid of it?**

Try increasing the number of water plants and reduce feeding for a few weeks. Cut out all food for a fortnight and then see if the condition of the tank improves. Many aquarists have gone on holiday and left their tank unattended and on return have found that the tank is cleaner than it has ever been before. I know this is true as it has happened to me on more than one occasion.

**My small assistance re conservation is to breed thousands of tadpoles each year and release them when they are small frogs. My trouble is that I feed them on crushed biscuit and mashed**



earth worms. The supply of the latter is variable. Can you suggest any other foods?

You are to be commended for your efforts to keep up a good supply of frogs. I hope that you only release them during late evenings on a rainy day and into long grass. This gives them a better chance of escaping being eaten by birds. Tadpoles will eat almost any soft material such as boiled cabbage or spinach, boiled oatmeal, soaked bread, etc. Always see that food is not given at such a quantity that it turns the water foul.

I have bred some coldwater fishes in the past and would now like to concentrate on breeding common goldfish, shubunkins and fantails. I have two small ponds and would like to know if these could be used. Also how can I control their spawnings so that I may be on hand when this happens?

I do not recommend that you should breed common goldfish as they are not likely to pay for your trouble. Good types of fancy goldfish cost no more to feed than common ones and are more attractive and of more value. It is not easy to be able to control any spawnings, especially in a pond. The only way would be to keep the sexes apart until you are able to be on hand. There is one method you could adopt and that is, hand spawning. This is not difficult as long as the fish being treated are quite ready to spawn. When the females appear to be full of eggs and the males are showing the white tubercles you can proceed as follows. Get a bowl of water which has stood for a day to get rid of any chlorination and add a few fine-leaved water plants, such as Hornwort, *Ceratophyllum demersum*. Take a female fish in one hand belly uppermost. Hold just under the water and with thumb and finger of the other hand, apply steady pressure from the head end towards the vent. Eggs should flow out quite easily if the fish is ready. Do not press too hard or you could injure the fish. If no eggs appear with a few gentle strokes, refrain from

applying any harder pressure. Once eggs are obtained repeat the process with the male fish. The milt appears as a milky fluid and very little is needed as it contains thousands of sperms to fertilise the eggs. The tail of the fish may be used to swish the water around a little. I used this method for obtaining fry from a selected pair many years ago and providing it is not attempted when the fish are not ripe, there should be no difficulty.

Do you think that the Ruffe is a good fish to keep in a coldwater tank?

The Ruffe or Pope, *Cerina cornua* is not a very good fish for a tank. The Perch, *Perca fluviatilis* of a similar Genus is much more attractive in colouring. The Ruffe is carnivorous and so must be kept with small fishes. When fishing as a boy, this fish was a nuisance when fishing for Perch. It has such a huge mouth that it would swallow a large worm and Perch hook right down it and had to be almost deheaded to retrieve the hook. Small boys used to stick a cork on the sharp dorsal fin spines and throw the fish into the water to watch it try to swim below surface.

I have an adult pair of Calico Orandas in a 24 x 12 x 15 in. tank. They feed well, are active and appear in perfect condition except that they do not carry their dorsal fins erect like a sail. What can I do to cure them?

I do not think that there is anything to worry over. As the male fish shows the breeding signs and the fish feed well there cannot be much wrong with your methods. Your feeding of them with flake food and garden worms is quite satisfactory. I suspect that the dorsal fins are not closed right up but just fold over to one side. This is because the calico fancy goldfish such as Veiltails and Orandas have soft flowing finnage, unlike the stiff types of the scaled varieties. The spines of the dorsal fins of your fish are not strong enough to hold the whole fin erect. Usually the larger the finnage of a fish, the less will it be able to hold the dorsal erect.

#### ADVANCE NOTICE

#### THE FEDERATION OF NORTHERN AQUARIUM SOCIETIES

Members of The Confederation of United Kingdom Aquarists  
present



### THE 26th BRITISH AQUARISTS' FESTIVAL

EUROPE'S BIGGEST AND BEST AQUARISTS' SHOW

at

BELLE VUE ZOOLOGICAL GARDENS, MANCHESTER

on

SATURDAY AND SUNDAY 22nd 23rd OCTOBER 1977

Further details shortly

## KOI QUERIES

by Hilda Allen

I intend to extend my present pond to 19 feet by 8 feet by two and a half feet, probably using Butyl rubber for this. Since making my original pond two years ago I have been troubled with green water. To try and eradicate this I made a filter using a plastic laundry basket, filter wool, gravel and carbon. I have also used a well-known algicide but these methods were all inadequate. Can you please advise on method and construction of a filter suitable for my sized pond.

If you intend to enlarge your pond I hope that you will make at least some of the extension more than two and a half feet deep. Experience has shown that Koi need a greater depth of water to satisfactorily over-winter here in the U.K. and a minimum of four feet at least is strongly advised. It should be remembered that Koi come from a milder climate, with far shorter winters than our own and thus should be afforded every protection. Many Koi have died during the past long winter season, mainly because they were kept in shallow ponds.

Green water is a perennial problem to pond keepers but this can be most effectively dealt with by the use of biological, undergravel filtration. This should be constructed to cover about one third of the pond bottom and it must be operated continuously in order that the useful bacteria continue to function. I have sent you details of the home construction of pond under-gravel filtration, which may be situated either in the pond or adjoining.

I have no experience of algicides and in any case would be reluctant to add any chemicals to a Koi pond.

It is a good idea to shade part of any pond against bright sunlight.

Last year I bought seven small Koi about three inches long and put them into two aquaria with some small Cambridge blue shubunkins. Everything seemed all right for a few weeks when I noticed one of the Koi skulking in one corner and opening and closing his mouth in a very exaggerated manner. There was sufficient aeration and no sign of illness and I thought he had swallowed a pebble. Soon afterwards the others became affected and stopped eating, often only using one gill at a time. I tried every known cure and for a time Methylene Blue appeared to be helping but eventually all but one of the Koi died. I had by this time bought another, larger Koi who soon developed the disease although the shubunkins remained healthy. I would be

pleased if you could tell me what the disease is. Also, is it true that Koi will only grow to the size you want, that is in a tank, because their gorgeous colours can be seen so much better if kept in tanks. As it is emphasised that Koi are pond fish I feel a little uneasy at "dwarfing" them.

I think it is more likely that your small Koi were suffering from gill-flukes rather than disease as the symptoms you describe are typical of gill-fluke infestation. I suggest that you treat any new purchases with a solution of "Dipterex 80." This is an insecticide available from good garden centres and it should be treated with the greatest respect. Infected fish should be bathed in a solution of 10 grammes of "Dipterex 80" per one pint of water for three to four minutes. Sufficient solution should be made if a number of fish are to be treated otherwise asphyxiation will occur. The fish, kept in a net, are immersed for the required few minutes and then transferred to a container of fresh water at the same temperature immediately. Overdosage will seriously deform Koi and the damage is permanent. "Dipterex 80" is a powerful organo-phosphonate that is very effective against gill and skin flukes, anchor-worm, fish-lice and the protozoans Cyclochaeta and Chilodonella which cause sliminess of the skin.

On no account must "Dipterex 80" be used on Orfe or Rudd which it will cripple or kill on contact. It is absorbed through the skin and the use of rubber gloves during treatment of Koi is advised. The solution should be disposed of immediately after use.

Koi will not grow to the size we want but rather according to the limitations of space available and if kept permanently in a tank will only grow commensurate to the size of the tank. Overcrowding will also hinder growth and should be avoided. The same principle applies to very small ponds. There is no reason why Koi cannot be kept in large tanks if no garden pond is available, they do provide pleasure if well cared for. I cannot, however, agree with you that the colours of Koi are seen to their best advantage in tanks. Koi should be viewed from above as they have been specifically bred for the colour and patterns on the dorsal (top) areas.

Although in your article in the March edition of *The Aquarist* you referred to the gold Koi as Ohgon, I have a Koi that is gold and silver. Is this an Ohgon also and if so, does it have a special name?

Your Koi is probably a Hariwake (pronounced Harry Wacky). This means gold and silver foiled



and Hariwake are extremely beautiful Koi. The head should be clear and of one colour. Doitsu Hariwake, which are generally scaleless except for a row of large mirror scales along the lateral line are particularly attractive. Any Koi that have a metallic shine to their scales are a variety of Ohgon, they are all magnificent fish of great beauty.

Some time ago I bought two small Koi of approximately the same size and while one is growing and filling out the other fish is very quiet and keeps most of its fins folded. Recently it has taken to resting on one leaf of a broad-leaved plant at the back of the tank. It only feeds a little and its gills do not open properly. The Koi share a 24 in. x 12 in. x 12 in. tank, fitted with undergravel filtration and separate aeration, with small Moors, Bitterlings, Goldfish and a Shubunkin and the water temperature is usually about 72 F.

The small Koi is obviously sick and should be removed from the communal tank immediately, if only to protect the other fish. You could try isolating it in a separate tank, with aeration, but without undergravel filtration, which would remove any treatment such as Methylene Blue which could be added to the water at the prescribed dosage. The problem may be gill-flukes which are very dangerous to small fish. I must warn you that the move may well prove to be the final straw and I am not very optimistic of the outcome for this small Koi. This is my first opportunity to advise anyone who is buying imported Koi of the very real need for strict quarantine. In particular the small Koi of 2 in - 3 in. can cause endless trouble if added indiscriminately to healthy, established stock. Generally they are under-nourished and not able to withstand the stress of handling, air-freight, various changes of water, etc., and many die from shock, disease or parasitism within a few weeks of purchase.

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## SEXING GOLDFISH

by Dorothy Mason

ON the vexed question of telling the sexes apart in the goldfish family (and possibly other cold-water fish, too) I find dealers, however benevolent and helpful, just as unable to assist as most "fish books." From a certain well-known "little wonder" type book, right through to hefty tomes costing many pounds, information is mostly based on the theory that female fish, when looked down upon from above, are more rotund than males gazed upon from the same viewpoint. In fact, sex equality in the fish tank is such that unless you are prepared to wait until spring when wishing to purchase a male goldfish out of a tankful of lively unisex-type characters, you would probably have to buy about thirty in order to find that, quite by chance, you had managed to secure one male!

As is well-known, a male fish who is ready to breed sports a natty set of white spots on his gill-covers (NOT to be confused with Ich) much in the same way that his human counterpart sports a long, low, high-powered convertible car—they are both designed to separate the men from the boys!

As fish rarely hang obligingly motionless in the water long enough for you to decide that there ARE some white tubercles, (should you opt to wait for spring, so that these obtain), you can still come home with the wrong fish; even when it is obvious that one fish is chasing another and therefore the chaser must be male it is still possible to catch the wrong one and STILL come home with a female.

About a year ago, a friend of my husband's lent me a library book (sub-lent?) and though alas, I cannot

remember either the title of the book or its author, I do recall that the book was very expensive. Most of the information contained therein was about as useful as that gleaned from almost any cheaper book including the 'little wonder' variety—except for ONE chapter—the sexing of goldfish and their varieties. Of course, again you require obliging fish which will remain still long enough for you to get a glimpse of their *cloacae*. It would seem that the female's vent comes to a point, and the male's, a small depression. In other words, it is just the opposite of what you would expect—the female has a "pimple" and the male, a "dimple." Also, when a fish is bottom-feeding and "standing on its head," the vents themselves can be seen to differ in shape, the female's being round and the male's, oval.

I have found this method 100 per cent accurate (if ONLY the fish would keep still long enough, in the aquarium shops, for me to differentiate between "pimples" and "dimples." I have too often got home and found I've made a mess of it and bought all females.)

I do not know if this method of sexing is accurate for all cold-water fish or only for those of the carp family. What I do know is that the author of that book is the only writer I've ever come across to have made the "pimple and dimple" observation.

No doubt readers will immediately flock to their tanks, some perhaps armed with magnifying glasses, to check this theory. One's own fish usually being extremely tame, I think there should be no difficulty in discovering that this method is very accurate.

# A POND FOR KOI

by Hilda Allen

IT IS CERTAINLY true to say that many people have come to Koi-keeping through goldfish-keeping, myself included; it is equally true to say that most people have soon found that traditional ornamental goldfish ponds are not usually suitable for Koi. In general, other pond fish are less active, require less food, are smaller and so make fewer demands on their environment. If anyone intends to keep more than a very few Koi, thought should be given to constructing a pond that will be adequate for growing on and overwintering Koi here.

Most people are captivated by Koi once they have seen them and become determined to keep them. Koi will, of course, live quite happily with all the other pond fish and are not aggressive to even the smallest specimens, eating the same sort of food, but Koi cannot be regarded in the same way as goldfish, etc. Unless certain provisions are made, then anyone is unlikely to remain a Koi-keeper for very long, so do be sure that you are prepared to provide a good home for Koi because building a Koi-pond is not something to be undertaken lightly.

A site as close to the house as possible is best because this gives easier accessibility of electrical supply (for pumps), water supply and main drainage. It also means that the Koi are readily seen at all times, in wet weather or fine and Koi do become a part of the family I promise you.

If the ground is higher so much the better, provided it is clear (or can be cleared), of overhanging bushes or trees and receives some sunlight.

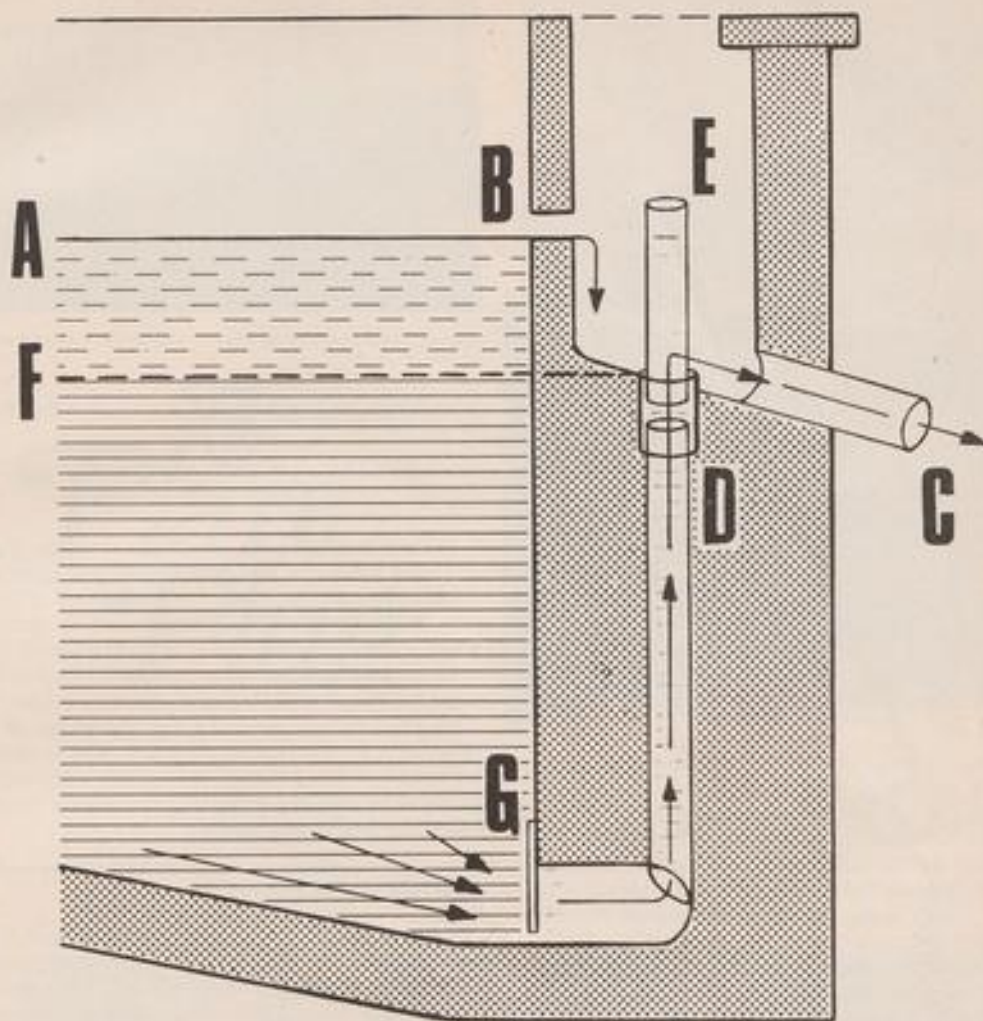
Koi-ponds can be made from concrete, concrete slabs, Butyl rubber (or the new Butyl-made, cheaper, Ethylene Propylene) and nowadays Koi-ponds can

be made of glass-fibre. The cheaper, plastic liners may not be sufficiently strong or durable, but I have no experience of these.

The chosen site should be cleared and pegged-out before digging begins, remembering that the finished pool will be slightly smaller. Here I could point out that a pond partly raised above ground saves digging, is attractive and often makes syphoning-out much easier. Anyone should make a Koi-pond to give the Koi a good swim, as long and as wide as possible but probably depth is the most important dimension. Everyone has their own idea of what is long, wide or deep but generally a pond of about 15 ft. x 20 ft. is adequate but it must be at least 4-5 ft. deep. It will be obvious that a deep pond will better maintain its temperature, shallow ponds giving rapid temperature variations which are bad for Koi and a severe winter will prove the need of a really deep pond. A good pond should have provision for a water overflow to remove surface debris and this should be some 9 in. or 10 in. below the level of the pond-wall. This will not only prevent loss or damage by cats but has been proved to be a safeguard when Koi decide to leap about, especially on warm, summer nights. Largish Koi, say of between twelve and eighteen inches, really do create a splash!

A useful water-exchange system as used by many people is illustrated in the diagram. This can be built across one corner of a concrete pond, at the deepest point; the whole pond floor should slope towards the bottom-drain. If the pond is to be made of Butyl then this pond should also have a low point for draining off soiled, stale water. Most swimming





SECTIONAL VIEW OF WATER-EXCHANGE  
SYSTEM  
(Drawing by E. A. Allen)

- |  |  |
|--|--|
| <p>A. Normal level of pond water</p> <p>B. Top overflow through 1-inch gap in retaining wall.</p> <p>C. 3-inches diameter pipe to main drain</p> <p>D. 2-inches diameter pipe with connecting piece permanently fitted</p> | <p>E. Extension pipe, reaching above normal water level when fitted, but when removed soiled water and mulm flows forcibly from the bottom of pond</p> <p>F. Lower level of pond water. This should be 9 inches minimum or according to the volume of water change required</p> <p>G. Grille to cover the bottom drain in pond</p> |
|--|--|



Above: The completed corner and water over-flowing slot about  $\frac{1}{2}$ " x 2".

Above left: The pipes should spread over the filter area for an even pull-through of water.

Below left: At least 8" depth fine gravel  $\frac{1}{8}$ " (or  $\frac{1}{4}$ ") holes drilled through are easier than slots.



pool manufacturers stock bottom drains specially made for fitting into liner pools. Both types of bottom-drains and the necessary plumbing should be installed during the construction of a pond. The plastic pipe used, often Bartol or Osma brands is available from hardware shops or builders' merchants.

Many ponds today have under-gravel filtration which is highly successful in maintaining healthy conditions and to combat the problems of green-water. During the construction of a concrete or concrete-slab pond a barrier not less than fifteen inches high should be built to contain the gravel.

The filter area should be sited well away from any bottom drain and should cover at least one quarter to one third of the pool floor. All pipes, which may be of  $\frac{3}{4}$  in., 1 in. or  $1\frac{1}{2}$  in. plastic should be drilled or slotted through with holes of  $\frac{1}{8}$  in. or  $\frac{1}{4}$  in. size at 1-2 in. intervals for an even pull-through of water. The framework should be completely covered with well-washed small gravel and connected to the inlet of the water-pump. The pump must be operated continuously (not switched off at nights) and the returned water should be directed away from the filter bed to ensure good circulation. Pumps may be of the submersible kind or the outside, industrial type which should be protected from the weather.

It may not be quite so simple to make a gravel-retaining barrier in a liner pond and the filter may be built alongside the pond. Under-gravel filtration is maintenance-free and has been used by many Koi-keepers with great success over several years.

In my own opinion it is wise to build a second small, separate pond if space and finance permit. This pond need be only around 8 feet square but it will be invaluable for quarantine purposes, Koi spawnings or fry-rearing. It is also wise to have a second pump as stand-by in case of failure, which may be critical, especially during hot weather.

## JOINT RESEARCH

Joint research in aquatic pathobiology is being carried out by the Hebrew University and the University of Stirling in Scotland. The director of the Scottish Unit, Dr. Ronald Roberts, visited Israel last January and a post graduate student, Mike Sillito, is coming in April to spend a year on research into the diseases of gilt head bream.

Dr. Roberts will be the editor of a new international scientific quarterly to begin publication next year. An Israeli, Mr. Shmuel Farig, who is director of the Fish Diseases Laboratory at Nir David, has been appointed advisor to the international editorial board.

