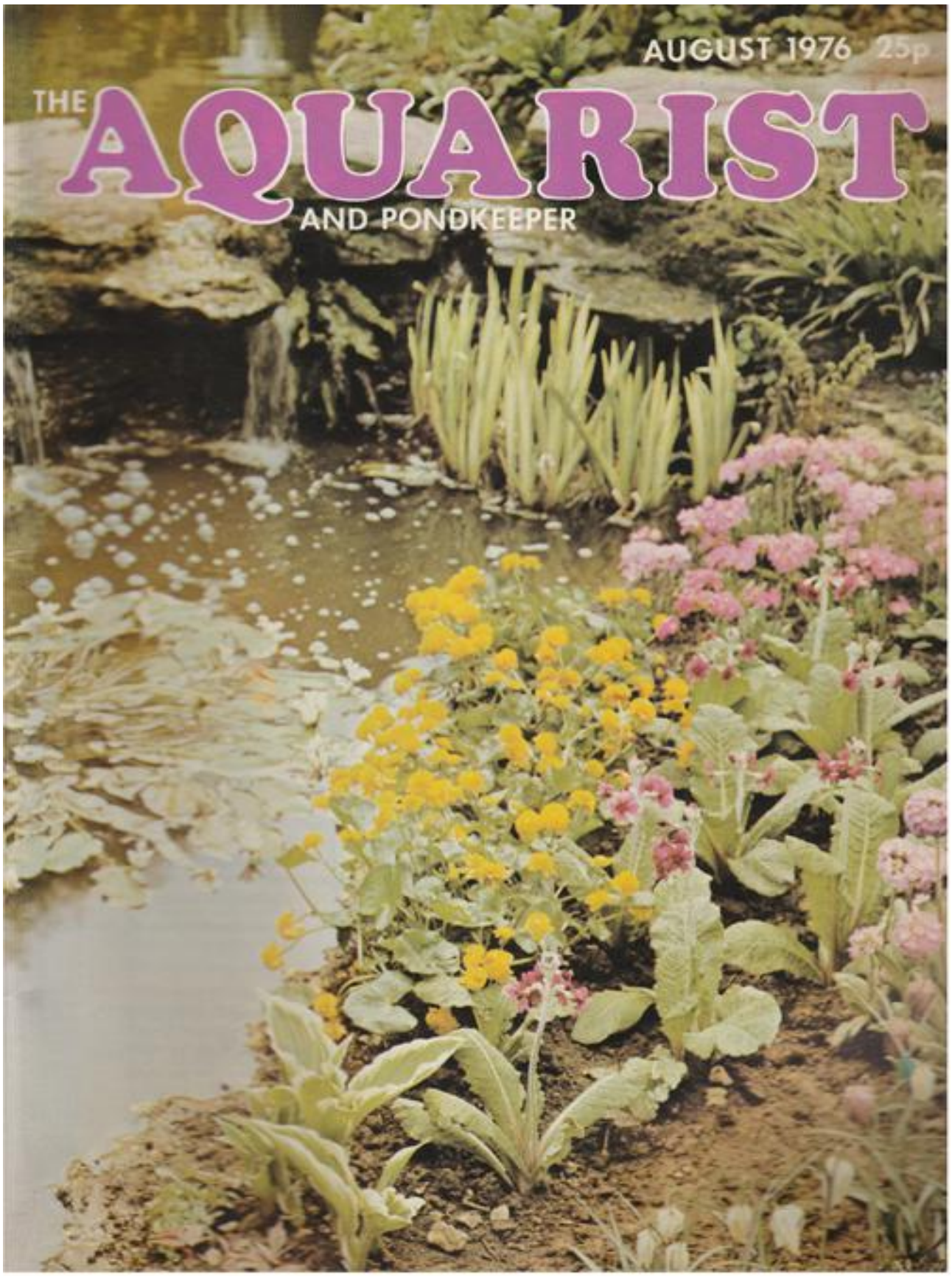
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THE
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CRYPTOCORYNES (4)

Cryptocoryne blasii
C. cordata
C. griffithii
C. purpurea

by Vivian De Thabrew, M.A., N.D.T., FL.S.,
Director, Suhada Ltd., (U.K. and Sri Lanka)

THIS ARTICLE is devoted to the above four Cryptocorynes, which are grouped here owing to their similarity in appearance. The main differentiating features for the aquarist are the colour and special leaf characteristics. All four species have leaves of similar shape and size, and the height and root-stock are also very similar. All of these are extremely attractive plants, but are not readily available on the market. Occasionally one or two species arrive here almost by accident. I have obtained what were alleged to be the above four species from twelve plant dealers who regularly advertise in the hobbyist journals. However, only one species from one dealer turned out to be the correct one. All the others were either hybrids or totally different species.

Cryptocoryne blassii De Wit

This is named after the famous German plant collecter and grower, A. Blass.

Habitat: Mainly in Thailand, especially in the murky waters of river tributaries.

Description: The fleshy leaf is ovate, up to about three inches (seven and a half centimetres) long and one and a half inches (three and a half centimetres) broad. It is reddish or reddish brown on the upper side and deep purple or burgundy colour on the underside. The base of the leaf is heart-shaped and the tip blunt. Due to the irregular thickening of the leaf tissue in the areas between the lateral veins a mottled effect is given. These mottled areas appear brownish red or rusty brown. The leaves, borne on thin, pale purple petioles, have a prominent midrib with three to four sets of veins either side. The root-stock is fairly woody, and in the case of very mature plants, stout and wiry.

Cultivation and propagation: This grows well in a medium of muddy clay and peat or coarse sand and peat. The aquarist should not bother too much about the medium, as unwashed gravel and coarse river sand will do. It is very undemanding as to light conditions. A temperature range of 72°-76°F is very satisfactory. Like most Cryptocorynes, it prefers acidic water conditions. However, even a pH of 7·2 is tolerated.

C. blassii is yet another hardy species which will produce an exceptionally beautiful and thick bushy plant.

Two years ago I received several of these plants from a Thai botanist. These I grew under many experimental conditions, paying special attention to pigmentation variation induced by light intensity. One interesting fact that emerged from this concentrated observation was that the rusty brown mottled areas on the upper surface of the leaves turned purplish or reddish green under strong light. The entire leaf developed a satiny sheen, while the midrib assumed a pale purplish hue. Even in a turbid tank, the leaves maintained a healthy condition and the entire plant was not visibly affected, provided the temperature was maintained at a steady 72°F. During this period the root-stock grew vigorously, developing lateral shoots and runners.

Cryptocoryne cordata Griffith

The aquarist may occasionally come across this species offered by some dealers. However, it is most unlikely that it is the true species, as according to many collector botanists, such as De Wit, Stodola, Wirawadana, Sudeha and Sakata, the true *cordata* species is not available to the plant importers. What comes as *cordata* is *C. griffithii*, a plant with very similar characteristics.

The aquarist should bear in mind that nearly all the plants imported into this country are collected by native jobbers who have no knowledge of botanical characteristics, but collect the plants from the wild going by traditional know-how, and identifying the

plants by the very same names which their predecessors have given.

Habitat: Malaya and Borneo. It is also presumed to be found in Java and Sumatra.

Description: This is often confused with *C. griffithii*, as both the species have very closely similar characteristics. The only distinguishing features are found on the leaf and flowering structures. Therefore the true identification of this species can only be ascertained by a trained and qualified botanist, and even then only during its flowering stage.

It has wide and oval or egg-shaped leaves, about five to seven centimetres long (two to three inches) and four centimetres (one and a half inches) wide, which are slightly rounded at the base and gradually pointed at the tip. The dark green petiole (leaf-stalk) is about six to twelve centimetres (two and a half to five inches) long, slender but strong. The flowering spathe is yellow inside.

