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# AQUARIST

AND FISHKEEPER

*The Magazine for Fishkeepers*



*In this issue:*

**A Voracious Toothcarp**

**The Pearl Danio**

# THE AQUARIST AND PONDKEEPER

Britain's Leading Magazine for Fishkeeping

Published Monthly 70p

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The Editor accepts no  
responsibility for views expressed  
by contributors

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## WHAT IS YOUR OPINION?



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

"I WAS GLAD to see that the printer's gremlins had been dealt with and that your photographs had the right captions in June's *W.Y.O?*—with the exception of one, that is. The picture of *Apistogramma borelli* shows the wrong fish. Since this fish has featured in your column several times before I thought I ought to put things straight.

"I did write to the Editor about this after a previous article. The letter was due to be published but I guess there just wasn't any space for it. To save writing the whole thing out again I enclose a photocopy of my original letter (dated 11th November 1981). I hope this is of use to you. They spawn very readily but as yet mine have produced no fry. Just for the record, I bought my fish *A. trifasciatum*. I was not pleased when I found out what I'd really got. They are readily available in England, probably reflecting the ease with which they are bred. Here's to the next *W.Y.O?*" These comments, and the following letter, which I had not seen previously, were written by Mr. Ian G. Watson, of 11 Wavell Road, Maidenhead, Berks., SL6 5AB. The following is a copy of

the original letter he sent to our Editor in November 1981.

"The article in November's *Aquarist* on *Apistogramma borelli* (by Rudolph Zukal) was interesting but contained some mistakes. Firstly, the fish pictured was not *A. borelli* (Regan 1906)—note spelling—but was almost certainly *A. cacatuoides* (Hoedeman 1951). This confusion seems to have had a long history in popular literature. Regan (1906) makes no mention of the extended dorsal fin lappets in his description, nor of the lyre-shaped caudal fin characteristic of *A. cacatuoides* males. The problem has been resolved by Kullander (1980). *A. borelli*, is a commonly imported species, its most usual synonym being *A. reitzigi* (Ahl 1939). This fish has been known for some time, but it has taken until now for it to be named correctly.

"*A. cacatuoides* was reported by Hoedeman (1951) to come from 'near Paramaribo, in Dutch Guiana'. Kullander (1980) corrects this. *A. cacatuoides* has never been found in Surinam and the mistake seems to have been due to the type specimens being wrongly re-labelled. Its precise distribution is uncertain, but it occurs in the Peruvian Amazon.

"Hoedeman (1951) recommends keeping *A. cacatuoides* in 'neutral or slightly alkaline—pH 7 to 7.5—not

hard (titrated hardness less than 2)' water. This is important for the successful breeding. Eggs hatched in acid water tend to give predominantly male fry. Those hatched in neutral water give an equal balance between males and females. The problem was discussed at the recent British Cichlid Association Convention. All those who had solved it did so by changing to neutral to slightly alkaline water. I had assumed that *Apistogramma* were uniform in their demand for acid water, but it seems that this is not so.

"References: Hoedeman, J. J. (1951) Notes on the fishes of the cichlid family I. *Apistogramma cacatuoides* sp.n. *Beaufortia* (4): 1-4. Kullander, S.O. (1980) *A taxonomical study of the genus Apistogramma; Regan, with a revision of Brazilian and Peruvian species (Teleostei: Percoidae: Cichlidae)*. *Donn. Zool. Monogr.* 14: 152pp. Regan, G. T. (1906) *A revision of the South American cichlid genera Retroculus, Geophagus, Heterogramma and Biottoeca*. *Ann. Mag. Nat. Hist.* (7), 17: 49-66."

Thank you very much, Mr. Watson, for pointing out what would appear to have been incorrectly identified fish. I'm always pleased when readers can help me identify species which I cannot name; or when they can help me by correcting any errors that I

Male *Apistogramma cacatuoides*





Female *Apistogramma cacatuoides*

make. Some years ago I first published the picture of the *Apistogramma* species that appeared in my June column and at that time I asked if any readers could identify the species for me from the photograph. A letter from a reader informed me that the fish was *A. borelli*. The spelling *A. borelli* is used in the Federation of British Aquatic Societies' *A Dictionary of Proper and Common Names of Freshwater Fishes*, National Booklet No. 9, a lot of work on which was done by my friend Dick Mills. I find the book invaluable and use it frequently to check names and spellings. The spelling *A. borelli* is also used by Mr. Rudolph Zukal in his article, *A small and peaceable Cichlid*, in the November 1981 issue. Your comment: "... *A. borelli* ... note spelling ..." suggests that we've all got it wrong. In the F.B.A.S. *Dictionary* *A. borelli* is given the common names Borell's dwarf cichlid and the umbrella cichlid. *A. cacatuoides* is named as the cockatoo dwarf cichlid; and *A. reitzigi* as the yellow dwarf cichlid and Reitzig's dwarf cichlid.

Photograph 1 shows a male *Apistogramma cacatuoides*, and photograph 2 a female—according to the classification passed on to us by Mr. Ian G. Watson. Have you kept and bred this species—and if so under what name was it sold to you?

Mr. F. D. J. Hockey resides at 15 Ainsdale Avenue, Blackpool, Lancs.

He writes: "*Chaona anatica*. As I have never read about this species I thought it well worth my time to pop some words down about this graceful and lovely fish. I first saw my two snakeheads at my dealer's; he is a great friend of mine. I went home and the fish were on my mind so I rang up my friend and asked him not to sell the fish—which were 8 in. long. The following day I cleared out a 48 in.  $\times$  15 in.  $\times$  15 in. tank and put 1 in. of medium gravel on the base. I set *Vallisneria* all along the back and put some duckweed to float on the top. The temperature of the water was 80°F. and the depth 14 in.

"I fetched the fish home and installed them. It took a week before they settled in. Now they take any food which moves. I feed 8 in. garden worms chopped in three pieces; or any fish past its best and up to 2 in. in length. Their tank is the farthest away in my fish house. On 22nd June I was cleaning the glass and the male fish grabbed my scraper in his mouth. I was surprised because many times he allowed me to arrange plants with my hands. I looked in the tank from the front and there was a wriggling mass of fry in the duckweed. I got a net and took out about three hundred, putting them in an 18 in.  $\times$  10 in.

$\times$  10 in. tank which I hurriedly set up with old aquarium water, with a little duckweed on top. They all bunched up together in the duckweed. Now and again one would swim round but always return to the main mass. The parents, by that time, were shepherding the few babies I had left with them. The male bit me as I took out his babies. I did not feel it, in my excitement, but he drew blood. This endears him to me for his caring way of looking after his brood.

"I put a little dust food on the surface of the water and set up a battery of brine shrimps for them. Now is the time to see the snakehead parents at their best—all fins fully stretched, their colours intensified as they patrol up and down keeping the babies together. They do mouth the youngsters if they wander too far but any close to the nest are nudged back. They really show extreme gentleness. My family love them and they even dig for their worms."

He goes on to say that he has bred a large number of different species recently—including 11 different killies. "What a glorious early retirement I am having. I will keep you informed of the progress of the young snakeheads," he concludes. (I hope I have copied this reader's name correctly; and I hope he has a long, healthy, happy and active retirement. B.W.)

Photograph 3 shows some attractive, female guppies amidst plants of *Hydrocotyle* and dwarf chain-swords; and photograph 4 shows a fancy, male guppy. Please send me details of your successes in raising a strain of good-quality guppies. They retain their challenge—and attraction—for me.

I'm always pleased to receive letters from readers who live in any part of the world—but especially from those who live in Northern Ireland because I normally receive very few from that country. Mr. Ian McMahon, of 71 Lagan Walk, Old Warren, Lisburn, Co. Antrim, N. Ireland is an aquarist



Female guppies, *Hydrocotyle* and dwarf chain swords

who writes: "I'd like to pass on some information which was given to me by my dealer. I'll write it as it happened. Just over a year ago I resumed fishkeeping after a break of 10 years. I re-started with marines; and contrary to what one reader wrote in *W.Y.O.*, marines are not easy and inexpensive. I bought a Hawaiian angel at £43.00. It was beautiful. The thing died the next day! However, I'd been having considerable problems with my pH—so I consulted my patient dealer. All the causes and cures were discussed and tried. My dealer told me that he thought the water-boards were adding chemicals to the water; but he wasn't sure what. Someone told him that a chemical is added to the Ulster water to kill leeches' eggs. This was said to have happened around Crumlin and also somewhere in Wales.

"Thinking I could be onto something I wrote to my M.P., who wrote to the gentleman who is in charge of the D.O.E. here. In the latter's reply he stated that apart from 'normal' chemicals used, nothing is added; and if anything will be added the public will be informed. The normal chemicals

used are chlorine, fluoride and bluestone. Bluestone, it turns out, is copper sulphate ( $CuSO_4$ ), a chemical which can be lethal to fish. My dealer was telling me that there has been a number of wipe-outs; no reason could be found. Is there a connection?

"In January this year I changed back to freshwater tropicals, a move I do not regret. Incidentally, I watched a programme on TV which showed marine clownfish being bred in America specifically to be put into the coral reefs of the oceans to replace those taken for aquarists. Apart from a severe case of *Oodinium*, and a battle with thread or blanket algae, I hope I've now got things running smoothly. By the way, years ago I bought a super siphon; but the manufacturer went out of business. I got a siphon from Halfords—car people—and it cost £1.90. It has a narrow tube. Just pull this off, get an Algarde extension uplift tube for their U/G filter, and it is a perfect fit. If this isn't long enough get a standard Algarde uplift and glue it to the extension. It is invaluable to me.

"Two weeks ago I was talking to my dealer. He told me that someone who works for the water-

board had a good talk with him in his aquarium shop. He said that the water board uses, 'as it thinks fit', 16 chemicals in the water supply. My dealer showed this man a packet of marine salt with the ingredients printed on the packet. The chemicals used by the water-board will react with 14 of the salt ingredients. I asked my dealer if the information was sound and, if I can put it this way, if the man was reliable. 'Very much, yes,' was the answer. Personally, I believe it. What can be done? I think it would take someone from the press or TV to investigate this, to nose around.

"As I said, I started freshwater in January. I've had honey and dwarf gouramies spawn within one week in a community tank. My *Ancistrus* sucker catfish have spawned. Yesterday, in a last bid to beat the algae, I completely stripped the tank and replaced all water and plants. I had the lot finished when, in 20 minutes, the angels spawned. As the female laid the eggs, the male ate them. . . ."

Please send me details if you have successfully grown either of the plant species shown in Photograph 3.

The next letter comes from a younger reader—and I'm always pleased to let young aquarists express their views in this feature. Master Richard Bosworth's home is at 7 Meadow Park, Irwell Vale, Ramsbottom, Lancashire, BL0 0QB, and he writes: "I am a 14-year-old schoolboy from Lancashire and have been interested in the hobby for about 12 months. I am a member of Accrington and District Aquarists' Society and have started to show an interest in showing my fish.

"I have two 24 in. × 12 in. × 12 in. tanks, one 48 in. × 12 in. × 12 in. tank, upstairs in my bedroom, and one 48 in. × 12 in. × 15 in. tank in the lounge—while it is part of my hobby to me, it is a piece of furniture to my parents. We have recently invested in a pond in the back garden. I am mainly interested in coldwater fish. The

tank upstairs is empty because the fish are in the pond. The tank in the lounge is a tropical, community tank.

"Recently I was given a pile of *Aquarist* magazines dating from early 1980 to late 1981. I was cutting out interesting articles and I came across a *Meet the Aquarist* article on Robert Robinson, aged 14—in the August 1981 issue, if I remember correctly." (July 1981, Richard, B.W.) Richard continues: "I was really pleased to see that *The Aquarist* was including the younger aquarists in the magazine. I think that if you could feature a few more younger aquarists in the magazine, it would make the hobby more exciting and interesting to them. Keep up the interesting article!"

(I'm glad you enjoyed the *Meet the Aquarist* feature I wrote about young Robert Robinson. I encouraged Robert to try to write a few articles for the magazine, under the *Junior Aquarist* heading, to encourage teenage readers. His first article appeared to get lost; his second was accepted by the Editor but has yet to appear in print; and his third was rejected. I think he has abandoned further plans to write about the hobby; however, I managed to obtain permission for Robert and some of his fourth year and second year school friends to be allowed to attempt G.C.E. 'O' level English language in the June examinations despite their being entered three years and one year early, respectively. I hope they'll be successful when the 'O' level results are published in August. B.W.)

Please do write again, Richard; and I should also be pleased to hear from any

Fancy male guppy



other young readers of *The Aquarist*. Your views are often refreshing.

It was encouraging to see *W.Y.O?* receiving some praise in the *You & Us* competition letters in the June and July issues. The £10.00 prize winner in the June issue wrote: "... Articles like *W.Y.O?* are great for finding out what other aquarists are doing and thinking, too. Such articles are to be encouraged..." The writer was Mr. Paul Mansfield, of Wickford, Essex. In the July *You & Us* competition Mr. G. W. Temperley, of Co. Durham, wrote: "... My favourite article is *W.Y.O?* because it gives the views of people like myself, ordinary aquarists, not experts..." It was interesting to see that he also wanted a "... For Sale and Wanted or Swap Column ..." and a "... Junior section for fishkeepers of the future..." I'm always pleased to include wanted or swap items in this feature. I didn't see any of the *You & Us* letters other than those published but I'm sure they made interesting reading; however, your monthly letters help to keep me in touch with readers' news, views and opinions.

I should like to make the point that I accept no responsibility for the views expressed by contributors to this feature; and I do not necessarily agree with the views and opinions expressed by those whose letters are published.

"I am writing to you about fish farms," states Mr. Tim Share, of 487 Sutton Road, Walsall, West Midlands. He continues: "This is an aspect of the hobby in which I am particularly interested and know a lot about. As you live in Northern Ireland I don't know if much fish farming goes on there (a fair amount does—B.W.) and it is a little too far for me to travel to find out. I can say in all certainty that on the mainland this little industry is rapidly expanding. I have considered writing a piece for you on a number of occasions; however I decided not to as I did not have sufficient knowledge about the subject. My knowledge has since

been steadily collected and this is now a subject I am capable of writing about. The item is only a few paragraphs long as I have shortened it as much as possible. This padded out version has been printed in two, local club newsletters and has interested an enormous number of people—many of whom suggested I sent it to you; so when I saw you wanted information about fish farms I shortened it down and here it is.

"Article. At the moment numerous fish farms are opening up in various parts of the British Isles, and many of them are near large centres of population. This gives people in large cities and towns the chance to go to get fresh fish—which they can usually pick themselves from a tank. Usually the public only see the large vats in which the rainbow trout ready for sale are kept. Here are the fish of about a pound in weight which are usually about one year old.

"The trout are grown up in big concrete pools where they grow at a rapid rate, having both space and food in abundance. When a pool of about 500 young trout has food added it is truly an amazing sight as all the fish rise to break the surface, for their food almost at once. When the fish are in these large, horseshoe-type tanks oxygen is the biggest problem of all. The fish are cramped and very overcrowded. This means there is a general lack of oxygen. The problem in most cases is a spray bar. This is a tube across the tank with numerous, tiny holes in it. The water shoots through these holes at a very high pressure."

Unfortunately time has beaten me this month—as has ill health. Please send me your opinions on any of the following for a future feature: (a) breeding dwarf cichlids; (b) cultivating *Bacopa*; (c) breeding killifish; (d) terrapins; (e) ponds in summer; (f) breeding small tetras; and (g) getting good plant growth in tropical aquaria.

I hope you'll write to me. Goodbye until next month.

## Your questions answered...

### Tropical

#### about breeding . . .

Can you send me some information on breeding fish?

To begin with I suggest that you have a look at one of the encyclopaedia-type books on fishkeeping. "The Complete Aquarium Encyclopaedia of Tropical Freshwater Fish" edited by J. D. van Ramshorst (Phaidon, about £13.00) is very good. Since it is expensive, perhaps you should borrow it from a local library. However, "Know How to Breed Tropical Fish" by R. Haas (Pet Library) is also very good—and much cheaper at around £3.00.

#### worries over . . .

I am worried about leaving my fish when I go on holidays for two weeks. Can you give me any hints?

So long as you have cared for your fish correctly for most of the year, they will easily survive your two week absence. There is a book available called "Your Aquarium, Your Vacation, Your Relocation" by S. Dow (T.F.H.) which may be useful.

I suggest that you leave your filter/air-stone running for the duration of your absence, but turn the lights off. Feed and care for your fish as normal as your holiday approaches and carry out a 25-30% water change a few days before you leave.

There is no need to feed your fish while you are away—just get a neighbour to check that the pump is still working, that the tank is not leaking, etc., every few days. Leaving the telephone number of a reliable aquarist friend is probably a good idea too.

#### unusual fish . . .

Can you give me some information on the care of the butterfly fish, *Pantodon*?

*Pantodon* is not too difficult to care for. Provide soft, slightly acid water, at a temperature between 25-30°C. A large aquarium is best, with some floating plants or rooted plants whose leaves extend over the surface of the water. This fish is most active at twilight; feed on all manner of live food (it will even eat small fish!).

#### water quality . . .

The tap water in my area is rather soft and many of my livebearers (which I specialise in) do not seem to like it. Can you offer any suggestions?

In the short-term I suggest that you add some aquarium, cooking or marine salt to your tanks—about one tablespoon to each 10 litres. Then you might like to investigate the various methods by which water can be made harder and more alkaline. Adding limestone rocks to the tank is one way, but I suggest you have a look at "Aquarium Water Quality" by R. Geisler (T.F.H.).

#### kribensis . . .

At what age can my *Kribensis* fry be removed from the parent fish, and at what age does labyrinth organ of dwarf gouramies form?

You can remove your *Kribensis* fry from the tank containing the parents at almost any time, but I would suggest waiting until they start feeding on dried food. The Labyrinth organ of anabantoids takes a few days to weeks to form, and it is for this reason that the air above the aquarium should be kept warm and humid during the early life of these fish. C.A.