The new journal will deal with all aspects of diagnosis and treatment of fish and shell fish diseases in the aquaculture industry, particularly in the fresh water and marine environments of the tropics. It will also provide background scientific information for the benefit of fish farming communities.

Judy Carr

THE AQUARIST





*Ceratophyllum demersum*

AN ARTISTICALLY laid out fish pond can increase the enjoyment of a garden beyond all belief. 'Indeed,' as I have mentioned elsewhere (*Your Garden Pond*, Colourmaster Publications, 1975), 'as spring melts imperceptibly into summer a well-stocked garden pond can hardly fail to be anything but rewarding.' I refer, of course, to the visual pleasure derived from observing the movements and colours of the fishes and the undeniable charm and fascination of plants growing in the water or out of it in habitually moist but not sour soil: 'attractions which can be mesmeric from March to September.' Or, given good weather, beyond.

Man-made ponds of long ago were more often than not mere deep or shallowish excavations in the ground lined with a well-turned mixture of chopped straw and heavy clay rammed firm. Later concrete came into its own. Even at the present time, that is for those who do not mind long days of hard work, a properly made pond constructed of a 4 to 6 in. layer of one part of cement, two of clean sharp (coarse) sand, and three of small washed gravel spread evenly over a beaten and wire-reinforced base and sides, and finished off with a  $\frac{1}{4}$  in. rendering coat of one part cement to three parts washed sand will outlast its builder. Waterproofing powder (obtainable at any builders' merchant) mixed into the rendering coat helps greatly to prevent any slow seeping away.

For all that, it is less muscle-pulling and exhausting to line a basin—or rectangular-shaped hole with water-retaining sheeting. In short, a pond liner. Needless to say, the most expensive pond liners give

# A GARDEN POND

by Jack Hems



*Lagarosiphon muscoides*

the greatest satisfaction and can last for years. They are not, however, resistant to the thrust of a garden fork or, say, the penetrative powers of strong thorns or jagged-edged stones. Hence it is recommended that a pond liner should be cushioned on a dampened layer of sand or several thicknesses of newspaper.

Unlike a cement-and-sand pond that has to be cured of harmful free lime by vigorous scrubbing and many, many changes of water before the introduction of any plants and fishes (lime-sealing compounds are available), a liner lined pond may be filled and stocked with plants and fishes almost right away or, to be precise, after an interval of a few hours (or longer) to allow for the chlorine in freshly drawn mains water to be taken up into the atmosphere.

A stretchable liner made of butyl rubber (one of the best) or any reasonably flexible waterproof sheeting reinforced with nylon, vinyl or terylene should be draped over the entire excavation and the surplus left around the edges weighted (anchored) with some slabs of stone or bricks. Next, direct water from a hose into the sagging middle of the sheeting. Naturally, as the sheet fills so the weight of the water will push it down and mould it to the contours of the hole. The creases that form around the edges should be pulled out even or gathered into neat folds. Now, secure the edges of the sheet left on the pond surround with paving stones slightly overlapping the water. Alternatively, allowance can be made during the excavation of the hole for making turves to join up with a lawn. These turves, in turn, can be inter-



A concrete pond of varying depths ready for filling.

spersed with irregularly spaced outcrops of stone or moss-covered tree stumps to give a more artistic looking margin.

Whatever the materials used to make a pond—one can even buy prefabricated water containers of polyethylene or glass fibre bonded with polyester resins—it is desirable that at least one part of it is at least 2 ft. deep and the sides stepped in shallows or shelves in which to establish plants that require only a few inches of water for their cultivation. More important: a deep part is necessary to afford frost proof shelter for fishes during the coldest days of winter.

To determine the footage of liner required, the

length should be that of the excavation plus twice the depth, and the width that of the width of the excavation plus twice the maximum depth. Thus a rectangular pond 8 ft. by 5 ft. by 2 ft. deep requires a lining sheet 12 ft. long and 9 ft. wide.

For those who, like myself, are plant enthusiasts, it is a good plan to make part of the pond surround a moisture-retaining bed in which to grow plants that like—indeed, must have—damp feet. All that is necessary is to remove some 18 in. of soil from the chosen area (neither excessively sunny nor in too much shade) and then line it with 500- or 1,000-gauge polythene, with several small holes for drainage stabbed in the bottom. Over the holes spread a layer of broken bricks or weathered cinders or clinker to a depth of about 6 in. Then fill in the cavity with previously soaked peat mixed with chopped rotted turves or well-rotted dark compost. This done, give the bed a really good watering before introducing any plants.

The candelabra and other primulas should do well in such a bed. Also, such plants as the pygmy forms of late summer to early autumn flowering golden rod (*Solidago*), the yellow loosestrife (*Lysimachia vulgaris*), with 3 ft. spires of closely set yellow flowers in character from June to September, *L. clethroides*, that attains the same height as its congener but has terminal flowers that curve horizontally in striking plumes of white, and the beautiful ornamental grass known to the garden trade as *Glyceria aquatilis variegata*. This grass that grows equally well in or out of water (in ground that is never permitted to dry right out) heralds the coming of spring with purplish leaves



Left: *Hottonia palustris*.



Right: *Egeria densa*.





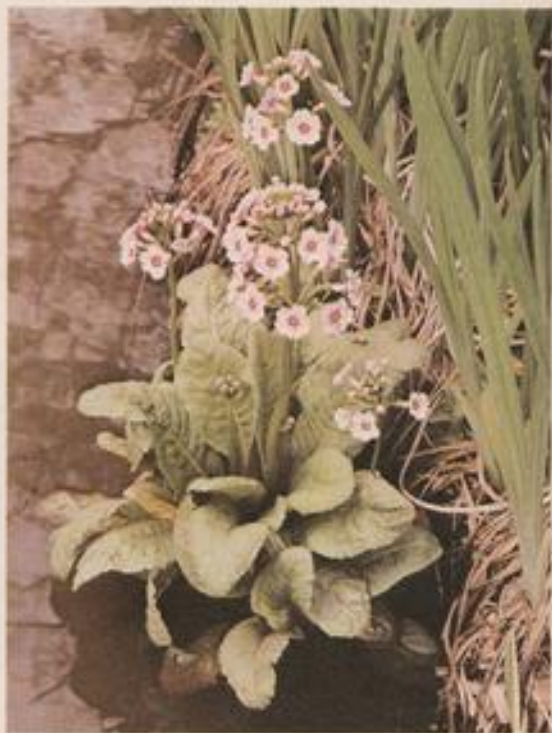


Above: The colourful large-tailed variety of Shubunkin.

Right: Candelabra primulas come in a very wide range of both brilliant and subtle colours and are at home both in the bog garden or with their "feet" in the water.

Left, Above: Golden Orfe, a surface swimmer which rapidly grows to a large size.

Left, Below: Koi. Brightly coloured Rainbow Carp, the most spectacular of all pond fish.







Water Lily *N. froebeli*

that push up, within a few months, 18 in. narrow blades striped green and ivory-cream suffused with wine-red. Bergénias or elephant's ears have plate-sized fleshy leaves that remain in character all the year round. Most bergénias produce sturdy spikes of pink to rose-red flowers early in the spring, but a few of the latest introductions on the market flower for a second time around in September and onwards. Bergénia 'Ballawley', kindly sent to me many years ago by the late Margery Fish, is one of my favourites. Its flowers are rich rosy red; its leaves are mostly liver-red giving way to pinkish round the margins. The hellebores best represented by the Christmas and Lenten roses flourish well in a moist bed as do the noble plain and variegated-leaved hostas. The skunk cabbages (*Lysichiton*) send up arum-like flowers before their paddle-shaped leaves. The monkey flowers or mimulus are late spring and summer flowering. They make drifts of crimson-scarlet, vermilion, and yellow spotted with red. Pulmonarias

or lungworts—the name lungwort having to do with the doctrine of signatures—come into flower as early as February and continue well into May. The flowers of most pulmonarias are rose-pink turning to blue. The lanceolate leaves are sage-green spotted and marbled with silver to white. An almost white-leaved form is known. There is an enchanting blue-flowered pulmonaria with narrow green leaves. It is listed by nurserymen as *P. angustifolia* var. *azurea*. Indeed, there are scores and scores of sumptuous flowering or foliage plants—the enormous leaved *Gunnera manicata*, for instance—ideally suited to a moist bed. Books on moisture or water gardening by reliable writers make inspiring reading.

For the water itself it is of the utmost importance to have plenty of submerged plants (roughly every square foot of bottom area should have its bushy thicket) to help keep algae in check and maintain the pond in a clear and healthy condition. Among the best oxygenators are *Lagarosiphon muscoides* var. *major*, *Elodea canadensis*, *Callitriche verna*, *C. autumnalis*, *Crassula intricata*, *Ceratophyllum demersum*, *Hottonia palustris*, *Ranunculus aquatilis*, and some of the potamogetons or pondweeds. All these can be planted in lattice-sided plastic crates or perforated trays filled with grit or sharp sand mixed with some loam or clay and then topped with more grit to keep the soil washing out and clouding the water. These oxygenators can be started in the shallows and then moved, when good growth has been made, to deeper water.

For permanent adornment of the shallows, say, in about 2 to 5 in. of water over the planting trays, aquatics such as *Scirpus tabernaemontanus* var. *zebrinus*, with 3ft. quill-like foliage banded alternately with greeny grey and white, foot-tall *Acorus calamus* var. *variegatus*, a green and cream striped form of the sweet flag, a plant known to many for its aromatic leaves and rootstock used in the culinary, medical and perfumery arts, are most decorative. Of inestimable value is *Butomus umbellatus*, with triangular-shaped foliage and rose-pink flowers borne on a stout stem.



Hi-goi or Golden Carp showing attractive black patterning on gold.



Golden Rudd.



Common Frog, a welcome pond resident.

The plant attains a height of about 2 to 4 ft. About half as tall and straggly bushy is the marsh marigold or kingcup (*Caltha palustris*). This plant is ablaze in May and early June with large buttercup-like flowers. It can be bought from water garden specialists in several different forms, including a white (*C. palustris* var. *alba*), and a double gold called *C. palustris* var. *flore pleno*. It goes well with the sky-blue water forget-me-not.

Nowadays there is a plethora of highly desirable pond irises. Our native yellow flag (*I. pseudacorus*) bears rich yellow flowers from May to about the beginning of July (flowering may be prolonged by removing the spent flowers from the stems). The June-flowering *I. laevigata* demands a lot of peat around its roots. Given this particular requirement, it grows well. Forms are procurable with intense blue flowers lined in the base with gold, in white, violet-purple, and various shades of pink or lavender or blue flecked and mottled with deeper colours. The above are true water irises. The clematis flowered irises (*I. kaempferi*) of Japan do not mind wet roots



Common Toad. Not a pond resident but the female may choose to deposit her spawn there.

in the growing or flowering period, but they do demand a position where the roots are well-drained and are not standing in water over the winter. Further, the clematis flowered irises are not at all tolerant of lime at the roots. The foliage of *I. kaempferi* has a distinct midrib and the self-coloured flowers have velvety petals ruffled around the edges.

The common arrowhead (*Sagittaria sagittifolia*) is easy to grow. It attains a height of about 1½ ft. and its stems terminate in arrow-shaped leaves. There are whorls of white flowers in the middle of the summer. The Japanese arrowhead (*S. japonica plena*) is larger-growing than the common arrowhead and has double white flowers. Every part of the rapidly invasive water mint (*Mentha aquatica*) is minty scented and about July produces erect stems clothed with typical mint-like flowers.

The nymphaeas or true water lilies are synonymous with the ornamental pond. They should be planted in the largest sized water plant crates. Line a lily crate with pieces of fabric cut from an old hessian sack or old but stout linen sheet or bleached sailcloth or deck chair canvas. Then fill in with friable loam or clay kept open with grit and some peat. Prune away any broken or dead string-like roots. Firm the soil around the fleshy rootstock or tuber but leave the pink growing bud or buds well clear of the soil. Cover the latter with pebbles to prevent the lily floating out of its container or the fish stirring up the planting medium. It is best to start a water lily in shallow water. This is easily achieved by resting the planting crate on bricks. As the stems of the lily lengthen and the pads break open on the water remove such bricks as are necessary.

Well-suited to the pond about 9 ft. long by 4 ft. across are the nymphaeas called Escarboucle, James Brydon and Froebeli. These lilies have flowers in delightful shades of red. Escarboucle is the brightest red of all. *Marliacea chromatella* has darkish green pads mottled and veined with purple, the flowers are



canary yellow. Indiana has the habit of producing young flowers of a lovely orange-red hue. As the days pass by they change to rich coppery red. Gloire de Temple-sur-lot has myriad-petalled flowers of creamy white. Sunrise has immense flowers of light gold with brilliant yellow filaments. *N. odorata alba* has scented flowers of white. As added bonus, this lily is in bloom from early summer to the middle of the autumn (if the weather is kind).

The general rule for stocking a pond with fish is to allow 24 square inches of water surface area to every inch of body length, not counting the tail-fin. For all that, as some species are heavily built and therefore consume more oxygen than their slimmer bodied companions, it is advisable to understock a pond with fish rather than stock it to capacity. Then again, it is of the utmost importance to bear in mind that some fish grow to a good size. Even the common goldfish can attain a length of about 10 in. More showy in its finery of rainbow tints is the shubunkin. This matt-surfaced variety of the goldfish is quite hardy and peaceable—a most necessary quality in fish destined to live their lives together—and is about full grown at 6 in. Golden tench and golden rudd attain a length of about a foot. That is about the only thing they have in common; for the tench is essentially a bottom-liver. Its good looks do not fade with increasing size. The rudd is frequently at the surface. There it cruises about looking for food or enjoying the warmth of the sun. Its fins never fail to catch the eye: they are rich, plushy red. The common carp and the mirror-carp become very knowing and tame and large—sometimes in excess of 18 in. The mirror-carp is so-called on account of some extra large scales that extend along most of the upper sides, and sometimes lower down, and glitter like slightly tarnished silver seen under a bright light. Carp visit all levels of the water in search of food: tender greenstuff, small crustaceans, snail spawn, various worms, aquatic larvae and so on. In captivity they much appreciate plain boiled rice, cooked green peas and rich fruit cake. More splendid in coloration is the hi-goi carp from Japan. The most commonly seen colour form of this fish is orange-red. There are, however, rarer and more exalted hi-goi with black blotches on a red ground or, perhaps, red blotches on a black, yellowish, say, or white ground.

Of more recent introduction into this country is the beautiful Japanese koi. Metallic or matt yellow, gold, platinum, lilac-blue and so on in ground colour. The selfs. There are others with rainbow mottlings or regular or irregular markings, some dusted, as it were, with gold or silver on the head and back. By crossing typical koi with mirror carp, Japanese breeders have succeeded in producing a number of interesting varieties with a highly ornamental scale pattern.

The golden orfe grows to about the size of a common carp, but is much more streamlined in shape. It is pinkish to orange yellow in colour and sometimes marked with a few brownish to blackish spots on the head or body or both. It is a surface frequenter, that is after the early morning chill has gone off the water.

No pond-lover can deny that our native amphibians add life and interest to the water garden. It is not unknown, however, for an amorous male frog, in the absence of a free female, to kill a small or medium sized fish by wrapping its front legs around its body in a tight embrace (properly called the amplexus). All the same, such a happening is rare and in these days of a fast vanishing countryside the frog should be encouraged rather than banned from our gardens. The same goes for the common toad and our three species of newt. One great advantage in having amphibians in our gardens is that they prey on many of the pests that rob our plants of their lives or beauty. Hence a garden that ordinarily supports a flourishing population of wood-lice, small slugs, snails, wireworms, earwigs, and the like, soon shows a more healthy appearance after a number of frogs and toads have settled in. The toad, in particular, is a painstaking liquidator of pests. Malcolm Smith records in his *British Reptiles and Amphibians*, Collins, 1964, that examination of the stomach of nine toads revealed 'ants varying in number from 112 to 363.' Large toads will make short work of baby mice and various snails or swallowable size.

But back again to fish. During the summer months, fish will find a lot of their own food: gnat larvae, accident prone moths, flies, beetles and so on. This natural food, however, is seldom sufficient to satisfy their dietary requirements, and so it must be supplemented by a daily ration—if the weather and the annual holiday permits—of a proprietary pondfish food together with such tit-bits as shredded red meat, cooked vermicelli, cake crumbs and any grubs or earthworms turned up when forking over a bed. Plenty of food over the summer and into a warm autumn enable fish to survive the cold dark days of winter when they go into hibernation or partial hibernation until the longer and warmer days come round again.

Finally, never construct a pond near large trees, particularly deciduous species. Annual leaf-fall and strong roots seeking moisture and *lebenstraum* make for too many problems.

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ANSWER TO: BUT DON'T GIVE UP!  
AQUARIUM PHOTOS.

THE AQUARIST

# Coldwater Fishkeeping

## BREEDING

### FANCY GOLDFISH

by Arthur Boarder

IN this article I intend to deal mainly with the breeding of fancy goldfish. In most well kept garden ponds common goldfish will usually breed without much attention from the pondkeeper. However, the breeding of any particular strain of fancy variety is quite another matter. In a pond with mixed types of fishes it is almost impossible to breed any good types of fancy goldfish. One reason is that all varieties of goldfish will breed together and so if various kinds of goldfish are in the pond there could be all sorts of crosses and the chance of getting any really good specimens of a special type are very remote. Even if fry of a good type were hatched in a pond, if they were of a kind with a double tail, any good young fish could be eaten by the older fish. This is because such fish are slower swimmers than a single tail fish and so would be easy to catch, whilst the poor quality fish, perhaps with a single tail, would escape.

To emphasise the point I must point out that in four decades of breeding fantails in a garden pond, I never once found a young fish of any development good enough to keep or describe as a good type of fantail. Also it must be borne in mind that my breeding pond contained no other variety of goldfish and so the chance of cross-breeds never arose. If any pondkeeper wishes to breed a special variety of fancy goldfish, it is much better to have just the one strain in the pond and to never introduce any other types. I always had and bred a few Tench in the pond but, of course, they could not breed with the fantails.

If one already has different varieties in the pond it is still possible to breed any special variety. This course is open only to anyone who can be on hand when the fish start spawning. It is then possible to catch a particular pair of fish and place them in a fair sized tank with plenty of water plants. When removing such fish it is important to see that no water from the pond accompanies the fish to the

spawning tank. This is because such water could contain some freshly shed milt from male fish which could fertilise any eggs subsequently laid.

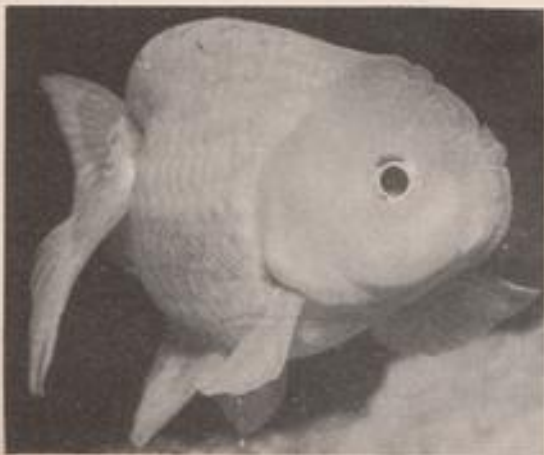
First of all in the stocking of the breeding pond it is well to have very few water plants scattered about in the pond as this could prevent you from salvaging eggs when they are laid. When fish can spawn all over the pond it is very difficult to gather any eggs, whereas if bunches of plants are anchored only in one corner or spot in the pond, the fish will use these and so the eggs can be easily gathered and very few will be lost. Naturally one must have the two sexes present in the pond and it is better to have double the number of males to females. This is because if a couple of males are chasing and nudging a female, it is certain that eggs are more likely to be produced and fertilised. Any special preparation for the spawners should not be necessary if they had been fed well the previous late summer and autumn. Any healthy fish should have developed the roe or milt during that period. Having ensured that the fish are in good condition it is essential to make sure that the water is also in good condition. Unless the water is pure and well oxygenated it is hardly likely that the fish will spawn. Some garden worms can be added to the diet at this time and spawning can be expected at any time, usually during the early morning. Even the most amateur should have no doubt when spawning is taking place. If one watches the pond during the evenings, on the day previous to actual spawning, the fish may be seen following one another around the pond, but not actually nudging. The actual spawning is a very vigorous operation and the females are chased among the dense leaves of the plants in the spawning nests. The fish may lie there quietly for a time and then with a vigorous thrashing of tails, the eggs and milt are expelled. The eggs are tiny when first shed and they adhere to the leaves of the plants and



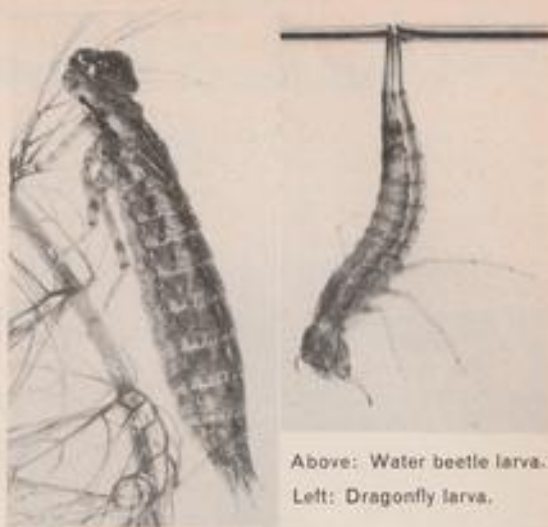
soon become about the size of a pin's head. Most eggs are fertilised as soon as they are laid, but the sperms from the males can live for some time, swimming around searching for an egg.