Cultivation and propagation: A tank medium of peat, coarse river sand and mulm or peat, clay and fine gravel is suitable. It prefers a slightly higher temperature than most Cryptocorynes. However, a temperature range of 68°-78°F is tolerated, the best temperature being 74°F. Temperature fluctuation should be avoided, as it is fairly sensitive to this.

The water should be soft and acid. A pH range as low as 6·0 to 6·6 is preferred. This species should be planted in a deep tank, where it will develop strong and large leaves with long leaf-stalks. In a shallow tank, the leaves become smaller and broader, with short leaf-stalks. Being of a strong creeping habit, it should be propagated by runners. As with most Cryptocorynes, root division is possible.

Cryptocoryne griffithii Shott

Habitat: Malayan archipelago, in clear, flowing waters.

Description: The leaves are oval or egg-shaped, and slightly more pointed than those of *C. cordata*, with a slightly rounded base. They are three to three and a half inches (seven to nine centimetres) long and about two inches (five centemetres) broad, and are borne on long petioles growing up to about five inches (twelve and a half centimetres). Another significant characteristic is that, more often than not, the two sides of the leaf base connect the petiole at different points. The upper side of the leaf is a velvety dark green, while the underside is purplish to pale green. A thick midrib bears three or four purplish or reddish veins on each side. Grown in a weak intensity of light the leaves often become mottled, and manifest reddish or brown blotches. The fleshy root-stock produces sprouting runners and a mass of fibrous roots. The flowering spathe is purple inside.

Cultivation and propagation: A planting medium of a mixture of coarse river sand and peat or clay is ideal. Best results are obtained by planting in a deep tank. It is particular about water conditions, and requires soft water. It is also tolerant of slightly less acid water than that preferred by *C. cordata:* a pH range of 6·5 to 7·0 is suitable.

A medium light intensity should be provided, as it does not like too strong an illumination. It should also be protected from strong sunlight. Grow it in a shady situation. The temperature range should be between 65°-75°F.

Propagation is effected by means of the many runners emerging from the root-stock. The sprouting plantlets should be left to develop to about an inch in height, when they can be separated and transplanted in a medium of clay or peat and fine gravel or coarse sand.

Cryptocoryne purpurea Ridley

Habitat: Malaya, India and in very small colonies in Sri Lanka.

Description: An extremely attractive species, which is still shrouded in mystery. There is very little known about its habits and behaviour.

The leaves are longish, ovate, dark green on the upper side and often speckled with brown dashes or dots, and reddish, purplish or brick-red on the underside. They are about three inches (eight centimetres) long and about two inches (five centimetres) broad, with a rounded base and blunt tip. The strong is about eight inches (twenty centimetres) long, and greenish red or purple. The pronounced midrib has three to four lateral veins on either side. The entire plant grows to a height of about twelve inches (thirty centimetres).

Cultivation and propagation: This is one of the difficult plants to grow, as it is very demanding as to water, temperature and light conditions. Soft water is essential, and the pH range should be 6·5 to 6·8. Rain water, well filtered, can be used in the aquarium for this purpose.

Because it is a tall plant, a deep tank is essential. The water temperature around 74°F has proved to be beneficial. It should be protected from strong sunlight; moderate artificial lighting is required. A shady situation should be provided in the aquarium.

The few specimens I received from Sri Lanka were subject to these conditions and developed to be brilliant and most attractive specimens. One particular specimen, which was growing in extremely poor light at a temperature of 72°F and pH of 6·7 developed deep purple foliage with grey-green spots.

Propagation is very slow, and this occurs by developing sprouts on runners borne on a fleshy root-stock.

This species is rarely available to the aquarist, but can occasionally be obtained from botanist collectors. However, a few plants may find their way onto the market quite accidentaly, as another species.

WHAT IS YOUR OPINION?

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

Photographs by the Author

NATIVE MARINE life is the subject of the first of this month's letters. It reached me from Mr. Alex Byrne, of 36 Hollybush Lane, Hemel Hempstead, Herts. He writes: "There are a few points I should like to mention regarding British seawater life. Surely, as we are surrounded by seawater, one would have thought that the aquarium trade would have utilised this fact for the benefit of both aquarist and retailer. Even with such a variety of marine animals on our doorstep, all to be had for nothing—compare that with tropical marine prices!—relatively few aquarists have taken up the challenge; so I must be in a minority.

"I have successfully kept and maintained a green shore crab, *Carcinius maenas*, and various beadlet anemones, *Actinia equina*, for four years without a single loss, and now hope to obtain more specimens from a day trip to the East Coast. The trouble is that various species are difficult to obtain, and I am on the look-out for some tubeworms, *Sabella pavonina*, and sea fan, *Eunicella verrucosa*. I would therefore be pleased if you and your readers would send me any information—the addresses of marine laboratories, for example—where I could obtain these creatures, bearing in mind that I am situated just about as far from the sea as it is possible to get! British marine keeping provides a stepping stone to the ultimate, i.e., tropical marine aquaria, and I feel that a little experience gained in this field it worthwhile. I am also an ardent tropical freshwater aquarist and a marine and a freshwater tank side by side contrast in a very pleasing manner. Try it and see. I will answer any queries addressed to me, and hope that more aquarists will be introduced to this branch of the hobby." (The Queen's University Marine Biology Station, Portaferry, County Down, might be able to help; or you could try writing to The New University of Ulster, Coleraine, County Londonderry. No doubt other British universities could provide advice or assistance).

"Having been a subscriber to *The Aquarist & Pondkeeper* for quite a few years, I now turn to *W.Y.O.?* first each month as I find it very interesting and informative," writes Mr. Alf Marsden, from 688 Abbeydale Road, Sheffield. He continues: "I have been an aquarist for nearly forty years, keeping both tropical and coldwater fish. Recently I built a 12 ft. × 6 ft. fish house, with double floor with fibre glass sandwiched between; also the walls are lined with fibre glass, then faced with hardboard. The roof is clear Cascalite sheeting and lined with polythene sheet. All windows are lined as for double glazing. Shelving is made of angle iron and 1 in. plywood; electricity and water are both laid on; there's an internal drain should I want to run a tank through—that is, when our water supply returns to normal. All I want now is for the price of things to hold up so that I can stock it. Recently the disposal of sick fish was queried. My way is to put the patient in strong permanganate of potash solution and, after a few minutes, to take it out and bury it under my almond tree. I work in a hospital and see people leave this world, but I still do my best to save a fish before taking the final move. Life is precious in all creatures great and small; even plants get a second chance with me.

"Regarding the use of lead in the tank: I once cut a 1 in. gas pipe into ¼ in. rings, then boiled them and put them outside for a while to weather; I then used them in all my tanks and had no trouble at all. When planting a tank for large goldfish, I plant in fine gravel and then add a 1 in. layer of pebbles. This stops the fish from gardening and uprooting all the greenery; it also stops the fish from damaging their mouths on the lead.

"My first tank was given to me by my sister and her husband for working in their nursery keeping the plants and greenhouses in order whilst they were in the forces. The fish came from Kingfisheries, at Kings Langley, and I had them for nearly ten years, losing them only when I was called up and my brother moved in and overfed them. On my return to civvy street I waited until I was married and had my own home before starting again. I obtained a 24 in. × 12 in. × 12 in. tank containing eleven 3-5 in. goldfish and a 5-in. catfish. These had been in a tank for four years when I got them; their main food was Kit-E-Kat and thin

pieces of steak dropped in by their owner when he came home from work. With these fish I had several spawnings and still have some of their offspring; I hope they will provide me with more. I am now waiting for some eggs to hatch; but the weather has turned cool so that will add a couple of days as they are in a tank in the back. My tanks have all had plenty of plant life as I believe this helps to keep the water clean and and makes life better for the inmates; after all, we humans always furnish our homes to help in the comfort of living. I have friends who come along for a fish or two and I always ask them the size of the tank they'll be putting the fish in, if the tank is set up properly, and if they are really interested in looking after the fish. These questions usually make them think; and after a little talk those who are going to look after them are supplied; if there is any doubt I tell them to come back after they have had a think about it. When you tell them to get a tank and not a bowl; that gravel, plants, lights and a period of six to eight weeks are required before putting in the fish, they sometimes change their minds—so that prevents the fish from suffering discomfort and probably dying a slow death in a neglected tank. Keeping fish is, to me, one of the best hobbies to have because once a tank has matured and the fish are installed and settled in, it's better to look at than television—and it can be more entertaining; also, half an hour per week will keep the tank in tip-top condition.