### TROPICAL



Dr. C. Andrews

### COLDWATER



Arthur Boarder

### Coldwater

#### mixing . . .

I have a tank of obvious tropical fishes and four coldwater tanks containing Moors, Lionheads, Veltails, Orandas and Fantails. Would it be possible to mix the tropicals with the coldwater fishes? Would it spoil the colour of the goldfish varieties and interfere with their breeding habits?

It would be possible to mix these fishes but not advisable. Most of your tropicals are small types and will not grow any larger whilst the goldfish types can grow quite large. Once the coldwater types are put in warm water they will grow much faster than they would have done in cooler water. Goldfish varieties kept in water at a temperature of between 70°F and 75°F, will grow twice as fast as when they were in water of 55°F to 60°F. As for losing colour, the one fish which I think could lose colour in warmer water is the Moor. This fish could lose its sooty blackness. As for breeding, the warmer water could bring on the goldfish varieties to spawn more quickly than when in cooler water. I do not like to see large fishes in tanks with much smaller ones, they never look right and there could be bullying at feeding times.

#### algae . . .

I have a coldwater tank 24 in. x 12 in. x 12 in., and my problem is the growth of brown Algae. How can I cure this? The tank is in a passage with a strip light over it.

**PLANTS**

Vivian De Thabrow

**KOI**

Hilda Allen

**MARINE**

Richard Sankey

**DISCUS**

Eberhard Schulze

Our experts are always pleased to receive your letters which should be addressed to: Readers Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex TW8 8BN. All queries must be accompanied by a S.A.E.

Although lack of light is usually the main cause of the formation of brown Algae, there are other factors which must be considered. The lack of sufficient oxygenating plants is an important factor; the number of fishes and the amount of food given can also have an important effect. Try changing the light to a filament type and keep it on for twelve hours a day. Cut down on the feeding as this can affect the state of the water. If any food remains uneaten then this can upset the condition of the water. Add more oxygenating plants and cut down on dried foods. Many aquarists forget that coldwater fishes do not need as much food in cold weather than they do in warm water.

**toads . . .**

I am very keen on the preservation of toads and would like to breed some to be released when ready. Can you tell me where I can get some toad spawn? I already have some frogspawn in one of my ponds.

You can find the spawn in stagnant ponds or canals. You could perhaps get some boys to collect some for you. However, it is not as easy to find as frog spawn, as this usually floats to the surface. Toad spawn is laid in a double row, similar to two rows of pearls. This is always laid down low in the water around the stems of reeds, etc., and so is not easy to see. The best method would be to get toads before they have spawned and put them in your pond. Once a pair have joined up they rarely leave the water until they have spawned. I have found that in the majority of breeding times the

toads have paired up before they reach the water, whereas with frogs I have found that most of them pair after entering the water. If you want to rear some frogs in one of your ponds you must realise that fishes will eat frog tadpoles avidly and so you must raise the tadpoles away from fishes.

**breeding . . .**

I have a garden pond, 10 ft. x 8 ft. and 2 ft. deep. In it I have a mixed collection of fishes of the goldfish varieties, including common goldfish, shubunkins, fantails, veiltails and moors. My question is: if they breed will the offspring be mixed or will the individual varieties breed with one another?

All your fishes can breed with any other variety, as they are all types of goldfish of the same species. If you require any particular pair to breed you will have to separate them from the others. Once a female starts to spawn in a pond, most of the male fishes of any variety, will join in the chase and it is possible to get many cross-breeds of little value as a result.



Veiltail Goldfish during spawning chase

**filter material . . .**

I have a pond with Koi and would like to know if fibre glass would be suitable to put in a filter?

I would not think that this would be of much use as it is too smooth. Get some proper filtering material as advertised and over this some granulated charcoal, topped up with fine gravel should be all right.

**young platies . . .**

I have a 4 ft. tank which is kept at about 70°F., and have various varieties of goldfish and also a few platies. When cleaning the tank recently I found some tiny fish. Do you think they are young platies?

I think that the young fishes are young platies as these fishes are live-bearers and so the young fishes would have a better chance of surviving than would fry from the other fishes in the tank which are all egg-layers. The eggs would stand little chance of hatching before being eaten. **A.B.**

**Plants****tank set-up . . .**

I'm going to set up a 36 in. x 12 in. x 15 in. all-glass tank using under-gravel filters with 1 in. layer of gravel, 1 in. of Irish peat moss, with a final layer of 2 in. of gravel. Can I put the peat in something, as my Sucker Loach tends to dig deep holes. What light do I want? At present it is lit with a 2 ft. 20 watt warm white tube. How high above the gravel do the air-lift tubes



need to be? I'd like to cut them to hide them better.

Your idea of sandwiching a layer of peat is good. If you find the digging up of the peat by your Sucking Loach is causing you problems, here is what to do: put the peat in a casing of muslin. An old nylon stocking with a thicker mesh would do. Then place this on the tank bottom and cover it with a layer of gravel/sand. Lighting by a 2 x 20 watt warm white tube should be kept on for up to 10 hours per day. This sort of lighting should be satisfactory. The air-lift tubes should reach just above the upper water level for efficient aeration. If you want to hide them, the best way to do this would be by planting some tall-growing bushy plants in front of them.

### **Filtration? . . .**

I am going to set up a new aquarium, which I intend to try and maintain without the aid of filtration of any sort, relying solely on partial water changes, but other literature states this does not work, as over a period of time the substrate will foul up and kill both fish and plants. What is your opinion?

Plants in an aquarium do not require filtration at all, provided all their requirements are met, such as good lighting, suitable planting medium and water condition, etc. Check any algae growth and do partial water changes as necessary. A certain amount of debris can be useful as a fertiliser for the plants, but any excess amounts should be siphoned off before it upsets the biochemical balance of the tank. Hardy fish should survive and flourish in a well-planted tank using the system you are proposing, provided you don't overstock the tank or overfeed them, both of which would cause problems and quickly pollute the water. However, more delicate species may require a certain amount of filtration, and you should consult your fish dealer on this point. My own tanks have no filtration at present, though certain plant species require aeration. **V.T.**

## **Koi**

### **blanket weed . . .**

Last year I was plagued by a drastic increase in the blanket-weed in my pond which I had to remove daily as it floated to the top, otherwise by next morning it had sunk to the bottom and the koi stirred the whole lot up again in searching for food. Even after the coldest part of the winter I noticed the algae and blanket-weed still thriving and dread the summer. Is there any answer to this problem?

Your letter is typical of a number received on this subject and with which I have a lot of sympathy. Some of the more long-standing keepers of koi now have large, active fish which create their own special problems. I think many of us started with collections of goldfish, shubunkins and orfe to which were added small koi as they became available during the late 1960s; ponds were usually planted and all the fish were quite compatible. Most people enjoy seeing their fish grow as a sign that the food is both suitable and adequate. No fish have the growth potential of koi and so the problems start. Plants which provided useful shade are decimated to pathetic remnants by the activities of large robust fish and being carp, koi love to grub and sift through everything, including what used to be politely referred to as "settled mulm" which is then anything but settled; and any soil in planting baskets receives their constant attention. When lilies, etc, lose the battle, then obviously the effect of shade to inhibit the growth of all forms of algae is seriously reduced.

Most koi-keepers try to keep the pond floor as clean as possible in order to reduce the amount of ooze, which at the same time could provide sustenance for plants but also obscure their koi in cloudy water through their aforementioned delight in "stirring." Thus, a situation is created which is ideal for a dense growth of blanket-weed—which in the past has driven me to distraction.

I have never been a great believer in

the clinically clean ponds and water achieved by some enthusiasts, but excess algae and blanket-weed by the yard is a major nuisance to many during the warmer months when we should all be enjoying our koi-keeping.

There are a number of algicides available, some detergent-based and some mercury-based. They are usually short-term in their effect and quite expensive in relation to large volumes of water in koi-ponds.

By Spring 1981 I was dreading the return of the familiar masses of blanket-weed, but by then I had managed to obtain an aquatic weed-killer which is safe for fish and other water wildlife if used as directed. The product controls a broad range of weeds to various degrees and blanket-weed is fully susceptible as I had the pleasure of proving during last summer.

It was not without some trepidation that I added the herbicide to the pond and my beloved koi as I have the greatest reservations about the introduction of chemicals into ponds full of fish. However, the koi were in no way affected but the blanket-weed stopped growing and after 2-3 weeks there were more obvious signs of death.

I also proved that it is very detrimental to water-lilies and oxygenators and marginals would be similarly affected.

Heavy rainfall and water-changing will determine the period of control and will vary from pond to pond according to the quantity of blanket-weed also.

It is unfortunate that the product is sold in 10 kg sacks only at an approximate cost of £30 plus VAT, but if it can be shared it is well worth the outlay. It is safe for koi and it does control blanket-weed; I have sent you the name and it is available through Corn and Agricultural Merchants. Needless to say, it should be used only as directed on the leaflet and, like all chemicals should be stored in a safe well away from children and pets.

**H.A.**

## **Marine**

### **advice please . . .**

I am about to set up a marine

aquarium, 52 in. x 24 in. x 24 in., using the conventional U/G filter system.

I would be very grateful if you would give me some advice by answering some questions.

Could you describe the best method and materials to use to make an U/G filter.

What is the best type of gravel to use with this filter?

Which pump/pumps will provide the required 9 gal./min. turnover for my particular tank?

Could you give some advice on a lighting system for this aquarium. I do not intend to keep invertebrates.

First, let me say that the size of aquarium you are setting up is ideally suitable for a marine aquarium. There are so many ways of setting up such an aquarium but it would be impossible to outline them all in one brief letter. For this reason I always advise people that write to me on such matters, to travel around to several aquarium shops until they find a good shop that they feel confident about, and that the advice they are getting is sound. I personally believe that a conventional undergravel filter on its own is inadequate as a means of filtering, particularly for the larger size aquarium such as yours. However, if you are determined to use the undergravel filter, which I might add is virtually the least inexpensive method, then please consider in the long term the addition of some form of protein skimming and additional mechanical filtration; again a good shopkeeper will advise you on this matter.

As regards the media to use in your sub-gravel filter, there are many products on the market and I have used for many years algal Oolitic coral sand, which has the ability to "use" large numbers of the important bacteria that will establish your bio-filtration, with reference to the volume of water that you wish to turnover. We ourselves market a series of water pumps and filter equipment manufactured by a Company in Germany, Messrs. Tunze Aquarientechnik. They have two water pumps within their range that would cover your requirements. The Turbelle 2002 and

the Turbelle 4002 pumping 2000 litres and 4000 litres an hour respectively.

However, I am sure that there are others on the market that can give you the same performance, but here again a shopkeeper would be better suited to giving you specifications on the particular subject. Finally, regarding lighting, I am a firm believer in the use of blue end of the spectrum light sources rather than the red end. As your aquarium is quite deep I suggest the use of three 4 ft. fluorescent tubes of either north light, tropical day light, cold light, true light and if at all possible the addition of one tungsten 250 watt spot lamp which should be run for 3-4 hours a day only.

R.S.

## Discus

### on holiday . . .

I will be going away on holiday later in the year for just over 2 weeks and wonder whether I can leave my Discus fish without any food during this time. It would be very difficult to arrange for someone to come and look after my tank and feed the Discus fish while I am gone. Also, would it be better to have the lights on or off during this time?

If your Discus fish are no longer babies but young adults or fully grown specimens and have been well cared for and free from disease during the past months, I can assure you that you can leave them without any food for 2 weeks or so and still find them alive on your return. However, you might notice that they seem somewhat 'slimmer' but probably, this will not be a bad thing, since most Discus fish, almost like human beings, are somewhat overweight. It is said, that an overweight Discus fish will need all his body oxygen to cope with the excess food/fat instead of using the body oxygen to produce eggs/sperm. These fish usually make bad breeders and a diet can often be a good thing.

Fully grown wild caught Discus fish are sometimes very difficult to start to feed on any kind of food and

will often go without for a very long time. The longest time I have ever experienced Discus refusing to accept any kind of food was about 6 weeks. This means, of course, that these fish were practically without any kind of food for maybe 8 to 9 weeks, while they were being transported from the river/lake to a collecting station/shipping point and then to Europe. One must remember, of course, that they were wild fish and any Discus raised in their natural habitat seem much stronger fish and keep going far longer than a tank-raised specimen which would, after only half the time, look very emaciated.

If your Discus fish are still comparatively small then I feel that you have to find someone to watch over and feed them at least 2 or 3 times a week. At the same time an eye could be kept on all the electrical pieces of equipment to see they operate properly. (Often much more important than a missed meal.)


If your friend is a Discus fish-keeper, no doubt, he or she will know what to do. If not, make sure to prepare a selection of measured out portions of food and stress the importance of any 'uneaten' foods. It is much better to let a Discus fish go hungry than to allow food to be pumped into the aquarium by an inexperienced but well-meaning friend. You can also reduce the temperature of the water to about 78 to 80°F; this will slow down their metabolism, their food requirement would also be that much smaller and there could be that much less chance of uneaten foods polluting the water with all the unwelcome consequences.

As far as light is concerned, the easiest way out would be to install a time clock to regulate the day and night cycle. If you also keep a few Amazon Sword Plants or Crinum thalium Plants with your Discus fish to keep the water 'sweet' then you must either remove the plants or install a timeclock before you leave otherwise the lack of light or too much light would easily upset the balance of the aquarium.

Go and enjoy your holiday, your Discus fish will not die from lack of food!

E.S.

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## Coldwater Jottings

by Frank W. Orme

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SHORTLY after typing last month's column, when I mentioned the difficulty experienced by most amateur editors of society newsletters in obtaining contributions from their members, I received a copy of the Goldfish Society of Great Britain 'Bulletin' for May. For thirteen years this newsletter has been produced by Roger Whittington, ably assisted by his wife Pam; however, having retired from the editorship, they have now handed over to the Portsmouth Group of the Society. Although Tony Barnes, of 10 Lower Farlington Road, Farlington, Portsmouth, will be responsible for the receipt of contributions, the group will be responsible for the continued production of the bulletin. The editorial made the point that the co-operation of all members was needed, with large, informative reports from the officers of the Society, together with letters, comments and articles from members. Sharing the editing, production and posting will certainly ease the task, but copy will still be needed for, as the editorial remarks, the bulletin will only be as good as the material it receives.

### Whirling Disease

The bulletin which I received contained a report on the outbreak of Whirling Disease in Gloucestershire. This disease mainly affects trout, and earlier this year the Severn Trent Water Authority discovered the disease in the Midland area which it is responsible for. The trout were killed and then sold off to hotels and the public—who

were assured that the fish were quite safe for human consumption.

Whilst making my periodic visit to Hampshire, during last May, I took the opportunity to call in at Compton Acres. Compton Acres is actually in Dorset, quite near Poole, on the Canford Cliff road at Yaffle Hill, Broadstone and comprise six acres of ornamental gardens with many rare trees and shrubs. These gardens, although privately owned, are open to the public for a modest entrance fee and are well worth visiting. Each garden, and they include attractive woodland and a semi-tropical glen, rock and heather gardens, palm court, English, Italian, Japanese and Roman gardens, is a hidden self-contained unit separated by high banks or sunken paths, each being entirely different in design and character to the rest.

The great attraction, from my point of view, was that many were water gardens traditional to the country upon which the particular garden was based. For instance, the Italian garden is one of splendid formality with a large canal-type lake in which there is a good collection of waterlilies and goldfish. The lake is flanked by grass-bordered flower beds which, at the time of my visit, were a blaze of colour. At one end of the lake is a domed "Temple of Bacchus" with a Carrara marble sculpture of the "God of Wine" whilst at the opposite end is a terrace with carved stone seats and terracotta vases. Further on, a sandstone tunnel leads to a rock garden where a series of rustic

bridges cross the pools which contain waterlilies and carp. Two waterfalls cascade down from the top banks, to feed the pools, splashing over weirs and falls as the water passes from pool to pool to end in a chain of lakes at the bottom of a glen. Above the sandstone tunnel a winding stone-flagged path skirts goldfish pools, planted with waterlilies, water hawthorn and various other aquatic vegetation.

### Japanese Garden

The last garden is, in many respects, the most interesting; it is a Japanese water garden. A Japanese architect and workmen were employed, and they brought everything with them from Japan. The garden is reputed to be the only completely genuine Japanese garden in Europe, each stone and ornament and every detail of the design having a special traditional significance. Just inside the gate is a well, with a nearby lantern, and a "God of Punishment" who keeps away evil spirits. A flight of steps leads up to an authentic temple and this gives an excellent view of the sunken lake, cascade, stepping stones and bridges. The stepping stones prevent any evil spirits crossing the water. Steps descend to a Summer-house, and a Goddess who protects little children. Nearby is an iron-stone Buddha which is reputed to be three thousand years old! There is an imperial red Tea House, framed in Wistaria, and a bronze Torre gate embellished with two dragons attempting to reach the two pigeons perched above—this symbolises the constant attempt of evil to overcome good. There are two granite pagodas, several sacred red-crested cranes in bronze and, lurking in unexpected corners, a number of carved animals each with its own name and special significance. The trees, shrubs and other plants are mostly Japanese varieties. The only thing missing from this garden were the Koi. There was not a single Koi to be seen and this, I found, rather a disappointment. *Continued on page 35*

BEGINNERS often complain that the advice which they have read or listened to is inaccurate, and conclude that those who have given it don't know their stuff. I have some sympathy with this: it is quite wrong, when discussing matters of nature, to lay down hard and fast rules, and those who do so display their own immaturity and lack of authority. It is not a matter of disbelieving all you read, as a principle, but of reading the right stuff, and it is precisely this which this magazine seeks to present. I think it quite irresponsible to persuade readers into starry eyed ecstasy over some fish or another when I know perfectly well that whilst it is a popular selling line, it is nevertheless an absolute horror to live with. Many plants, too, are recommended so wholeheartedly that it is a wonder that dealers could in honesty ask more than a few pence for them, yet they drop their leaves and rot away within a day or so despite all our conscientious research.