I have found that one of the best water plants for receiving the eggs is Hornwort, (*Ceratophyllum demersum*). This plant has more than one advantage over most others. It has very fine leaves on which the eggs can stick and it has no roots. This means that when a bunch, with eggs, is taken from the pond and placed in a hatching tank, it is likely to remain alive and give off oxygen. There is then no need to have any base compost in the hatching tank. In fact it is much better to use tanks with no compost as this can contain matter which could tend to pollute the water. Once a bunch is taken from the pond another bunch can be introduced as it is probable that after a few minutes the fish will return and lay more eggs. It seems that a fresh bunch is appreciated as the fish appear to realise that the eggs will not be too thickly placed on the plants.

Spawning may go on all the morning and on occasions into the afternoon. Hundreds of eggs may be laid by one fish but unless many are removed soon after they have been laid it is very probable that many will be eaten, not only by fishes not spawning but also by the parent fish as well. Leaving the eggs in the pond to hatch means that very many will be eaten and even if any hatch out, they can also be eaten. Also when eggs are left to hatch in the pond it is probable that the water may be rather cold and so the eggs will take a long time to hatch. The longer the eggs are left in the pond the more chance is there of many being eaten by predators, such as water snails and the larvae of many insects, apart from fishes.



June, 1977



Above: Water beetle larva.  
Left: Dragonfly larva.

Two pond predators guaranteed to enjoy overlooked Goldfish fry.

Having taken the eggs to a safe hatching tank it is a good plan to provide some warmth. A temperature of 70°-75° F. is a very good one to maintain as this will provide a hatching time of three and a half days. Far more fry are likely to hatch out under these conditions. Although I do not use aeration in tanks for adult fish I do so in the hatching tanks. It is most important that the water in such tanks is very well oxygenated and a constant stream of fine bubbles flows about the eggs. Some liquid fry food can be introduced into the tank after a couple of days when the eggs are first introduced as it is probable that *infusoria* will start to form and be available when the fry are free swimming. This should be after about a day if the water is kept warm. The fry can then start to eat and as long as sufficient fine food is available they will grow fairly quickly. Once the fry are free swimming reduce the flow of air through the stones so that they do not have to continually fight against a strong current of water.

I do not favour the feeding with *infusoria* which has been cultivated by the owner, as the water introduced with it can tend to pollute the water and it is very important that nothing is done to upset the purity and freshness of the water whilst the fry are very young. If any eggs have been left in the pond, they may take as long as a week to hatch and so very few may do so. The fry in the warm tank will soon be able to take very fine dried foods. It is possible to buy powder-fine dried food for the fry but even so I think that it is a good plan when feeding with it in the early days, to put some in a small bottle or glass tube with water and shake it for a time before emptying it into the tank. Partially softened food is

taken better by the fry and they have little trouble in digesting it.

With the warmth and good feeding the fry will soon grow and it may be necessary to spread them out to prevent any overcrowding. Although many fry may be kept rather crowded for a week or so after hatching, it is important to see that they have more space once they grow on a little. The best method of moving the fry is to use a small saucepan, one with a white enamelled base is best. Dip out some fry with plenty of water and it is possible to make an early sift through them to remove any which are not likely to make good specimens. This is quite a simple matter when one is breeding any of the double-tailed varieties. Even after a week it is possible to tell which have a single tail, as this appears thin and reed-like. The fry which will develop a double tail will show a distinct thickening at the end of the tail and it will appear as arrow-head shaped.

Mashed garden or white worm can be added to the diet as the fry grow but one must be careful not to give food which is too large to be eaten, as this could remain uneaten and pollute the water. Watch carefully to see that all food given is cleared up very soon after it is offered and gradually increase the size of food as the fry grow. The sorting of the fry as they develop is very important as it is a waste of food and space to keep under special treatment any which are not likely to make good specimens. It is possible to tell at an early age which fish are never likely to make good ones, but not possible to pick out the eventual winner until much later on.

When sorting any of the double-tailed varieties it is well to place them in a white based tank so that they can be examined from above. Care must be taken here, as some fish may appear to have a web tail, (joined) but this may soon open up to a properly divided tail. Once tails have been examined the fish can be watched from the side to sort out any which are too shallow in body and to see that the dorsal fin is well shaped. At this time, if any fish, such as Lionheads, with no dorsal fin, are being bred, the back contour should be quite even and show no small protrusions. Many otherwise good specimens are spoilt for showing by having one or two small bumps on the back where the dorsal fin should normally be.

All double-tailed varieties should have a paired anal fin, but many fish have either one or none at all. Also some have an irregular pair with one fin double the size of the other. Such faults will never grow out and so space and food should not be wasted on such fish. Young shubunkins will start to show their colours at a very early age, but varieties which are visibly scaled, may not change colour during the first year. This colour change from bronze to gold, can be hastened by the warm treatment and it is then possible to get young fish to change completely

within a few months. When breeding moors, some fanciers have found that it is better to refrain from keeping the young fish too warm as there is then a tendency for them to become bronze instead of the sooty black which is required.

As the season lengthens and the fish in the pond have not spawned, it is a good idea to remove a fairly large amount of water from the pond and refill with fresh cold water straight from the tap. This is best sprayed from a hose which is sited at the pond-side on a stick or fork, so that the water is well broken up as it enters the pond. This tends to remove any effects of chlorination and also ensures that it is well oxygenated. This treatment will usually bring forth a spawning. If bunches of water plants have been in the pond for some time it is probable that there may be a covering of fine silt on them. It is well to wash the bunches up and down in the water each day to remove this, as it might prevent eggs from sticking to the leaves.



Varieties such as Lionheads and Orandas may not develop the hood for a couple of years and so one must have plenty of patience and allow time for the hood to form. The hood should cover the head and gill-plates completely, but many fish never develop a good hood and so are not of value as show specimens. It may take two years before any young fish can be so developed for the pondkeeper to see if they are good enough to keep for breeding. The establishing of a good strain of fancy goldfish may take some time, but it is often better to start with good fish from an excellent strain than to try to get prize winners for a start. There is a lot of satisfaction in forming a good strain by this means rather than paying a high price for specimen fish.



# THE 5th SCOTTISH AQUARISTS' FESTIVAL, 1977

WHEN WE STARTED S.A.F. in 1973 we hoped it would grow into something rather special and I feel that this year has proved it all to be worthwhile. The crowds are continuing to increase in numbers and the standard of the fish on view is also improving. My own personal thoughts are that the clubs and dealers are now putting on a better display as we are all learning the tricks of the trade. Also, the move away from Easter obviously suits most people.

For the second year running the B.K.A. (Scottish Group) lifted the "TetraMin" Trophy for the best tableau, and, as Mr. Fred Pebworth of TetraMin was presenting the prizes, they received a special cheer. It must be said that only half a dozen points separated the first four tableaux which was evidence enough of the high standard attained. There was a touch of the Jubilee year in the T.V. set of the Edinburgh Aquarists and Pondkeepers exhibit which took second place and Muirhouse A.S. (the home team so to speak) took third spot with a well laid out fruit shop—real fruit and veg even. My own society, Lanarkshire A.S. took fourth place with a Piano.

"The Aquarist" Trophy for the Society gaining the highest number of points went to Northumbria

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## OBITUARY

It is with deep regret that we record the sudden death of Duncan Fotheringham, one of the best loved figures on the Scottish aquatic scene.

He was amongst the principal architects of the Scottish Aquarists Festival and had given active support to the Federation of Scottish Aquatic Societies since its inception in 1958.

In addition to being a prominent member of Edinburgh A.S., and show secretary for S.A.F., he was for several years secretary to the Confederation of United Kingdom Aquarists.

His energy and enthusiasm were well known, but above all he was a kindly man who genuinely cared for the hobby and was rarely too busy to offer assistance when it was required. His passing will be greatly mourned by all those who knew him well, and we extend our most sincere sympathies to his widow in her bereavement.

A.S. Amongst their other awards was the F.N.A.S. Trophy for the best individual furnished aquaria (they always do well in this class and have quite a few members capable of something special when setting up furnished aquaria), The George Henderson Trophy with a *Limia melanogaster* which was showing very well throughout most of the show and the Aquarama Trophy with a particularly nice pair of *Mollinesia sphenops*. In addition, they also collected the Muirhouse Trophy with a good sized specimen of *Colisa chuna*, the Rift Valley Trophy with a *L. Fuelleborni* and the Mark Aitken Trophy with a well marked *Corydoras reticulatus*. A nicely coloured *C. argenteiventri* took the Aberdeen Trophy and finally they plundered one of our new trophies this year, the Hutchings Trophy with a very nice pair of Golden Guppies. A grand total of nine going to a Society who go to great lengths to show their favourites throughout the country and always present their exhibits in the best possible conditions—well done Northumbria!

Another English Society who deserve a great deal of credit for the manner in which they exhibit their fish and for the high standard attained is Stanley A.S. who listed among their awards the Bobby Wood Trophy for the "Best Fish in Show"—a particularly nice specimen of dwarf Sijoesdtedti, a nicely coloured well grown fish, it also took the Friendship and B.K.A. Trophies. Stanley A.S. also picked up the Belle Vue Trophy for best Fighter, the Alloa Trophy for *A. deltaensis* and the M. & M. Trophy with a good pair of *A. gularis*.

The F.G.A. (N.W. Lancs. Group) lifted the Earl of Motherwell Trophy for the best single Guppy. I believe this fish belongs to one of their younger members and I know he was particularly pleased to be taking some silverware back home.

The exceptionally long journey made by the Basingstoke A.S. was rewarded by their three trophies, namely the Stan Taylor Trophy with a lovely specimen of *B. phutomo*, the Lanarkshire Trophy for the Best Breeders Livebearers with a first time shown in Scotland team of *X. einesi* and a well marked *Bonia sidhimunki* took the Hartlepool Trophy.

The Edinburgh Aquarists and Pondkeepers Society lifted the N.E.L. Trophy for the Best Society Furnish-

ed Aquaria with an exhibit that created a great deal of interest—a well laid out local marine set up.

Wishow High School took the Bell Thomson Trophy for the best exhibit in the Schools Aquatic Art section. This section was better supported than in previous years and we hope it will attract even larger entries in future years.

For the second year in succession Livingston A.S. went home with the Bob Ferguson Trophy for a nice *R. pauciperforata* and one of our smaller societies, Laskhall A.S., took the Fotheringham Trophy with a well marked nicely coloured *C. cyanogattatum*.

A good sized specimen of *H. herbertaxelrodi* took

the Woodcock Trophy for the Lanarkshire A.S. and another local society, East Kilbride A.S., won the Edinburgh Aquarists and Pondkeepers Trophy for the Best Coldwater exhibit.

It was most pleasing for the committee and all the other voluntary workers at the show to have the public support us in such a marvellous fashion and we look forward to seeing you all again at the slightly earlier dates of 18th and 19th March, 1978. Finally I hope you all enjoyed the show as much as we did and that all our visitors arrived home safe and sound.

J. GOODWIN.



'The Shooting Gallery' which won first prize in the tableau section for the B.K.A. (Scottish Group).



'The Aquarist' Trophy being presented by Mr. Fred Pebworth to a member of Northumbria A.S.

## PRESS RELEASE

SPECIALIST manufacturers of aquarium equipment, Interpet of Dorking, England, now have the extension to their new plant fully operational. This extension costing £70,000 has given the purpose-built plant erected in 1972 a 50 per cent increase in floor area which is all to be used for production.

With purchases in £ sterling now being such good value, the company is well placed to increase exports and seeks to expand further, particularly into Europe and the U.S.A.

Regular deliveries to Northern Europe have now started using Interpet's own vans. The company predicts that this move will increase further its already interesting sales volume to this market. Products primarily sold to Europe are Super Twin, Outside Filters, CV Subgravel Filters and aquarium heating equipment, Liquify and Liquify Marine.

At the Animark show in Paris in May, Interpet launched on to the European market the Plant Plug, invention of Aquarium Products U.S.A. and made under licence in England. Distribution of Liquify food for baby fishes and Liquify Marine is carried out in U.S.A. by Aquarium Products of Baltimore and Aquatrol of Los Angeles.



The Electrical Production area in the new extension to the Interpet plant.



# NYMPHOIDES

FAMILY: Gentianaceae

GENUS: *Nymphoides* O. Kuntze

by Vivian De Thabrew

The Genus *Nymphoides*, though usually classified under the Family Gentianaceae, is also grouped under the Family Menyanthaceae. There are nearly thirty species, scattered mostly in the tropics and subtropics. Of these, at least ten species have been experimented upon under controlled conditions, but until recently only two species were popularly used in aquaria. In 1965, as a result of our plant expeditions, two more species were investigated and subsequently introduced to the aquarist. They are *N. indica* and *N. parvifolia*, both indigenes of India, Sri Lanka, Thailand, Malaya, China, Japan and tropical Africa.

All the species inhabit less turbulent, marginal waters and small watercourses. Small, heart-shaped leaves, borne on long, thin stalks form dense clusters on the water surface. Most species of *Nymphoides* in their natural habitat generally grow with communities of *Nuphar*, *Nymphaea*, *Potamogeton* and *Salvinia*.

*N. aquatica* (Walter) O. Kuntze

**Habitat:** U.S.A.

**Description:** This is a perennial plant with a cluster of miniature banana-like tubers which sends up a rosette of thin, long-stalked, heart-shaped leaves of bright green or purple colour. The mature leaves are fleshy and floating with purplish stalks.

**Cultivation and propagation:** One of the easiest aquatic plants to grow in the aquarium, it is very indifferent to water conditions. If, however, a tank bottom with organic detritus is provided, then its natural propagation will be rapid. A pH

range of 6.2-7.2 and a temperature range of 68°-75°F with plenty of light is adequate. Moderate light should be mainly from above for up to ten hours a day.

Propagation is either by seed or by leaf cuttings. Leaves should be cut into several pieces and these should be placed in a tray of moist sand and clay or even moist potting compost, secured around the edges with either wire pegs or pieces of rock. The tray should be covered over with a sheet of glass and kept in a warm place, even on a window sill. Within seven to eight days the roots begin to appear and plantlets develop. Once they are about an inch tall, they should be removed and planted in the aquarium.

*N. humboldtiana* (Kunth) O. Kuntze

**Habitat:** Tropical America.

**Description:** This is also a perennial, which produces runners, wiry and long. The floating leaves which are round or sometimes oval and covered in fine hairs on the underside, are borne on long stalks. According to the depth of water and intensity of light, their colour changes from light green to pale purple. Sometimes they may also become mottled.

**Cultivation and propagation:** *N. humboldtiana* has not been tried much as an aquarium plant. However because of its beautiful blooms it should be given a try. It requires strong light and especially plenty of sunlight. A temperature range of around 70°-76°F. Above this temperature, the plant deteriorates very rapidly. The water should also be soft and slightly acid.

Propagation is easily achieved by runners planted

in a clay cum sand base. Aquarists no doubt will note that this species is rarely available from the plant dealer. The only source would be from a plant collector.

*N. indica* (L.) O. Kuntze

**Habitat:** India, Sri Lanka, Malay peninsula, China, Japan, Australia and certain regions of Tropical Africa.

**Description:** A perennial plant with floating heart-shaped leaves of up to five inches in diameter. The mature leaves are light green on the upper sides and light purple on the undersides. The leaf stalks are long, thin and purple. The juvenile plant initially forms a rosette or loosely arranged bush consisting of brownish green or light purple leaves. The flowers arranged in clusters are small, cream or yellow and mildly fragrant.

**Cultivation and propagation:** This is one of the prettiest species to be grown in the aquarium. However, its cultivation needs a bit more attention than the average aquatic plant. But its exceptionally beautiful foliage and the fact that it easily flowers in the heated aquarium should make the extra effort worthwhile. Its "lily" flower is handsome and grows to a diameter of up to three inches.

The tolerated temperature range is 68°-76°F. The water should be slightly acid and soft. Plenty of light up to twelve hours a day is recommended. Ideally it should be grown in a tank receiving plenty of sunlight. It will flower whether lit naturally or artificially. Propagation is by root division or by seed.

*N. parvifolia* (Wall.) O. Kuntze

**Habitat:** India, Sri Lanka, Malay peninsula, Thailand, Australia, New Guinea.

**Description:** In most respects this species is similar to *N. indica*, but it differs in the fact that the leaves are usually much smaller up to about three inches in diameter, light purple to burgundy in colour and slightly crinkled. The juvenile leaves are slightly turned upwards hinting the shape of a very shallow cone. The leaves are borne on short stalks and remain submerged. The subsequent leaves are pushed up to the water surface by means of long slender purplish stalks.

**Cultivation and propagation:** Yet another pretty 'lily' which is easier to grow in the aquarium than *N. indica*. In its natural habitat it grows in clear ponds and by the water's edge in shallow streams. It dislikes much water turbulence. Like most species of this genus, it requires plenty of light but not necessarily strong light.

I have observed this species along with *N. indica* and *N. parvifolia* var. *moonii* in several areas in Malaya, India, and Sri Lanka, and was amazed to

see their adaptation to varied light and growing condition. In certain areas all these species were found growing in partial shade at water temperatures of 70°-76°F., while in some other situations they were growing in temperatures of 62°-70°F. The water condition also varied from acid to slightly alkaline. However one outstanding common factor was that these species were always growing in a very clayey base.

Hence it is obvious that a similar tank bottom should be given. Like *N. indica* it flowers easily in the heated aquarium, provided there is at least four inches between the water surface and light bulb or tube. Flowers are white or yellowish white. Propagation is easily done by seed.

*N. parvifolia* var. *Moonii* (thwaites) Back

This is very similar to *N. parvifolia*, but its flowers are slightly larger and leaves have more fine down on their undersides. It is an indigene of Java, but very recently specimens were sent to me from Indonesia and Borneo indicating that it may be endemic to that part of Asia.

Propagation and cultivation is done in the same method as recommended for *N. parvifolia*.

The above three species are now available to the aquarist from time to time as limited quantities are released to the aquatic market by us.

*N. peltata* (Gmelin) O. Kuntze

**Habitat:** China, Japan, Indo-China, S.E. Asia and Europe.

**Description:** A plant with floating leaves growing from a thick rootstock. These leaves which are heart-shaped, leathery and deeply cordate, grow to about six inches in diameter, the first ones being serrated and dotted on the undersides and the later ones with an almost smooth-edge or entire margin. Its yellow flowers are arranged in groups on small bracts.

**Cultivation and propagation:** This is not suitable for the heated aquaria, though it can be grown in temperatures up to 64°F. Ideal for the unheated tank or the outdoor pond in summer.

The planting medium should contain coarse sand and a good organic detritus or loam. The water should be soft and slightly acid or neutral. Plenty of light is necessary for its healthy growth. Propagation is essentially by leaf cuttings, which root in a sand and clay or mud medium.

Of the six species described, the most outstanding ones, without doubt, suitable for the heated aquarium, must be *N. indica* and *N. parvifolia*. Their elegant foliage with bushy formation and the ability to produce beautiful "lily" flowers in the average aquarium elevate these to a class of their own. The aquarist should find these two species very interesting and rewarding.



# From a Naturalist's Notebook

by Eric Hardy

## Disappearance of field ponds

The decline of Britain's field ponds is an anxiety with waterlife conservationists. Eight years ago, Relton showed that in Huntingdonshire only 44 ponds remained from 74 in 1950 and 100 in 1890, though a count in 1764 gave only 74. In the country generally, old unmodernised farms harbour 2 species of aquatic mammal, 5 amphibians, 9 fish, 11 dragonflies and 25 pondsnails in their permanent ponds and ditches. In marked contrast, modernised farms with only temporary ditches and piped water average no fish, aquatic mammals or dragonflies, only 2 amphibians and 3 pondsnail species.

In a recent Nature Conservancy report on modern farming influences, marsh-clubmoss is mapped extinct in Shropshire. But I found it by Brown Moss, near Whitchurch, in 1971. In fact all its Midland haunts are mapped extinct, and all but two in Wales: a flooding moor near Brynberian in Pembrokeshire, and Llyn Llyffant, under the summit of Carnedd Llewellyn in Snowdonia. Likewise all its Lakeland haunts bar one, in Little Langdale. It is now extinct from its former Lancashire sites at Formby Dunes, Hale and Risley Moss, and from all Cheshire haunts. In fact, only 54 sites remain in Britain out of a former 178. Most of these are in southern England, north Norfolk, the West Country like Trentishoe near Ilfracombe, and in Scotland.