"One of my other hobbies is photography. I have two 35mm. cameras. I have some slides of *Daphnia* and of my fish, but they are not as good as I would like them to be. I have always used 100 watt bulbs over the tank; they give enough light, but due to not having a correction filter they all came out with a yellow cast; so now I am going to have to try with High Speed Ektachrome tungsten-type film which requires no filter. Before filming I polish the glass inside and out with newspaper; this really cleans it. Then I put a piece of glass down the centre, which brings the fish forward, giving a clearer view of the fish—and also keeping the plants in the picture. All schools of photography tell you to take three frames: take a meter reading; then use a stop up, the actual reading, and a stop under. This gives you a selection, one of which should be spot on. This, of course, is OK if you can afford the film. Maybe the chap who does the covers of our magazine could give us a few professional hints and ideas for us to try."

Mr. Marsden continues: "I have an everlasting supply of *Daphnia* and *Tubifex*, plus earthworms from my allotment; and, during the summer, gnat larvae. The only other food I use is a granular brand which I riddle through a small sieve, then through a fine net, and finally a silk stocking. This gives me three sizes of food: large for big fish, medium for smaller ones, and fine powder for tropicals and babies. I don't use any chemical preparations in my tanks, other than permanganate of potash once per month, and I have never had any diseases in my tanks. All new fish are quarantined for a month and I have even cut pieces off fish and kept the fish separate until they could go back with the others. Having had fish all these years I'm afraid the Latin names evade me so I, along with many others, miss out when articles use these names for fish and plants. If English names were put in brackets it would help. I let a friend borrow some of my books and he came back saying that he had read certain

articles but had given up when the names were beyond him; so, in the end, he decided to stick to the fish he knew." (I always try to include common names, where possible; however, there are some less common species which do not have common names. Some American journals leave me rather cold as they seem to concentrate on new species which I have never seen. The pronunciations of certain names are certainly difficult. I'm still uncertain about how one should correctly say *Aponogeton*—and it's difficult to write down pronunciations when normal publishers don't have type for phonetic symbols. How do you pronounce the above plant name?).

Fish euthanasia continues to provide a talking point. I don't think death in a solution of potassium permanganate would be very pleasant as it is an oxidising agent. I had a chat with my vet earlier this week and he again suggested boiled water. As an alternative he suggested phenobarbitone dissolved in a solution of baking soda. He said it would make a lethal and painless cocktail. I asked him about the suggestion of methylated spirits—and he said it would be a very painful way to dispose of an ailing fish. The oxygen-free water is obviously the easiest substance to produce. Has anyone tried killing a fish in boiled water, i.e., water which has been boiled to drive off all the oxygen and then allowed to cool down to an appropriate temperature? I suppose it wouldn't work for those fish that can breathe atmospheric oxygen, e.g., fighters and gouramies.

Some time ago a reader from Glengormley sent us details of her experiences with the breeding of catfish. Photograph 1 shows a trio of *Corydoras* heading for a food tablet. I'd be pleased to hear from anyone else who has bred *Corydoras* species. (If I remember correctly, the breeder from Glengormley fed her young *Corydoras* on porridge!).

Messrs. M. Dobson and D. James are fifteen years old and wrote to me from 9 Chestnut Avenue, Holbeach, nr. Spalding, Lincs. They are also having trouble with those scientific names. Mr. Dobson writes: "My friend and I are enthusiastic aquarists, fairly new to the hobby. We have managed to overcome many of the problems related to aquarium keeping and have attained a reasonable knowledge of it. Unfortunately we have one major problem: we are totally confused when we come across words like *Gymnocorymbus ternetzi* or *Hyphessobrycon*; and we even have to hesitate over common words such as cichlid or characin. The situation could be improved if there were an aquarist society locally which we could join and learn these words through contact with more experienced aquarists; but as there isn't, we would appreciate an article, on the pronunciation of the widely used words related to aquarium keeping, in a future issue. May we take this opportunity to praise your excellent magazine; it has helped us a great deal and we do not think we would have achieved our present standard without its numerous views and ideas."

I was pleased to receive another letter from a reader in N. Ireland. It reached me from 59 Bladon Drive, Belfast BT9 5JN, and was written by Mr. Patric Baird. "I became a keen aquarist almost a year ago when I kept a pair of zebra danios, guppies and a female fighter in my brother's 12 in. × 8 in. × 6 in. newt tank—which grew to an 18 in. × 10 in. × 10 in. community tank; followed by a water turtle and a guppy breeding tank. One shop serves all my requirements for tropical fish because, in Ulster, there is not a wide range of aquatic shops. I get all my advice from the shop; and I bought an 18 in. × 12 in. × 10 in. angle iron framed tank, complete with hood, for £2—which I found an excellent bargain. I thank you

for a great magazine which I discovered in February. I would be happy if you could print an article about, or details of readers' experiences with, the khuli loach. I have five specimens and could write a book about their antics."

Photograph 2 shows a young discus. I'd be pleased to hear of your successes with the keeping and breeding of discus. Last week I was pleased to hear from an old friend, Mr. Derek Chambers, who emigrated from Ballymena to New Zealand some years ago. Derek asked if I remembered him and stated that he used "to pester" me—to use his own words—for guppies and plants. Some months ago he obtained recent copies of *The Aquarist* and was pleased to see that *What is your Opinion?* is still thriving. I was delighted to learn that Derek, who lives in Auckland, has long since graduated from guppies and is now considered to be the top discus breeder in New Zealand. He is now selling his young discus for a

few New Zealand dollars and has just invested in several pairs of red discus. I've asked him to share a few secrets of his successes with us. I'll publish any useful information he may supply. (I was interested to note that his letter from New Zealand to Northern Ireland took only a couple of days to arrive. It's ironic in the light of the fact that second class letters from England usually take much longer!).

"Forth," Bankheadln., Hoghton, Preston, Lancs., is the address that heads a letter from Mr. Murray Winters. He tells us: "I recently purchased a starter culture of microworms as I have never had much success with brine shrimps. I have found the worms to be extremely simple to keep. In all the books I have read it has been suggested that microworms should be kept at a tropical temperature in a shallow dish covered with glass, and shaded with cardboard. When I received my culture I had everything prepared and

was rather disappointed when, after over a week, I had found only a few worms. I decided to experiment. I now find that if I use old coffee jars and start the cultures off at the suggested temperature, later moving them to a cold room, the cultures will continue to produce large numbers of worms for at least five weeks. The tight-fitting, screw-on lids of the jars keep in the rather repulsive smell. I find this method is much better than the old one where new cultures had to be started every five days or so. It is also more economical on oats. Fish prices: I found the price of the same species to be twice as much in one shop as in another in a near-by town. Young angels are in the 30p range; neons 25p; guppies 35-40p; cardinals 30p; dwarf gouramies 95p; red swordtails 35-40p; and young tiger barbs about 25p."