#### Differing habits

Why all this variation? So far as fish are concerned, there are certain broad habits which characterise individual species, and some are therefore generally sociable or long lived, whilst others are fretful and perhaps aggres-

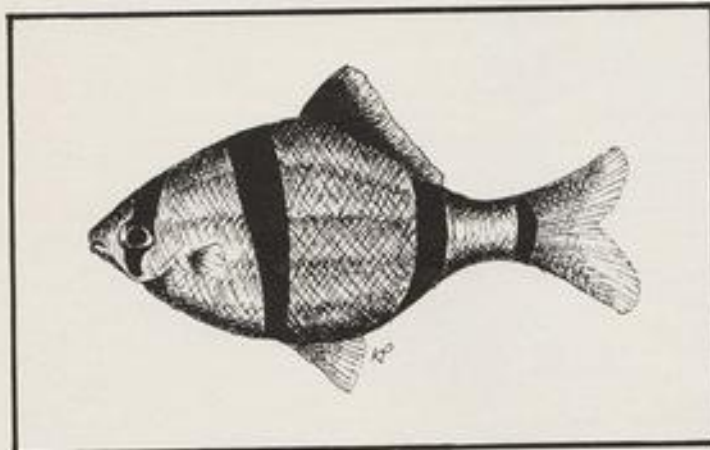
sive. On points like these the books will give fairly reliable information, but modern methods of intensive breeding bring about the development of local strains, and these can display features somewhat at odds with normal expectation. The more vigorous and successful the strain, the more likely are individual fish to be assertive—this is not necessarily a disadvantage if it stops short at combat, and can be a point in their favour if showing is planned. Another factor is the actual age of fish, for youngsters will often behave quite differently from mature specimens. This is nearly always true with cichlids, but hardly ever so in the case of the tetras. Trouble comes when someone writes that the barbs are peaceful excepting in the case of Tigers. The disbeliever then invests in a half dozen young of the species and then complains to the editor that the advice given was all wrong because this particular shoal behaves itself impeccably. One day, however, these fish suddenly come of age and all hell is let loose! But rarely does the editor then a get note beginning "Dear Sir... I was quite wrong..."

#### Other factors

A number of other factors, not as obvious, will also affect performance, such as water quality, light, diet and the composition of the other inmates of the tank. Again, I would emphasize that these variables are not necessarily a bad thing at all, for certain (perhaps fortunate) combinations will often bring about unexpectedly agreeable or successful results. One of the main rôles of the responsible press is to document these happenings for the benefit of the readership, and our monthly *What is your opinion?* is a valuable means of distributing this sort of knowledge.

Regular readers will know that recordings of events in this column are real life situations, and they will have greater validity in this country than the

*Continued on page 35*



Tiger Barb—highly decorative, but temperamental

# SPOTLIGHT

## The Pearl Danio

by  
Jack Hems

THE PEARL DANIO or Opalescent Fish (*Brachydanio albolineatus*) is one of the smaller cyprinids native to India and what was once known as further India through the Malay Peninsula to Sumatra and beyond.

As an inhabitant of a community tank it cannot be too much praised. First and foremost, it is peaceable. Next in importance, it will withstand a temperature range of 68°F (20°C), even less for a day or two, to 80°F (27°C) with no adverse effects. (Bear in mind, however, that any change in temperature should be made very gradually.) Further, it is always on the move and frequents the middle and upper levels of the water.

By nature it is a shoaling species and always seems more at ease, or secure, when it is kept with a number of its own kind. It is a voracious feeder and will eat anything swallowable such as granulated dried food, powdered flake, live mosquito larvae, live *Daphnia*, brine shrimps, scraped raw red meat, fragmentized raw cod, whiting or haddock and so on. But it is not customary or indeed likely for the fish to search for food on the bottom.

In well-grown fish there should be no

difficulty in telling the sexes apart; the male is the slimmer of the two and is shorter in the body. Indeed, at full size a mature male seldom exceeds a length of 2 in., whereas a mature female reaches 2½ in. if not a trifle more, and is well-padded all over.

Not all cyprinids have barbels, but *B. albolineatus* is equipped with four: hair-fine and so silvery as to be hardly discernible to the unaided eye. The maxillary pair reach beyond the base of the pectoral fin. The rostral pair extend to the posterior margin of the orbit. The transverse mouth is upward directed.

The coloration of the fish is not easy to put down in words. By and large it is lavender-blue suffused with shell-pink, patchy here and there with shades of light green and gold overlaid with a satiny sheen of ash or pearly grey. The back is more grey than blue; the underparts pinkish giving way to white or silver. A wine-red stripe, narrow anteriorly and broad posteriorly, extends from a point near the pink-tinged pectoral fins to the red-blotched bifurcation of the greenish yellow caudal fin. It is bordered above and below with a hint of violet or dark lavender. The dorsal fin is yellow to clear, and the long-based anal fin is adorned near the bottom margin with a horizontal band of primrose yellow, or green, trimmed with a row of red dots. The ventral fins are pale pink to reddish. A golden variety of *B. albolineatus* is known. Among the

great delights of this fish is the habit it has of changing its tints, or producing new ones, according to the strength and direction of light by which it is viewed by the beholder.

There are many ways of breeding this fish and none is difficult. The trouble lies in preventing the fish from eating their own eggs: a failing at which they are singularly adept. The eggs are non-adhesive and are scattered here, there and everywhere as a ripe female (easily distinguished by her bloated sides and noticeable excitement) is driven without pause (that is until she, and usually her male partners, are completely overcome by exhaustion) by the highly libidinous males. It is advisable to place a ripe female with two or more males. Naturally, a great many more fry may be expected if you run several females with several males.

An 18 in. × 10 in. × 10 in. tank is large enough for modest spawnings. A larger one is advised if the wish is to obtain a great number of eggs/fry. It is of supreme importance to furnish the bottom of the tank with an egg-trapping device such as a double layer of glass marbles, or better still a piece of non-toxic semi-rigid plastic sheeting perforated with a multitude of holes or narrow slats: the plastic sheet, of course, must be cut to fit the inside measurements of the tank and raised some two inches above the bottom. A few pieces of broken brick (well-soaked before use) will help in this direction.



# SPOTLIGHT

The water should be shallow—not more than five or six inches above the egg-saving device. Shallow water gives the rushing and twisting and rapid u-turning fish small hope of gobbling too many of the floating eggs before they gravitate to their place of safety.

It is hardly necessary to say that, the spawning tank should be made ready several days before breeding is intended, and the temperature of the water should be identical with that of the home tank. Introduce the fish into the prepared tank last thing at night (a few moments before all the lights go out, and to facilitate rapid catching employ

two square or oblong nets: one large one held stationary, a small one used to facilitate capture). Then set the thermostat in the prepared tank to give a temperature a few degrees above normal. If the tank is placed near a window facing south-east to east there is no need to worry about fitting up artificial light (in fact some screening from strong sunlight may be necessary). If such a spot is out of the question, then rig up a 60-watt house lamp or a 20-watt fluorescent lamp just above the glass cover. If an ordinary electric lamp is used, do not omit to suspend it at least six inches above the glass cover as a precautionary measure against cracking.

The rest follows as a matter of course. Generally speaking, as early morning light brightens the water, or the light is switched on, almost always the fish start rushing about in all directions. Their behaviour indicates high sexual excitement. Then the males settle down to serious driving. Hundreds of eggs are scattered during

these drives. A large female releases more eggs than a small one (but there is really no need to emphasize this fact). After spawning is over, the parent fish, looking more than a trifle caved-in and tattered, should be removed to the home tank or a special tank reserved for recuperation.

The eggs hatch within the space of two days. The minute fry hang to the film on the surface of the water, or the sides for another couple or three days, and then release their hold and swim off in jerking movements in search of food. It has to be small. Freshly made *infusoria*, proprietary fry food, flour-fine dried food. This, and the like, for the first few days. Then micro-worms, brine shrimps, freshly hatched mosquito larvae, mixed in with slightly larger dried food. The rest is plain sailing.

It is interesting to note that the life-span of *B. albolineatus* extends to about three years. The type has been known to hobbyists in Europe for more than seventy years.

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## Coldwater Jottings

Continued from page 30

### For the water gardener

These gardens will be found particularly interesting by the water gardener, both as a source of ideas and background planting. All plants, trees and shrubs are numbered which enables them to be identified in the comprehensive list in the back of the official illustrated guide. Certainly I spent a most enjoyable time wandering through these very pleasant gardens and I can thoroughly recommend them both to the individual and to any club which is looking for a suitable venue for an outing. Enquires should be addressed to The Secretary, Compton Acres, Canford Cliffs, Poole, Dorset.

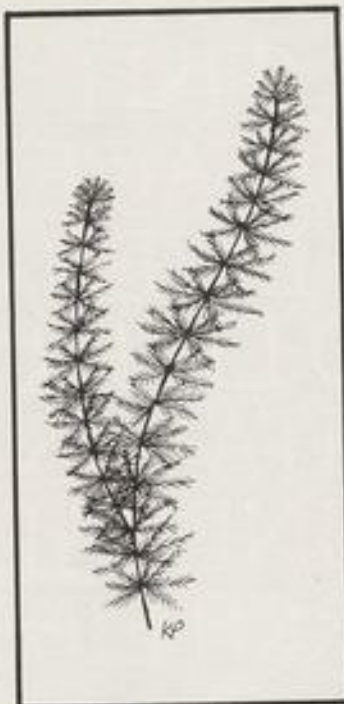
In the June issue of this magazine, under the heading "You and Us" readers letters mentioned, amongst other things, that the writers would like some guidance upon the construction of a fish-house. One letter, written by Mr. Paul Mansfield, stated that he had yet to see a book or magazine that even touches upon the subject. This is a subject which, during past years, has received coverage by some excellent articles in the *Aquarist & Pondkeeper* and, no doubt, similar articles will appear in future issues. My book "Fancy Goldfish Culture" also contains a section on fish-house construction—perhaps I could suggest interested readers obtain a copy.

## COMMENTARY

Continued from page 31

advice, however well intended, emanating from, say, Florida. There are vast seasonal differences as between various parts of the world, and intensity of light and length of day will also bring their weight to bear.

Though the fish themselves will behave more individually than many writers find convenient, it is the plants which take a lot more understanding. Possibly the buyer is at fault in many cases for buying plants for the aquarium which might more properly be situated in a tray of mud perched on top of the tank. He is well advised, before laying out cash for underwater plants, to satisfy himself that they genuinely normally live submerged, and that they do not have a resting season. True, there are some fine plants which are



### Plant care

It should also be remembered that the vast majority of buyers of even ordinary house or garden plants are abysmally ignorant of their real needs, and even when they are told what to do merely listen with one ear tightly shut and the other turned away. So, in the case of aquarium plants even more careful prior study is needed before a tank is set up. Water plants are delicate to handle, for the most part, they are just as susceptible to changes in water chemistry as are fish, and they need far longer to settle down.

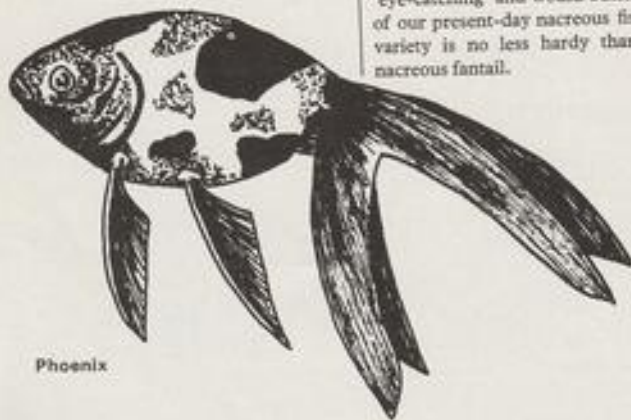
Formulae for success are often based on water chemistry, type of compost, light quality and quantity, and so on, but the highest thing on the list—a long period to allow rooting—is nearly always forgotten or ignored as being unimportant.

It is most sensible, therefore, to carry out as much private research before buying aquatic stock as you would before buying a new car; in fact, taking into account that living things have minds of their own, it is rather more vital in their case to weigh all the facts as their behaviour, quite unlike



IT HAS been estimated that there are something like one hundred different varieties of goldfish. Whether these are true, distinct varieties—or merely variations, in some degree, of another—is not certain. What is certain is that many are unlikely to be seen in the tanks of British hobbyists for, due to their extremely bizarre appearance, they are not types that would find much acceptance amongst the fishkeepers of these islands—being considered much too ugly or deformed for our liking. Indeed, there are those who consider any variety which departs too far from the original form to be an abomination and an affront to Nature. A visit to one of the specialist goldfish open shows will reveal the general appeal of the various varieties. As a rule it will be found that the Bristol shubunkin accounts for the largest number of entries, whereas other varieties, such as the bubble-eye, are very much in the minority.

Periodically specimens of the more acceptable varieties are imported into this country, and older aquarists will recall the highly coloured nacreous phoenix goldfish which was available from specialist dealers some years ago. More recently there have been importations of the jikin and tosakin varieties, specimens having appeared upon the benches of some open shows. So far as I am aware, the Association of Midland Goldfish Keepers is the only society which has recognised these two varieties in their show standards.



Phoenix

# goldfish varieties

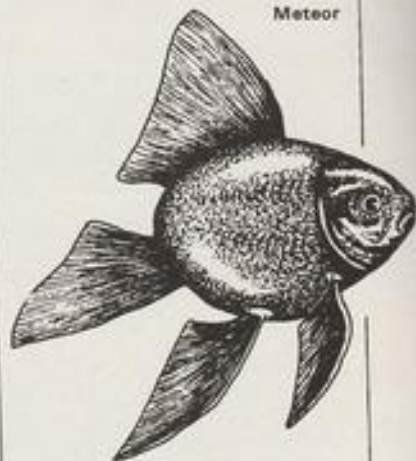
## Part 5

A series of six articles  
by Frank Orme

### The phoenix

The phoenix is a variety created by Chinese breeders; it has a body shape which is somewhat deeper than that of the common goldfish, but not so deep as that of the fantail. It has a moderately curved contour to its back and lacks a dorsal fin. The pectoral and pelvic fins are well developed and resemble those of the veiltail types of goldfish. The anal fins are paired and should be well separated. It has a long caudal fin, which is very deeply forked to form a 'ribbon-tail' and should be fully divided to form two separate, matching fins. The nacreous form is the most popular type and should carry intense colour, the ground colour being a bright, 'forget-me-not' blue interspersed with blotches of strong orange-red, yellow, violet, brown and black. This variety is well remembered for the quality of its blue background which, in many specimens, was really 'eye-catching' and would outshine most of our present-day nacreous fish. The variety is no less hardy than, say, a nacreous fantail.

Meteor



### The meteor

Another Chinese variety is the quaint meteor goldfish. This deep-bodied, egg-shaped fish is remarkable for the fact that it has no caudal fin! In order to compensate for the loss of the caudal, the other fins have become greatly over-developed. The dorsal fin is sail-like in its height and breadth, whilst the anal fin is also long and broad. Equally well developed are the pectoral and pelvic fins which are much larger than those of any other goldfish variety. The meteor is a metallic type, and very few of the young resemble their parents—many having their normal complement of fins. This is not a popular variety with British aquarists and, therefore, very few have been imported—quite possibly nowadays it would be difficult to locate a supplier in China.



Jikin

#### The jikin

The jikin, otherwise known as the peacock-tail, is a very old Japanese variety which has been selectively bred since the eighteenth century, mostly in the area of Nagoya. It has a very similar body to that of the common goldfish, although it is rather thicker in the region of the belly. The outstanding features of this variety are the colour and the form of the caudal. The best specimens have a silver-white, metallic body-colour, with red fins and red lips—as though lipstick had been applied to the mouth of the fish. This variety derives its common name from the fact that the paired caudal splay out at a perpendicular angle from the body of the fish, giving the impression of the raised, spread tail of a strutting peacock. The caudal is divided and forked to form four distinct sections with rounded lobes. When viewed from the rear these sections form an X; in the centre is the scaled end of the strong, broad peduncle. The axis of the caudal fin is almost perpendicular to the axis of the body. This is an attractive variety which may become more popular with the passage of time and increasing availability. This variety, however, produces only a small percentage of young which may resemble their parents—even from the oldest of strains.

#### The tosakin

The tosakin has been claimed to have been first produced around 1845, when Katsusaburo Saga crossed the Osaka buffalohead (a type of lionhead) with the ryukin. However, it has also

been found that this variety can arise as a mutation from the ryukin. The chief area of production is around Kochi where the output varies according to the prevailing rise or fall in the popularity of the variety. It is similar in appearance to the ryukin, the main differences being a slightly shallower body and shorter fins together with a peculiarity of the caudal fin. The upper edge of the double caudal fin is completely joined, whilst the lower lobes are greatly extended with up-turned outer edges. The fin has the appearance of being reversed and spread out in the direction of the head. Due to the formation of this fin the fish has great difficulty in swimming normally because of the 'drag-effect' of the caudal, therefore the Japanese fish-keeper houses these fish in quite shallow



Tosakin

water thus limiting its range of activity. It is unable to spawn naturally and this means that both fish must be stripped by hand if fertilized spawn is to be obtained. It will be realised, from the foregoing that this is a variety which must be kept in an aquarium—being totally unsuitable for even a short stay in the outdoor pool. It is a metallic-scaled variety.

#### The toadhead

A variety which is known as the toadhead has been raised in China for some centuries, and its facial appearance is truly toad-like. In body shape and finnage it resembles the bubble-eye described in last month's article; how-

ever, the eyes turn upwards rather like the celestial goldfish (also described last month). This variety, which has no dorsal fin, is not telescope-eyed, although at first glance it may appear to be; in fact it has small fluid-filled sacs below the eyes. How this variety arose is not known with certainty but it is thought to have originated from a crossing between the celestial and the bubble-eye types. Nowadays the toadhead is raised in considerable numbers in Japan. In 1976 Mr. Gerry Herring received seven specimens of the variety from a Canadian hobbyist and it is believed that they were the only, and possibly the first, fish of that variety in this country at that time. Whether Mr. Herring managed to breed them, or still has any of the variety, is not known.