Another aquatic, the grass-like creeping pillwort, sometimes called a water-fern, has been reduced from 181 sites to 70. This grows where Snowdonia's Llyn Idwal narrows in the middle and at the foot of this lake, also by Anglesey's Mynydd Boadfon. It grows in the North Wales mainland at Llyn Helyg (Flintshire), also in two mid-Cheshire meres, but seems lost in Lancashire.

Various known as Esthwaite Waterweed, *Elodea nuttallii*, *Hydrilla lithuanica*, *H. verticillate*, *Anacharis occidentalis*, etc., a strange, submerged pond plant, light green and very narrow, was first found in Esthwaite Water, Cumbria in 1914. It first flowered in Amberley Wild brook in West Sussex in 1975. It has also been reported at Werrington (Peterborough), the Welland basin from south Lincolnshire and Cambridgeshire to Crowland and the Nene sometimes more abundant than Canadian weed, as well as at Renville, Connemara, West Galway and Oxfordshire. It is difficult to name precisely without flowering. The small, pale pink flowers of common *Elodea*

*canadensis*, on thread-like stalks up to 6 in., were seen more in recent hot summers of 1975 and 1976 than any time since 1935's good flowering year for this and duckweeds. This does not normally set seed here as it is usually the female plant only, which flowers from May.

## Cave-dwelling shrimps

With further reference to cave-dwelling freshwater shrimps (*Gammarus*) which I mentioned the other month, Pierce and Cox of Lancaster University, and others, have been studying the pigmented and unpigmented specimens found in the famous Ingleborough area of the Yorkshire Pennines, Clapham Trout Beck but not in Fell Beck. Here albinos were formerly recorded shoaling 200 metres down Beck Head Cave and pale yellowy orange and grey forms, and colourless, 600 m. down Ingleborough Cavern. At night, and in floods, they drift downstream at night into caves. The colourless ones retained their paleness and did not grow pigmented when kept 6 months above ground in aquaria so they are permanently depigmented. They are in the cave below Clapham Lake, too.

## Natterjack Toads

As we expected, the famous breeding colony of natterjack toads on the dunes between Southport and Liverpool reaped full benefit from last winter's exceptional rainfall. With the subterranean water table in the dunes highest since 1968, it attracted unexpected numbers of male toads. At dusk on the evening of 7th April I stood overlooking the great Massam's slack on the Ainsdale nature-reserve at Freshfield outer dunes listening to nearly 100 toad voices rising to a crescendo of calls.

A few were also using the newly excavated pools; but the great Massam's Slack, a natural depression which had been dry for years, now held large sheets of standing water. Natterjacks were calling on territory at the north end and around the Fisherman's Path at the middle. A week before, the warden found none here. Only 3 or 4 early appearances had either returned to hibernation after the night frosts, or died. Now they were on breeding territory in unusually large and early numbers, with every indication of the best breeding season for years to recoup their losses. The hatching of common toad spawn was delayed a month by spring's night frosts.

These are all on the seaward side of the railway, but a few natterjacks breed in garden pools on the inland side. The other year, a friend in Formby found a natterjack hibernating in his garden compost-heap at Dean's Cottage, between Formby Station and the Lighthouse Café. Common frogs are now the scarcest of the dunes four amphibians.

#### Reptiles' sperm formation

Excepting some sea-snakes and tropical lizards, most reptiles resume sperm-formation soon after each breeding season, to advance germinal stages before the cold winter season. But there is a seasonal interruption in sperm-production. In many tortoises and turtles there are several months delay. Lofts and Tsui of Hong Kong University recently studied this in the soft-shelled Chinese freshwater turtle, *Trionyx*, from Hankow. These breed in March-April when the interstitial cell-secretions with testis-stimulating androgens are most active; yet it is August-September before the peak of sperm production. Their observations don't support the old theory that increasing temperatures increase the effect of this hormone, but that two hormones are involved.

#### Lampreys

Studying the freshwater life of sea-lampreys, which migrate up rivers attached to returning salmon to spawn, Potter and Beamish of Bath and Guelph (Ontario) Universities, working on those in the St. John River of Canada, suggest the young adult lampreys may not feed for 9 or 10 months after their mid-July metamorphosis, then a short May period feeding in shad replenishes their food-reserves for downstream migration. This ability to feed and grow in freshwater enabled land-locked forms of lamprey unable to tolerate salt-water to evolve, while declining in size.

I had always assumed that most lampreys died after spawning, so apparently the fast is among younger lampreys not having spawned. From the time of their entry into freshwater, until spawning, both sexes may be reduced 11 per cent to 15 per cent in length.

#### Aquarium societies and inflation

With inflation biting hard at many aquarium societies today, I was interested to turn up a note I wrote in the scientific journal *Nature* in November, 1939, on the way they were meeting wartime difficulties. The Scottish Aquarium Herald, journal of the Scottish A.S., came out in a modified edition as Kerr, its editor, was already in the Navy. Paris Zoo aquarium sent its fish for safety to the Prince of Monaco's Monte Carlo aquarium and its reptiles to Marseilles Zoo. Berlin and Hamburg Zoos destroyed their dangerous reptiles and closed their aquaria

though it was another year or more before the much feared air raids began. Meanwhile, Manchester's Belle Vue, then the leading aquaria society, halved its subscription when it feared few members would attend meetings in the black-out. Nevertheless, Edinburgh's Carnegie Aquarium and the still flourishing Brighton Aquarium managed to keep up a full stock of exhibits, the former including a tank of herrings and the latter 120 silver whiting. Belle Vue had 41 *Neon tetra* in a tropical tank, Dudley Zoo aquarium acquired some claw-footed toads, and every club, after the first cautious air-raid expectations, was determined to carry on at all costs.

Once a society closes, it is very difficult to revive it in the same form. Much better is to cut its programme according to its cloth, even meeting in a free schoolroom, duplicating its news-letters and holding excursions nearer home. Rent, printing and transport are the chief problems, the former particularly in London and the cities. We didn't come up with any bright ideas when we discussed it last year on the Council for Nature's regional committee at its autumn conference at Warwick University. Since the Council itself was struggling for survival, trying for an immediate sponsor to meet its £7,000 overdraft on its annual £14,000 budget, further subsidy grants improved its financial position.

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## PRESS RELEASE

Phillips announce the launch of a new addition to their well-known range of fish foods. Called PHILLIPS POND PELLETS this high-protein floating food is specially formulated to provide a balanced diet for goldfish, koi and all fish in outdoor ornamental ponds, from the smallest fry to the largest specimen.

PHILLIPS POND PELLETS are appetising and nourishing. The ingredients include herring and meat meals, yeast products, vegetable and fish oils, wheat cereal and grass meal enriched with vitamins, minerals, essential amino acids and trace elements.

PHILLIPS POND PELLETS are available in smart blue, orange and white drums in a 225g size at 49p and 450g size at 89p.

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#### Correction

In our April issue we published an article by Barry Durham entitled Pretty but Pugnacious which was illustrated on page 4 with line drawings, one of which carried the caption *Poecilia parae*. This drawing had been intended for use with the article by Barry Durham on *Girardinus metallicus falcatus* which appeared in our March issue under the title "Identifying Ol' Blue Eyes".



# SPAWNING THE DWARF GOURAMI

by J. F. Haddon

*Colisa lalia* is a brilliantly coloured fish. The male has vertical stripes of alternating turquoise and blue. When in breeding condition a dark blue band appears running from his mouth to the start of the anal fin. The female, although less brilliant, has a quiet beauty of her own. At a quick glance she appears to be silvery but if you look more carefully you will notice very light vertical stripes of yellow and mauve.

These fish are very easy to spawn and need very little conditioning time. I have often found that I can condition them in two days using white worms. When the female is full of eggs place her with a male in a breeding tank—which can be as small as two gallons. The male usually will start to build a bubble nest almost immediately.

The male takes air into his labyrinth and coats it with saliva; he will then spit out several bubbles. These he usually anchors together with some floating weed—preferably *Riccia fluitans*—until he has a nest that may be anything up to 6 in. x 4 in. and  $\frac{1}{2}$  in. high. While building his nest the male will be continually courting the female when she is in sight. He will dart out from under his nest and circle the female, often on his side. She will then usually respond in one of two ways. She will either turn away, whereupon the male will give chase, or she will allow the male to coax her underneath the nest which she will inspect and probably refuse. After the female has again been chased off the male will continue to build his nest. The female will be coaxed under the nest several times; eventually she will accept and the two fish will embrace. This is usually about a day after the fish have been introduced.

For the first few embraces no eggs will appear. After about half a dozen such contacts, though, eggs will be seen rising to the surface. This is caused by a bubble of oil in the eggs which are transparent and about 1mm in diameter.

The fish will spawn for a couple of hours. The male chasing the female away after each embrace. She will return of her own accord after the male has secured the eggs in the nest with the help of a few more bubbles. Eventually the female will be chased away and will not return again. She can be removed

now but this is not essential as the male rarely harms her. His role in the wild is to protect the nest from predators. As there are no predators in the spawning tank and the eggs float he can be removed—although he can be left until the fish are free swimming. I usually take him out on the third day.

After about 48 hours the eggs will hatch and the fry can be seen as small black exclamation-like marks about three millimeters long. The embryos will absorb their yolk sacs for the next two days, after and during which they will start to stray from the nest.

Dwarf Gouramies spawn and hatch best at about 80°F. A pH of 7.0 is suitable although the fish seem to have a very wide tolerance range. A hardness of between 100 and 200 ppm seems to suit them best.

As the fry are so small minute food must be given. Green water is the best at this stage. I find that this is produced quickest if some cabbage leaves are boiled for a few minutes. This breaks open the cell walls and leaves the chlorophyll free and ready made for algae. Place this in a very light place and leave for a fortnight. The water should now resemble thick pea-green soup.

In a three gallon tank which I use for breeding these fish I usually add about two pints of green water in which visibility is about two inches. I put this in on the first day that the eggs hatch. From the time the fry are free-swimming I put about two pints a day of water rich in *infusoria* (usually *paramecium*). I continue to add more until I can see the *infusoria* in the water of the tank in fairly plentiful quantities—about twenty to the square inch. From now on I regulate the amount of *infusoria* that I put in by eye. As the water level rises quite fast in this size tank I siphon out a about two pints a day through an air stone.

After about ten days the fry will start to take brine shrimp and micro worms. The *infusoria* level will remain quite high producing a gradual change over to the larger food. From now on the fish can be fed progressively larger foods.

The difficulty in breeding the *Colisa lalia* is not in getting them to spawn but to get the fry to survive through the difficult stage when their labyrinth is



forming. This forms when the fry are about four to five millimeters long. It is not put into use, however, until the fry are about eight millimeters long. If when the fry take their first mouthful of air the temperature is more than about two degrees below that of the water, the majority, if not all, of the fry will perish. Although people with a space-heated fish house don't have this trouble it is the hardest period for others. I find that this problem can be overcome if polythene bags are opened out over the tank leaving two slits about two inches long and a

quarter of an inch wide at the two ends of the tank. The smallest gap possible between the water and the cover of the tank will also help to reduce the loss of fish. I adopt this method when the fry are about 4mm and continue until they are about 10mm. The young fish will start to get their first colouring at about ten weeks.

Although these fish can be bred at any time of the year I find it best when they are spawned in late spring or early summer when the days are longest and fairly warm.

## WHIRLIGIG BEETLES

by Huw Collingbourne

IN late summer the surfaces of pools of water or of slow-running streams may be seen to be alive with groups of tiny beetles spinning madly and seeming hardly to touch the medium on which they move.

Aptly named, these are whirligig beetles (Family: Gyrinidae; Genus: *Gyrinus*) of which there are ten species native to Britain, the most common being *G. nator*. Any attempt at distinguishing one species from another, however, would prove fruitless to anyone other than a specialist, for they all look much alike: small, (about 0.8 cm.) oval in shape, black and shiny with yellow legs.

There is one exception to this in the form of the hairy whirligig, *Orectochilus villosus*, whose dorsal surface is covered in short thick hairs.

You might wonder what possible interest such tiny creatures could have for the average aquarist. Unfortunately the most apparent answer is rather negative for, (as is the case with so many invertebrates) they will be considered by the "average aquarist" to be no more than unwelcome pests to be disposed of at once and this is certainly true of the predatory larvae which may be easily introduced into an aquarium along with wild water plants. However, having said this, I shall at once add that, having either gathered whirligigs from nature or having removed them from an aquarium, the aquarist might be well rewarded by placing them into a small aquarium of their own (the tiniest will be sufficient!) where, out of harm's way, they may prove as endearing as any much larger aquarium occupant.

If adults are kept it is worth noting that in a natural environment the beetles fly from pond to pond and, lest this urge seize them in captivity, their container should be fitted with an escape-proof lid.

One of the first things to be noticed about them will almost certainly be their diving capabilities for, when disturbed the whirligig will quit the surface and plunge into the water carrying with it a silvery air

bubble.

Close examination of the adult beetle will reveal several anatomical adaptations which aid the whirligig in its mode of existence. Its legs, for example, are flattened and fringed with hairs and in addition to safeguarding its buoyancy by holding air, enable it to skim so lightly over the water surface.

Its eyes, too, are quite remarkable for they are divided and the top half sees plainly the above-water world while the bottom half is forever scanning the under-water world.

In spring the female beetle enters the water to lay her eggs upon a leaf of a submerged plant. From these emerge the larvae which, when fully grown, may be 1½ cm. in length (about twice the size of the adult). They resemble the larvae of the alder fly, having many projecting gills, and may be confused with naked caddis fly larvae, which is to say caddis fly larvae without the covering of their self-constructed cases.

The larvae are carnivorous in general though they may occasionally eat some vegetable matter. They normally crawl about on the substrate but they are able to swim by flexing the body and may attack very small fishes.

At the end of July they leave the water, climbing to the surface on projecting leaves of water plants. They then pupate in cocoons and a month later, the metamorphosis complete, the adult beetle emerges and it is at this time of year that they are so numerous, whirling upon the water. Their characteristic gyrations, incidentally, are not without purpose for it is in this manner that they locate little insects which have become stuck to the water surface and which the whirligig feeds upon.

With the arrival of winter the adult beetles hibernate in the mud around the roots of plants growing in streams and ponds and they do not re-emerge until the next year when egg-laying time approaches once again.



# PRODUCT REVIEW

**Nitrite Test Kit, £1.98 incl. VAT. Nitrate Test Kit, £1.62 incl. VAT.** Manufactured and distributed by Waterlife Research Industries Ltd., Heathrow, Middlesex.

These two products will be of special value to the aquarist who, at times, cannot understand why his hitherto active and sprightly looking fishes suddenly show signs of increasing sluggishness and, perhaps, appear to be suffering from some unaccountable malaise, or worse: die without apparent cause.

In most cases, leaving aside such things as an improperly functioning heating apparatus or, say, the introduction of heavily chlorinated or metal-tainted water, the answer may be found in the unsuspected poisoning of the environment brought about by various pollutants and toxins arising, for example, from the excretory processes of the fish, such commonly overlooked sources of trouble as dead molluscs, and the like, or dead or dying plants. From this it follows that cleanliness and a low level in toxic substances is the essence of a healthy aquarium. Cleanliness, yes, and a partial change of water every now and again. This latter—even if an under-gravel filter is in use—is of supreme importance; for a partial change of water spaced out not too many weeks apart precludes environmental changes prejudicial to the well-being of fish.

It must be stated at once that different aerobic bacteria convert accumulated and potentially damaging organic wastes first into ammonium compounds (fatal to marine life in quite minuscule quantities), and then into salts of nitrous acid (nitrites) which, in excessive amounts, give rise to an equally dangerous situation. Nitrobacter bacteria, as they are called, translate nitrites into relatively harmless nitrates. (Relatively harmless or at best harmless only if they are kept at an acceptable level by a vigorous growth of genuine underwater plants and, as mentioned earlier on, periodical changes of water.)

A feature common to both of the above water testing kits is that they are equally applicable to freshwater or seawater. The nitrite test kit, the makers claim, is the most sensitive of its kind (for aquarium and pond purposes) in the world. For the data-minded, it must be emphasised that 600 tests can be carried out with it for less than £2.00 (value indeed). It is interesting to note, also, that this nitrite test kit was initially developed and placed on the market nearly

ten years ago. It was the first available in Europe. It has since been copied by other manufacturers. No other manufacturer, so far as the writer is aware, has succeeded in achieving a comparable performance owing to the unique combination of chemical reagents formulated by Waterlife Research Industries Ltd. The nitrate test kit is the first known in the world market, and for the detection of nitrate toxins has an accuracy and sensitivity down to 1.25 ppm (mg/litre). The notes on the use of the colour comparison chart (for nitrite readings) and the several ways to rectify an excess of nitrite and nitrate are stated clearly. The colour chart is water resistant and plastic encased. In a word, then, the possession of these two kits will open up an entirely new concept in water management for the caring aquarist and cannot be recommended enough. JACK HEMS.

**Promin Tropical Fish Food.** Manufactured and distributed by Promin Limited, Manor Lane, Holmes Chapel, Cheshire. Price ? inc. VAT.

Fishes, like human beings, need a diet containing all that is necessary to ensure proper growth, repair and renew their body tissues and to supply them with energy. Promin Tropical Fish Food fills all the above requirements and more because, according to the manufacturer's guaranteed analysis, it is particularly rich in proteins and Vitamins. Vitamin E—to pick one of these organic substances at random—is associated closely with fertility. Hence normally breedable fishes that show no or little inclination to spawn even though all other factors necessary are present may be suffering from a deficiency of this Vitamin in their diet.

Promin Tropical Fish Food comes in grades coarse, medium and fine: and all eaten readily. The coarse grade is ideally suited to well-grown angel fish, medium-sized barbs, large anabantids, and the like, while the medium grade is just right for all the smaller barbs, regular tetras and popular livebearers. Really diminutive fishes such as *Heterandria formosa*, *Rasbora maculata*, and fry grown beyond the microscopical food stage will profit from the fine grade, each particle roughly the size of a pin-head. The different grades of food are packed in rigid plastic drums, each one of a conspicuous colour which makes identification of the grade required instantly recognizable. J.H.





## 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.

COMMITTEE members elected at the recent annual general meeting of the **Scunthorpe Museum Society-Aquarist Group** were as follows: chairman: J. R. Rhoades; vice-chairman: M. Hill; secretary: A. Bines, 67 Mill Lane, Brigg, Sth. Humberside DN20 8ND; show secretary: D. Caddow; treasurer: D. Pearson; committee members: S. J. Mason and G. B. Gow.

The Society meets every first and third Wednesday of each month at 7.30 p.m. at the Borough Museum, Oswald Road, Scunthorpe. New members and visitors will be very welcome.

WITH about thirty paid-up members the **Longridge and District A.S.** is now firmly established. There have already been talks on livebearers, judging, and raising fancy guppies and speakers are booked for most of the remaining meetings of the year. The Society's own Show League is proving quite popular with members and is now running quite close with two husband and wife teams at the top with 41 points each.

Everyone in the Society is looking forward to their first full showing season as well as preparing for the first Open Show in September. Excellent support has been received from many local firms and offers of ten trophies for the Show have already been received. The current standings in the Society Show League are: Joint first Mr. and Mrs. R. Holden and Mr. and Mrs. B. Durham with 41 pts; 3, J. Marsh 26 pts; 4, N. Bland 12 pts.

CHANGES of officers of the **Galashiels & District A.S.** are: president, E. Lindsay; secretary/treasurer, A. B. Robertson; vice-president, R. Hendrie; show manager, G. Forsyth. The Club now meets in Community Centre, Haliburton Place, Galashiels at 8 p.m. on alternate Mondays e.g. June 13th. There is no summer break. Anyone interested please come along, or contact the secretary, A. B. Robertson, 117 Magdala Terrace, Galashiels.

OFFICERS elected at the first meeting of the **B.B.B.A.S.** were president and secretary T. Porta, 182 Hatfield Lane, Banstead, Surrey, and chairman and treasurer A. S. Lug.

The first meeting was off to a very good start with 100 per cent attendance. A very interesting discussion took place during the course of the evening, touching on various subjects such as sexing and breeding techniques and aggressive tendencies. The table show results were: A. V. coldwater: 1 and 2, A. S. Lug, A. V. Marines, 1, 2 and 3, T. Porta.

The officers were thanked for all their efforts in starting the club and suggestions were put forward for a lecture by one of the members at the next meeting accompanied perhaps by slide show of some interesting finds while on holiday. A drive is being undertaken with the target of doubling the membership by the end of the year.

MEMBERS of the **Bournemouth A.S.** had a disappointment at their April meeting as Mr. David Hagg of a local petshop who was to have given a talk with slides on "Marine Fishkeeping," was unfortunately taken ill at the last minute, so Club member J. Walker kindly stepped in at short notice, with a talk on livefoods for feeding tropical fish. This proved very interesting, and he answered many

questions from members. Table Show results: A. V. Guppies: 1, 2 and 3, Mr. Chatfield. Coldwater breeders (four fish): 1 and 2, Mr. Crab. Regular meetings are held on the first Monday of every month, at Kinson Community Centre, Pelham Park, Bournemouth, and the Secretary, Mr. R. Matley, will be pleased to welcome new members, at any time.