In the U.K. we always seem to be ill-prepared for extreme weather conditions; if it snows heavily we almost grind to a halt; if it rains heavily we almost get flooded out; and if we don't get much rain water supplies are rationed. Perhaps other countries are no better when it comes to dealing with such circumstances—although they could hardly be called unusual in the U.K. In the past week we've had temperatures soaring in the nineties—and I must admit that the heat has almost prostrated me. Have any readers had problems with their aquaria or pools because of the heat? If so I'd be pleased to hear of your experiences. Have water restrictions affected you in any way? No doubt our electricity bills should be slightly lower with aquarium heaters being switched off for longer periods than usual. At times such as these aeration and filtration can be particularly useful when higher temperatures mean that less oxygen will remain dissolved in water.

Although most of us keep fish for pleasure, aquaria have their educational uses also. Mr. L. Walters teaches in Heolddu Comprehensive School, Bargoed, Mid-Glamorgan. He has the following to say: "With reference to your December, 1975, article about the use of aquaria in schools, I would like to tell you of the Aquarist Society which I have formed in the above school where I teach. Twelve months ago a 3-ft. tank and the necessary equipment was purchased to accompany the 2-ft. tank which the school already had. The first term proved unsuccessful, despite the interest shown by the children, in that the tank was situated in a classroom; and even allowing for the settling period we lost countless fish. The only fish that survived were black widows; all other species—including zebras, guppies, swords, Siamese fighters and gouramies—were doomed to fail. Therefore, I thought it desirable to give the fish a room not occupied by children. Obviously they enjoyed the more tranquil scene for success was achieved immediately; and since, very few fish have been lost and the tanks are a picture

of health. Possibly the tanks are not in an ideal position at present for not all can enjoy the pleasures of seeing the aquarium but unfortunately our foyer cannot hold a tank, and a possible site is unavailable. However, the club is available for anyone interested enough to come along.

"Our major success has been the breeding of convict cichlids, the procedure being identical to that stated lately in your column. Unfortunately the pair bred during the school holidays, and underneath a rock, so very little was seen of the mating procedure. We have approximately twenty young which are thriving; however, the male took it on himself a week after the young were free swimming to give the female a frightful hiding—so I had to separate them. This week the male started digging pits again and displaying colours—as did the female; but on putting them together he killed her. Incidentally, the convicts cost me a mere 15p each from a local shop. I have found a great variety of prices around here: for example, angels vary from 18p to 30p for a small silver, and from 20p to 40p for a small black; neons are from 11p to 25p; and swords from 25p to 40p. Obviously it pays to shop around. As you previously stated, the squeeze on spending will not allow us to purchase new tanks and equipment; we save just enough to feed and purchase the occasional new fish—so any help from local aquarists would be a great assistance." (Mr. Walters' last point is, I feel, a very valid one. There must be plenty of aquarists who have a few extra fish or plants which they'd rather give away than attempt to sell. Many schools would be glad of such fish or plants—or, indeed, of unwanted filters, etc. If you have any spare items contact your local school and ask if anyone there would be interested in having them. It's an excellent way to encourage and recruit new, young aquarists—and to enlarge the curriculum in any given school. The names and addresses of schools in your area can be found in the yellow pages of your local telephone directory).

" . . . Over the past few months I have seen several queries about fish photography," writes Mr. M. Hibberd, St. Albans, Morgans Vale Road, Redlynch, Salisbury, Wilts. "It seems most of the trouble is with the flash reflecting in the glass. I have a S.L.R. camera and I have the flash on an extension lead. I place the flash gun over the tank—on the cover glass. Using standard film I set the camera at 1/30 sec. at f16. As you can see from the enclosed photographs, the results are quite acceptable. I have taken black and white photographs without a flash, with good results; but with colour I think you would need such a fast film that the quality of the prints would suffer. I have not tried because I am pleased with the results using flash." (Mr. Hibberd's photographs are among the best I have received. They include a monocrome print, three coloured photographs of marines, and three of freshwater tropicals. Recently a reader asked about very fast colour films. A friend told me that Gaf 500 film can have its rating doubled to 1000 ASA and that there is a charge of £1 extra for having the up-rated film processed. I'm sure grain would become rather obvious under such circumstances).

Photograph 3 shows a thick-lipped gourami. Please send me details of your experiences with the breeding of this species. Were the fry difficult to raise?

Good writing fascinates me; hence it was a joy to receive the following letter from Miss Margaret Cairns, of 16 Lonsdale House, Portobello Court, Portobello Road, Notting Hill Gate, London W11 2DG. Her beautiful writing is amongst the finest I have ever seen. Miss Cairns informs us: "You might be interested in my experiences with clown loaches, even though I have not yet spawned them successfully. The female was bought some five years ago and was just under an inch in length. She was grown on in a 24-gallon tank which contained young angels and glowlights. She took about nine months to attain a length of 3½ in. and has grown no larger. The male was bought some two years later and was a candy-striped *Botia*. Although the female was, at that time, quite shy and almost entirely nocturnal, she bullied fish of her own colouring and I therefore reared the male in another tank. He reached 3½ in. six months later. I had no idea that these two fish might breed but when all three pairs of angels decided to breed at once I removed the clown loach for safety's sake—and was dismayed at the savage fighting which broke out between the two fish when she was placed in the male's tank. However, on closer observation I realised that neither fish had extended the fighting spur below the eye. The tank contained many hiding places and, as no other tank was available, I had to leave them to it. After three days of 'savage fighting' no damage had been done to either fish. They had lost their shyness and battled all over the tank. I was astonished to realise that both fish were showing ovipositors, that of the clown loach being longer and thicker than that of the candy-striped *Botia*. There was no sign of brood tending behaviour and the eggs had, presumably, been eaten. After that I often saw that the fish had spawned but did not see any sign of fry.

"The fish courted constantly and courtship was always the same. The fish swam side by side at the same speed and in the same direction, at a distance of about ½ in. The male seemed to strive to get close enough to press his body against the female, while she reacted with a show of anger at his 'close marking tactics;' however, if he did leave her for a moment she always followed him! As courtship became more

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B.K.K.S. News

THE Northern Section's Third National Koi Show was held at the home of Mr. and Mrs. Phil Searle in Southport, Lancs, on Sunday, 6th June, and, once again, was a great success.

The venue could not have been bettered and I am sure fellow members will agree with me when I say that Phil has managed to create a house-garden-pond complex of rare beauty. He waited until he had been on the B.K.K.'s trip to Japan in 1975, in fact, before completing plans for his new house and subsequently put all the best ideas he picked up into operation, literally building his house around the pond. A good third of the pond extends into the house taking up one large sun-room the edges of which are covered with thick, unbreakable, glass-plated flooring so that the fish are clearly visible at all times. The two-thirds of the pond extending into the garden can be sectioned off during the cold months of the year with a glass "door," but during the summer the fish are free to swim in and out of the house as they desire. A large "bubble" roof window over the "pond room" forms part of the veranda from the master bedroom, so Phil and his wife can really see the fish at any time of the day or night at any season of the year! Added to this the house backs on to a natural hill and Phil has seen to it that the filtered water returns to the pond down some 30 ft. of natural rock-strewn waterfall. Full marks to Phil, now the envy of every B.K.K.S. member who has seen his set-up and particularly those who had the pleasure of appreciating the setting on one of the hottest June days on record.