#### The wakin

The wakin is the 'common goldfish' of Japan, where vast numbers are sold throughout the country each year. It is very similar to the common goldfish which we know; however, the caudal fin is double—unlike our single-tail type. Although not as popular as the metallic type, there is also a nacreous form. The variety was introduced into Japan from Ming China, and extensively bred in Koriyama Province of the Yamato District but is seldom exported to other countries.

There is a type of goldfish described as the 'out-turned operculum' which is a far from attractive fish. Fish of this type suffer from a defect which sometimes manifests itself in the young of the various goldfish varieties. In effect the hard plate covering the gills, turns back to expose the soft gill sheets. British goldfish breeders consider this defect to be a serious fault and such afflicted fish are destroyed immediately they are seen. Under no circumstances would fish exhibiting such an ugly fault be bred with the intention of perpetuating the defect in further generations. It is unlikely that these fish, if offered, would be imported to our shores, for our dealers are well aware of the likes and dislikes of their customers and whilst fish with faults such as webbed caudals or so-called 'tritails' may be acceptable to the less discriminating buyer, few would consider a fish with out-turned gill plates.

# ELEPHANT NOSE FISH

by D. Sands

When all other scientific names seem to be changing, the African 'Elephant nose' fish, *Gnathonemus petersi* remains an old land mark. (In defence of the hard working ichthyologists, name changes are usually the result of a lengthy research and not just invention to annoy aquarists.)

These light shy, 'social' fishes belong to the family Mormyridae, a group of African fishes which warrant a closer look by ethologists who could provide more information on behaviour. Mormyriids 'come' in many shapes, and sizes, some have extended tips to the snout, some are very round-nosed—they are all soft bodied and prone to damage when collected by the fish exporters for aquarists.

*Gnathonemus petersi* is said to be from central Africa, but probably has an even larger distribution as it is frequently imported from West Africa. Mormyriids have an extensive distribution, with many species also found in the rivers around the African Rift Lakes.

Much has been written about the 'intelligence' of these fishes—suggestions arise out of the information that some members of the group are said to have an enlarged cranium area, but it has also been reported that this is to accommodate the extra brain tissue required to control





electrophores; these cells generate minute electrical discharges which may assist in the fishes' directional guidance or be for shoaling communication. It is thought that different species produced individual frequencies and wavelengths—if these could be documented,

classification and identification could be enhanced. This use of electrical mechanisms is not unusual in fishes, the South American knife fishes (Gymnotids) are parallel in general terms. They are also light shy, extremely nocturnal in habit, spending daylight hours wedged

inside submerged logs etc.

*Gnathonemus* seem to be a contradiction: they are regarded as social animals, yet observations suggest they are probably more so, when *not* confined in aquarium conditions. In aquaria they can be territorial—even aggressive with each other, but usually poor or the wrong conditions, and incorrect feeding overtakes everything else and has fatal results.

In aquarium conditions *Gnathonemus petersi* requires subdued lighting, well aerated, neutral to acidic, slightly soft water conditions—with the long nosed species it is most certainly important that the substrate should be soft, leaf or peat mixed with a fine sand would be ideal. This layout would not accommodate undergravel filtration unless the filter bed (using gravel) is sectioned off from the leaf area. In dim light, most plants would struggle but I have found Java fern and Java moss will survive. The elephant-nose fish require a food which can be searched for in the substrate: *tubifex*, bloodworm and small earth worms are ideal the latter being the best because disease cannot be introduced with them.

The largest specimen of *G. petersi* I have seen was about 8 inches total length, but they may well attain a larger size in the wild.

There are no known breeding accounts of any member of the Mormyriids in aquarium conditions—it would possibly require a large group of specimens housed in a huge aquarium, if aquarist were to attempt to breed them.

I consider these fish ideal for the hobbyist willing to put *extra effort* into creating the best environment for them, but I do not recommend them for standard community aquariums where lighting is too strong and substrate packed; nonetheless, I expect many to be sold for these conditions.

**£10**  
**PRIZE**

# YOU & US

**READER  
PARTICIPATION**



Dear Sir,

I think the magazine most fishkeepers like myself require has to cover as wide a range of subjects as possible. After all, there are so many aspects of the hobby to cover and there are many thousands of aquarists, each with an interest just a little bit different to that of his 'neighbour.'

Various articles I would like to see are: (1) How to prepare and maintain a fish house. I have yet to see a book or magazine that even touches on the subject. Converting a shed, for instance, is not a task many people take upon themselves every day. It obviously needs a lot of thought, preparation and work put into it. Also, there are many choices available when it comes to methods of heating, insulation, etc. Which is the cheapest and most reliable system to use? The questions can become ever lasting and an initial mistake can cost a lot of time, money and exasperation. How many people would like a fish house but are scared to take a leap into the dark? (2) I enjoy 'Meet the Aquarist' articles, seeing what other people are doing within the hobby. How about 'Meet the Society?' Britain has a large number of aquarist societies, some of which get together for inter club meetings, but obviously this can only be done on a fairly local level. A club in the South has little or no contact with a club in the North. An article on various clubs would give us an insight into each others interests and aims. Also, it would be useful to know who is having success breeding fish in different parts of the country. We all know that certain fish breed better in different parts of the country and articles on different societies would show the water chemistry of various areas and also the different methods tried.

A lot of people are surprised to find that there is a society in their area. I only discovered my local society when I saw a sticker in a car window. By following the lead offered to me, I found a thriving society. It was a joy to at last meet and talk to fellow aquarists, most of whom knew more than me and were willing to pass on their knowledge.

Articles like 'What Is Your Opinion?' are great for finding out what other aquarists are doing and thinking, too. Such articles are to be encouraged.

Keep up the good work, we need our magazines to keep us up to date.

22, Cedar Avenue,  
Wickford, Essex.

Yours Sincerely, Paul Mansfield  
(Southend, Leigh & D.A.S.)

## **THE WINNING ← LETTER**

*The letter reproduced here (originally printed in our June issue) has been selected by our Editor as the most interesting and imaginative received by us throughout the three month period of our 'Reader Participation' contest.*

*Our sincere thanks to all those people who sent in contributions and many congratulations to Mr. Paul Mansfield whose endeavours earn him a further prize which he will be receiving from us in the near future.*



Mr Paul Mansfield

## READER PARTICIPATION

*The editor reflects on the many ideas put forward by correspondents during the past few months*

It is widely appreciated that complaints in all fields of enterprise are generally more readily forthcoming than plaudits and that the consumer is more motivated to put pen to paper when he has a grouse than when he is satisfied, or even delighted, with his purchase. So it is with some pleasure that, having invited suggestions and opinions from our readership concerning our make-up and content, the preponderance of views expressed is favourable and criticism nothing but constructive. From the latter we have a plethora of ideas on which to base future editions and from the former we can conclude only that there is widespread approval for the course we are pursuing.

Bearing in mind that it is an impossibility to achieve one hundred per cent satisfaction, our aim must be to please the widest spectrum of readership and to obtain a balance of editorial

content which caters for the several realms of the hobby so that tropical, coldwater and marine enthusiasts receive a fair crack of the whip. More difficult is the problem of serving both the tyro and the experienced aquarist so that beginners are not lost in a fog of science and the old hands are not taught the niceties of egg-sucking.

Many requests in your letters were for articles by other aquarists describing their successful attempts to construct fish houses and to conserve heat. Naturally, there is a universal desire to share in the experiences of fellow hobbyists which is why our 'What is Your Opinion?' feature enjoys such popularity. Reading of other fish-keepers' endeavours is of particular importance to the many thousands of hobbyists who, for one reason or another, do not enjoy the interchanges of ideas available within aquarist societies. Such people, ploughing a

lone furrow, need the benefit of others' experiences.

'Spotlight' appears to be a popular feature and it is noted that one of our foreign competitors has seen fit to use this title to describe a similar feature within their pages. Such imitation can be construed in only one way.

It has been most pleasing to receive your letters and especially the suggestions they contain. These are being studied and some have been followed up already, several of the proposed features now moving along the pipeline towards an early appearance in forthcoming editions.

We shall continue to adapt and enlarge in an endeavour to cover the whole field of 'aquaristics' and to achieve that balance which will obviate the need for readers to undertake comparative counts of pages devoted to the respective aspects of the hobby.

L. E. Perkins.

### NEXT MONTH

David Sands instructs us on the right conditions for keeping **THE CLOWN LOACH** (Colour feature).

**TERROR OF THE ROCK POOLS.** A fascinating and informative article concerning the deadly Sea Scorpion. (Colour feature).

**TWO AFRICAN KILLIFISH.** Another beautifully illustrated colour feature from the pen of R. Zukal.

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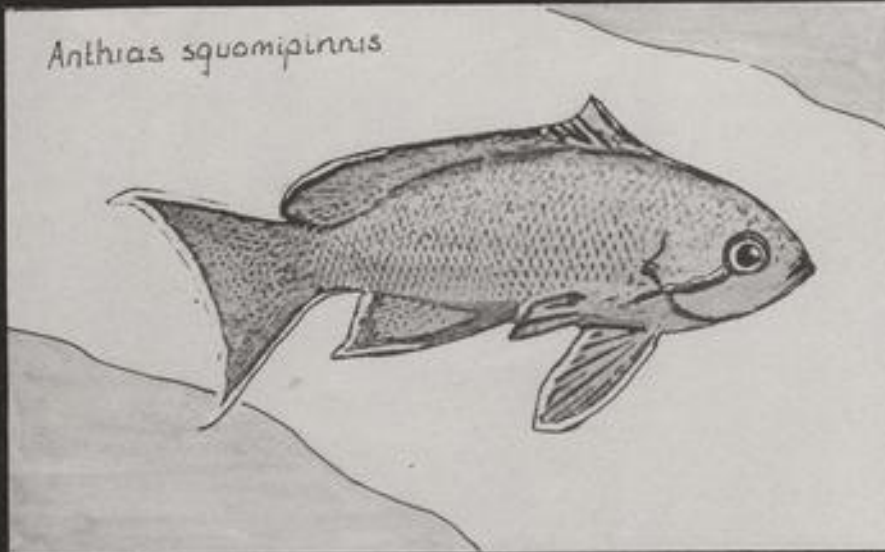
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**TRADE ENQUIRIES INVITED**

# The Lyretail Coralfish

by David C. Morgan

*Anthias squomipinnis*



JUST as many aquarists not familiar with marine fish keeping are startled by the brilliance of the electric blue colours worn by many of the more common species available, so are they impressed by the radiant pink juveniles of a species less frequently seen, the Lyretail Coralfish.

A gem of an aquarium fish for the experienced marine aquarist, this species hails from the central regions of the tropical, Indo-Pacific and grows to about 4 inches in length.

At any size the fish is a real beauty, very small specimens are in fact yellow but when about three-quarters of an inch long, a pink flush sweeps downwards leaving only the tail, anal and pelvic fins yellow. Occasionally the whole fish turns pink. Sometimes dealers will describe specimens as

"orange Lyretails", a condition some authorities have linked with a diet of small crustacea, such as mysis shrimp. I confess to being a little sceptical of this observation. In my opinion this is just another, perhaps less reliable phase, that an individual fish may or may not exhibit.

When fully adult the fish sheds its 'electric' brilliance but develops mauve to purple finnage as if to compensate. These areas are edged by a light blue fringe which appears at about the same time. The body will now be a creamy brown colour which becomes paler towards the head.

A feature shared throughout all stages of development is a stripe which extends to a point just behind the gill cover from each eye. Another stripe of about equal length can sometimes be observed under the lower jaw. These stripes are deep red, almost maroon in colour, and are quite intense.

The crescent of the gill cover is interrupted by an angular point just in front of the pectoral fins. Here may be found a pair of soft spines, which could be some kind of defensive mechanism. Care should be taken not to cause injury when handling by trapping these spines in a net, so a captive specimen should be expelled head first.

The second and third rays of the dorsal fin are longer than the rest and form an attractive peak which is frequently displayed, especially at meal times.

This is one species with which feeding should definitely not be a problem. It has a voracious appetite, eating almost anything offered. Most freeze dried and irradiated products, though not *Tubifex* in any form, are taken eagerly, as is mixed flake. Preferences toward mysis and brine shrimp products will probably be noted. Do try to include a little fresh food such as chopped prawn and flakes of white fish. The mouth is deceptively large and quite big pieces can be easily managed. Suggested live foods would be obviously brine shrimp, *daphnia* and glass worms when available. The latter has the added advantage of living for several hours in marine water, though the unfortunate creatures last only half a minute once the fish discover their presence.

A very active fish it darts and dances around the entire aquarium. It comes to a full stop and has a rest in odd places at times. It may be found 'sleeping' at night, holed up amongst the coral or in a shell and will be observed in what appear very unnatural positions, upside down on occasion and vertical quite often, head or tail uppermost.

Not aggressive by nature it is, however, capable of looking after itself. I once spotted a particularly boisterous damselfish trying to take a bite out of the elongated caudal rays; the Lyretail turned smartly through 180° and caught the damsel a crashing blow on the snout. The damsel leaves a healthy margin now. Generally though, it will retreat rather than attack.

Provided it is not used to being a loner, it is possible to keep more than one in the same tank; if plenty of rockwork is present, so much the better.

Unfortunately my research has not disclosed whether the fish shoals naturally, but such information is generally useless as far as aquarium behaviour is concerned anyway.

The fish is quite hardy and not prone to disease, an admirable quality in marines. It is not susceptible to copper poisoning when this element is present in medicinally acceptable levels and so proprietary products such as 'Copper Cure' or 'Cuprazine' (for which I have the highest regard) can be used if problems do arise. I try always to establish this factor with any new fish I purchase. Whilst it is true that probably 95% of the marine species (fish) imported would tolerate small concentrations of copper without any ill-effects, to the remaining 5% it would be lethal. A vet I once consulted remarked that although it was possible for the degree of tolerance to vary from individual to individual within the same species, it was most unlikely to vary to a point where a minute copper content would cause death in one instance and not in another; therefore results observed in one specimen should be a reliable guide to its fellows' disposition. A sharp eye should be kept on any new species after the first dose of treatment. Better safe than sorry.

Water condition must be good to keep *A. squamipinnis* happy. Less than perfect conditions will be tolerated, but not indefinitely. If undergravel filtration is employed, a powerful airstone supplementing water movement will be immensely beneficial.

I have some large pieces of calcareous "Tuffa" rock in my community marine tank. Apart from its stabilizing effect it looks very natural. It is easy to sculpt this rock when dry with an electric drill and even more holes can be made or enlarged. Many of the smaller corallfish will explore these crevices and the Lyretail will be no exception.

One word of warning if invertebrate life is present in the same tank. Very small prawns or shrimps will suddenly become conspicuous by their absence. They tend to disappear in sections, tail first sitting, head the next. The rule is not to include anything under 1½ inches long.

Finally a note on classification. Although I refer to the fish throughout as *Anthias squamipinnis*, some authors place it in the genus *Franzia* under the species name *rubra*. This does appear to be out of date now and modern references are to *Anthias*.



# KEEPING AND BREEDING GREEN TOADS IN CAPTIVITY



by  
David R. Billings

#### Description, Distribution and Habitat

The Green Toad (*Bufo viridis*) is one of the most attractively marked European toads, having a ground colour of greenish-grey patterned with large green spots on the back, legs and sides. The underside is greyish-white. Some of the warts, which are large and prominent, may be red and particularly on the male. It attains

an average size of 7-9 cm, and unlike most other European toads, the male grows to a larger size than the female. The sexes can be distinguished by the thicker forelegs and conspicuous nuptial-pads of the male.

The geographical range of the Green Toad is extensive, ranging from North Africa to Southern Sweden and eastwards through southern and central Russia towards Mongolia and Tibet.

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It is essentially an East European species and is not found anywhere west of the Rhine. It is found in a variety of different habitats and is very numerous in the southern parts of its range. No particular habitat is favoured although it avoids forested areas and high altitudes. It often frequents town parks and suburban gardens.

#### General care

Green toads make good inhabitants for an indoor or outdoor vivarium, but if an attempt is to be made at breeding, the latter mode of accommodation is essential. The best way to house them outdoors is in a greenhouse or large cold-frame as most Green Toads offered for sale by dealers originate from countries bordering the Mediterranean where the winters are of shorter duration and less severe than those experienced in Britain. A completely open-air vivarium may not provide enough protection from frost. I have successfully overwintered mine in both greenhouse and cold-frame for many years, the extra protection afforded by the glass ensures a frost-proof retreat for the hibernating inmates no matter how cold the outside temperature. Conversely, they can withstand any degree of heat and enjoy basking in full sunshine. They also like to burrow in loose soil, so the loam used to cover the floor of their vivarium should be light enough to allow them to do so.

A pond of at least 90 cm. x 100 cm. must be provided which should have a shallow margin of about 3-4 cm. at one end. Whether the pond is of moulded fibreglass, or of plastic or

rubber lining, the rim can be concealed by carefully positioned rocks and stones. The rest of the floor can be decorated with rocks and pieces of bark placed strategically and under which the toads can retreat. Rockery plants and other low-growing vegetation can be planted which will eventually spread around the bark and rocks to form a pleasing overall effect.

Aquatic plants such as Elodea, Hornwort and Starwort can be introduced into the pond as well as marginal plants such as Dwarf Rush (*Acoris*) or Mimulus. The whole set-up can be made to look very attractive, especially if the soil is banked to form a mound with the pond at its base.

Feeding Green Toads presents no difficulty as they will eat any creature that is small enough to swallow. Earthworms, slugs, woodlice, beetles and any other garden invertebrates thrown into the vivarium will be eagerly devoured. Any that escape will eventually establish themselves forming colonies on which the toads will prey naturally. Mealworms and gentles are much appreciated and can be reserved for hand-feeding the toads. Their intelligence is such that they will soon learn to associate the approach of their owner with a feed, rapidly emerging from hiding in anticipation.

#### Breeding

The following notes are based on successful spawnings in June 1980 and July 1981. The experience gained in the breeding and subsequent rearing of the offspring was by trial and error, as I was unable to find any record of this species breeding in captivity.