THE **Reading & D.A.S.** Open Show held in March attracted over 700 entries and 36 clubs entered fish. Best fish in show was Mr. K. Taylor's *Corydoras Casiquitar* (Havant Dist). F.B.A.S. Trophy Class Ca. was won by Mr. P. A. Moye (Sudbury). Results—Ag.: 1, 2 and 4, Mrs. G. M. Rushbrooke (Reading); 2, C. M. Howe (Newbury); B.: 1, Master R. Howe (Newbury); 2, D. Goss (Reading); 3, L. Yates (Petersfield); 4, Mr. Hollings (Basingstoke). Ca.: 1 and 2, P. A. Moye (Sudbury); 3, T. Cruikshank (Basing); 4, N. J. Miles (Kingsclere). Ch.: 1, T. Barvill (Basingstoke); 2, Mr. and Mrs. Dawsey (Aylesbury); 3, P. Rushbrooke (Reading); 4, Mrs. A. I. Feast (Strood). C.: 1, M. Dore (Reading); 2, T. A. Dowell (Weymouth); 3, K. A. Hillier (Newbury); 4, C. and D. Pinnis (Strood). Db.: 1, 2 and 3, R. C. Smith (C.A.D.A.S.); 4, F. Crips (Newbury). Dc.: 1, K. Taylor (Havant); 2, D. Edlesten (Salisbury); 3, S. Pritchard (Salisbury); 4, W. A. Knight (Gosport). D.: 1, R. Canning (Newbury); 2, P. Merritt (Reading); 3, W. A. Knight (Gosport); 4, Mrs. Netherell (Riverside). E.: 1, Mrs. V. A. Feast (Tonbridge); 2, S. Broome (Reading); 3, A. Chaplin (Basingstoke); 4, D. Goss (Reading). F.: 1, J. H. Jackson (Basingstoke); 2, R. Barford (Saracens); 3, M. Pearce (B.K.A.); 4, R. F. Adams (Salisbury). G.: 1, D. Edlesten (Salisbury); 2 and 4, D. and L. Hills (Aylesbury); 3, C. J. Sykes (Cat Ass). H.: 1, K. Taylor (Havant); 2, C. J. Sykes (Cat Ass); 3, Mrs. M. Netherell (Riverside); 4, Mr. and Mrs. Cobbett (Bletchley). J.: 1, D. North (Corringham); 2, D. and L. Hills (Aylesbury); 3, R. Canning (Newbury); 4, Mr. Hollings (Basingstoke). K.: 1, Mr. and Mrs. Dibble (Nailsea); 2, R. Broomfield (Reading); 3, Mr. and Mrs. Cobbett (Bletchley); 4, P. A. Moye (Sudbury). L.: 1, A. I. Feast (Tonbridge); 2, R. F. Adams (Salisbury); 3, K. A. Hillier (Newbury); 4, R. Canning (Newbury). M.: 1, A. Chaplin (Basingstoke); 2, P. and Y. Watts (Caerphilly); 3, M. Dore (Reading); 4, T. Waller (E.L.A.S.). NB-M: 1, A. Chapman (Basingstoke); 2, Mr. and Mrs. Stacey (Petersfield); 3, J. H. Jackson (Basingstoke); 4, Mrs. P. Hampton (Hounslow). N-OT: 1, 2 and 4, A. E. Noronha (Orpington); 3, Mr. and Mrs. Dibble (Nailsea). O.: 1, L. Yates (Petersfield); 2, P. Snooks; 3, S. J. Spicer (Southend); 4, J. H. Jackson (Basingstoke). P.: 1 and 4, Mr. and Mrs. Dibble (Nailsea); 2, R. Barford (Saracens); 3, T. Woolley (Saracens). Q.: 1, N. J. Miles (Kingsclere); 2, R. C. Smith (C.A.D.A.S.); 3, C. and D. Pinnis (Strood); 4, A. R. Fisher (Newbury). R.: 1, D. Fitzgerald (Weymouth); 2, Mr. and Mrs. Dibble (Nailsea); 3, T. Barvill (Basingstoke); 4, A. R. Fisher (Newbury). S.: 1, A. Chaplin (Basingstoke); 2, E. Pankhurst (Heacknell); 3, A. Worth (Dunstable); 4, Mrs. P. Hampton (Hounslow). T.: 1, 3 and 4, A. E. Noronha (Orpington); 2, Mr. and Mrs. Dibble (Nailsea). X.B.M.: 1, Mr. and Mrs. Cobbett (Bletchley); 2, D.

Elliott (Newbury); 3, A. Chaplin (Basingstoke); 4, K. A. Hillier (Newbury). X-OT: 1 and 2, A. E. Noronha (Orpington); 3 and 4, Mr. and Mrs. Dibble (Nailsea). U.: 1, Miss L. Feast (Tonbridge); 2, Miss C. Rupert (Port Talbot); 3, F. Pender; 4, T. Woolley (Saracens). V.: 1 and 4, Rudland and Green (Reading); 2 and 3, A. C. Green (Reading). W.: 1, E. Binstead (Portsmouth); 2 and 3, F. Pender; 4, R. Langford (Bedford). Z.: 1, P. Merritt (Reading); 2, D. Chiswright (Southend); 3, S. J. Spicer (Southend); 4, A. Chaplin (Basingstoke).

RESULTS of the April show of the **Presell T.F.S.** were: Egglayers: 1 and 3, R. Mayhew; 2, P. A. Busby; 2, R. A. J. Thomas; 2, F. Stammers; 4, B. Harding; 4, Mrs. Lewis. Livebearers: 1 and 3, Mrs. Coombe; 2 and 4, B. Locke; 3, F. Stammers; 4, P. A. Busby. Pairs: 1, J. Foster Powell; 2 and 3, R. Mayhew; 2, P. A. Busby; 4, R. A. J. Thomas. Labyrinth: 1, R. Mayhew; 1, J. Foster Powell; 2, P. A. Busby; 3, F. Stammers; 4, R. A. J. Thomas.

A TABLE show was held by **Brighton & Southern A.S.** in April for classes D. Db. Dc and Z. Results: D: 1, Mr. and Mrs. Houghton; 2, Mr. and Mrs. Ramshaw. Da: 1, Mr. and Mrs. Sayers; 2, Mr. and Mrs. Ramshaw; 3, Mr. and Mrs. Houghton; 4, M. Collins. Dc: 1 and 3, Mr. and Mrs. Houghton; 2 and 4, Mr. and Mrs. Ramshaw. Z (plants): 1, Mr. and Mrs. Ramshaw; 2, M. Collins; 3, M. Evans.

THE Annual General Meeting of the **East Anglian Federation of Aquarists** was held in March at 42 Cornhill Road, Ipswich, at the kind invitation of Mr. and Mrs. W. G. Card. Delegates were present from the Ely, Ipswich, King's Lynn, Norwich, Thetford and Norwich Societies. The following committee members were re-elected en bloc—chairman, C. Williamson; secretary, B. Williamson; show judging secretary, D. Lacey; treasurer, C. Hunt. F. Auffer was appointed to the new post of P.R.O.

OFFICES elected at the **Hoylake A.S.** annual general meeting were: chairman, G. Robinson; vice-chairman, D. Morris; secretary, T. Jones; 43 Rudd Street, Hoylake, Merseyside; treasurer, D. H. Neave.

A LARGE gathering was entertained at the March meeting of the **Corby & District A.S.** with a tape slide lecture obtained from the British Killifish Association entitled "Top & Switch Spawners." The society recently won the Northamptonshire "Aquaverity Challenge" beating Kettering by 310 points to 100 in the final.

The table show was judged by D. Pegg (FBAS). Result: Mollies: 1, J. Serevrist; 2, R. Wilson; 3, R. Giles. Danios and Werm: 1, R. Wilson; 2, R. Elliott; 3, A. Giles. Rasboras: 1, D. McAllister; 2 and 3, R. Elliott. Meetings are held on the first Wednesday of each month at the "Shire House" Willowbrook Road Corby. All interested are welcome.

RESULTS of the **Llantwit Major A.S.** table show were as follows: Class C: 1, 2 and 3, J. Edwards; 4, Mrs. A. Marton. K.O.: 1, J. Edwards; 2, G. Lewis; 3, Mrs. G. Lewis; Junior Competition: 1, Master A. Try; 2 and 4, Miss D. Lewis; 3, Master D. Williams. April saw the commencement of a junior class at Llantwit. The junior with the most points, at the end of the season will be presented with a cup. During the judging there was a general discussion of aquarium problems. The Society meets on the second Monday of each month

IN AQUARIUM OR POND  
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at the Red Dragon Club R.A.F. St. Athan's. Persons interested in the hobby are warmly welcomed.

THERE was a large attendance for the Yorkshire Koi Society Annual General Meeting. The Chairman reported that membership had more than doubled during the year and that many of the new members came from outside the Yorkshire area. As a result of the Society's highly successful tour of Japan in November 1976, much knowledge had been gained and many new friendships established with members of Japan's largest Koi society, Zen Nippon Aikikai. In addition, firm links have been established with members of two major American Koi Societies. Society activities continued unabated during the year and even more ambitious plans have been laid for 1977-78.

The following officers were elected: chairman: F. J. Ayres; secretary: J. Cavellier, 27 St. Giles Road, Lightcliffe, Halifax. Treasurer: S. Bent; editor: F. J. Ayres; advertising manager: D. M. J. Hollem; show secretary: P. Dobson; meetings secretary: P. Walker; membership secretary: Mrs. M. Hollem, 54 Wilber Drive, Heaton, Bradford 9. The Society meets monthly and new members are always welcome. Details from the Membership Secretary.

THERE were twenty nine societies competing at the Heywood A.S. Open Show with 652 entries. Best Fish in Show award went to Mr. and Mrs. H. Gough of Wymstay A.S. who also received an F.N.A.S. Diploma of Merit for an outstanding exhibit receiving 90 points. Results—Guppies: 1, Mr. and Mrs. Greenall (Leigh); 2, T. Redfern (Heywood); 3, Mr. and Mrs. R. Holden (Longridge). Platies: 1, Mr. and Mrs. B. Durham (Longridge); 2, A. Whittaker (Macclesfield); 3, B. Carter (St. Helens). Swordtails: 1, B. Carter (St. Helens); 2, K. Wright (Sandgrounders); 3, A. Whittaker (Macclesfield). Mollys: 1, Mr. and Mrs. Tynsley (Sandgrounders); 2, C. Yates (Leigh); 3, B. Carter (St. Helens). A.O.V. Livebearer: 1, Mr. and Mrs. Muckle (Southport); 2, T. Horrocks (Oswam); 3, K. Thompson (Merseyside). Small Characins: 1, Mr. and Mrs. B. Walsh (Blackburn); 2, K. Thompson (Merseyside); 3, P. H. Batchelor (Loyne). Medium Characins: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Taylor (Southport); 3, Mr. and Mrs. Muckle (Southport). Large Characins: 1 and 2, Mr. and Mrs. Houghton (Southport); 3, P. and H. Batchelor (Loyne). Rasbora: 1, Miss S. Goddard (Macclesfield); 2, Mr. and Mrs. Burgoine (Bridgewater); 3, K. Thompson (M.A.S.). Danio and Misono: 1, T. Fish (Heywood); 2, Mr. and Mrs. B. Walsh (Blackburn); 3, Mr. and Mrs. Baldwin (Sandgrounders). Small Barbs inc. Nigger: 1, M. Collins (St. Helens); 2, Masters N. and M. Rimmer (Sandgrounders); 3, A. Chadwick (Oldham). Large Barbs over Nigger: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Taylor (Atlantic); 3, Mr. and Mrs. Goddard (Macclesfield). Dwarf Cichlids inc. Kribia: 1, C. Carrick (Castelford); 2, Mr. and Mrs. Houghton (Southport); 3, J. Corbett (Merseyside). A.O.V. Cichlids: 1, G. Bond (Sandgrounders); 2, C. Yates (Southport); 3, Mr. and Mrs. Taylor (Atlantic). Malawi and Tanganyika Cichlids: 1, C. Carrick (Castelford); 2, D. Hilton (Bridgewater); 3, E. Stillwell (Sandgrounders). Angels: 1, Mrs. A. Dawson (Heywood); 2, Mr. and Mrs. Muckle (Southport); 3, C. Carrick (Castelford). Fishes (Self Coloured): 1, Mrs. B. Faux (Merseyside); 2, Mr. and Mrs. Campbell (Macclesfield); 3, Mr. and Mrs. Kilburn (Oswam). Multi-

Coloured Fishes: 1, E. Jones (Leigh); 2, B. Carter (St. Helens); 3, Mr. and Mrs. Greenall (Leigh). Anabantids inc. Thicklip: 1, K. Thompson (Merseyside); 2, Mr. and Mrs. Muckle (Southport); 3, Masters N. and M. Rimmer (Sandgrounders). A.O.V. Anabantids: 1, B. Davis (Stretford); 2, R. A. Johnson (Hyde); 3, Mr. and Mrs. Ellis (Oswam). Aphyosemon: 1, K. Thompson (Merseyside). Toothcarps: 1, S. Grundy (Middleton); 2, B. Dawson (Heywood); 3, B. Faux (Merseyside). Loaches and Botia: 1, T. Fish (Heywood); 2, Mr. and Mrs. B. Walsh (Blackburn); 3, G. Bond (Southport). Sharks and Puffers: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, T. Horrocks (Oswam); 3, B. Dawson (Heywood). Corvidae and Brochis: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Muckle (Southport); 3, C. Carrick (Castelford). A.O.V. Catfish: 1, Mr. and Mrs. H. Gough (Wymstay); 2, C. Carrick (Castelford); 3, J. and H. Price (Stretford). Pairs Egglayers: 1, Mr. and Mrs. J. McCartney (St. Helens); 2, R. A. Johnson (Hyde); 3, Mr. and Mrs. B. Walsh (Blackburn). Pairs Livebearers: 1, C. Yates (Southport); 2, P. Walsh (Blackburn); 3, K. Miller (Heywood). A.O.V. Tropical: 1, C. Whitley (Accrington); 2, P. Walsh (Blackburn); 3, E. and B. Calow (Coral Reef). Breeders (Livebearers): 1, E. J. Brown (Blakeborough); 2, C. Everson (Sang'vundera); 3, K. Thompson (Merseyside). Breeders Egglayers (1 to 5): 1, T. Redfern (Heywood); 2, E. J. Brown (Blakeborough); 3, S. Andrews (Stretford). Breeders Egglayers 6-10: 1, A. Carter (Stretford); 2, E. J. Brown (Blakeborough); 3, C. Everson (Sandgrounders). Breeders Egglayers 11-15: 1, M. McKay (Oldham); 2, E. J. Brown (Blakeborough); 3, A. Carter (Stretford). Breeders Egglayers 16-20: 1, C. Carrick (Castelford); 2, S. Wolstenholme (Heywood); 3, Mr. and Mrs. Taylor (Atlantic). Junior Egglayer: 1, Miss H. Johnson (Hyde); 2, C. Calow (Coral Reef); 3, Miss J. Baldwin (Sandgrounders). Junior Livebearer: 1 and 3, Master A. Sutton (Atlantic); 2, Miss H. Johnson (Hyde). Ladies Any Variety: 1, Mrs. G. Bond (Southport); 2, Mrs. J. Walsh (Blackburn); 3, Mrs. L. Bell (Nelson). Any Variety Marine: 1, K. Miller (Heywood). Any Variety Female Egglayer: 1, Masters M. and N. Rimmer (Sandgrounders); 2, P. and S. Taylor (Atlantic); 3, R. A. Johnson (Hyde). Any Variety Female Livebearer: 1 and 3, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. B. Durham (Longridge). Common Goldfish: 1, R. N. Dingley (Heywood); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. B. G. Holroyd (Morecambe Bay). Shubunkins: 1, 2 and 3, Mr. and Mrs. B. G. Holroyd (Morecambe Bay). Black Moors: 1, C. Whitley (Accrington); 2, R. N. Dingley (Heywood); 3, H. Pennall (Oswam). Fawns: 1 and 2, R. N. Dingley (Heywood); 3, T. Redfern (Heywood). Orandas: 1 and 2, R. N. Dingley (Heywood). Veiltails: 1 and 2, H. Pennall (Oswam); 3, R. N. Dingley (Heywood). A.O.V. Fancy Goldfish: 1 and 2, H. Pennall (Oswam); 3, R. N. Dingley (Heywood). Breeders Goldwater: 1, H. Pennall (Oswam). Any Variety European Goldwater: 1, C. Carrick (Castelford); 2, R. and L. Bell (Nelson); 3, M. McKay (Oldham). A.O.V. Goldwater: 1, T. B. Davies (Heywood); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Harvey (Atlantic).

IN March the East London Aquarists and Pondkeepers Association East London held their annual dinner and dance. As usual the event proved highly successful with over 120 members and guests attending. The Club has a very active social side and much of this success is due to the efforts of John and Rene Boss. Visitors are invited to come along to Ripple Road School, Ripple Road, Barking, Essex. The society meets on each first and third Friday in the month at 8 p.m. A warm welcome is assured.

THE Scunthorpe Museum Society Aquarist Group held its open show in April. The show was a huge success attracting 541 entries from 25 societies. The best fish in show award was won by Mr. and Mrs. D. Caldwell of the home society, the first time a member of the society has won this award at their own

show. The prizes were presented by the deputy mayor of Scunthorpe, Mr. E. Arnold who was accompanied by his wife.

The full results were: Guppies: 1, Mr. and Mrs. Welsh (York); 2, Mr. and Mrs. Riley (Castelford); 3, D. Pearson (Scunthorpe Museum). Swordtails: 1, Mr. and Mrs. Fletcher (Doncaster); 2 and 3, N. Blenkin (Bedlington). Mollys: 1, S. Hanson (Grimsby and Cleethorpes); 2, G. Sanderson (Thorne); 3, Mr. and Mrs. P. Mangles (Retford). Platies: 1, D. Busfield (Barnsley); 2, D. and W. Jordan (Sth. Humberdale); 3, Mr. and Mrs. Welsh (York). A.O.V. Livebearers: 1, Mr. and Mrs. Tilling (Immingham); 2, Mr. and Mrs. Daines (Doncaster); 3, B. Jackson (Doncaster). Small Barbs: 1, Mr. and Mrs. Holmes (Castelford); 2, J. Blizard (Sheffield); 3, Mr. and Mrs. Riley (Castelford). Large Barbs: 1, Mr. and Mrs. Roberts (Doncaster); 2, W. Neville (Grantham); 3, Mr. and Mrs. Holmes (Castelford). Small Characins: 1, Mr. and Mrs. Richardson (Scarborough); 2, Mr. and Mrs. Hopkinson (Darfield); 3, Mrs. J. Hughes (Grimsby and Cleethorpes). Large Characins: 1, Mr. and Mrs. Riley (Castelford); 2, Mr. and Mrs. Snowden (York); 3, B. Jackson (Doncaster). Dwarf Cichlids: 1 and 3, Mrs. Hec (Grimsby and Cleethorpes); 2, C. Carrick (Castelford). Angels: 1, Mr. and Mrs. P. Mangles (Retford); 2, H. Thorpe (Doncaster); 3, J. and S. Greenwood (Swillington). Rift Valley Cichlids: 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mr. and Mrs. Berry (Independent); 3, G. Collier (Goole). A.O.V. Cichlids: 1, Mr. and Mrs. Hopkinson (Darfield); 2, Mr. and Mrs. Burman (Independent); 3, Mr. and Mrs. P. Mangles (Retford). Corydoras: 1, C. Carrick (Castelford); 2, Mr. and Mrs. Holmes (Castelford); 3, Mr. and Mrs. D. Caldwell (Scunthorpe Museum). A.O.V. Catfish: 1, C. Carrick (Castelford); 2, Mr. and Mrs. Holmes (Castelford); 3, T. Sanderson (Thorne). Loaches: 1, T. Sanderson (Thorne); 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. and Mrs. Fletcher (Doncaster). Botia: 1 and 2, Mr. and Mrs. A. Bins (Scunthorpe Museum); 3, Master J. Emerson (Castelford). Sharks: 1, Mr. and Mrs. Campbell (Independent); 2, Master S. Neville (Grantham); 3, W. Neville (Grantham). Foxes: 1, W. Hunt (Thorne); 2, T. Sanderson (Thorne); 3, Mr. and Mrs. Riley (Castelford). Aphyosemon and Notoobranchia: 1 and 3, Master A. Young (Hull); 2, B. Banks (Thorne). A.O.V. Toothcarps: 1, Mr. and Mrs. Fletcher (Doncaster); 2, M. Symonds (Immingham); 3, W. Newson (Sth. Humberdale). Siamese Fighters: 1, W. Hunt (Thorne); 2, Mr. and Mrs. Kirk (Sth. Humberdale); 3, Mr. and Mrs. Smith (Independent). Small Anabantids: 1, M. Symonds (Immingham); 2, Mr. and Mrs. D. Caldwell (Scunthorpe Museum); 3, K. Hulton (Goole). Large Anabantids: 1, Mr. and Mrs. Newstead (Independent); 2, Mr. and Mrs. Berry (Independent); 3, T. Tidwell (Grimsby and Cleethorpes). Danios and Albinos: 1, A. Piggott (Grimsby and Cleethorpes); 2, Mr. and Mrs. Lake (Sth. Humberdale); 3, Mr. and Mrs. Holmes (Castelford). Rasbora: 1, A. Piggott (Grimsby and Cleethorpes); 2, C. Carrick (Castelford); 3, T. Tidwell (Grimsby and Cleethorpes). Pairs Livebearers: 1 and 2, Mr. and Mrs. Morrissey (Immingham); 3, K. Prendergast (Boston). Pairs Egglayers: 1, B. Banks (Thorne); 2, A. Frisby (Hull); 3, K. and M. Wood (Bullington). Novice Livebearer: 1, Master S. Tilling (Immingham); 2, Mrs. E. Fletcher (Doncaster); 3, Mr. and Mrs. M. Hill (Scunthorpe Museum). Novice Egglayer: 1, Miss T. Hopkinson (Darfield); 2 and 3, Mr. and Mrs. M. Hill (Scunthorpe Museum). Breeders Livebearers (1-10): 1, Mr. and Mrs. Hopkinson (Darfield); 2, Mr. and Mrs. Richardson (Scarborough); 3, Mr. and Mrs. Campbell (Independent). Breeders Livebearers (11-20): 1, Mr. and Mrs. Hopkinson (Darfield); 2 and 3, D. Busfield (Barnsley). Breeders Egglayers (1-10): 1 and 3, B. Banks (Thorne); 2, B. Jackson (Doncaster). Breeders Egglayers (11-20): 1, Mr. and Mrs. Scott (Sheffield); 2, C. Carrick (Castelford); 3, W. Blundell (Doncaster). Goldfish and Comets: 1, Mr. and Mrs. Steels (Retford); 2 and 3, K. Chapman (Mexborough).