A large and varied entry of Koi was judged by Miss V. Frost and Mr. H. Stiles. Results were as follows:—

CLASSES:

1. Kohaku
   1st—Peter Reynolds
   2nd—Ron Hodgson
   3rd—Ray Hanson
2. Shusui and Asagi
   1st—Arthur Danks (Shusui)
   2nd—Ron Hodgson (Asagi)
   3rd—Arthur Danks (Kinsui)
3. Taisho/Tancho-Sanke and Bekko
   1st—Peter Reynolds (Taisho Sanke)
   2nd—Ray Hanson (Sanke)
   3rd—Peter Waddington (Sanke)
4. Showa-Sanke, Utsuri and Yamato Nishiki
   1st—Ray Hanson (Kin-ki-utsuri)
   2nd—Peter Waddington (Yamato nishiki)
   3rd—Arthur Danks (Yamato nishiki)
5. Oghon, Harewake, Hikari and Kujaku
   1st—Arthur Danks (Oghon)
   2nd—Peter Waddington (Platinum Oghon)
   3rd—Geoff Claxton (Harewake)
6. Gin-Rin
   1st—Geoff Claxton (Kohaku Gin-rin)
   2nd—Geoff Claxton (Showa Gin-rin)
   3rd—Peter Reynolds (Orange Gin-rin)

Best in Show: Taisho-Sanke (Peter Reynolds)
Second Best in Show: Gin-rin Kohaku (Geoff Claxton)
Third Best in Show: Sanke (Ray Hanson).

Peter Reynolds (right) receiving Best in Show rosette from Barry Rowlinson (chairman of B.K.K.S., Northern Section) with Peter Waddington (show organiser) centre.

BLENNIES FOR THE AQUARIUM

by Huw Collingbourne

THE GROUP of fishes described by the name, Blenny, includes a number of forms of striking diversity. For the marine aquarist this group of fishes offers several species of considerable interest.

Perhaps the two most commonly seen species are the shanny and the butter-fish, which are frequently found in large numbers inshore, though there is considerable regional variation, and various other forms may be found in great profusion exclusive to quite definite localities.

For our purposes, however, I shall, at first, concentrate on the shanny which, in many ways, may be said to typify this group of fishes—or, at least, most of the varieties suitable for inclusion in a small home aquarium though, when other species deviate notably in form or habit from this chosen "type," I shall comment on it.

The Shanny or Common Blenny, *Blennius pholis*, is a largely bottom-living fish. Up to 15 cm. in length, its body is soft and slimy, and normally of an olive green hue, blotched with brown, black and grey markings—an effective camouflage against a background of rock encrusted with barnacles, sponges and sea-weed fronds.

But one further charming coincidence of appearance renders the shanny an especially attractive little fish—and that is its apparent smile; certainly, if I may, for a second, be forgiven the sin of anthropormorphism, it seems that the "jolly" expression of this fish is perfectly suited to its delightful, perky "character"—which may sound ridiculous in print but, in the same way that the freshwater cichlids usually convince their owners of a quite distinctive personality, blennies seldom fail to impress their guardians with what seems to be an almost reasoning manner of individual behaviour.

They soon adapt to aquarium life and almost invariably assume the role of tame, aquatic pets, rising eagerly at feeding time to take pieces of fish, worm or prawn flesh from one's fingers.

Blennies are quasi-amphibious and, when stranded by a receding tide, are quite capable of skipping about across the wet sand and sea-weed, pulling themselves along with their broad pelvic fins.

Some aquarists go to the trouble of providing a rock projecting above the water surface in the aquarium and, apparently, captive blennies sometimes choose to climb out of their natural element and bask briefly in the mere moistness of the upper air.

I must admit I have never seen the necessity of going to these extremes to accommodate my fishes as the provision of such a structure would cause certain practical problems. For one thing, having always used sub-gravel filters, I am always suspicious of very large rocks lying on top of the filter bed. And, of course, there is the problem of keeping the upper surface of the rock sufficiently wet, though perhaps this could be accomplished by directing the filter overflow jet against it.

The shanny may be found in large numbers virtually all around the coast and is most easily found in shallow, weedy rock-pools and under stones; blennies tend to spawn in deep, inaccessable crevices of rock. This occurs in mid-summer. At this time the male fish changes colour, becoming completely black, save for the lips which become white. The male keeps guard over the clusters of small amber eggs, until the young finally hatch out.

The Tompot Blenny, *B. gattorugine*, is another favourite with aquarists, though it is found in rather deeper water than the shanny and is normally only found in the south of Britain. It is quite a large species (around 23 cm.) and has distinctive, fringed tentacles projecting above its eyes.

The Butterfly Blenny, *B. ocellaris*, is another southern, south-western variety, about 18 cm. in length. Inhabiting rocky, weedy shores, this fish may be easily recognised by the large, sail-like dorsal fin which is marked by an eye-spot.

The Butterfish or Gunnell, *Pholis gunnellus*, is, in appearance, quite unlike the preceding species. Indeed, at first sight, you would be forgiven for identifying the butterfish as some type of eel, for that is certainly what it looks like. Aptly named, the butterfish is a very slippery customer and will writhe from the grasp with little difficulty.

On close inspection its true identity will be revealed

by the ten or twelve evenly spaced dark spots encircled by a band of white, which are found along its back. The basic body colour of the fish varies between brown and grey.

The female butterfish lays her eggs in masses inside empty shells or in cracks in rocks, and she collects them up as they are layed and protects them by coiling her body around them.

The Viviparous Blenny, *Zoarces viviparus*, is another large fish which may attain 60 cm. in length, though something between 15 cm. and 40 cm., would be more usual. This is a northern species possessing a notably tapering body and no tail fin.

It is a curiosity amongst blennies, for the vivaparous blenny does not lay eggs, but, as its name suggests, produces live young.

The eggs are fertilized, develop and hatch within the ovary of the female. The hatch occurs three weeks after fertilization, but the young do not leave the mother's body for another three months, and, when they finally emerge, they are fully formed small adults, about 4 cm. long.

Bearing this in mind, I would guess that the months of incubation must prove an arduous task for the female parent because, according to C. M. Yonge, a single brood of a viviparous blenny can number up to 300 individuals.

WHAT IS YOUR OPINION?

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intense the fish performed a 'tail beat' display which differed from that performed by cichlids in that both fish faced in the same direction while performing the display, while the wave of displaced water seemed to be aimed at the base of the mate's tail rather than at the lateral line or past the mate. I have often wondered if the cichlid 'tail beat' acts as a confirmation of the size and strength of the courting or opposing fish. That of the *Botia*, however, seemed to function as a stimulus only. Immediately before spawning the male's stripes faded and turned into a pattern of unrelated blotches, while the area of the lateral line became a light yellow colour. The stripes soon reappeared after spawning. Since these fish were in a community tank I assumed that other fish were preventing the rearing of fry and, as soon as I could, I removed the pair to a 36-in. tank which, due to lack of tank space, was subdivided twice to provide separate quarters for two rather vicious young discus. These were the survivors of five small discus and, having helped the three weakest to an early death, the three seemed intent on killing each other. The discus were in peaty water at 84°F, and separated by a mesh divider; an insulated barrier kept the *Botia* at 78°F. The *Botia* remained fairly close together but showed no signs of spawning behaviour in their new quarters for approximately three weeks.

"I then unexpectedly obtained an adult female discus—the survivor of a pair. She was in an appalling condition, starved and battered, with an injury to one eye. Unfortunately the plastic bag in which I was bringing her home burst while I was still on the bus. The lining of my shopping bag was semi-waterproof but I arrived home at a run with a six-inch discus flopping frantically in two or three inches of dirty water! There was not time to take proper precautions; I just pulled out all the tank dividers, tipped her in, and hoped. By the time I remembered the *Botia* the new discus was eating greedily and I dared not disturb her by attempting to catch such elusive fish. Courtship behaviour began two days later and the *Botia* spawned in a deep hole in the petrified wood. The clown loach revisited the 'nest,' but the candy striped *Botia* did not. On the second day after spawning the male vanished. The cloan loach was very restless and did not visit the 'nest.' I assumed that the candy striped *Botia* was within. Two days later I found that he had jumped from the tank and was on the shelf behind it. The clown loach now ignored the spawning area and so, as the adult discus was now much less nervous, I removed the wood and tipped the contents of the hole into a container—obtaining what appeared to be a mass of badly fungused eggs. If these were in fact eggs, I think that they must have been laid in a mass and not upon the walls of the hole.