In order to induce a breeding response in the male it was found that some form of stimulus was required. This was effected by removing the males (of which I had four) to separate quarters for two weeks in early June. During this period both the males and females were fed on as varied a diet as could be provided. The males

were returned to the vivarium containing the females in the early evening and left undisturbed.

Only one male showed any interest in the females at this stage, but the females were not ready to spawn and repelled the male's advances. Within a few hours the males began calling, and this invariably took place when they were sitting half-submerged in the shallow margin of the pond.

The male has a single throat-sac which is inflated like a balloon to about twice the size of the creature's head. It is then slowly deflated, the sound produced being a rather pleasant "trill" not unlike the call of a Turtle-dove. The call lasts about 6-10 seconds being followed by a pause of about the same duration. Although the male calls mostly at night it may continue calling sporadically throughout the day.

When the females were ready to spawn they entered the pond and were immediately seized by the males. In both years the spawn was laid at night and wound around submerged aquatic plants in long strings.

#### Rearing the Tadpoles

In order to observe the development of the tadpoles some of the spawn was removed from the pond and placed in a half-filled aquarium previously positioned outdoors in full sunlight to promote the growth of algae on which the tadpoles would later feed. Green Toad tadpoles are very appreciative of sunlight and warm water, thriving if such conditions are provided.

The spawn hatched in about 3 days, the tadpoles becoming free swimming 2 days later, feeding voraciously on the algae growing on the sides of the tank. On first hatching they are similar in size and coloration to Common Toad tadpoles, being black above and silver-grey below. They grow much faster than Common Toad tadpoles however, often completing their metamorphosis in 5-6 weeks. When larger, they are very

## Keeping and Breeding Green Toads in Captivity

variable in coloration matching the mud or gravel at the bottom of the water so effectively that it is difficult to spot them from above until they move.

Overcrowding must be avoided, especially when the tadpoles are larger; no more than 30 should be kept in a standard 24 in. x 12 in. x 12 in. aquarium. In addition to algae the tadpoles can be fed on rabbit pellets, pond pellets, and any type of flaked fish food or small pieces of raw or cooked meat. Any food left uneaten should be removed so as not to pollute the water.

### Rearing the Baby Toads

As soon as the tadpoles developed visible fore-legs an island of rocks

was placed in the tank to enable the newly metamorphosed toadlets to scramble out of the water. This is the time when the toadlets are most vulnerable to drowning; their limbs are not yet strong and they tire easily. If the toadlets cannot climb out of the water they will quickly expend their energy swimming desperately until they sink under the water where they quickly drown.

Once the toadlets had absorbed their tails they were transferred to another tank furnished as a vivarium with plenty of hiding places and a shallow dish of water. This tank was also placed outdoors in a position where it received plenty of sunlight. At first the baby toads were fed on aphids and fruit flies, later on very small mealworms, earthworms and any other small creatures obtained from the garden or from hedge-beating. In order to prevent diseases caused by dietary deficiency, as varied a diet as possible was provided while the baby toads were growing.

The young toads were very handsome in appearance being perfect miniature replicas of the adults. The average overall length on metamorphosing was about 10-12 mm and by the end of the summer some had attained an overall length of 25 mm. About the middle of October the vivarium containing

the toadlets was brought indoors as it was doubted that immature Green Toads could survive outdoors when the weather became cold. An unheated upstairs room was chosen as the best place for overwintering the toadlets, as in a cool room their metabolism would slow down and they would only need feeding about once a fortnight. This ensured that an adequate supply of live food could be provided throughout the winter months.

### Conservation

The Green Toad makes an excellent inmate for the vivarium and can be safely kept with any similar sized hardy frogs, toads or newts. Due to its toleration of dry conditions it can also be successfully housed with lizards.

The serious herpetologist can do much to help the status of our European reptiles and amphibians by breeding them in captivity, thus helping to lessen the pressure on wild populations by over-collection.

With an increasing number of countries passing legislation to prohibit the exportation or sale of reptiles and amphibians it may not be long before the only specimens that can be legally kept in confinement will be those bred in captivity.

OSCAR



G. Robinson

# American Cryptocoryne

by Karel Rataj

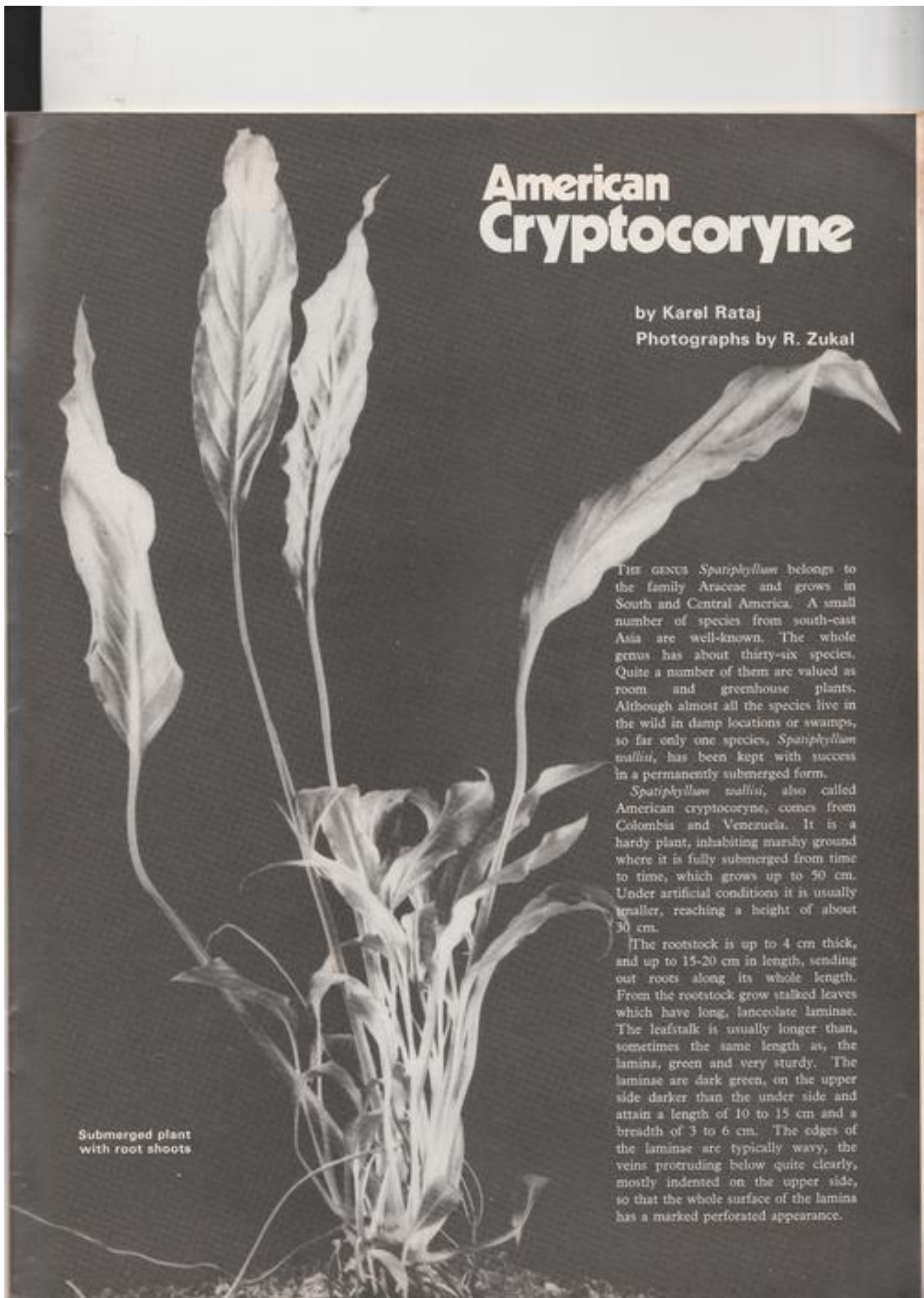
Photographs by R. Zukal

The genus *Spatiphyllum* belongs to the family Araceae and grows in South and Central America. A small number of species from south-east Asia are well-known. The whole genus has about thirty-six species. Quite a number of them are valued as room and greenhouse plants. Although almost all the species live in the wild in damp locations or swamps, so far only one species, *Spatiphyllum wallisii*, has been kept with success in a permanently submerged form.

*Spatiphyllum wallisii*, also called American cryptocoryne, comes from Colombia and Venezuela. It is a hardy plant, inhabiting marshy ground where it is fully submerged from time to time, which grows up to 50 cm. Under artificial conditions it is usually smaller, reaching a height of about 30 cm.

The rootstock is up to 4 cm thick, and up to 15-20 cm in length, sending out roots along its whole length. From the rootstock grow stalked leaves which have long, lanceolate laminae. The leafstalk is usually longer than, sometimes the same length as, the lamina, green and very sturdy. The laminae are dark green, on the upper side darker than the under side and attain a length of 10 to 15 cm and a breadth of 3 to 6 cm. The edges of the laminae are typically wavy, the veins protruding below quite clearly, mostly indented on the upper side, so that the whole surface of the lamina has a marked perforated appearance.

Submerged plant  
with root shoots



The inflorescence grows on a 30 to 50 cm long, leafless stem and consists of a six to eight cm long, cream-white quiver which is quite opened out when in full bloom, and in which the spadix containing the sexual organs is found. Below are tough, securely placed styles, which are yellowish-green, with yellowish stamens in the upper part of the spadix. Under artificial conditions the emergent form of this plant flowers throughout the summer. Until now, however, it has not been possible to produce the indehiscent fruit, or achenes.

Normally cultivated emergent plants are placed under water. In its emergent form, in rich garden soil, *Spariphyllum* grows very quickly. By way of contrast, it grows very slowly underwater. Fully developed plants at least 15 to 20 cm high with at least six to eight leaves are placed in the aquarium, therefore. *Spariphyllum* is not a typical water-plant. In the aquarium it remains in an attractive condition for some years, but grows there so slowly that over a year it produces only a single leaf. It is equally slow in reproducing underwater.

*Spariphyllum* adapts readily to its environment. It tolerates slightly alkaline as well as slightly acid water and half shadow as well as intense illumination. Consequently, the plant can be

Flower with almost ripe seeds



Emergent plant with flower

kept in company with *Cryptocorynes*, to which it provides a decorative background in the form of its fresh green coloration and thick growth. It can be kept with equal effect, however, in company with *Echinodorus* species in bright tanks. It has very tough, firm leaves and is, therefore, extremely well suited to the breeding of cichlids,

which lay their eggs on robust leaves.

The plant needs a temperature between 20 and 30°C and a rich substrate. That is to say, a well-established tank which is well supplied with mineralised detritus. The best time to place plants under water which have been grown as emergent plants is in spring.

As I have already mentioned, this plant reproduces very slowly under water and it develops shoots on the rootstock only rarely in the aquarium which are capable of separating from the mother plant. It is more advantageous to grow the mother plant out of the water. This plant is admirably suited to large, damp, tropical terraria and because it takes a firm hold in the presence of large, lively fish. It can, of course, also be grown as a room-plant in flower-pots of earth enriched with peat. Under such conditions, after about a year, ten to twenty young plants develop on the rootstock, which are removed in the spring then grown on in flower-pots up to a size of 15 to 20 cm, at which time they can be placed in an appropriate spot in the aquarium.



by B. Whiteside BA ACP

## New Fish Food from Taiwan

NUTRA FIN Fish Foods, manufactured in Taiwan and distributed in the U.K. by Peterama Ltd., Chelmsford, Essex. I have not been supplied with prices at the time of writing.

I was most interested to receive samples of this wide range of fish foods. I did not receive any advertising literature, e.g. press releases, so my observations and conclusions are drawn from labels on cartons, and from my own practical experiences.

Nutra Fin Staple Food is available in a 1 oz. (28.4g.) size; and in 3 oz. Large Flakes for larger tropical fish. Feeding several times daily is recommended. The ingredients are: fish meal; plankton; shrimp meal; soy flour; laver aquatic plant; kelp; oat flour; yeast; cod fish meal; fish liver; and chlorophyll. The guaranteed analysis is min. crude protein—46%; min. crude fat—5%; max. crude fibre—2%; and max. moisture—8%.

Nutra Fin Cichlid Food Large Flakes comes in a 3 oz. drum and is

formulated for cichlids and for many marine fish. The guaranteed analysis is identical to the above—except that the max. crude fibre is 3%. The first mentioned food is also available in tablet form—Nutra Fin Staple Tablet Food—for bottom-feeding freshwater and marine fish; and for large species of fish. The drum contains about 380 tablets and weighs 68g.

Nutra Fin Color-Tone Food is said to induce natural colour pigmentation. The guaranteed analysis is min. protein—42%; min. fat—5%; max. fibre—2%; and max. moisture—8%. Nutra Fin Livebearer Food is for livebearers such as guppies, mollies and swordtails. The analysis is identical to the Staple Food. Nutra Fin Plant Diet is a conditioning food formulated mainly for herbivorous fish. The analysis is identical to the Staple Food except that the min. protein content is 42%.

Nutra Fin Growth Food contains extra vitamins to promote rapid growth in young tropical fish. The min. pro-

tein content is 48%; the fat, fibre and moisture content is identical to that of the Staple Food. An interesting combination is the Nutra Fin Multi-Pack—which contains four varieties of food in separate compartments. The varieties are: Growth Food; Staple Food; Color-Tone Food; and Plant Diet. The container holds 1.6 oz. (45.4g.).

I must say I was most impressed by the white, plastic drums in which the above-named foods were supplied. They are all-plastic and of sturdy construction. The Large Flake drums have wide mouths that enable one to insert fingers and thumb easily to remove pinches of food. The smaller sizes have drums with swivel lids on which one simply has to line up an opening and a hole. This is a most sensible idea as one does not have to remove a lid and set it down somewhere. I think these are the most sensible drums and lids I have come across. The screw-on lids on the large drums do screw on properly and fit tightly—unlike many others I have tested. Well done, Nutra Fin.

Nutra Fin Freeze Dried Foods come in sealed, foil packs in cardboard outers. Those available in 0.176 oz. packs (5g.) are: Freeze-Dried *Daphnia*; F-D Zoo Plankton; F-D Brine Shrimp; and F-D *Tubifex* Worms. A fifth variety, F-D Mosquito Larvae, comes in a 0.352 oz. (10g.) size. As can be seen from the weights, the cardboard outer and foil pack do not contain a very large amount of the Freeze-Dried food.

My fish thoroughly enjoyed these foods—and I was particularly impressed by the excellent drums containing the non-F-D foods. I cannot comment on value for money but I can certainly recommend the foods and the good choice of varieties available. Many other manufacturers could well copy the design of the plastic drums!

## Meet the Aquarist

No. 16

Miss

## Hilda Morgan

90,  
not out . . .



Hilda during one of her few moments of relaxation

*Written by  
H. G. B. Thomas*

If you have been to any of the Fish Shows in Bristol during the past 25 years the probability is that you saw, or met, Hilda.

Formerly Hilda was a keen supporter of both the Bristol Aquarists' Society and the Bristol Tropical Fish Club. She was also a member of the local branch of the F.G.B.S. when it existed in this area.

At the moment she finds it easier to attend the meetings of the coldwater society. She holds the office of Registrar, which she performs with accuracy and zeal, for the Bristol A.S. which she joined in 1955. She was made a Life Member on her 80th Birthday in 1972.

Born on April 10th 1892, as a child she kept Caterpillars and her tastes have always leant rather more to the unusual than for the pretty.

She had her first Goldfish, complete with Bowl and Ants Eggs in 1919. In 1922 she had her first real aquarium. 36 in. x 12 in. x 12 in., which is still in use and now houses some small Koi, Rudd and Goldfish.



Hilda, at action stations, during one of her many assignments



A gourami with an eye for a strawberry

A keen interest in Herpetology has led to her keeping Salamanders, Newts, Sand and Green Lizards and both Tree and Clawed Frogs. At the moment she has two Tortoises in her garden, some Slow Worms, and a vivarium with a Common Toad and an Edible Frog. For many years she brought her case of Stick Insects as an exhibit at local shows.

As a testimonial to her fishkeeping skill she still has an Eel presented to her by a past-President of Bristol A.S. when he returned from a fishing trip over twenty years ago. At the moment she has reduced her former nine tropical tanks to four. She also has one coldwater aquarium and a garden pool.

Hilda has always had a preference

for the larger tropicals and at the moment her well planted aquaria house Tinfoli, Golden and Thick Lipped Gouramies, Rainbow and Comb Tail Cichlids, an 8 inch Black Shark, two Plecostomus, six Corydoras and several large unidentified Catfish and Pimelodellas.

At one time she was the proud owner of two *Osphronemus* Gouramies named Elizabeth and Richard, after those two well-known film stars. Elizabeth, who would take strawberries from the fingers, outlived Richard and weighed 6½ lbs. at the time of her death.

Hilda is a great believer in the value of Gentles and Tubifex as foods for her pets.

Since she retired from the Civil Service she has acted as a part-time assistant to two local aquatic dealers and helped to maintain and set up aquaria as well as the much messier job of looking after garden ponds.