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**WHITE SPOT OUT**  
Hillside Aquatics London N12



Shubunkins: 1 and 2, K. and M. Wood (Bridlington); 3, Mr. and Mrs. Hopkinson (Darfield); A.O.V. Colwyn: 1, D. and W. Jordan (Sth. Humberside); 2, W. Bundell (Doncaster); 3, K. and M. Wood (Bridlington); A.O.V. Tropical (up to 8 in.): 1, Mr. and Mrs. P. Smith (Independent); 2, Mr. and Mrs. Holmes (Castleford); 3, Mr. and Mrs. Lake (Sth. Humberside); A.O.V. Tropical (over 8 in.): 1, Mr. and Mrs. D. Caldwell (Scunthorpe Museum); 2, A. Frisby (Hull); 3, G. Witz (Independent); A.V. Marines: 1, Mr. and Mrs. D. Caldwell (Scunthorpe Museum); 2, and 3, N. Gow.

COMMITTEE members elected at the annual general meeting of the Clwyd A.S. were: J. T. Davies, chairman; T. A. Davies, secretary; K. Taylor, treasurer; J. Smith and G. Roberts. Trophies were awarded as follows: "Aquachamp" (Aquarist of the Year) J. T. Davies; "Furnisher Aquaria", Mr. and Mrs. P. Noakes. Table Show trophies were won in the past year by J. T. Davies, K. Taylor and I. Kelsey (Junior member).

The Society meets at 8.00 p.m. at St. Paul's Church Institute, Rhine Road, Colwyn Bay. New members are assured of a very warm and friendly reception. For further details write to Mr. T. A. Davies (Sec.), 42 Maes Hyfryd, Glas Conwy, Colwyn Bay, Clwyd LL28 5NE.

RECENTLY the annual general meeting of the Sandgrounder A.S. was held and according to the officers' reports, attendance at the fortnightly meetings had been very high, the membership list was still increasing, and the financial position was still stable, in a year which had made considerable demands on the funds.

Trophies were then awarded to the senior aquarist of the year, Mrs. Idris Stillwell, and the junior aquarist of the year, Master Derek Harvey. These were determined by the culmination of points awarded at the six table shows held during the past twelve months. After an interval the vice-president Terry Tasker, conducted the election of officers, which resulted in the following appointments: chairman, G. Waterhouse; vice-chairman, A. Jervis; gen. secretary, S. Houston, 81 Radnor Drive, Southport, tel. 24743; treasurer, R. Cliff; show secretary, B. Baldwin; assistant show secretary, N. Rimmer; p.s.o., J. Bale; committee members, G. Etoe, C. Evason; K. Howard.

A SLIDE show was presented at the April meeting of the King's Lynn A.S. about Gouramis. This was followed by a discussion on Aquarium electric and also a bench show for herbs. Winners were: 1, M. Rose; 2, A. Freeman; 3, T. Turner; 4, S. George.

New members are always welcome to come along to meetings held on the second Thursdays of the month and should contact either club secretary D. Mackay, tel. Downham 3010 or P.R.O. Mrs. S. George, tel. King's Lynn 671610.

IN April Hounslow and District A.S. were hosts to the Runnymede and Ealing Aquarists Societies, the occasion being a three-way interclub competition containing four classes. While judging was in progress members and visitors took part in a 28-question quiz organized by the Hounslow secretary, Mr. H. Parrish. Results—Barbs: 1, H. Pratt (Hounslow); 2, D. Scraie (Ealing); 3, Mrs. Lewis (Hounslow); 4, Mr. Crookshank (Ealing). Livebearers: 1, Mrs. S. Parrish (Hounslow); 2, Mr. Cooper (Hounslow); 3, H. Pratt (Hounslow); 4, H. Parry (Runnymede). Danos: 1, J. Healey (Ealing); 2 and 4, E. J. Sheppard (Runnymede); 3, T. Butler (Runnymede). Characins: 1, D. Scraie (Ealing); 2, Mrs. P. Hampton (Hounslow); 3, A. Constantine (Hounslow); 4, Mrs. Crookshank (Ealing). Total points: Hounslow 20, Ealing 14, Runnymede 7. The best fish in show award was taken by J. Healey of Ealing. A run down on the fish was given by F.B.A.S. judge, Mr. D. Lambourne. Visitors are always welcome at the meetings which are held at 8.00 p.m. on alternate Wednesdays at St. Stephen's church hall Whitton Road, Hounslow. All enquiries to the secretary, Mr. H. Parrish, 18 The Barons, Twickenham, tel. 01-892 5091.

AT the annual general meeting of The Goldfish Society of Great Britain held in March, the following people were elected to the committee: chairman, R. Dodkins; secretary, A. Law; treasurer, J. Parker; lay members: J. Shirleyand, D. Seymour; vice-presidents: J. Linale and J. Bundell. B. A. Dibley with a very nice Galico Veiltail, won the table show which was arranged for members who have never won an award at a G.S.G.B. show, and the Rose Bowl, awarded at every A.G.M. for the most popular fish on show, was won by G. King with a 2 year old Ranchu.

OFFICERS elected at the recent annual general meeting of Darlaston & District A.S. were as follows: chairman, J. Smith; secretary, D. Rickhuss, 14 Michaels Road, Rough Hayes, Wednesbury, West Midlands; treasurer, M. Nixon, Venue Conservative Club, Blockall Close, Darlaston, West Midlands.

AT the annual general meeting of the Northern Goldfish & Pool Society in April the following officers were elected: president, W. Ramsden; chairman, P. Johnson; treasurer, B. Rothwell; secretary, D. W. Lord, 40 Hospital Road, Bromley Cross, Bolton. The following new subscription rates were also confirmed for U.K. members: Full members, £3.00; Junior members and senior citizens, £1.50. It was further decided that the N.G.P.S. Journal which had previously only been sent to members in the U.S.A. would be made available to U.K. members at a cost of 15p.

CHANGES of officers reported from Oxley & District A.S. are: chairman, F. Whitehouse; secretary, Mrs. C. Carrier, 2 Ingestre Road, Wolverhampton WV10 6SN; treasurer, T. Matthews. The new meeting quarters are Newhampton Inn, Riches Street, Wolverhampton, Staffs.

THERE was a record entry for the Malvern & District A.S. open show, and next year it is anticipated that a new venue will be necessary to accommodate more people and more fish. Results—Male Guppies: 1, Mr. Parry (Glos.); 2 and 3, Mr. Ludlow (Evesham); 4, Mr. Morgan (Merthyr). Mollies: 1, Mr. Freshney (Glos.); 2, Mr. Coote (Chelt.); 3, Mr. Emtage (Chelt.); 4, Mr. Dibble (Nailsea). Swords: 1, Mr. Emtage (Chelt.); 2, Mr. Roan (Malvern); 3, Mr. Parry (Glos.); 4, Mrs. Hawkins (Chelt.). Pizzas: 1 and 2, Mr. Dibble (Nailsea); 3, Mr. Holder (Chelt.); 4, Mr. Dixon (Glos.). A.O.V. Livebearers: 1, 3 and 4, Mr. Dibble (Nailsea); 2, Mr. Coote (Chelt.). Small Barbs: 1, Mr. Timmins (Glos.); 2, Mr. Wing (Evesham); 3, Mr. Freshney (Glos.); 4, Mr. Underwood (Unit 59). Large Barbs: 1, Mr. Walton (Malvern); 2, Mr. and Mrs. Darby (Wombourne); 3, Mr. Watts (Evesham); 4, Mr. Evans (Kidderminster). Danos, Minnows: 1, Mr. Hutchinson (Kidderminster); 2, Mr. Jeynes (Malvern); 3, Mr. Swan (Rugeley); 4, H. H. & G. C. 1, Mr. Timmins (Glos.); 2, Mr. Walton (Malvern); 3, Mr. Cole (Stroud); 4, Mr. Williams (Malvern). A.O.V. Characins: 1, Mr. Dixon (Glos.); 2, Mr. Parry (Glos.); 3, Mr. and Mrs. Derby (Wombourne); 4, Mr. Walton (Malvern). Rasbora: 1, Mr. Timmins (Glos.); 2 and 3, Mr. Williams (Malvern); 4, Mr. Freshney (Glos.). Dwarf Goldfish: 1 and 3, Mr. Martin (N.W.A.S.); 2, Mr. Roan (Malvern); 4, Mr. Emtage (Chelt.). Angels: 1, Mr. Timmins (Glos.); 2, Mr. Fitchet (Nailsea); 3, Mr. Watts (Caerphilly); 4, Mr. Morgan (Merthyr). A.O.V. Goldfish: 1 and 3, Mr. Whitehouse (Oxley); 2, Mr. Dods (Evesham); 4, Mrs. Hawkins (Chelt.). Male Fighters: 1, Mr. Swan (Rugeley); 2, Mr. Morgan (Merthyr); 3, Mr. Underwood (Unit 59); 4, Mr. Hutchinson (Kidderminster). Anabantids: 1, Mr. Freshney (Glos.); 2, Mr. Dibble (Nailsea); 3, Mr. Cox (Kidderminster); 4, Mr. and Mrs. Darby (Wombourne). Corydoras: 1, Mr. Freshney (Glos.); 2, Mr. Dibble (Nailsea); 3, Mr. Legge (Caerphilly); 4, Mr. Neherbrell (Riverside). A.O.V. Guppies: 1, Mr. Bailey (Nailsea); 2, Mr. and Mrs. Marson (N.W.A.S.); 3 and 4, Mr. Walton (Malvern). Bossas, Loaches, Sharks: 1, Mr. Parry (Glos.); 2, Mr. Hutchinson (Kidderminster); 3, Mr. and Mrs. Darby (Wombourne); 4, Mr. and Mrs. Marson

(N.W.A.S.). Livebearers (Pairs): 1, Mr. Fitchet (Nailsea); 2, Mr. and Mrs. Roan (Malvern); 3, Mr. Blackburn (Oxley); 4, Mr. Hutchinson (Kidderminster). Egglayers (Pairs): 1, Mr. Cox (Kidderminster); 2, Mr. Whitehouse (Oxley); 3, Mr. Cureson (Malvern); 4, Mr. Parsons (Malvern). A.O.V. Tropical: 1, Mr. Whitehouse (Oxley); 2, Mr. Blackburn (Oxley); 3, Mr. Bailey (N.W.A.S.); 4, Mr. Pearce (Severnside). A.V. Goldfish: 1, Mr. Hutchinson (Kidderminster); 2, Mr. Dixon (Glos.); 3, Mr. Howard (Kidderminster); 4, Mr. Cureson (Malvern). A.O.V. Goldfisher: 1, Mr. Timmins (Glos.); 2, Mr. Morgan (Merthyr); 3 and 4, Mr. Watts (Caerphilly). Best fish in show: Mr. Dibble (Nailsea). Perpetual Club Trophy was won by Gloucester.

AWARD winners at the Walthamstow and District A.S. open show were as follows: A.A.B.: 1, Chingford A.S. Ag.; 1, T. Waller (E.L.A.P.A.); 2, Mr. and Mrs. Harris (Chingford); 3, B. Smith (Chingford). Ak.: 1, S. J. Spicer (Southend); 2, Mr. D. North (Corringham); 3, Mr. Watts (W.D.A.S.); 4, Mrs. Watts (W.D.A.S.). B.: 1, C. Cheswright (Southend); 2, P. Coyle (W.D.A.S.); 3, D. Ingle (Chingford); 4, M. Giddy (Ilford). Ca.: 1, B. Nichols (Mid Kent); 2, R. Thoday (E.L.A.P.A.); 3, A. Noronah (Orpington); 4, M. Collins (Mid Kent). C.: 1, Mrs. P. Edwards (Thanet); 2, R. Thoday (E.L.A.P.A.); 3, R. Dale (Bethnal Green); 4, Mrs. P. Edwards (Thanet). Db.: 1, 2 and 4, R. Smith (Corringham); 3, D. James (Corringham). D.: 1 and 2, R. Thoday (E.L.A.P.A.); 3, R. Rowland (E.L.A.P.A.); 4, A. Noronah (Orpington). Ea.: 1, Mr. North (Corringham); 2 and 4, T. Woolley (Saracens); 3, S. Ashita (W.D.A.S.). E.: 1, A. Chandler (W.D.A.S.); 2, B. Meech (East London); 3, D. Ingle (Chingford). F.: 1, R. Thoday (E.L.A.P.A.); 2, T. Allan (Romford and Becontree); 3, Mr. North (Corringham); 4, B. Barford (Saracens). G.: 1, T. Woolley (Saracens); 2, R. Thoday (E.L.A.P.A.); 3, M. Collins (Mid Kent); 4, B. Nichols (Mid Kent). H.: 1, B. Nichols (Mid Kent); 2, R. Dale (Bethnal Green); 3, T. Sleet (Croydon); 4, M. Collins (Mid Kent). J.: 1, J. Edwards (Thanet); 2, T. Allan (Romford and Becontree); 3, Mr. North (Corringham); 4, Mr. and Mrs. Harvey (Chingford). K.: 1, C. Peck (W.D.A.S.); 2, Mr. North (Corringham); 3 and 4, T. Sleet (Croydon). L.: 1 and 3, R. Thoday (E.L.A.P.A.); 2, P. Coyle (W.D.A.S.); 4, R. Fountain (Chingford). M.: 1 and 2, B. Nichols (Mid Kent); 3, P. Lovely (Chingford); 4, T. Waller (East London). N.: 1, A. Noronah (Orpington); 2 and 4, D. Cheswright (Southend); 3, T. Woolley (Saracens). O.: 1, S. J. Spicer (Southend); 2 and 3, A. Noronah (Orpington); 4, P. Doe (Ilford). P.: 1, B. Reynolds (Romford and Becontree); 2, B. Smith (Chingford); 3, B. Barford (Saracens); 4, B. Meech (East London). Q.: 1 and 2, B. Meech (East London); 3, B. Barford (Saracens); 4, R. Smith (Corringham). R.: 1, A. Noronah (Orpington); 2, B. Smith (Chingford); 3, M. Shadrack (Ilford); 4, M. Collins (Mid Kent). S.: 1, T. Sleet (Croydon); 2, S. J. Spicer (Southend); 3, A. Noronah (Orpington); 4, T. Woolley (Saracens). T.: 1, 2 and 4, A. Noronah (Orpington); 3, D. Cheswright (Southend). U.: 1, D. Cheswright (Southend); 2, T. Woolley (Saracens); 3, D. Goodbody (W.D.A.S.); 4, R. Smith (Corringham). V.: 1, 2 and 3, B. Cook (W.D.A.S.); 4, P. Holding (W.D.A.S.). W.: 1, Mrs. S. Hedges (Bethnal Green); 2, B. Barford (Saracens); 3, Miss S. Edwards (Thanet); 4, D. Goodbody

**halamid** A FRACTION A DAY, KEEPS ALGAE AWAY  
Hillside Aquatics London N12



(W.D.A.S.). Xb-m.: 1, R. Thoday (East London); 2, B. Reynolds (Rooford and Becontree); 3 and 4, J. Petre (Chingford). Xc-t.: 2, 3 and 4, A. Neronah (Orpington). Z.: 1 and 2, C. Chesswright (Southend); 3, R. Dale (Bethnal Green); 4, D. Shea (Chingford). Best fish in show: Mrs. S. Hedges with a Sun Bas (Club: Bethnal Green.)

AT the April meeting of the Accrington & District A.S., a talk was given by society member Mr. F. Focke on aspects of breeding coldwater fish. A small table show was held and the results were—Tropical: 1, I. Haworth; 2, Ian Ashworth; 3, N. Ashworth. Coldwater: 1, C. Walbank (B.L.S.); 2, B. Haworth; 3, F. Focke. Pairs: 1, N. Ashton; 2, D. Hargreaves.

AT the two April meetings of Merthyr A.S. plans were discussed for the Open Show. Table shows were held and a quiz and discussions on certain fish. In April the final of the Welsh League was held at Mon Santo Club, Newport. After judging, a jubilant Merthyr returned home, the result being Merthyr 28, Aberdare 14.

RECENT speakers at the Portsmouth A.S. general meetings have included Mr. R. Matley of Bournemouth who gave an interesting slide lecture on labyrinth fishes and Mr. M. Strange of Basingstoke whose very knowledgeable talk on keeping tropical fish included an interesting feature concerning the rearing of fishes in greenhouse 'ponds' under natural sunlight.

One of the meetings included a table show for Labyrinth, Danios and White Cloud Mountain Minnows. The results were as follows—*Siamia Fighters*: 1, E. Binstead; 2, Mrs. J. Sherman. *A.O.S. Labyrinth*: 1 and 3, E. Binstead; 2, 1, Walker; 4, Mrs. J. Sherman. *Danio*: 1, 2, 3 and 4, Mrs. J. Sherman. *W.C.M.M.*: 1 and 2, Mrs. J. Sherman. *Best Fish in Show*: E. Binstead with an Opaline Gourami.

THERE was a good attendance at the April meeting of the New Forest A.S. The winner of the Home Furnished Aquarium Competition held in March was T. Jeffries, and the main item of the evening was a Quiz which was completely run by the junior members. Some of their questions baffled a number of the older members, and an interesting time was had by all the members. During the interval there was a raffle, and an auction of fish, and aquarists equipment. Table show results were—*Characins*: 1, Mrs. Stokes; 2, J. Menhennett; 3 and 4, R. Travers. *Barbs*: 1 and 4, J. Menhennett; 2 and 3, P. Wheeler. *Fighters*: 1 and 4, J. Menhennett; 2, N. Gallar; 3, P. Norup. The secretary is Mr. R. Travers, 6 Auckland Avenue, Brockenhurst, Hants. SO4 7RS and he will be pleased to send details of the Society to prospective new members.