"Ten weeks ago I obtained two more clown loaches of an appropriate size. One is almost certainly a male. These fish tolerate each other but I have not observed any courtship or spawning behaviour. This may be because all three are now rather shy and semi-nocturnal. The original female has reverted to this behaviour. I suspect that all the hybrid matings were infertile, but would like to know if any *Botia* hybrids are known. If so, are the fry fertile?" (Congratulations, Miss Cairns, on such excellent, even writing—and on the careful observation of your fish's behaviour).

For a future feature please send me your opinions on any of the following: earthworms as a food for fish; breeding cardinals; the new safety regulations affecting aquarium heaters and thermostats; uncommon tropical plants; aquarium shows; breeding angels. (What is your opinion of the "tableaux" displays seen at many shows? I mean the kind of display where, say, six aquaria are displayed in an object which represents something such as a giant packet of cornflakes or a headstone. I feel they are matched only by plastic divers! How's that for a controversial comment?). I look forward to receiving your letters—despite the intense heat.

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? OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE
All queries MUST be accompanied by a stamped addressed envelope.

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

TROPICAL QUERIES

by Jack Hems

What is a diamond tetra?

The characin popularly called diamond tetra is the 2½ in. *Moenkhausia pittieri* from north-eastern South America. It is an attractive-looking fish, with compressed sides flashing gold, metallic blue and greenish lights from a silver ground. The short-based dorsal fin is full anteriorly and narrow posteriorly. The tip terminates near the root of the tail. The eye is fiery red. The species has been known to tropical aquarists for several decades. For all that, it is seldom seen in dealers' tanks. This is difficult to understand because *M. pittieri* is not much of a problem to breed, is well suited to sharing a tank with other fishes as inoffensive as itself, feeds on any live or dried food, and is quite comfortable at a temperature in the lower to upper seventies (°F).

Is there such a fish as a flying barb? If there is, please give me its scientific name and general requirements and behaviour in the aquarium.

The fish usually known by the popular name of flying barb is *Esomus danricus* from Burma, parts of India, Ceylon and the Nicobar Islands. It is characterised by its flattened sides, wing-like pectoral fins and habit of frequenting the upper levels of the water. It is inoffensive and a great leaper. A strictly tropical temperature suits it best. It is best fed on food that floats (dried grains or flakes), or live *Daphnia*, the larvae of gnats and whiteworms dispensed from a perforated worm feeder.

I have just purchased a fish called *Leporinus fasciatus*. **I should like to know the maximum length this species can attain.**

In the wild state, *L. fasciatus* attains close on a foot. In the aquarium, however, it usually stays well under this size. For all that, given plenty of swimming space in well-aerated water a length of about 10 in. is to be expected.

Is it safe to place a plecostomus catfish in a tank housing convict fish (*Cichlasoma nigrofasciatum*)**?**

The catfish mentioned in your letter is well-armoured and usually stays out of harm's way during daylight hours. Therefore it will not attract much, if any, attention from the convict fish. However, if your catfish is not very well-grown, it would be a good plan to watch the behaviour of the convict cichlids. As I have mentioned previously in this magazine, *C. nigrofasciatum* can turn out to be a most aggressive and spiteful fish.

I have noticed that the fins of my bettas and male guppies look in a very tattered state. The only other fishes sharing their tank are Buenos Aires Tetras, Schubert's barbs, Australian rainbow fish and some harlequin fish. Which species do you think is doing all the damage?

Without question the Tet from Buenos Aires. As this species increases in size it almost always develops into a keen fin-nipper. Naturally, it is more likely to interest itself in fishes with flowing fins than in short-finned species.

Is it true that *Tilapia mossambica* **will settle down and breed in sea water?**

That *T. mossambica* will live and breed in sea water was demonstrated in public aquaria many years ago. Bear in mind that the fish occurs in the natural state in brackish waters as well as in fresh. In point of fact it is so adaptable in several other respects that it has been introduced into many parts of the tropical and sub-tropical world as a food fish.

I am interested in finding out what I can about an anabantid called a licorice gourami. Have you anything to tell me about this fish?

Not a great deal. The licorice (American spelling)

gourami is known to science as *Parosphronemus deissneri* (George F. Hervey and I gave a few words about this rare fish in one of our books published more than twenty years ago). It appears to be rather localized in parts of Malayasia and Indonesia. It attains about 1½ in. It is timid, demands a strictly tropical temperature and, according to at least one German observer of this fish's habits, does not rise to the surface very often, if at all, for gulps of air. Its breeding habits, too, differ from those of the general run of gouramis.

Could I keep angel fish and discus in the same tank?

Yes. Providing the tank does not restrict the movements and growth of the fish and care is taken that the angel fish do not drive the more timid discus away from food. Be all this as it may, discus really flourish best in a tank to themselves.

I have bought a 39 in. by 15 in. by 12 in. tank and would be glad to know what size fluorescent lamp I will require to illuminate it and how many hours a day should the light be kept switched on?

You will require a 30 watt fluorescent lamp. If you go in for an ordinary warm white light and keep the light switched on for about 14 hours a day you will find that plants such as *Cryptocoryne affinis*, *Hygrophila polysperma*, *Ceratopteris thalictroides* and *Microsorium pteropus* will grow well.

In my 48 in. by 15 in. by 12 in. aquarium, I have a paradise fish and a Siamese fighting fish along with guppies and puffers. My fighting fish is presenting a problem. He chases after and bites pieces out of the fins of the paradise fish. Please can you give me a reason for this and, if possible, an answer to my problem?

Paradise fish and fighting fish do not get on together. Neither are peaceful fish. Nor for that matter are most puffers. The guppies will come off badly in the future even if you remove the chief aggressor. You should buy or borrow some of the books written by authors of good repute such as W. T. Innes, A. Evans, D. McInerny and G. Sterba. There are others.

I have several *Corydoras paleatus* and one of them has quite suddenly developed distended sides and lower parts. I have also noticed a reddish hue-like blood under the armour plates on the lower sides and belly. What steps should I take to remedy what appears to be some internal complaint?

I do not think your catfish is suffering from an internal complaint. More than likely you have a female fish well-laden with eggs. If there are males of the same species present spawning is almost certain to occur. The males will chase the female about and sooner or later she will deposit sticky eggs on broad-leaved plants, smooth rockwork, or the glass sides of the aquarium.

I am calling in experts to deal with woodworm in my house. Will the spraying or fuming used to kill the pests harm my fish?

The sensible thing to do would be to seal the space between the glass cover and the surface of the water with narrow wads of wet paper placed end to end all round the top of the tank. And if you have an air pump, switch this off until the fumes, if any, have gone and the windows have been opened to let in plenty of fresh air.

I have two clawed frogs in a 24 in. by 15 in. by 12 in. tank. I have installed an under-gravel filter. Should I keep the u.g. filter in action night and day? Also, could I introduce axolotls and terrapins into the tank?

The faeces of the clawed frogs are quite bulky and are best removed as soon as noticed with the aid of a dip tube. If you turn off the air pump last thing at night and set it going first thing in the morning the water should remain crystal clear. Axolotls would live all right with clawed frogs. I do not recommend terrapins. Largish terrapins snap and take pieces out of amphibians. Clawed frogs and axolotls are quite comfortable at ordinary room temperature. Terrapins, particularly young ones of all species, and older ones from the warmer parts of the world, require a heated tank and plenty of strong light.

I have searched in my books for information on David's upside-down catfish but have drawn a blank. Can you help me?

We owe Dr. Herbert Axelrod a debt for making this species known to tropical aquarists. He found it on one of his collecting trips in West Africa. It grows to about 3 in. and is inoffensive and not difficult to keep. It is known to science as *Synodontis davidii*.