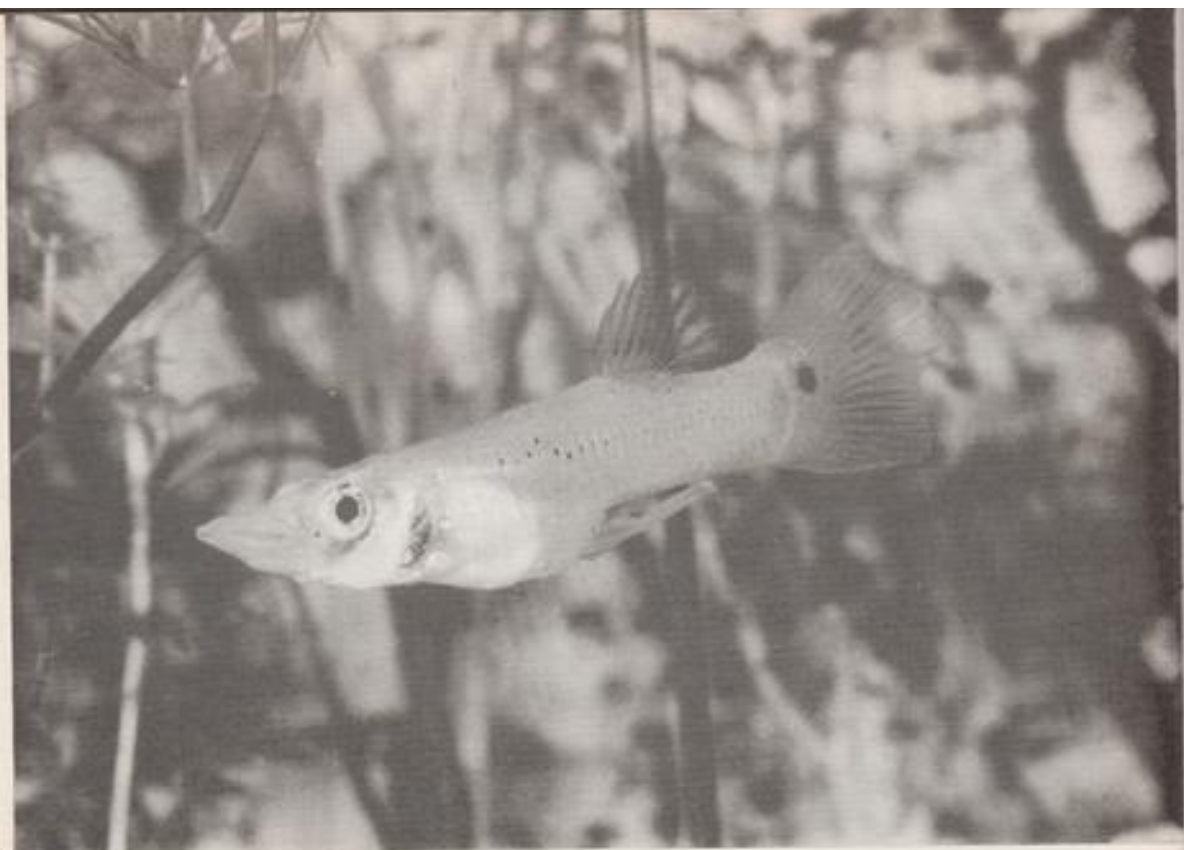
She discontinued these activities only recently.

Her 280 Prize Cards include 106 'Firsts' and also a 'Best in Show'.

As usual she helped in the setting up of the 1981 B.A.S. Coldwater Show, was on hand throughout the day of the show to help in the many chores that inevitably accompany such an occasion and then helped to put it all to bed.

Certainly a great achievement for an active lady of 90 years.





# A VORACIOUS TOOTHCARP

(*Belonesox belizanus*)

Rudolph Zukal

IN THIS article I will describe my observations on the life-style of this live-bearing toothcarp. It belongs to the family Poeciliidae and was initially brought to Europe from its natural habitat in southern Mexico, ranging through Guatemala and Honduras and as far as Nicaragua. The female attains a considerable size of 20 cm, whereas the male remains much smaller, in the region of 10 cm. Its species name *belizanus* is derived from the city Belize in British Honduras, its

generic name of *Belonesox* is composed of *Belone* (arrowhead) and *Esoc* (pike).

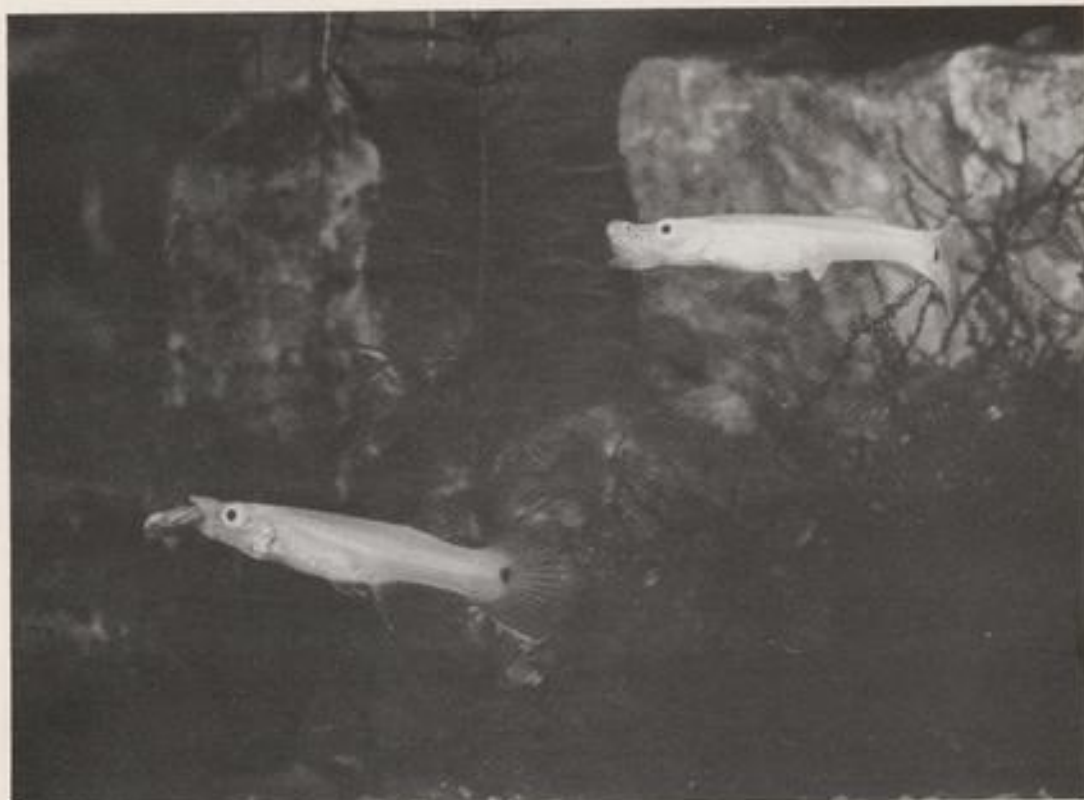
The body has a typical pike-like shape, with a pointed mouth which is equipped with sharp teeth. The male at maturity is much smaller and is equipped with a sexual organ, the gonopodium, so that sexual differentiation is straightforward, as is the case with most live-bearing species.

These fish must be kept on their own as they are voracious predators. This is perhaps the reason why they are kept so seldom. I wanted to obtain them in the past, but I did not know anyone in Czechoslovakia who bred them. Finally, I found out they could be obtained in Germany. The fish came through the ten-hour car journey home from Dresden quite

well, except the fins were a little torn. They were a young pair, both being about the same size at approximately 9 cm. At first they were put into a 40 litre tank, as I had no larger one available. To normal tap-water which had been left to stand, I added a small amount of salt (one teaspoon to this amount of water) and I raised the temperature to 24°C. From my reading I already knew that these fish like large-sized live food and, for preference, small fish. Consequently, I had already gone to the trouble of obtaining about a hundred guppies.

The pair soon settled in and after a few hours they swam curiously around the aquarium. However, if I made the slightest movement they would disappear into the plants, with





Growing Toothcarp need three such fish every day

the result that all that could be seen of them were their beak-shaped heads. Such a sight reminded me of the many hours I have sat on the river bank or lakeside catching pike (*Esox lucius*). Their behaviour and movements were so remarkably similar. From then on I regretted ever having brought these fish home. Why? Because I could no longer get down to any work. For hours on end I sat in front of the aquarium and observed my pet predators. When I introduced a few guppies into the tank, at first nothing would happen. The male guppies approached the toothcarps fearlessly; I even saw the male guppies initiate their courtship behaviour. They did not suspect any danger, having never been acquainted with such a predator in the past. Suddenly, there was a lightning-fast

movement and one of the male guppies disappeared. Now the alarm had been raised, as if the fish which had been swallowed had somehow warned the others or given some cry of terror. All the guppies gathered at the water surface, as far away as possible from the predators. But it was to no avail. A few guppies were consumed each day. The fish became bigger and bigger almost from day to day, it seemed. I spent many hours with them, as the accompanying photographs show. My greatest pride was occasioned with the production of about forty young by the pair.

The prey is often taken by surprise attack, that is grabbed in a flash and swallowed, or attacked obliquely from below after being stalked. Only occasionally is the prey chased. The literature I have available merely points out that the sexes should be kept separate, since the female is very

aggressive and could damage the male. In my experience, providing the fish are well fed, the male does not court any danger. The fertilisation of the female takes place so rapidly that the female has probably no opportunity to attack the male. The period between readiness to spawn and the birth of the young lasts five to six weeks according to the temperature. The female produces up to a hundred young which measure up to 3 cm and which will immediately feed on *daphnia* and small worms. The tank must have enough hiding places (in other words dense plant growth) in order to protect the young from the voracity of their parents. Shortly after the birth of the young it is advisable to leave the young to themselves. In other words, the parents should be removed. Given sufficient food, the young grow very quickly.



THIS article will be read in summer, but it was written in spring when frisky frogs and toads, all mouth and no manners, were spawning among joyous croaks and pipings in the pools. It was surprising to see so many after the severe winter, and I thought of Schmid's recent work at Minnesota University showing the success of an anti-freeze in gray tree-frogs, spring peepers and wood-frogs based, like that in your car, on glycerol.

That is the cryoprotectant when frogs and toads are exposed to 4 or 10 deg below zero C, and up to 35% of their body water freezes and then slowly thaws out. The antifreeze in their cells protects them from dehydrating when ice forms outside their bodies in winter hibernation, and would otherwise draw water from their cells. Some organisms use it to lower the temperature at which ice forms in their tissue. It works only in a slow freeze; too rapid a frost freezes the cells first; but some hibernating insects have a nucleator protein which counteracts this by allowing fluids to freeze outside the cell and not inside, where glycerol inhibits freezing.

#### Water Plants

Most field-guide books to plant identification are based on flowers, whereas aquarists have to recognise many plants by leaves or growth. 221 colour and monochrome plates in EP Publishing's recent £6.50 English translation of Helmut Muhlberg's 392-page German *Complete Guide to Water Plants* aren't all eye-catching flowers.

by Eric Hardy

Many series of leaves include 29 "Crypts", 16 Echinodorus species and various Aponogetons and Vallisnerias. Aimed primarily for the aquarist, and to some degree the pond-owner, it has notes on culture and classification but lacks space for many bog-plants. It includes Calla but not Caltha (Kingcups); no bog-primulas, Astilbes, Oenanthes, skunk-cabbages or even submerged stoneworts. Only Latin names are indexed and many well used English vernacular names are not mentioned. Plate 106 inscribed a "microscopic photograph" should read "photomicrograph". Famous old plant-families like Composites, Umbellifers and Grasses are renamed Asteraceae, Apiaceae and Poaceae. It doesn't tell us that *Elodea nuttallii* was named after Nuttall the St Helens (Lancs) botanist who became professor at Harvard.

I was rather startled to find myself a

listed contributor to Liverpool University's £20 new 306-page book on *Hilbre, the Cheshire Island*, by Professor J. G. Craggs; puzzled that it should include a 1941 book I wrote but not a series of publications from Merseyside Naturalists Association to The Aquarist containing records earlier than in its lists. I was asked to contribute, but declined in my stubborn stand against a notorious faked bird record (not in the book). Nonetheless, Dr Craggs with several specialists has produced a very fair and comprehensive account of the fauna and flora of the famous tidal islets in the Dee estuary, well illustrated with photographs and histograms. Much original work has gone into compiling its marine invertebrates and insects; its marine algae include the only known British haunt of one species *Chlorococcum submarinum*. Its fish-list does not include the spur dogfish, with a published stranding in 1958, or the pout, recorded in 1945. I might add a modern stranding of Aphrodite, the sea-mouse, in March 1980 and a blue crab, *Callinectes* I found, and recorded, on the lifeboat Slip in 1957, either from North America or a passing ship's galley. It lacks a good account of the geology and doesn't mention one of the few derived fossils from the Lower Triassic recorded from in its Bunter pebble-layer.

#### Natterjack toads

Recent wet, cold springs seem to have caused a decline among spawning natterjack toads at their major haunt

## Naturalist's Notebook

on Ainsdale National Nature Reserve near Southport. Not only was spawning late with little calling after the recent cold winter, but the warden at the reserve told me he found only 16 strings of spawn. Only 50 spawnings were traced at the Cabin Hill pool extra reserve, on Formby dunes, instead of the usual 200.

Many interesting aquatic plants are recorded in R. H. Roberts' new *Flowering Plants & Ferns of Anglesey* (88-pages, Welsh National Museum, £3.50). Eight-stamened water-wort (*Elatine*) still thrives in the shallow edges of Llyn Coron, where it was first discovered in Britain, as well as in Llyn Llywenan and Cefni reservoir. Six-stamened grows in Coron, Cefni and llynau Padrig and Hendref. Afon Lligwy is one of the 4 British haunts of the hybrid pondweed, *Potamogeton X lanceolatus*. Pillwort grows in the shallow margins of llynau Hendref and Llygeirian and a pool on Mynydd Bodafon, and quillwort in Llywenan and Llygeirian. Another rarity, three-lobed water-crowfoot, at Llanfaelog, Penrhoslligwy and near Llyn Maelog, grows elsewhere only in Cornwall, Devon and County Cork.

A £42,248 Government grant from the Natural Environment Research Council covers Dr. A. Ferguson (of Queens University, Belfast) present 3 years' study of natural and hatchery stocks of brown trout and their genetic crosses growth, feeding and reproductive differences in Loughs Melvin, in the Erne-Macnean lakes of Northern Ireland. He is using allozyme markers and selective breeding. £30,558 goes to a 3 years' study of circadian rhythms and light influence on the nerves and hormone secretions during the breeding season of rainbow trout, by Dr. N. R. Bromade at Aston University. Night interruption experiments and others with constant light, dark or dim illumination are among methods used. In September, Professor W. T. Potts concludes a £19,318 study of the adaptation of trout to acid waters, to aid future restockings here and in Norway and Canada. A £22,681 grant covered a recent 3 years' study at Stirling University of the effect of the moth-proofing agent Eulan on pike, fed under controlled conditions. Researchers at Nottingham University are finishing a £29,095 study of the aggressive behaviour and spacing of beadlet sea-anemones whose broods settle near their parents; how brook-lampreys cope with osmosis and nactricine water-

snakes adapt to different habitats. At Manchester University it's the shoaling strategy of perch in relation to their visual recognition of prey; at Liverpool predators and parasites of lake-dwelling leaches and at Aberdeen the eye-flukes of salmon and coarse fishes. £19,455 went recently to a 3 years' study at Exeter University of the effects of detergents on the gills of bony fish and £27,511 to study the breeding cycle of sea urchins collected at Plymouth and in Scotland and, by penning them, their effect on algal cover. Swansea completes a £23,923 study of deep sea echinoderms in the Rockall Trough.

## OSCAR



G. Robinson

## Junior Aquarist

# the pearl GOURAMI

By Robert Robinson  
(aged 15)

Photo by B. Whiteside



The pearl or mosaic gourami (*Trichogaster leeri*) is a member of the Anabantidae family. It comes from south-east Asia, Thailand, Malaya and Borneo. It is a peaceful and shy fish which grows to a length of about five inches. Although it attains this fairly large size, it has quite a short life, of about three years. It can be kept in a community tank of thirty inches or more with non-aggressive fishes.

The pearl gourami is one of the few fish equipped with the labyrinth, a breathing organ which allows the fish to breathe atmospheric oxygen as terrestrial animals do. The fish stores the oxygen in the labyrinth and gradually uses it up, when it comes to the surface for more and gets rid of the used air. In the fish's natural surroundings the water is usually very dirty and low in oxygen so that

the fish needs to come to the surface for oxygen.

Fishes very often evolve and adapt to their surroundings. The pearl gourami equipped itself to live in polluted water just as the blind cave fish discovered that it had no use for eyes as it comes from dark waters at the bottom of Mexican rivers.

The pearl gourami's tank should contain plenty of plants, including floating plants to provide shelter. As with most other fishes it needs open water to swim and feed in. A temperature of 20-23°C is adequate but this would have to be raised a few degrees for breeding.

The male is a little larger than the female. His dorsal fin is bigger and grows into a point. The male's chest and ventral fins are reddish in colour. The rest of the fish is brown with

silvery circles and there is a black band down each side, which stands out more in the female.

It is not a hard fish to feed. It will accept dried foods or live worms.

The pearl gourami will not attack any of the smaller fish, e.g. neons, white clouds, pencil fish or cardinals. This is my experience after observing the fish for a few months.

The pearl gourami is a bubble-nest builder. It mixes pieces of fine leaved plants into its nest which is nearly always built by the male. He takes air bubbles and covers them with saliva and these bubbles collect at the surface and when the nest is complete he encourages the female to lay. As the eggs leave the female, the male fertilizes them and they are then collected and placed in the nest. The male then cares for them.

The fry will hatch in twenty-four hours and they will continue to be cared for by the male. Young pearl gouramis look very attractive when kept on their own in a tank. As they get older they can be separated.

I am very fond of gouramis and I keep quite a number of them: moonlight, golden, dwarf, three-spot and opaline. The three-spot and opaline are closely related to the blue gourami. These fish need conditions somewhat similar to those required by the pearl. They will all live peacefully in the same aquarium.

The water should be soft—up to 10° DH. A pH of around neutral is suitable.

# watching through the window

BY E.D.ZONIK



ONE of the most satisfying alterations we ever made to the cottage was to build on a bay window fourteen feet wide. This has the effect of bringing the small ornamental pond within two feet of the sitting room so that it is now possible to sit in the window and watch the wild life which centres round the pool. Providing you keep still, remarkably little notice is taken of the watcher behind the glass.