OPEN Show results from Kettering A.S. were as follows: *Barbs*: 1 and 4, A. and M. Crew; 2, R. Wilson; 3, G. Salvi. *Characins*: 1 and 3, R. Elliot; 2, S. Elliot; 4, J. Sievwright. *Cichlids* (D): 1, 3 and 4, J. and P. Patching; 2, R. Hembury. *Cichlids* (Db): 1, J. and P. Patching; 2, R. Wilson; 3, M. and B. Coe; 4, R. Langford. *Labyrinth*: 1, A. and M. Crew; 2, G. Woolley; 3, G. Cobbett; 4, J. Chilvers. *Killies*: 1 and 2, A. and M. Crew; 3, S. Tite; 4, J. Sievwright. *Catfish*: 1, G. Woolley; 2, R. Wilson; 3, R. Langford. *Corydoras & brocchi*: 1, T. and S. Jones; 2 and 3, R. Elliot; 4, Mr. and Mrs. G. Cobbett. *Rasbora*: 1 and 2, J. Sievwright; 3, R. Wilson. *Danio* & *W.C.M.M.*: 1, R. Elliot; 2 and 4, Mr. and Mrs. G. Cobbett; 3, R. Wilson. *Loaches*: 1, 2 and 3, R. Elliot; 4, S. Elliot. *A.O.S. Egg-layer*: 1, R. Elliot; 2, A. and M. Crew; 3, N. Boot; 4, R. Langford. *Egg-layer* (Pair): 1, R. Elliot; 2, Mrs. Giles; 3, M. and B. Coe; 4, A. and M. Crew. *Livebearer* (Pair): 1 and 2, R. Wilson; 3, J. Sievwright. *Guppies*: 1, R. Elliot; 2 and 3, Mr. Weston; 4, M. and B. Coe. *Swordtails*: 1, J. Sievwright. *Molly*: 1, R. Vickers. *A.O.S. Livebearer*: 1, N. Boot; 2, Mr. and Mrs. G. Cobbett. *Goldfish*: 1, A. and M. Crew. *A.O.S. Coldwater*: 1, A. and M. Crew; 2, R. Langford. *Egg-layer broods*: 1, J. and P. Patching; 2, M. and B. Coe; 3, J.

Siewwright; 4, G. Woolley. *Livebearer broods*: 1 and 2, R. Wilson; 3, Mr. and Mrs. G. Cobbett; 4, R. Vickers.

SPEAKING to the Bristol A.S. Mr. G. S. N. Ingham, B.A., M.L.Envir.Sc., reminded members that most of the oxygen in our rivers and ponds was dissolved at the surface. Oxygen was taken out of the water by plants and fish by respiration and by the oxidation of decaying material by bacteria. Water at 4° Centigrade could hold ten times as much oxygen as water at 20° centigrade. One of the lessons learnt last summer was that fish could adapt themselves gradually to worsening conditions that would almost certainly have proved fatal had the change been made quickly.

A. Roberts spoke briefly on his methods for raising Goldfish fry. He described how he built up a "worm bank" throughout the winter and managed to get his fry fed hourly through their early stages!

AN inter society table show was held in April organised by Northwich and District A.S. in conjunction with Chester A.S., Warrington A.S. and Wrexham Tropical Fish Society. Mr. N. Ford and Mr. C. Pritchard were the judges and whilst judging was in progress an auction of fish and equipment was held by Mr. R. Mathers. The winner of the inter-society trophy was Warrington A.S. with 21 points. Second in the competition was Northwich A.S. with 18 points and third was Wrexham with 16 points. The best fish in the show award went to a red tailed black shark owned by Mr. W. Brown of Warrington A.S.

Other results were as follows—*Swordtails*: 1, C. and K. Davies (Northwich); 2, A. Hopwood (Wrexham); 3, P. Williams (Chester). *Barbs*: 1, L. and D. Thorne (Northwich); 2, C. Baker (Warrington); 3, C. and K. Davies (Northwich). *Cichlids*: 1, G. Swindley (Chester); 2 and 3, M. Baker (Warrington). *Rasbora*: *Danio*, *Minnows*, 1, C. and K. Wilson (Warrington); 2, A. Hopwood (Wrexham); 3, J. Higham (Warrington). *Catfish and Loaches*: 1, C. Baker (Warrington); 2, A. Hopwood (Wrexham); 3, Mr. and Mrs. Parry (Wrexham). *Characins*: 1, G. Swindley (Chester); 2, W. Brown (Warrington); 3, P. Oliver (Wrexham). *Sharks and Poles*: 1, W. Brown (Warrington); 2, Mr. and Mrs. Walker (Wrexham); 3, C. and K. Wilson (Warrington). *Fighters*: 1, J. Buckley (Northwich). *Killifish*: 1, Mr. and Mrs. Mathers (Wrexham); 2, P. and B. Connolly (Northwich). *Pairs* (Livebearers): 1, L. and D. Thorne (Northwich); 2, C. Rose (Warrington); 3, W. Brown (Warrington). *Pairs* (Egg-layers): 1, L. and D. Thorne (Northwich); 2, Mr. and Mrs. Parry (Wrexham); 3, Mr. and Mrs. Mathers (Wrexham).

AN interesting talk was given to the Tottenham and District A.S. in March by G. Boyall, chairman, on home-made Aquariums. At the first April meeting there was a good attendance by members and visitors and an informal evening was enjoyed with a few Fish Topics being discussed. D. Nut president had some interesting views on white worm cultures and food. The Club visited London Zoo Aquaria in May, due to the hospitality of Dr. Yevers the curator, for a tour behind the scenes. New members can be assured of a warm welcome at 703, High Road, Tottenham, London N.15.

THE colourful world of Characins was portrayed to Ealing and D.A.S. recently by Keith Purbrick of Hendon A.S. Many identifying hints and culturing tricks were included in the talk and the photographic slides were excellent. How to breed Neon Tetras in two pints of water was only one facet of the fascinating programme.

Already the social scene has not been neglected and a Social Evening has been held. A Bring & Buy evening was organised recently and the Club would like to thank all who supported it.

The Society's Open Show is still planned for 2nd October and the venue will be announced nearer the date. The FBAS Championship trophy will be for Class Ag."

AT the April meeting of the Nailsea and District A.S. the members were entertained with a talk by Mr. H. Thomas of Bristol who spoke on the subject of water in a most interesting and informative way. The monthly table show was also held, the results of which were: *Swordtails* (open): 1, D. Kenwood; 2, B. Billinger; 3, P. Fitchett. *Novice*: 1, B. Billinger; 2, T. Barrett; 3, J. Williams. *Mollies* (open): 1, T. Barrett; 2, M. Bywater; 3, P. Fitchett. *Novice*: 1, T. Barrett; 2, J. Williams; 3, S. Boulton. Meetings are held on the fourth Tuesday of the month at Church House, Silver Street, Nailsea, where all are welcome.

IN April the meeting of the Mid-Sussex A.S. was the home leg of the Over the Downs Interclub competition against Brighton and Southern A.S. Mr. R. Forde gave an interesting talk on Aquatic Plants and the conditions needed for their growth and also judged the club plant class awarding the cards as follows—1 and 3, B. Ferrin; 2, E. and T. Tester. The Over the Downs Contest was judged by Mr. Scullwell, as follows: *Labyrinth*: 1, Mr. and Mrs. Ramshaw (Brighton and Southern); 2, S. Frost (Mid-Sussex); 3, M. Sparshott (Mid-Sussex). *Danios*: 1, Mr. and Mrs. Rice (Brighton and Southern); 2, Mr. Hills (Brighton and Southern); 3, B. Bartles (Mid-Sussex); 4, E. and T. Tester (Mid-Sussex). *Loaches*: 1, Mr. and Mrs. Ramshaw (Brighton and Southern); 2 and 4, E. and T. Tester (Mid-Sussex); 3, Mr. Hooper (Brighton and Southern). *A.O.V. Egg-layers*: 1, Mr. and Mrs. Sayers (Brighton and Southern); 2, Mr. and Mrs. Ramshaw (Brighton and Southern); 3, Mr. and Mrs. Rice (Brighton and Southern); 4, E. and T. Tester (Mid-Sussex). *Livebearers*: 1 and 2, J. Smith (Brighton and Southern); 3, B. Slade (Mid-Sussex); 4, E. and T. Tester (Mid-Sussex). *Breeder* (Egg-layers): 1, Mr. and Mrs. Houghton (Brighton and Southern); 2 and 3, B. Slade (Mid-Sussex); 4, Mr. Hills (Brighton and Southern). The Brighton and Southern A.S. won the first leg by 36 points to 24 points. The second leg of the competition will be at Brighton on 16th May. Further details may be obtained from the Secretary Mr. B. Slade (H. Heath 53747).

THE David Brown A.S. has just completed its first twelve months as a Society, and now has a membership of 50. Members are currently engaged in a table show which is being run over the whole year, with a different class at each meeting. Meetings are held on the first and third Tuesdays each month in the Social Club of David Brown Tractors, Meltham Hall, Meltham, Nr. Huddersfield. Membership is mainly DBT employees, but anyone can join by contacting the Secretary Mr. A. Copp Huddersfield 43398 or by attending the meetings.

RESULTS of the Mount Pleasant A.S. Open Show held in April—*Barbs*: 1, P. Best (Priory); 2, J. Hunter (Priory); 3, J. English (N.T.F.S.); 4, Smith Family (K.A.A.). *Barbs*: 1, A. Walton (Priory); 2, Mr. and Mrs. Hall (Novos.); 3, P. Drewett (Novos.); 4, Master D. McClurg (S.T.A.S.). *Characins*: 1, A. Walton (Priory); 2, G. Wilson (S.T.A.S.); 3, R. George (N.T.F.S.); 4, K. Ring (Mt. Pleasant). *Characins*: 1 and 4, P. Wright (Sunderland); 2, Mr. and Mrs. Smith (K.A.A.); 3, J. Irwin (S.A.S.). *Cichlids*: 1 and 3, L. Hunt (H.M.A.S.); 2, A. G. King (S.S.A.S.); 4, Archibald (Ind.). *Cichlids*: 1, R. Atherton (H.A.S.); 2, S. Hay (H.A.S.); 3, Mr. and Mrs. Lawson (Novos.); 4, Mr. and Mrs. Wright (Sunderland). *Cichlids*: 1 and 2, S. Hay (H.A.S.); 3, J. Irwin (S.A.S.); 4, F. Napier (S.S.A.S.). *Labyrinth*: 1 and 4, Mr. and Mrs. Reboon (N.T.F.S.); 2, J. Middlemast (Ind.); 3, C. Appley (Ind.). *Fighters*: 1, A. Stevens (Middleborough); 2 and 3, R. Atherton (H.A.S.); 4, Mr. and Mrs. Knibbs (S.T.A.S.). *Tropical Catfish*: 1, J. Donely (S.S.A.S.); 2, M. Holman (Priory); 3, J. King (Redcar); 4, J. Irwin (Stanley). *Corydoras*: 1, C. Mallaby (Mt. Pleasant); 2, D. Turnbull (Mt. Pleasant); 3, R. Newworthy (Northumbrian); 4, P. Wright (Sunderland). *Rasbora*: 1, Mr. and Mrs. Hall



(Novos); 2, Mr. and Mrs. Knibbs (S.T.A.S.); 3, A. Bloomfield (Mt. Pleasant); 4, P. Wright (Sunderland); *Danio & W.C.M.M.*: 1, A. Stevens (Middlesbrough); 2, W. Walton (Priory); 3, W. A. Grant (Ind.); 4, P. Taylor (Mt. Pleasant); *Loach*: 1, M. Campbell (Mt. Pleasant); 2, J. Irwin (Stanley); 3, M. Robinson (Mt. Pleasant); 4, D. Turnbull (Mt. Pleasant); *Labes*: 1, J. Irwin (Stanley); 2, I. Blyth (S.S.A.S.); 3, C. Mallaby (Mt. Pleasant); 4, Smith Family (K.A.A.); *A.O.S. Egg*: 1, Mr. and Mrs. Kidd (K.A.A.); 2, J. Robertson (Northumberland); 3, L. Hunt (H.M.A.S.); 4, Kenard (K.A.A.); *Pairi Egglayers*: 1, J. Middlemast (Ind.); 2, A. Stevens (Middlesbrough); 3, D. Campbell (Mt. Pleasant); 4, K. Nunn (S.T.A.S.); *Pairi Livebearers*: 1, G. Leazoy (Novos); 2, Mr. and Mrs. Knibbs (S.T.A.S.); 3, R. Neworthy (Northumbrian); 4, Mr. and Mrs. Johnson (S.T.A.S.); *Male Guppy*: 1 and 3, Mr. and Mrs. R. Hill (N.G.L.S.); 2, Mr. and Mrs. Knibbs (S.T.A.S.); 4, J. King (Redcar); *Female Guppy*: 1, I. Davison (Ind.); 2, G. Wilson (S.T.A.S.); 3, Mr. and Mrs. Knibbs (S.T.A.S.); 4, A. Thompson (N.T.F.S.); *Hallers*: 1, K. Nunn (S.T.A.S.); 2, C. R. Gled Hill (Redcar); 3, N. Thompson (Wallsend); 4, T. Marshall (N.T.F.S.); *Play*: 1, Dobbie (Priory); 2, G. Leazoy (Novos); 3, J. Robertson (Northumbrian); 4, Mr. and Mrs. Knibbs (S.T.A.S.); *Molly*: 1, Miss D. Knibbs (S.T.A.S.); 2, S. Hay (H.A.S.); 3, J. English (N.G.L.S.); 4, Dobbie (Priory); *A.O.S. Livebearers*: 1, Mr. and Mrs. G. McClurg (S.T.A.S.); 2, T. Marshall (N.T.F.S.); 3, R. Neworthy (Northumbrian); 4, Archibald (Ind.); *Goldfish*: 1, K. Lowe (Cleveland); 2, E. Hodgson (Priory); 3, R. Kirkup (Mt. Pleasant); 4, R. Scott (S.S.A.S.); *Breeders (Livebearers)*: 1, R. Neworthy (Northumbrian); 2, K. Lowe (Cleveland); 3, N. Soppit (Houghton); 4, R. Kirkup (Mt. Pleasant); *Breeders (Egglayers)*: 1, K. Lowe (Cleveland); 2, J. Donely (S.S.A.S.); 3, R. Scott (S.S.A.S.); 4, R. Neworthy (Northumbrian). Best fish in show was won by a Fire Iel, exhibited by Mr. and Mrs. Kidd Killingworth (A.A.). Best exhibitor: S. Hay. Society result: 1, Stockton A.S., 36 points; 2, Priory A.S., 29 points; 3, Mount Pleasant, 25 points; 4, Hartlepool, 22 points. A total of twenty one societies exhibited.

The list below of officers for 1977/78 for the **Smethwick & District A.S.** is as follows: president, L. Stokes; chairman, D. Johnson; secretary, Mrs. S. Timmins, 82 Shenstone Road, Edgbaston, Birmingham B16 0NT, tel: 021-558 8454; treasurer, J. Harris; show secretary, A. Layton; assistant show secretary, J. Inley; chairman elect, R. Hall.

**ENTRIES for the Nelson A.S. open show** totalled 486 from 19 societies and the results were: Section A—Livebearers (Guppies): 1, Mr. and Mrs. J. McCarthney (St. Helens) (section winner); 2, N. Wallbank (Loyne); 3, T. Redfern (Heywood); *Swordtails*: 1, Mr. and Mrs. R. Houghton (Southport); 2, K. Wright (Sandgrounders); 3, A. Copp (David Brown Soc.); *Mollies*: 1 and 2, Mr. and Mrs. J. Tinsley (Sandgrounders); 3, B. W. Carter (St. Helens); *Plates*: 1, Mr. and Mrs. G. Muckle (Southport); 2 and 3, B. W. Carter (St. Helens); A.O.V.: 1, M. Pownall (Ind.); 2, Mr. and Mrs. D. Durham (Longridge); 3, Mr. and Mrs. J. McCarthney (St. Helens); Section B—Anabantids—(Fighters): 1 and 3, Mrs. B. Faux (Merseyside); 2, R. I. Payne (Merseyside); *Small*: 1, Mr. and Mrs. G. Muckle (Southport) (section winner); 2, Mr. and Mrs. L. Newton (Blackburn); 3, Master M. and N. Rimmer (Sandgrounders); *Large*: 1, A. Lyons (Longridge); 2, Mr. and Mrs. E. Ellis (Oxram); 3, B. Wilson (Sandgrounders); Section C—Characins—*Small*: 1, K. Thompson (Merseyside) (section winner); 2, Mr. and Mrs. B. Walsh (Blackburn); 3, Mr. and Mrs. R. Houghton (Southport); *Large*: 1, Mr. and Mrs. B. Baldwin (Sandgrounders); 2 and 3, Mr. and Mrs. R. Houghton (Southport); Section D—Scavengers—*Cory and Brochis*: 1, Mr. and Mrs. R. Houghton (Southport); 2, Mr. and Mrs. G. Muckle (Southport); 3, Mr. and Mrs. J. Taylor (Atlantis); A.O.V.: 1, Mrs. G. Gough (Wynnstay) (section winner); 2, Mr. and Mrs.

B. Walsh (Blackburn); 3, D. Ridyard (Leigh); *Loaches*: 1, S. Worstenhame (Heywood); 2, D. Tomlinson (Macclesfield); 3, Mr. and Mrs. G. Muckle (Southport); *Sharks and Foxes*: 1, Mr. and Mrs. B. Baldwin (Sandgrounders); 2, H. Baver (Merseyside); 3, B. Dawson (Heywood); Section E—*Toothcarps—Rasboras*: 1, K. Thompson (Merseyside) (section winner); 2, N. Wallbank (Loyne); 3, Miss S. Goddard (Macclesfield); *Danios and Minnows*: 1, Mr. and Mrs. R. Houghton (Southport); 2, Mr. and Mrs. R. Newton (Blackburn); 3, Mr. and Mrs. G. Muckle (Southport); *Toothcarps*: 1, J. Noon (Leigh); 2, K. Thompson (Merseyside); 3, Mr. and Mrs. T. Tasker (Sandgrounders); Section F—*Barbs—Small*: 1, N. Stevenson (Oxram); 2, Master M. Rimmer (Sandgrounders); 3, Mr. and Mrs. G. Muckle (Southport); *Large*: 1, Mr. and Mrs. B. Baldwin (Sandgrounders); 2, Mr. and Mrs. J. Taylor (Atlantis); 3, R. I. Payne (Merseyside); Section G—*Cichlids—Angels*: 1, N. Stevenson (Oxram); 2, D. Hughes (Longridge); 3, H. Baver (Merseyside); *Dwarf*: 1, Mr. and Mrs. R. Houghton (Southport); 2, Mrs. K. McBride (Aireborough); 3, N. Hayes (Loyne); *Rift Valley*: 1 and 2, Mrs. E. Stillwell (Sandgrounders) (section winner); 3, B. Wilson (Sandgrounders); A.O.V.: 1, J. Faux (Merseyside); 2, Mr. and Mrs. J. Taylor (Atlantis); 3, P. Beaumont (Padham); Section H—*A.O.V.—Tropical*: 1, P. and H. Bachelior (Loyne) (section winner); 2, Mr. and Mrs. L. Newton (Blackburn); 3, Miss E. Holt (Nelson); Section I—*Coldwater—Common*: 1 and 2, Mr. and Mrs. D. & J. Wolstenhame (Blackburn); 3, Mr. and Mrs. P. & G. Holroyd (Morecambe Bay); *Single Tail*: 1, Mr. and Mrs. Wolstenhame (Blackburn); 2, A. Ratcliffe (Nelson); 3, Mr. and Mrs. Holroyd (Morecambe Bay); *Twin Tail*: 1 and 2, Mrs. E. Hall (Aireborough) (section winner); 3, R. Dingley (Heywood); A.O.V.: 1, T. Davis (Heywood); 2, Mr. and Mrs. R. Houghton (Southport); 3, Mr. and Mrs. B. Baldwin (Sandgrounders); Section J—*Pairi—Livebearers*: 1, Mrs. K. McBride (Aireborough); 2, Mr. and Mrs. G. Muckle (Southport); 3, Mr. and Mrs. B. Baldwin (Sandgrounders); *Egg-layers*: 1, K. Thompson (Merseyside) (section winner); 2, Mr. and Mrs. A. Goddard (Macclesfield); 3, Mr. and Mrs. G. Muckle (Southport); Section K—*Breeders—Livebearers (1-10)*: 1, K. Thompson (Merseyside); 2, Mr. and Mrs. C. Ellis (Oxram); 3, C. Evison (Sandgrounders); *Egg-layers (1-10)*: 1, M. Pownall (Ind.) (section winner); 2, Mr. and Mrs. H. Gough (Wynnstay); 3, Mr. and Mrs. T. Tasker (Sandgrounders); *Egg-layers (11-20)*: 1, Mr. and Mrs. J. Taylor (Atlantis); Section L—*Junior—Livebearers*: 1, K. Morris (Nelson); 2, Master M. Rimmer (Sandgrounders); 3, M. Pownall (Ind.); *Egg-layers*: 1, Misses P. and S. Taylor (Atlantis) (section winner); 2, Master M. Rimmer (Sandgrounders); 3, Master A. J. Copp (David Brown); *Ladies A.V.—Section M*: 1, Miss S. Goddard (Macclesfield) (section winner); 2, Misses P. and S. Taylor (Atlantis); 3, Miss M. Morton (Southport); *The Best Fish in Show* award went to Mrs. G. Gough with a *Pimelodus Claris*.

#### F.B.A.S.

PLANS are well in hand for the second FBAS Convention, to be held at the Meeting Rooms, London Zoo, on 17th September. Of slightly different format to last year's, the morning session will consist of a varied selection of films and the afternoon periods will be filled by two eminent aquatic speakers. Following a refreshment break the final part of the programme will be devoted to a 'forum' at which prominent aquarists will form a panel to answer questions and give views on aquatic subjects. Tickets (limited to 200) will be £1.50 excluding refreshment costs. Fuller information on the Convention can be obtained from the General Secretary of the FBAS, Hugh Parrish, 18 The Barons, St. Margarets, Twickenham, Middlesex.