What is Walker's Killifish and where is it found in nature?

Walker's Killifish is known to science as *Aphyosemion walkeri*. It is found in the wild state in Ghana. It is inoffensive, reaches about 3 in. and eats most live or flake foods. It spawns on the bottom in peaty debris.

COLDWATER QUERIES by Arthur Boarder

One or two of my goldfish in a garden pond have developed white patches on them. They were originally gold and now white or silver areas have appeared although the fish appear quite healthy otherwise. What is the cause and cure?

As long as the fish are in good condition you have no cause for worry. As long as there are no patches of cotton-wool like substance on them, and no scales are missing, the change of colour is just due to pigmentation variation. Many goldfish have some silver colouring on them and this may increase as the fish ages. In my experience, this silver never changes back to gold but appears to increase in size each year. It is not a disease and there is nothing you can do to alter matters.

I made a pond 40 feet square with a liner and left it for a few months after planting it before putting in any fish. Recently I bought six Koi, 2-3 inches and six Golden Orfe, 2-3 inches. Five of the Koi died within a week and showed no signs of disease or injury. Do you think the water was too alkaline for them as our tap water is hard?

When fish die and show no visible signs of disease or injury, one can usually assume that it is the water which is at fault. The Orfe appear to be all right but I am inclined to think that the koi may have been bred under warm conditions and then when placed in an outdoor pond, they suffered and died. It is a pity that you did not make some enquiries before stocking your pond. If you had consulted a good book or an expert you would not have chosen the fishes you did for your pond. Neither fish is suitable for a pond the size of yours. Both are fairly fast growing and can reach a size of about eighteen inches in length. With your pond, say 5 ft. × 4 ft. one of the fully grown fish could cross the pond with one wag of its tail. Your fish could grow to over six inches in length in two years and so the pond would be much too small for the types you have. I am sorry to hear that a well-known water garden establishment sold you the fish if they knew the size of your pond. You should be content with goldfish or shubunkins.

One of my pond fish has a hole near its tail about a quarter of an inch in diameter. I have only recently bought the fish and noticed at the garden centre that several of the fish had wounds on them as well. I think they may have been caused by careless handling by prospective buyers. What is the cause and cure?

A small wound the size of the one you describe could have been caused by a fish louse, *Argulus*, the pest may have left the fish and the wound can soon heal if this is so. If you dab the spot with T.C.P. whilst holding the fish in a wet cloth it should help any further spread of the wound. If you had had more experience you would not have bought fish from such a source. Any sign of ill health among the fishes offered for sale would have put off an experienced aquarist immediately and he would have gone elsewhere for his fish.

We have a fairly large pond with large goldfish and carp. Some time ago we noticed that some of the fishes had wounds on their bodies as if they had been pecked by a bird. The other day my husband was watching the pond when he saw a snake in the pond attack a fairly large carp and bite it. The carp died two days after. What kind of snake could this be? A neighbour thought it might be a slow worm?

I am almost certain that the snake was a grass snake and if you could have given me a description as to its colour I could have been more certain. However it is well known that grass snakes are good swimmers and will eat fish as well as frogs and toads. I caught one in my pond once which was about sixteen inches long and found that it had swallowed a fully grown frog, although the head of the snake was no thicker than a man's thumb. I have heard of other fishes which have showed wounds on their bodies and have suspected a bird to have done the damage, but now from your description of the wounds on some of your large fishes it would seem that a snake could have been the culprit. If a fish was too large to be swallowed it is reasonable to suppose that a snake could bite a piece out of a fish.

Can you tell me where I can buy some Koi fry as, when I have finished my "A" levels, I wish to take up fish farming as a career. I have some tanks and hope to recover their costs by selling fish and then to expand the project?

I am enclosing the name of a breeder and dealer but whether he would be prepared to sell Koi fry is a different matter. Koi fry may not show their good colours until they are of a good size and anyone could sell a number of fish which could contain some worth

a few pence whilst others in the batch could be worth as many pounds. I do not wish to discourage an enthusiast but it is not by any means easy to become a successful breeder of any type of fancy fish. Many may cover their expenses when successful but few are able to show enough profit to be able to live on such proceeds. The trouble is that many fancy types of fishes are bred abroad where the climate is better and it is difficult to produce the same results in this country without expensive heating arrangements.

I have a coldwater tank, 37 × 15 × 12, and have two six inch fish and two three inch fish. Can I add some more small fish and is there any equipment for feeding my fish whilst I go on holiday?

Your tank will hold about 22 inches of body length of fish or 18 inches of fish according to whether the tank is 15 inches wide or that in depth. It is the surface area of water which is the important factor. The old idea of an inch of fish was squashed by me many years ago. This idea quoted an inch of fish to a gallon of water. No credence can be put to this system unless the surface area of the water is also known. A gallon of water could not hold an inch of fish if the container had a narrow surface. For instance, a cubic foot tank holds six gallons of water and providing the tank was twelve inches across at the top, it could hold six inches of fish. Now halve the width of the tank making it six inches at the surface and 24 inches deep and although the tank would still hold six gallons of water it could only accommodate three inches of fish. Now suppose the tank was six inches deep but twenty-four inches wide at the surface it could hold twelve inches of body length of fish, although the tank still holds only six gallons of water. The safe rule is to allow an inch of body length of fish to each 24 square inches of surface area. Nothing is gained by trying to overstock a tank. Leave the fish unfed whilst you are away, its safer.

Do you think that under-water oxygenating plants are essential in a garden pond. I enquire as I understand the surface of the pond should allow plenty of oxygen to enter the water?

This is a very good point and although it can be assumed that sufficient oxygen will enter the water in a pond, it is also very necessary to have a good supply of oxygenating plants to counteract the effect of the sunlight on the water which encourages the growth of free-floating *algae* which turns the water green. Any pond with no under-water plants will soon become very green, whilst one with a good supply of such plants will not be as likely to become green.

Is there any chemical which would kill duck weed in a pond without harming the fishes?

I see no reason to use any chemical to destroy the duck weed. If a pond is completely covered with this plant it can be removed quite easily by playing a strong hose jet on the pond and sweeping the duck weed to one side. It can then be raked off.

I would be most grateful if you could advise me on what I consider to be very contradictory articles in various books and catalogues with regard to planting water lilies in a pond. One says use plenty of old cow manure, another says coarse loam with bone meal and well-rotted cow manure, whilst another says, no manure or bone meal. The depth of planting also varies in the directions. What is your idea of all this?

Let me make it quite clear in the first place that there are two main considerations to examine. There is the pond keeper whose main wish is to grow water lilies luxuriously and not worry about having any fishes in the pond. The other type would be an aquarist who puts the health and well being of his fishes first. The flower-lover would certainly get better results with bone meal and or old cow manure as this would encourage the water lilies to make strong growth quickly with plenty of flowers. However the fishkeeper would not introduce any fertilisers into the pond when planting lilies as the contamination of the water through excess manure etc., would be harmful to the fishes. The main use of a water lily to the aquarist is to use up much of the droppings from the fishes and so help to keep the water clear. If a lily is planted in a basket of plain turf the roots of the plant will soon penetrate through the basket in search of nourishment. The mulm on the bottom of the pond will contain the decaying droppings from the fishes and this is attracted to the roots of the lily and much of it is used up. If the lily had been planted with a large supply of fertiliser it could not be expected to do its work of using up waste matter from the fishes. I know that the aquarist will appreciate the lily flowers but this is a secondary wish as the lily, whilst not being an oxygenator, will feed on the mulm.