Studied at such close quarters, even the goldfish have different personalities from a six inch shubunkin of some fifteen summers who sucks in large fish pellets whole with the precision of a vacuum cleaner, to Jubilee, bought in that year, and red, white and blue in colour whose splendour is seldom appreciated because it rarely surfaces until dusk. Still, I suppose it can be said to put on an evening performance. The pool is spotlighted from inside the window and it joins all the other fish in twirling and displaying as long as the lights are on. I never knew fish were such exhibitionists!

Hedgehogs come regularly to drink so in order to avoid tragedy, we have built a ramp of stones which lodges on one of the Iris baskets. The "hetchies" scramble up and down most agilely, and are hugely diverting to watch.

The garden is not large and has no big trees, we are also in the middle of the village but a fair variety of birds either live with us, or pass through. Great, blue, marsh and coal tits, live and nest in or around the garden and from time to time a small party of long tails will "chitter" through.

Except for late summer when most birds desert the garden for the hedge-rows, thrushes and blackbirds, along

with chaffinches and dunnocks, are resident in the garden. We also have a pair of wrens, and robins, with an obsession about nesting under the eaves of a stone building which runs the length of the patio. Each year the hen persuades her mate to build there, and all goes well until the warm weather arrives, the French windows are open all day and we sit out. As the stupid birds always choose the same spot for their nest we have no choice but to sit below it. At this point their nerve fails and they desert. As the hen bird has gardened beside me all winter this seems ridiculous. However it has happened for the past three years. Last spring was different. The weather was so cold and wet that no one sat out until late June and they actually succeeded in bringing off a brood. Certainly an example of an ill wind.

The bird table is just the other side of the pond and food is put out daily but one soon realises that a constant supply of water is even more essential. More birds come to drink than to eat. The splendid destructive bullfinches, straight from de-flowering my trees, or on a bitter winter's day a flight of goldfinches, land in the viburnum above the pond like a cluster of bright candles. When they drop down to drink they leave one bird on watch. Each Autumn garden warblers drift like olive green leaves through the undergrowth, drink, preen and move on.

Winter brings other visitors. Last year a hen blackcap, who should by rights have migrated, stayed until Spring and in a cold snap three red-wings camped out by the pond for a week, drinking and bathing frequently. To watch them at such close quarters

was fascinating. Pied wagtails also use the pond in cold weather.

Bathing techniques differ greatly. The tiny birds bob up and down on one of the lily pads and wash in the drops of water they throw up.

The blackbirds and thrushes tend to fly slowly backwards and forwards through the spray from the small fountain, then preen on the low wall which surrounds the pond. Except, that is, for one hen blackbird who doggedly persists in trying to sit on a lily pad, which not surprisingly sinks; this sends her into the inevitable fit of blackbird hysterics.

The robin trails himself with wings spread through the fountain-splashed aubrietia, but the wren is the most regular bather. Winter and Summer it baths before bed, regardless of the weather. Fine in Summer but on a January afternoon to retire still soggy to the nesting box on the rose arch seems very misguided.

Greenfinches, dunnocks, and sparrows drink considerably more often than they wash, the latter infinitely prefer a dust bath. The blackbirds often follow their baths by a session of 'anting' on the lawn, scooping the ants up under their wings and preening them into their plumage.

Not all visitors are welcome, for example the heron which dropped down out of the fog to within six feet of the lawn and my goldfish. The dogs and I saw him off in no uncertain fashion. Even less welcome are the foxes who call so diabolically under the bedroom window on January nights and who raid the bird table unless it is protected with wire netting. Their prints are clearly visible on the surface of the pond when it is frozen, along with other unwelcome tracks of carrion crow and magpie. These circle the garden and visit it in the early morning. They are capable of snipping through pretty stout wire in order to remove whole containers of fat and nuts. They certainly take a heavy toll of eggs and young birds, and are becoming far too numerous. So are the starlings whose descent on the garden is not a visit but a visitation. Closer observation has not softened my feelings towards them; they are too like certain human beings: loud greedy and messy in their habits.

# NEWS...



## SOUTH EAST



AT this year's South Park Aquatic (Study) Society open show, entries came from a wide area, with Koi (under 7 in.) plus any other variety of Fancy Goldfish being included for the first time, bringing the total to a record 20 fish and 11 plant classes. The exhibits were judged by Jim Blandell, Ron Forster, Gordon King, Johnny Kingland, Dave (Mac) Mackay and Derek Seymour. Results: Vegetalia: 1, Mrs. G. M. Parker (Best Basic Variety); 2, Dave Brooks; 3, Mrs. G. M. Parker; 4, E. R. Mercall. Bristol Type Shubunkin: 1 and 2, R. S. Graham; 3, E. Binstead; 4, Gerry Herring. Globe Eye: 1, T. Jacques; 2, M. Dudley. Brambleheads: 1, and 2, Maizer Andrew Field; 3, John Pollard; 4, R. Kich. Bubble Eye: 1, John Pollard; 2, R. Kich; 3, Gerry Herring; 4, Steve Greenham. Oriental: 1, M. Dudley. Pom-Pom: 1, 2, 3 and 4, J. Pollard. Penciltail: 1 and 2, M. Dudley; 3, and 4, T. Jacques. Common Goldfish: 1, L. R. Clape; 2, 3 and 4, G. Herring. London Shubunkin: 1, J. Pollard. Oranda: 1, R. Kich; 2, D. Morgan; 3, N. Macintosh; 4, J. Webster. Broadtail: Moor: 1 and 2, R. Field; 3, N. Macintosh; 4, M. Dudley. Fantail: 1, R. Field (Best Popular Variety); 2, D. Morgan; 3, T. Longstaff; 4, E. Binstead. Comet: 1, G. Herring; 2 and 3, D. Mackay; 4, E. Binstead. Goldfish Breeders: 1 and 2, E. R. Mercall; 3, J. Webster; 4, T. Longstaff. Native and Foreign: 1, V. B. Hunt; 2, D. Herman; 3, E. Barrie; 4, M. Franklin. Centra-chin: 1, V. B. Hunt; 2, E. Franklin; 3, M. Dudley; 4, T. Longstaff. Koi (under 7 in.): 1, 3 and 4, Sidney and Nora Lewis; 2, D. Herman. Koi (over 7 in.): 1, 2, 3 and 4, D. Herman (Best Fish in Show) (Best-Shu Sai). A.O.V. Fancy Goldfish: 1, M. Dudley; 2, P. Oldridge; 3, D. Morgan; 4, G. Herring. Plants—Koiated: (1): 1, 2 and 3, Jean Ellis; (2): 1, Jean Ellis; (3): 1, Helen Berry; 2 and 3, Jean Ellis; (4): 1, Mrs. C. A. Greenham (Best Plant in Show); 2, M. Dudley; 3, Jean Ellis; 4, D. Mackay. Cuttings: (1): 1 and 2, Jean Ellis; (4): 1, 2 and 3, Jean Ellis. Filogony: (1): 1, M. Franklin; 2, E. Franklin; 3, D. J. Mackay; 4, J. Ellis; (3): 1, J. Ellis; 2 and 4, M. Franklin; 3, H. Berry.

Founded in 1967 South Park Aquatic (Study) Society specialises in coldwater fish and meets at 8 p.m. on the third Tuesday of every month at the Wimbledon Community Centre, St. George's Road, London S.W.19. New members and visitors always welcome. Full details available from Mrs. M. Dudley, Secretary, 163 South Park Road, Wimbledon, London S.W.19 8RX. Tel: 01-540 5662.

FOLLOWING the usual club business and an open show "Debriefing" session at the July meeting, South Park Aquatic (Study) Society members held a Koi evening. Numerous colour slides supplied by Derek Herman were shown and the many varieties described by Lily Grey to an attentive audience. Lovely discussions covered a wide range of topics including seeing adult fish, types of scale and colour patterns, etc. Stories were exchanged on the lengths Koi keepers will go to keep their charges happy and healthy which included building an extension to the

## From Aquarists' Societies

house to cover part of the pond and use one apartment who turned his spare upstairs bedroom into a pool by raising floor round the walls and sawing the door into two sections! Full details of S.P.A.S.S. are available from Mrs. M. Dudley, 163 South Park Road, Wimbledon, London S.W.19 8RX. (Tel: 01-540 5662.) The Society specialises in coldwater fish-keeping and meets at the Wimbledon Community Centre, St. George's Road, London S.W.19. New members and visitors always welcome.

MR. Bill Francis entertained fifty members of the East Kent Aquatic Study Group at their July meeting with a talk on Reptiles and Amphibians. He explained the unusual life cycle of some of these creatures and gave many tips on their care and breeding. Members were fascinated by the lizards and terrapins which Bill brought along to illustrate his talk. The table show was judged by Tony and Colin Pannell. Results: Class 'D' Cichlids: 1, L. Simpson; 2, C. J. Bridgeman; 3, P. Gotsell; 4, B. Marsh. Class 'F' Corydoras: 1, J. Edwards; 2, H. Piggott; 3, F. Scary; 4, L. Scary. Class 'P' Kribia: 1, P. Edwards; 2, F. Scary; 3, B. Marsh; 4, J. Edwards. The Society was the highest pointed society at the All Kent Fish Show staged by K.A.A.S. at Chatham on 18th July. Club meetings are now held at the Memorial Hall, Bellingham, Herne Bay on the second Tuesday of each month.

THE 1982 Romford & Becontree A.S. open show was a great success with 332 entries and the society thanks the judges, Mr. J. A. Carney, Mr. D. C. Durran, Mr. W. R. Dale, Mr. R. D. Eason, Mr. T. A. King and Mr. A. Noman. Special thanks are also given to the companies who donated prizes, especially Mr. Sam Brey of S.E.A. Brey Aquariums Ltd., who donated an aquarium and cabinet for the raffle prize. Results of the show: Class Ag: 1, Andrew Waller (SLADAS); 2, Paul Mills (WDAS); 3, M. Smith (Rom); 4, P. Prior (Rom); B: 1 and 4, W. Hastings (SELAS); 2, H. Smith (Sudbury); 3, J. Part (Rom); C: 1, 3 and 4, J. Part; 2, W. Hastings; Ca: 1 and 4, Mrs. E. Smith (WDAS); 2, J. Part; 3, P. Riley (BG&I); D: 1, G. Moore (Rom); 2, W. Hastings; 3, J. Part; 4, M. Mottram (Newham); Dh: 1, G. Steptow (Rom); 2, P. Prior; 3, W. Hastings; 4, M. Marsh (Rom); Dc: 1, G. Steptow; 2, J. Part; 3, G. Moore; 4, P. Riley; E: 1, W. Hastings; 2, J. Part; 3, G. Steptow; 4, M. Smith; Et: 1, G. Moore; 2, Karen Pitt (Rom); 3 and 4, T. Laughlan (Haringey); F: 1 and 2, M. Smith; 3, J. Part; 4, P. Riley; G: 1, J. Part; 2, M. Mottram; 3, W. Hastings; 4, G. Steptow; H: 1, W. Hastings; 2 and 3, J. Adams; 4, T. Laughlan; Hs: 1, W. Hastings; 2, J. Part; 3, A. Waller (SLADAS); 4, G. Steptow; J: 1 and 3, P. Chapman (Lon. Trans); 2, M. Smith; 4, J. Part; K: 1, P. Mills (WDAS); 2, A. Waller; 3, W. Hastings; 4, Karen Pitt (Rom); L: 1, W. Hastings; 2, A. Waller; 3, Karen Pitt; 4, H. Smith (Sudbury); M: 1, W. Hastings; 2, P. Mills; 3, P. Wilson (Sudbury); 4, W. Hastings; N&M: 1, W. Hastings; 2, P. Mills; 3, H. Smith; 4, A. Waller; N&T: 1, J. Part; 2, W. Hastings; 3, M. Smith; 4, H. Smith; O: 1, T. Laughlan; 2, P. Riley; 3, V. Wren (Rom); 4, E. Ward (Rom); P: 1, P. Riley; 2 and 3, V. Wren; 4, M. Smith; Q: 1, J. Part; 2, A. Waller; 3, H. Smith; 4, W. Hastings; R: 1 and 2, J. Part; 3, G. Moore (Rom); 4, A. Waller; S: 1, P. Chapman; 2, W. Hastings; 3, G. Moore; 4, P. Prior (Rom); T: 1, H. Smith; 2 and 3, P. Riley; 4, P. Mills; U: 1, J. Part; 2 and 3, P. Mills; V: 1 and 2,

Monthly reports from Secretaries of aquarists societies for inclusion on this page should reach the Editor by 3rd of the month preceding the month of publication.

P. Prior; 3, M. Wright (BG&I); 4, P. Chapman; W: 1, 2 and 4, G. Steptow; 3, M. Wright; X&M: 1, J. Part; 2, M. Smith; 3, G. Steptow; 4, E. Ward (Rom); X&T: 1, W. Hastings; 2, J. Part; 3, A. Waller; 4, P. Mills; Z: 1, M. Smith; 2, 3 and 4, P. Mills; Junior (Special): 1, 2 and 3, Karen Pitt (Rom); 4, Neale Byatt (Rom); Junior Coldwater: 1, Michelle King (Rom); 2, Paul King (Rom); 3, Neale Byatt (Rom); 4, Lee Prior (Rom); F.R.A.S. Championship: Class P: Female Guppies, won by P. Riley (Bechtel Green & Independent); Best Cichlid and Best Fish in Show: G. Steptow (Romford) with a *Nannacara tania*. Highest Pointed Society: Trophy won by W. Hastings of South East London Aquarist Society.

AT the M.S.A.S. meeting on 8th July at Oakley Lodge, Keymer there was an auction of plants, and all went bought within ten minutes. The table show results: Kribia: 1 and 4, A. and J. Fall; 2 and 3, T. Pidgey; Laches: 1, S. Simpson; 2 and 3, T. Wren; 4, P. Chalford; Bots: 1, T. Pidgey. The Judge was Mrs. Alan Fressel. Further information about the M.S.A.S. is obtainable from the Secretary, Mr. John Smith, 51 Eastbourne Road, Brighton, Sussex. Telephone: BGN 602407.

## NORTH



AT the Lytham A.S. open show held on 4th July, there were 314 entries. Best in Show was an A.O.V. Livebearer shown by Mr. Carl Nichols (Independent) and was awarded 80 points. Class results: Guppies: 1, R. Clough (SLAG); 2, Mr. and Mrs. Daniels (Blackpool); 3, A. M. Redman (Blackpool); Mollies: 1 and 3, I. Brownlow (St. Helens); 2, Mr. and Mrs. Baldwin (Sandgrinders); Swardtails: 1, Mr. and Mrs. Baldwin; 2, R. Clough; 3, Mr. and Mrs. Hand (Accrington); Platies: 1, 3, and K. Corbett (Merseyside); 2, K. Bostley (Bridgewater); 3, A. and E. Berry (Bridgewater); A.O.V. Livebearer: 1, C. Nichols (Ind.); 2, M. and N. Rimmer (Sandgrinders); 3, A. and E. Berry. Characins (Small): 1, Mr. and Mrs. Ratough (Sandgrinders); 2, Mr. and Mrs. Baldwin; 3, Mr. and Mrs. Mills (Merseyside); Characins (Large): 1 and 2, Mr. and Mrs. Ratough; 3, Mr. and Mrs. Underwood (Bridgewater); Barbs (Small): 1, I. Whitaker (Bridgewater); 2, Mr. and Mrs. A. Goddard (Macclesfield); 3, S. and F. Spencer (Freston); Barbs (Large): 1, Mr. and Mrs. Baldwin; Ruboras: 1, Mr. and Mrs. A. Goddard; 2, Mr. and Mrs. Mills; 3, S. and F. Spencer; Danios and Minnows: 1 and 2, Mr. and Mrs. Baldwin; 3, A. and E. Berry; Angels: 1 and 3, W. and D. Hoare (Ind.); 2, Mr. and Mrs. Slater (Blackpool); Cichlids (Small): 1 and 3, Mr. and Mrs. Underwood; 2, S. Tomlinson (Macclesfield); Cichlids (Large): 1 and 2, Mr. and Mrs. Underwood; 3, Mr. and Mrs. Ratough; Rift Valley: 1, Mr. and Mrs. Ratough; 2 and 3, Mr. and Mrs. Baldwin; Fighters: 1 and 3, A. M. Redman; 2, J. and K. Corbett (Merseyside); Anabantids (Small): 1 and 3, M. Hartley (Sandgrinders); 2, I. Whitaker (Bridgewater); Anabantids (Large): 1 and 2, Mr. and Mrs. Underwood; 3, M. Hartley (Sandgrinders); Corydoras and Breches: 1 and 3, J. T. Morris (Sandgrinders); 2, Mr. and Mrs. Baldwin; A.O.V. Catfish: 1, 2 and 3, J. T. Morris; A.V. Loach: 1, A.



Bibby (Sandgrounders); 2, Mr. and Mrs. Underwood; 3, Mr. and Mrs. Baldwin, A.V. Sharks and Foxes; 1 and 2, Mr. and Mrs. Underwood; 3, Mr. and Mrs. Baldwin, A.V. Toothpick; 1, K. Buckley; 2, D. Parkinson (Stelmersdale); 3, S. Tomlinson (Macclesfield), A.O.V. Tropical; 1, Mr. and Mrs. Baldwin; 2, A. and E. Berry; 3, Mr. Hartley, Breeders (Egglayers) (Iland); 1 and 2, J. T. Morris; 3, K. Buckley, Breeders (Egglayers) (Easy); 1 and 2, K. Buckley; 2, J. T. Morris, Breeders (Livebearers) (Iland); 1, M. Hartley, Breeders (Livebearers) (Easy); 1 and 3, A. and E. Berry; 2, R. Cough (SLAG), Breeders (Coldwater); 1, A. and E. Berry, Pairs (Egglayers); 1 and 2, J. T. Morris; 3, A. and E. Berry, Pairs (Livebearers); 1 and 2, J. and K. Corbett; 3, M. and N. Rimmer, Junior (Egglayers); 1, L. and M. Buckley (Bridgewater); 2, D. Hartley (Sandgrounders); 3, Miss J. Baldwin (Sandgrounders), Junior (Livebearers); 1 and 3, A. M. Redman (Blackpool); 2, D. Hartley, Junior (Coldwater); 3, Miss L. Pymery (Macclesfield); 2, Miss J. Baldwin; 3, I. Whittaker (Bridgewater), A.V. Marine; 1, J. H. Clark (Hyde), Furnished Mini Jar; 1, Mr. and Mrs. T. White (Bury), A.V. Ladies; 1, Mrs. Baldwin (Sandgrounders); 2, Mrs. Slater (Blackpool); 3, Mrs. J. Corbett (Merseyside), Common Goldfish and Comets; 1, Mr. and Mrs. Underwood; 2, P. Slater (Blackpool), A.V. Shubunkins; 1, A. and E. Berry; 2, S. Walsh (Accrington); 3, C. H. Whitney (Accrington), Fantails and Veiltails; 1 and 2, Mr. and Mrs. Underwood; 3, C. H. Whitney, Lionheads and Orandas; 1, Mr. and Mrs. Colley (Oldham); 2, C. H. Whitney; 3, S. Walsh (Accrington), Moons; 1 and 2, W. Pymery (Macclesfield); 3, Mr. and Mrs. Colley, A.O.V. Coldwater; 1, S. Walsh; 2, Mr. and Mrs. Eastough; 3, A. and E. Berry.