A feature to be seen around Open Shows this year is the colourful FBAS Show Stand, at which the whole range of Federation publications, Ties and Badges may be purchased. Alternatively, it also serves as a social focal point. The cheery Show Stand Manager is J. Nethersall, and he will be only too pleased

to be of assistance and show you the full range of FBAS merchandise. Societies requiring the Show Stand should first obtain an 8 ft. x 6 ft. space in their hall and then book the Stand through the FBAS General Secretary.

The long awaited AquaTalk on Non African Cichlids (No. 21) by Ian Sellick is now available, as is No. 26, Characins by Gordon Howes. In response to several enquiries from Societies, a selection of AquaTalks are now available in cassette form but there may be a loss of quality (Not attributable to the FBAS) if these programmes are reproduced on unsuitable equipment. The cassette programmes can be ordered through W. R. Dale, 14 Rutland Road, London, E.11 2DY. Reel to reel programmes will continue to be distributed through K. Saxby.

#### NEW SOCIETY

**THE Skelmersdale and District A.S.** has been formed recently. Details from P. Summers, 162 Acragate, Little Dismoor, Skelmersdale Lancs. WN8 9LV.

#### VENUE CHANGES

**THE Malvern and District A.S.** now meet on the first Wednesday in the month at the "Star" public house, Cowleigh Road, Malvern at 8 p.m.

The monthly meetings of the Accrington and District A.S. will in future be held at the Blockade Hotel, King Street, Accrington on every second Wednesday of each month.

#### SECRETARY CHANGES

**Galashiels and District A.S.** A.B. Robertson, 117 Naysdale Terrace, Galashiels, Selkirkshire.

**Doncaster and District A.S.** B. Roberts, 2 Shelley Grove, Sprotborough, Doncaster, DNS 8BX, South Yorks.

#### CHANGE OF DATE

OWING to circumstances beyond their control the show date of **Leamington and District A.S.** has been postponed until 11th September.

#### AQUARIST CALENDAR

**4th June:** Weymouth A.S. Open Show at St. Aldhelm's Church Hall, Radipole. Secretary Mrs. J. Dowell, 37 Sunsex Road, Weymouth DT4 6PL.

**4th June:** Weston-Super-Mare Tropical Fish Club Open Show at St. Johns House, Oxford Street, Weston-Super-Mare, Avon. Show secretaries, Mr. and Mrs. M. Raymond, 1 The Coombe, Burrington Blagden, Near Bristol.

**5th June:** 1977 Inter-Club Show (Portsmouth A.S.).

**5th June:** Loughborough and District A.S. Open Show.

**5th June:** Loyne Aquarists Open Show. St. Paul's Church Hall, Scoforth Road, Lancaster. Details from Mrs. N. E. Gardner, 161 Fairfield Road, Heysham, Morecambe, Lancs.

**5th June:** Thorne A.S. Open Show at the Moorends Community Centre, Northgate, Moorends nr. Doncaster. For further details please contact the show secretary, B. Banks, B. Banks, 75 Marshland Road, Moorends, S. Yorks DN8 4SY.

**5th June:** Accrington and District A.S. Annual Open Show at the Antley Methodist Church Hall, Blackburn Road, Accrington. Show schedules from N. Holden, 198 Higher Antley Street, Accrington.

**11th June:** Llantwit Major A.S. Open Show. Schedules available April onwards from J. J. Edwards, "Glanafon", Mill Park, Llanblethian, Cowbridge, South Glam. CF7 7BG.

**12th June:** Newcastle Tropical P.S. Open Show will be held at Cruddas Park Community Centre Westmoorland Road, Newcastle upon Tyne. Further details of the show can be obtained from the Show Secretary T. Marshall, 488 Elswick Road, Newcastle upon Tyne.

**12th June:** Salisbury and District A.S. Annual Open Show. Further details and show schedules from R. F. Adams, 26 Empire Road, Salisbury, Wilts.

**12th June:** Boston A.S. Open Show, Kirwood Girls School, Robinhoods Walk, Boston. Schedules from secretary, Mrs. M. Sands, 20 Arnyle Street, Boston, Lincs. PE1 8PH.



**12th June:** Sudbury A.S. Open Show at the Waipa Rugby Ground, Repton Avenue, Wembley. Schedules from L. J. Brazier, 66 Ormesby Way, Kenton, Middlesex. Tel: 01-204 5374.

**12th June:** St. Helens A.S. Open Show will be held at the Rainhill Community Centre, Exchange Place, Rainhill, Merseyside. Further details from M. Collins, 26 Vicarage Drive, Haydock, St. Helens, Merseyside WA11 0UG. Tel: St. Helens 22522.

**18th June:** Bath A.S. Open Show at Pitmans Press, Bath.

**19th June:** Dunmow and District A.S. Open Show for further information please contact Mr. I. Forlow, 12 Castle Cross Saffron Walden Essex. Phone 95-22965.

**19th June:** Northwich and District A.S. Ninth Open Show at the Hartford Secondary Boys School Chester Road, Hartford Northwich. Judging to F.N.A.S. standards details from Show Secretary, Mr. D. Valentine, 43 Hartford Road, Davenham, Nr. Northwich Cheshire. Tel: Northwich 6624.

**19th June:** Redditch Open Aquatic Show. Incorporating the International Herpetological Society Show. Its a knock-out (Redditch Firms), Fair, Bar and Catering. Organised by Delson A/S at the Abby Sports Stadium, Birmingham Road, Redditch, Worcs. Details: Mr. P. J. Binney, 29 Plyford Close, Lodge Park, Redditch. Tel: Redditch 26568 Evenings Only.

**19th June:** Swillington A.S. Open Show. Schedules available from P. Campling, 4 Edinburgh Place, Garforth, nr. Leeds. Tel: 88605. Mini-Show on the 15th March.

**19th June:** Whiteway and District F.S. Fifth Open Show at Whiteway Community Centre, Kelston View, Whiteway, Bath. Schedules available after 30th April from Show Secretary, Mrs. E. Daniels, 21 Haycombe Drive, Whiteway, Bath BA2 1PG, Avon.

**19th June:** North West Lancs./Manchester Sixth Annual Open Show. 36 Guppy Classes. Venue and further details from B. Morris (Show Secretary), 4 Irwell St., Burnley, Lancs.

**19th June:** The British Cichlid Association, Hertfordshire Area, invites all interested in cichlids to a lecture, with slides on AFRICAN LAKE CICHLIDS to be held at the Elstree/Borehamwood Community Association, Manor House, Allam Lane, Elstree (near Elstree and Borehamwood Station). The talk will start at 3 p.m. and the speaker will be M. Williams, F.B.A.S., Lecturer. Refreshments will be available. Further details from R. Harper, Rickmansworth 74504 or M. Hannev, Hoddesdon 61206.

**19th June:** Forfar and District A.S. first Open Show in the Reid Hall, Forfar. This show will be run under Scottish Federation Rules using official Federation judges.

**19th June:** South Shields A.S. Annual Open Fish Show at the Casa Nova Club, Ocean Road, South Shields. This is a new venue from previous shows.

**25th June:** Newport A.S. Open Show at St. Johns Hall, Victoria Avenue, Maindee, Newport, Gwent. Details from show secretary, B. Webster, Glenview, Mount Pleasant, Pontnewydd, Pontypool.

**25th June:** Nailsea and District A.S. Annual Open Show at the Holy Trinity Church Hall, Church Lane, Nailsea, to be held in conjunction with the Donkey Derby. Details from Mr. D. Kenwood, 90 Slade Road, Portishead BS20 9BB.

**26th June:** Dunlop Aquarium Keepers Society Open Show to be held in the Dunlop Factory Canteen, Speke-hall Avenue, Speke, Liverpool 24. Further details from secretary, T. Griffiths, 19 Belper Street, Garston, Liverpool L19 1RG.

**26th June:** Alfreton and District A.S. Annual Open Show at Alfreton Hall. Details and Show Schedules from P. W. Bonar, 10 George Street, Riddings, Derbyshire DE5 4GF.

**3rd July:** Chard and District A.S. third Annual Open Show at Furnham School, Chard, Somerset. Details from A. Griffin, 50 Fairway Rise, Chard, Somerset, TA20 1NT. Show schedules available end of April.

**3rd July:** Brighton and Southern A.S. Open Show at Portlade Town Hall, Victoria Road, Portlade. Show Secretary, M. Rooney 66 Portland Villas Hove, Sussex.

**3rd July:** Grantham and District A.S. Annual

Open Show, to be held at Aveling-Bartolds Social Hall, Gonerby Road, Grantham. Schedules can be obtained with a S.A.E. from W. E. Neville, Show Secretary, 32 Sharpe Road, Grantham, Leics. NG31 9BW. S.A.E. Please.

**3rd July:** Billingham A.S. Open Show at the Billingham Community Centre, Billingham.

**9th-10th July:** Romford and Beacontree A.S. Open Show, Dagenham Town Show, Central Park, Dagenham. For Show schedules (April), Show secretary, R. Jones, 87 Wood Lane, Elm Park, Essex. Tel: 49 56947.

**10th July:** Scunthorpe and District A.S. Venue to follow.

**10th July:** Lytham A.S. Show Lytham Baths, Dicconson Terrace, Lytham, Lancashire (Same venue as last year). Show Schedules from Show Secretary, Mr. P. Ham, 1 Wyndene Grove, Freckleton, Preston, Lancashire, PR4 1DE, Tel: Freckleton 633182.

**10th July:** Goldfish Society of Great Britain General Meeting, 2.30 p.m., Small Hall, Conway Hall, Red Lion Square, Holborn, London WC2.

**17th July:** S.E.L.A.S. Open Show at 141 West Greenwich House, Greenwich High Road, London S.E.10. Details from T. Asquith, 49 Central Avenue, Welling, Kent. Tel: 01-854 232.

**17th July:** Scarborough and District A.S. Open Show. Further details later. Show secretary J. F. Richardson, 5 Keld Garth, Pickering, N. Yorks YO18 8DG.

**17th July:** Sandgrounders A.S. Annual Open Show at Meols Cap School, Meols Cap Road, Southport.

**17th July:** Scarborough and District A.S. Open Show at Gladstone Road Junior School, Wooler Street, Scarborough. Schedules available from J. F. Richardson, 5 Keldgarth, Pickering, N. Yorks YO18 8DG.

**24th July:** The South Humberside A.S. will hold its second open show at the Memorial Hall Cleethorpes. Further details from W. Dreurey, 223 Wellington Street, Grimsby.

**29th 30th and 31st July:** Tottenham D.A.S. are pleased to announce (subject to confirmation) that a Open Show can now go ahead at Alexander Place for full details please phone Don Philipson, 263 2654 Show Secretary, Mike Fowler 801 5943 Secretary.

**7th August:** Tonbridge and District A.S. Open Show Schedules available from J. Feast, 19 Hardley Road, Sevenoaks, Kent TN13 1XX.

**7th August:** Koi East Anglia Open Show, Waveney Fish Farm, Dias, Norfolk. Viewing from 1.30 p.m. Further details from G. Wright, 98 Lower Cliff Road, Gorleston-on-Sea. Tel: 0493-68440.

**14th August:** Oldham A.S. Open Show at Wernith Park, Oldham. Information and show schedules can be obtained from A. Chadwick, 341 Broadway, Chadderton, Oldham. Tel: 061-652 0809.

**14th August:** Grimsby and Cleethorpes A.S. Sixth Open Show at the Memorial Hall, Cleethorpes. Benching from 12 noon to 2 p.m. Details and show schedules available from the Show Secretary, L. Curtis, 4 Swaby Drive, Cleethorpes, South Humberside DN35 9PB.

**20th 21st August:** Yorkshire Aquarist Festival to be held at Doncaster Racecourse. Details from B. D. Chester 7 Rose Lea, Ordsall, Retford, Notts.

**21st August:** Stretford and District A.S. Open Show at Buile Hill High School, Eccles Old Road, Salford. Details from J. Brown, 18 Royston Court, 72/74 Carlton Road, Manchester 16.

**21st August:** Stroud and District A.S. Annual Open Show at the Subscription Rooms, Stroud. Full tropical classes plus twelve classes for Coldwater. Schedules later from Mr. J. Cole, 13, The Hill, Randwick, Stroud, Glos. 4504.

**21st August:** Macclesfield A.S. Open Show. Details to follow.

**21st August:** B.K.A. Severnside Group, Annual Killifish Show (Incorporated in the Stroud A.S. Open Show). Seven classes, awards for each class. Subscription rooms, George St. Stroud. Schedules from Mr. J. Cole, 13 The Hill, Randwick, Stroud, Glos. GL6 6JH.

**27th-29th August:** Tyne Tees Association of Aquarist Societies second exhibition of fish-keeping at Lambton Pleasure Park, Chester-le-Street. The Tyne Tees Championship will be included in the programme. Further details available at an early date.

**27th August:** The Fourth Welsh National Open Show and Exhibition of Tropical and Coldwater Fish will be held at the Sophia Gardens Pavilion, Cardiff. Further details available from C. Turner, 146 Arran Street, Roath, Cardiff. Tel: 498982.

**28th August:** Long Eaton A.S. Open Show at Gregory's Rose Gardens, Toton, Nottingham Send s.a.e. for Schedule to—Mr. R. Smullen, 9 Festival Avenue, Breaston, Derby, DE7 3DH.

**28th 29th August:** Gt. Yarmouth and District A.S. Tropical and Cold water Fish to be held at Hapton New Village Hall (on A12 between Gt. Yarmouth and Lowestoft).

**28th August:** Northern Goldfish P.S. First Show at St. James Church Hall, Bolton.

**29th August (Bank Holiday):** Southport A.S. Open Show at "The Oak Leaf Hall" British Legion Club, Whitehouse Lane, Formby, Nr. Southport.

**4th September:** Castleford A.S. Open Show at the Civic Centre, Castleford. Schedules and information can be obtained from show secretary, F. Holmes, 48 Elmets Road, Ferry Fryston, Castleford, Yorks. Tel: Castleford 559485.

**4th September:** Bridgewater A.S. Second Open Show will be held at St. Georges Community Centre. Details from Show Secretary, D. Hilton, 31 Portland Road, Worsley. Tel: 061-790 8106.

**4th September:** Wellingborough Open Show (F.B.A.S.). Venue: Weavers Sport Centre. Show Secretary, A. J. Crew, 67 Swinburne Road, Wellingborough, Northants. Tel: Wellingborough 77131.

**4th September:** Hoylake A.S. Open Show. Venue to be announced later. Secretary, G. Robinson, 24 Heathmoor Road, Moreton, Wirral, Merseyside L46 7UN.

**10th September:** Hounslow and District A.S. Annual Open Show to be held at the Youth Centre, Cecil Road, Hounslow, Middlesex.

**10th September:** Kingston and District A.S. Open Show at The Sutton Adult School and Institute, Benhill Avenue, Sutton, Surrey. Schedules Mr. B. Lough, 315 Ewell Road, Tolworth Surrey.

**11th September:** Harlow A.S. Open Show at Moor Hall, The Stow, Harlow.

**11th September:** Longridge and District A.S. first Open Show at Longridge Civic Hall, Willows Park Lane, Longridge, Preston, Lancs. (15 minutes from the M6). Details available later.

**11th September:** Mid-Cornwall Aquarist Society First Open Show at All Saints Church Hall, Falmouth. Show Schedules available nearer the date from Show Secretary Mrs. M. Hall, 15 Tukes Close, Falmouth, Cornwall.

**17th September:** Bristol A.S. Open Coldwater Show at Bishopston Parish Hall, Gloucester Road. Schedules from Show Secretary, E. N. Bowden, 15 Inns Court Green, Bristol BS4 1TX.

**18th September:** Whitby and District A.S. Annual Open Show at the Spar Pavilion, Whitby. More details at a later date.

**18th September:** Barnsley Tropical Fish Society Open Show. Mappletwell and Staincross Village Hall, Darton Lane, Mappletwell, nr. Barnsley. Further details from T. Busfield, 31 Coniston Road, Barnsley S71 1EL.

**18th September:** West Cumberland A.C. Open Show Venue: The Calder Club, Mirehouse, Whitehaven, Cumbria.

**18th September:** Hastings and St. Leonards A.S. Open Show. Schedules from: Mr. C. Panell, 148 Linley Drive, Hastings, East Sussex TN34 2BY.

**18th September:** Wythenshawe and District A.S. Third Annual Open Show to be held at the Forum, Civic Centre, Wythenshawe, Manchester. Details available from Show Secretary, D. Carr, 7 Penarth Road, Manchester 22.

**20th September:** Aireborough and District A.S. Autumn Mini Show at Greenacres Hall, New Road Side, Rawdon, Nr. Leeds. Schedules from G. E. Cuff, 31 Oakdale Drive,



Bradford, W. Yorks. BD10 0JF. Tel: Bradford 632424.

**25th September:** Atlantis Fishkeeping Society First Open Show at the Aintree Institute, Black Bull, Aintree, Liverpool. Schedules will be available later.

**25th September:** Chesterfield and District A.S. Annual Open Show will be held at Clay Cross Social Centre.

**1st October:** The Ichiban Ranchu Society National Ranchu Open Show, Seymour Hall, Seymour Place, Westminster. S.A.E. for schedule to Mr. F. Hilton, 5 Woolmers Mead, Pleshey (Show Secretary) or ring for details Bishop's Stortford 870395. There will be six classes, with Engraved cups for 1st, 2nd and 3rd, plus Award Cards and Specials.

**2nd October:** David Brown A.S. First Open Show, to be held at Paddock Village Hall Church Street, Paddock, Nr. Huddersfield. There will be 32 classes, in 12 sections. For further details send S.A.E. to A. G. Copp, 41 Keldgate, Bradley, Huddersfield, West Yorkshire.

**2nd October:** Ealing and District A.S. Open Show. Venue to be announced.

**2nd October:** Newbury and District A.S. Open Show to be held at the Corn Exchange, Newbury, Berkshire. Show Secretary, Mrs. Shirley Canning, 6 South End, Cold Ath,

Newbury, Berkshire. Tel: Thatcham (0635) 64254.

**8th October:** Goldfish Society Great Britain Open Show is to be held at Raynes Park, Wimbledon of Show schedules available from Mr. G. Herring, 94 Penwith Road, London S.W.18.

**9th October:** A.A. Jones and Shipman Aquarist and Pond Society's Second Open Show, 5p entry, trade stands, exhibitions etc. Schedules will be available from M. D. Brainbridge, c/o A.A. Jones and Shipman Ltd., Narborough Road South, Leicester in July.

**15th October:** East London Aquarist & Pondkeepers Association Annual Open Breeders Show, at Ripple Road School, Ripple Road, Barking, Essex. Schedules available from T. Waller, 1 Sparsholt Road, Barking, Essex.

**16th October:** North Wilts A.S. First Open Show to be held at the Mechanic's Institute, Emlyn Square Swindon Wilts. Schedules from Q. Curtis, 80 Beech Avenue, Pinchurst, Swindon Wilts. Tel: Swindon 32920.

**16th October:** North Wilts First Open Show at Swindon. Details later.

**16th October:** Torbay A.S. Open Show at the Torbay Chalet Hotel, Marldon, Paignton. Details from J. Davis, 23 Haldon Road, Torquay.

**22nd 23rd October:** British Aquarists'

Festival Belle Vue Zoological Gardens, Manchester. Further details shortly.

**23rd October:** Huddersfield T.F.S. (at present provisional date).

**29th October:** Doncaster and District A.S. Open Show at Carcroft Welfare Hall, Chestnut Avenue, Carcroft Nr. Doncaster Yorks. Details from Show Secretary, Mr. K. Lancashire, 20 Symes Gardens, Cantley, Doncaster.

**6th November:** Halifax A.S. Open Show at the Forest Cottage Community Centre Countess Lane, Illingworth, Halifax. Schedules sent only on request. S.A.E. to: D. Shields "Cobblestones" Gaimet, King Cross, Halifax, HX2 7DT, or Ring for details Halifax 60116.

**6th November:** Blackburn Aquarist Waterlife Society Open Show. Venue at a later date. Secretary, Mrs. Jean Wolstenholme, 39 George Street, Great Harwood, nr. Blackburn BB5 7JE.

**13th November:** Bradford and District A.S. Open Show at Tezzie Hall, Westgate, Bradford. Details are available from the show secretary, J. Cornforth, 15 Weymouth Avenue, Allerton, Bradford. Telephone: Bradford 493165.

**19th November:** Goldfish Society of Great Britain, General Meeting, 2.30 p.m., Small Hall, Conway Hall, Red Lion Square, Holborn, London, WC2.

Another date for your diary

## YORKSHIRE AQUARIST FESTIVAL

DONCASTER RACECOURSE—AUGUST 20th-21st 1977

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