**RESULTS of the Sandgrounders A.S. 12th annual open show, held at Meols Cop High School, Meols Cop Road, Southport, on 18th July.** Guppies (Concord Trophy); 1, Mr. and Mrs. Stevenson (Oldham); 2, R. Evans (Iland); 3, A. and E. Berry (Bridgewater), Sweedies (Jan Fuller Trophy); 1 and 2, R. W. Carter (St. Helens); 3, S. Whiting (North Staffs), Plaies (Waine Trophy); 1 and 2, R. Payne (Merseyside); 3, B. W. Carter, Mollies (Mount Pleasant Hotel Trophy); 1, J. Lynch (Merseyside); 2, J. Rowlow (St. Helens); 3, S. Jones (St. Helens), A.O.V. (Livebearers) (Sandgrounders Rose Bowl); 1, C. Nichols (Iland); 2, A. and E. Berry; 3, M. and N. Rimmer (Sandgrounders), Anabantids (Small) (Hughes Trophy); 1, K. L. Payne (Merseyside); 2, K. Buckley (Bridgewater); 3, B. Wilson (St. Helens), Anabantids (Large) (Ellieman Post Industrial Cleaners Trophy); 1 and 3, Mr. and Mrs. Underwood (Bridgewater); 2, D. Maloney (Merseyside), Siamese Fighters (Safeway Trophy); 1 and 2, A. M. Redman (Blackpool); 3, C. A. Daniels (Blackpool), Cichlids (Small) (Keith Wright Trophy); 1, Mr. and Mrs. Underwood; 2, R. Payne; 3, J. Kidd (Macclesfield), Cichlids (Large) (Peter Ground Trophy); 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Underwood; 3, P. Clayton (Preston), Rift Valley Cichlids (Under 10 cms.) (Carlmer Trophy); 1, Mr. and Mrs. Waterhouse (Merseyside); 2, R. Wilson; 3, Mr. and Mrs. H. Cooper (Bury), Rift Valley Cichlids (Over 10 cms.) (Carlmer Trophy); 1, Mr. and Mrs. H. Cooper; 2 and 3, Mr. and Mrs. Waterhouse, Angels (Clara Walker Memorial Trophy); 1, Mr. and Mrs. Stevenson; 2, Mr. and Mrs. Puce (Sandgrounders); 3, W. D. House (Iland), Characins (Small) (Chairman Trophy); 1 and 2, Mr. and Mrs. Baldwin; 3, E. and B. Callow (Bridgewater), Characins (Medium) (Tony Aindow Trophy); 1 and 2, Mr. and Mrs. Eastough; 3, S. Waterhouse (Merseyside), Characins (Large) (Cliff Tasker Trophy); 1, R. Payne; 2, Mr. and Mrs. Underwood; 3, K. Buckley, Barbs (Small) (Tommy Byrne Trophy); 1, Mr. and Mrs. Eastough; 2, J. Roberts (Nelson); 3, S. Whiting (North Staffs), Barbs (Large) (Bank Aquatic Trophy); 1, Mr. and Mrs. Stevenson; 2, Mr. and Mrs. Baldwin; 3, K. Buckley, Rasbora (Cliff Tasker Trophy); 1, Mr. and Mrs. Waterhouse; 2, B. W. Carter; 3, Mr. and Mrs. Goddard (Macclesfield), Minnows (Fawn Trophy); 1, Mr. and Mrs. Underwood; 2 and 3, Mr. and Mrs. Baldwin, Danies (Paul Deposits Trophy);

1 and 3, Mr. and Mrs. Baldwin; 2, J. Brewlow (St. Helens), Corydoras and Brochis (Ella Ana Trophy); 1, B. Parr (Piscine); 2, Mr. and Mrs. Waterhouse; 3, Mr. and Mrs. Baldwin, Sucker-mouth Catfish (Bond Trophy); 1, J. T. Morris (Sandgrounders); 2, Mr. and Mrs. Baldwin; 3, M. and I. Crother (Nelson), Synodontis (Baldwin Trophy); 1 and 3, Mr. and Mrs. Waterhouse; 2, J. T. Morris, A.O.V. Catfish (Fletcher and Fletcher Trophy); 1, Mr. and Mrs. Underwood; 2 and 3, J. T. Morris, Loaches (Sue Underwood Trophy); 1, Mr. and Mrs. A. Bibby (Sandgrounders); 2, Mr. and Mrs. Underwood; 3, M. and N. Rimmer (Sandgrounders), Sharks (Charbon Trophy); 1 and 2, Mr. and Mrs. Underwood; 3, A. and E. Berry, Flying Foxes (Lance Left Conversion Trophy); 1, Mr. and Mrs. Stevenson; 2, K. Buckley; 3, A. and E. Berry, Killifish (Piddich Trophy); 1 and 2, M. Agnew (Buxton); 3, K. Buckley, A.V. Female Fish; (H. Santal Trophy); 1, M. and N. Rimmer; 2, D. Parkinson (St. Helens); 3, R. W. Carter (St. Helens), Pairs (Livebearers) (Prince of Wales Trophy); 1, J. and K. Corbett (Merseyside); 2, R. and B. Callow (Bridgewater); 3, M. and N. Rimmer, Pairs (Egglayers) (Sue Underwood Trophy); 1 and 3, J. T. Morris; 2, Mr. and Mrs. Bentham (St. Helens), Breeders (Livebearers) 1-10 (Steve Hooton Trophy); 1, Mr. and Mrs. Baldwin; 2, R. I. Payne; 3, A. and E. Berry, Breeders (Livebearers) 1-20 (Waterhouse Trophy); 1, M. Hartley (Sandgrounders); 2, A. Birchall (Oldham), Breeders (Egglayers) 1-10 (Rowland Trophy); 1 and 2, K. Buckley; 3, J. T. Morris, Breeders (Egglayers) 11-20 (Rowland Trophy); 1, K. Buckley; 2 and 3, J. T. Morris, A.O.V. Tropical (Oceanarium Trophy); 1, Mr. and Mrs. Baldwin; 2, Mr. and Mrs. A. Morris (Sandgrounders); 3, Mr. and Mrs. Bentham, Common Goldfish and Comets (Stephen Howard Trophy); 1, S. Walsh (Accrington); 2, Mr. and Mrs. Underwood, Shubunkins (Jan Fuller Trophy); 1, A. and E. Berry; 2, A. Messer (Iland); 3, R. and D. Parr (Piscine), Fantails (West Lancs Nurseries Trophy); 1 and 2, Mr. and Mrs. Underwood; 3, C. Whitney (Accrington), A.O.V. Coldwater (Single Tail) (Rams Trophy); 1, A. and E. Berry; 2, S. Walsh (Accrington); 3, Mr. and Mrs. Eastough, A.O.V. Coldwater (Twin Tail) (Southport Year Trophy); 1 and 3, Mr. and Mrs. Colley (Oldham); 2, C. Whitney (Accrington), Lionheads (Harvey Family Trophy); 1, S. Walsh; 2, C. Whitney; 3, D. Hewin (Oldham), Juniors (Livebearers) (M. Morris Trophy); 1, A. M. Redman (Blackpool); 2, L. and M. Buckley (Bridgewater); 3, D. Hartley (Sandgrounders), Juniors (Egglayers) (Chris Connor Memorial Trophy); 1, P. Underwood (Bridgewater); 2, J. Corbett (Sandgrounders); 3, S. Waterhouse (Merseyside), Juniors (Coldwater) (Sandgrounders Trophy); 1, P. Underwood; 2, Miss J. Baldwin (Sandgrounders); 3, C. Berry (Bridgewater), Ladies Fish (Any Variety) (Dates Bidding Supplies Trophy); 1, C. Buckley (Bridgewater); 2, Mrs. White (Bury); 3, Linda Morris (Sandgrounders), Furnished Mini Jar (Ladbroke Trophy); 1, D. Milner (Derwent); 2, Mr. and Mrs. White (Bury); 3, B. W. Carter (St. Helens), Photography Competition (Morris Trophy); 1, Mr. A. Morris (Sandgrounders); 2, B. Layland (St. Helens); 3, B. Wilson (St. Helens), Best Fish in Show (The Ildon Trophy); Mr. and Mrs. H. Cooper (Bury), Rift Valley Cichlids, Society with the most points (Bernard Crabtree Trophy); Sandgrounders A.S. Society with most entries (Kingway Casino Punch Bowl); Bridgewater A.S. Exhibitor with most points (Fish Pad Trophy); Mr. and Mrs. Underwood. Total number of entries in show: 540.

## SOUTH WEST



"CULLING Fancy Goldfish" was the subject of a talk given by Vic Cole to Bristol A.S. After listing the various standards for Goldfish,

the speaker emphasized that it was essential to know the faults to eliminate in order to achieve success on the show bench. The secondary effect of culling was to make the optimum use of space, heat and food for the selected fry. Dealing with Shubunkins, Vic looked first for tail shape and then body contour, because colour was often late in developing. This was done after eliminating all "pinks" and metallics. Twintails showed their faults more readily and the speaker preferred to retain the shorter bodied fish. By the use of excellent slides members were able to see eggs, fry and young fish through their development to potential winners.

Table Show results: Lionheads; 1, 2 and 3, Vic Capaldi; 4, R. Pincock, Barbs; 1, D. Spruce; 2, Miss H. Morgan; 3 and 4, D. Garland, Loaches; 1 and 2, J. Hughes, Catfish; 1 and 2, Miss H. Morgan; 3 and 4, D. Spruce.

## Dates for the diary

A monthly information column to keep you up to date on forthcoming events.

### SEPTEMBER

**5th September: COVENTRY POOL & AQUARIUM SOCIETY** open show in conjunction with 2nd Mal Show. Further details, contact Mr. C. Bates, 2 Fieldside Lane, Bingley, Coventry. (Tel: 0203 451528).

**5th September: WELLINGBOROUGH AND DISTRICT A.S.** open show at Westfield school for boys, Brickhill Road, Wellingborough, Northants. F.R.A.S. Championship Class C.R. Schedules from M. Gee 20 Salisbury Street, Kettering Northants. (Tel: Kett. 521800).

**5th September: NORTH WILTS A.S.** open show, details from Show Secretary, Mr. P. Taylor, 7 Ridgeway Road, Stratton, Swindon, Wilts. (Tel: 0793 824114).

**5th September: HUDDERSFIELD TROPICAL FISH SOCIETY** open show at Slatkwaite Civic Hall, Slatkwaite, Huddersfield. Booking in time is 12.00 p.m.-5.00 p.m., plus afternoon auction at the same time.

**5th September:** The Norwich Section of the **BRITISH KOI KEEPERS' SOCIETY** are holding their monthly meeting at the home of Mr. J. D. Meadows at 2.30 p.m. at 11 Wilton Road, Packfield, Lewes. For further information, please telephone Mrs. Olive Crosby, the Section Secretary on Norwich 412095.

**5th September: EDINBURGH A.S.** annual open show at the Westfield Hall, Westfield Avenue, Edinburgh.

**15th September: BRISTOL A.S.** Coldwater Fish Show at St. Andrew Church Hall, Steedford Road, Whitehall, Bristol from 2-5.30 p.m. Details and Schedules from Show Secretary, I. Milden, 87 St. John's Lane, Bristol BS3 5AB. (Tel: 0272-712383).

**11th September: BOUNSLOW & DISTRICT A.S.** open show. Details from the show secretary, Mr. T. Bingham, 2 Holmwood Close, Addlestone. (Tel: Weybridge 54976).

**11th and 12th September: EAST KENT AQUARIST STUDY GROUP** annual exhibition of fishkeeping at Littlebourne, Nr. Canterbury.

12th September: **BARNSELEY A.S.** open show at the Hall Balk 6th Form College (Old Girls' High School), Huddersfield Road, Barnsley. Benching from 12-2 p.m.

12th September: **BUXTON AND DISTRICT A.S.** annual open show in St. Peter's Church Hall, Fairfield Road, Buxton. Benching 12.00 to 2.00. Judging to commence at 2.15 prompt.

12th September: **LEAMINGTON AND DISTRICT A.S.** open show to be held at Lilington Community Centre, Lilington, Leamington Spa, Warwickshire. For further details contact Chairman Mr. J. White, 33 Charles Street, Warwick. (Tel: Warwick 492019).

12th September: **DUNFERMLINE & DISTRICT A.S.** 12th annual open show at Nethertown Institute, Dunfermline.

12th September: **CHELTONHAM T.F.C.** open show at St. Mark's Community Centre, Hesters Way, Cheltenham. Schedules from M. Jenkins, 3 Marlborough Place, Princes Street, Cheltenham. S.A.C. please.

12th September: **LANARKSHIRE A.S.** meeting at Airdrie Community Centre, Clark Street, Airdrie, Lanarkshire at 7.30 p.m. The speaker will be Mr. J. Sinclair and the table show will be Swordtails, Sharks, Foxes, Pairs of Egglayers and Breeders Swordtails.

18th September: **PLYMOUTH & DISTRICT AQUARIST & PONDKEEPERS SOCIETY** open show at The Trinity United Reform Church Hall, Torr Lane, Hartley, Plymouth. Schedules from the Show Secretary, J. Rundle, 87 Crossways, Plympton, Plymouth.

18th September: **KINGSTON AND DISTRICT A.S.** open show at Raynes Park Methodist Church Hall, Worples Road, Raynes Park, SW20.

19th September: **TONBRIDGE AND DISTRICT A.S.** open show at Hadlow Village Hall, Hadlow, Kent.

19th September: **DISS & DISTRICT FISHKEEPERS CLUB**, Diss Show at the Youth Centre, Sheffanger Road, Diss, Norfolk. Schedules will be available from Mr. N. Hume, 10 Blenheim Road, Diss, Norfolk IP22 3NU.

19th September: **CHISTERSFIELD & DISTRICT A.S.** open show at Westfield Upper School, Mosborough. Benching 12 to 1.45 p.m. Schedules available on receipt of s.a.c. from Mr. L. Wally, 79 West Street, Eckington, Sheffield S31 9GA. (Tel: 0246 432531).

19th September: **POTTERIES AND DISTRICT A.S.** 3rd annual open show at Birches Head High School, Birches Head Lane, Hanley. For further details, contact D. J. Bromley by phone (after 6 p.m.) 0782/271488.

25th September: **ILFORD & DISTRICT AQUARIST & PONDKEEPERS SOCIETY** annual exhibition of Fishkeeping at the Lambourne Rooms, Ilford Town Hall, High Street, Ilford, Essex. Change of Programme Secretary: D. Seaman, 52 Lighborn Avenue, Rush Green, Romford, Essex. (Tel: Rom 49996.)

26th September: **Northern Area Group** open show at Darwen Library Theatre, Darwen, Lancashire. Details from B. Baldwin, 20 Olive Grove, Southport, Lancashire.

26th September: **WOLVERHAMPTON A.S.** open show, the venue to be decided at a later date. Show Secretary is Alan Davis, 5 Star Close, Bentley, Walsall. (Tel: Walsall 446265).

26th September: **WYKE SHOW SOCIETY** open show at Hull College of Further Education, Ingimire Avenue, Hull. Benching 12-2 p.m.

26th September: **Carlisle open show, NORTHERN AREA GROUP C.A.G.B.** at Darwen Library Theatre, Darwen, Lancs. Classes for all types of Carlisle, plus photo competition. Details from Show Secretary: B. Baldwin, 10 Olive Grove, Southport, and P.R.O. J. T. Morris, 102 Cale Lane, New Springs, Wigan, Lancs.

26th September: **STIRLING A.S.** first open show.

26th September: **WALTHAMSTOW & DISTRICT A.S.** annual open show at Queen Mary College, 98-110 High Road, South Woodford, E.18.

## OCTOBER

2nd October: **EAST LONDON AQUARIST & PONDKEEPERS ASSOCIATION** 34th Annual Breeders open show at Cathedral Hall, Cecil Road, Chadwell Heath, Essex. Schedules available from Show Secretary, Mr. Martin Howells, 30 Kilmington Road, Goodmayes, Essex. (Tel: 01-990 1824).

3rd October: **THE BETHNAL GREEN AND INDEPENDENT A.S.** 2nd open show to be held at Windsor Road School, Manor Way, East Ham, London, E.6. Benching from 9.30 p.m. on Saturday to 11.30 a.m. Sunday. Judging at 12.00 noon. Schedules and further information from Mr. L. Tuck, 9 Hartford Street, Stepney, London, E.1. (Tel: 01-791 0965).

3rd October: **NEWBURY & DISTRICT A.S.** 10th open show. For details please contact the Chairman, B. A. Barrett, 38 Digby Road, Speen, Newbury, Berks. (Tel: Newbury 41395).

3rd October: **DALKEITH COMMUNITY CENTRE A.S.** open show at the Dalkeith Community Centre.

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