As for the depth of planting necessary; this is entirely a matter of the kind of lily to be set. There are three main groups of lily. The miniature or Nymphaea type, the normal one and the large one. The first named could grow in nine inches to a foot of water. The medium type in up to eighteen inches and the large ones up to two foot or more in depth. When planting any of the larger types it is advisable to stand the planting receptacle on bricks so that the crown of the lily is not very deeply set in the water. As leaves are formed the lily can be gradually lowered to its proper depth. You will find that most lilies will make quick and strong growth once they are established and then, for the average pondkeeper, it will not be a question as to how to make it grow but how to keep it within bounds.

FISHES & STAMPS

by Roger T. Chambers

Most aquarists will, at one time or another, have collected stamps but, probably, most no longer do so. We usually start as small boys with cheap albums and a sort of vague idea of forming a complete collection of the stamps of the world. The rapid realisation that this would cost millions of pounds generally persuades the more intelligent to specialise in the stamps of a particular country but by the late teens a feeling seems to overtake one that stamps are somehow childish and collections are either consigned to the cupboard under the stairs or are sold to finance the purchase of an airgun or, perhaps, a fish tank.

All this is a great pity because to the thoughtful collector philately can be of absorbing interest. Unfortunately the more thoughtful and specialised one becomes, the more costly it is and the truth is most of us cannot afford a comprehensive collection of any popular subject; until, that is, the possibility of forming a thematic collection is considered.

Thematics is all about collecting stamps depicting a particular subject or which are concerned with a related theme. One can collect stamps portraying queens; or subsequently assassinated rulers; or maps; or industries and one can enlarge the interest by researching the biographies and economics, for example of the subject of interest. The majority of countries now produce large numbers of pictorial stamps and while it cannot be denied that the purpose of this proliferation is primarily financial gain and not postal necessity, a large number are concerned with subjects suitable for the thematic collector.

It is possible to form large and beautiful collections of birds, animals, butterflies, insects and—fish. A thematic collection based on fish can form an interesting sideline to the aquarist's principal hobby, and at the same time allow him once again to explore the pleasures of another hobby for which he probably still secretly hankers.

The collector of stamps portraying fish is in a sense luckier than the one who collects birds because as yet there are fewer avaiable and consequently a complete collection can, just, be contemplated at least as a possibility. It is true that one can extend the collection to include fisheries, marine invertebrates and so forth but probably most would wish to restrict their collection in some way.

The marine aquarist will probably collect only marine fish, the tropical freshwater man only stamps depicting tropical freshwater species, while the fancy goldfish breeder will find considerable scope for a collection only of goldfish. The purist might collect only the stamps depicting fish he owns while some may reverse the situation and only buy fish if they own an appropriate stamp. Of course, allowing for personal taste, some stamps are hideous and others are works of art in their own right, so a collection could be based on aesthetic considerations.

Normally a collection of stamps will be arranged according to the country of origin and the date of issue but this may not be the most appropriate way for the thematicist. The particular form adopted will probably depend on the particular interest of the collector but stamps depicting the same species might well be grouped together. On the other hand this will inevitably involve the breaking up of sets and since some sets form a coherent series there is a dilemma. The question of sets also poses another problem. Although countries will from time to time issue single stamps it is the normal practice to issue them in batches of different denominations or face value. These batches are known as "sets" and so prevalent is the practice that single stamp issues are often known as single stamp sets. Since countries do not issue stamps for the sole benefit of the thematic collector the set of stamps may include stamps other than fish. The set is usually reserved for a theme but the theme might be "animals of commercial value" and so include tuna, cows and turkeys; or it might be marine life and so include seaweeds and shrimps. So whether one collects sets or breaks them up must be a matter for personal decision.

Not all countries issue stamps portraying fish. Britain has never done so although, perhaps pandering to the almost universal British love of birds, it has published sets depicting birds. On the other hand such desert bound countries as Dubai, Sharjah, Fujeira and Umm Al Qiwain on the shores of the Persian Gulf, are particularly fond of issuing fish stamps. Both Fujeira and Sharjah have issued stamps showing freshwater fish which must be virtually unknown to many of the local people; angel fish, tiger

barbs and paradise fish for example.

This may suggest another way of limiting the collection: collecting only fish native to the country on whose stamps they are portrayed. This would be a pity perhaps because the ten stamp set from Sharjah of which four are illustrated, must be one of the most beautiful available and the 5 dirhams stamp from the 1971 definitive issue of Fujeira must be a strong contender for the title "Most aesthetically pleasing individual stamp."

In 1973 Poland issued a series entitled "marine life" to promote the theme "protection of the environment." One of the stamps showed a pike (marine?) barely visible amongst water lillies. This is interesting because whilst depicting a fish and being of interest

because of the theme of the set, the fish itself can in truth scarcely be seen.

Probably the interest of stamps lies in their beauty, their individuality and in their interpretation. It is their interpretation which forms the basis of the thematic collection. The presentation and its design must, therefore, be a matter for the individual but there are one or two points which are probably of general application.

Any collection of any sort will look better in a good quality album specially produced for the job. There are a number of designs available but generally speaking the larger the page, the most spacious the layout and the more attractive the appearance. Usually albums are looseleaf and it is worth paying for those which permit the pages to lie flat. The usual page is ruled in light grey squares rather like slightly "broadgauge' graph paper. The marginally more expensive black paper can look very smart but has the disadvantage that any annotation has to be in white ink which in any case tends to be confused by the white ruling.

The stamps will usually be arranged in a manner to be artistic. The usually white border stamp will look better in most cases if a jet black border is drawn round it. This can be very effective and can also be used to collect stamps together on the page. A little experimenting will show how the differently designed stamps respond to this treatment.

If it is intended to write up the collection this can either be done on the facing page or on the same page as the stamps. The more copious the notes the more likely it will be that the facing page will be preferred. Neat, small, black hand printing is undoubtedly the best. Typewriting is a disaster. Obviously the notes must be accurate and there is often a considerable difficulty in identifying the species portrayed. Whether one includes details of watermarks, printing methods, artists and so on is a personal choice.

It is not one hopes, necessary to point out that stamps should not be gummed directly into an album. Good quality stamp hinges should be used as this will avoid damage to stamps and facilitate their removal from the page. Even stamp hinges will damage mint stamps because the moisture will remove the gum. For this reason any potentially valuable mint stamps should be mounted using clear acetate envelopes.

A well presented thematic collection will be of immense interest and can be assembled quite cheaply. The collection as a whole can be very much more valuable than the total value of the individual stamps. It will also be a worthwhile adjunct to the main collection of living fish in the aquarist's tanks.

VIEWPOINT

by A. Jenno

Aquarists who have garden pools will no doubt have noticed that this year, once again, we seem to be suffering another glut of poor quality diseased cold-water fishes from trade sources. The main troubles again are fungus and general debility, coupled with a high incidence of ulcerative infections. Certain reputable dealers are as always doing their best to avoid passing on such specimens to their customers and are not buying stock from sources known to be prone to these complaints, but others are unfortunately carrying on in the same old way, and either genuinely do not recognise sick fish or else deliberately ignore them and hope that they will sell quickly.

For some years it has been practical for importers to obtain the cheaper common goldfish and some of its coloured variations, shubunkins, comets, etc., from Italy. Fishes from that part of the world appear to be the main offenders with regard to poor quality and disease, and I am told that this year there has been some pressure from certain authorities to stop this particular avenue of importation. The outbreak of Ulcerative Dermal Necrosis (U.D.N.), which disease manifests itself as large open body wounds or sores and rapidly attracts fungus, has been and still is especially troublesome in that there appears to be no definite cure for the condition, and it has now virtually reached plague proportions in some areas.

Reputable importers are now attempting to establish trading links with other sources, Germany being thought to be more reliable, but whether some others will even worry about such matters without legislative compulsion is another question. The great danger may be that our pools and some natural waters might by now have become in themselves sources of the causative organisms behind the diseases, so that it may then no longer be just a question of controlling imports. If we reach a situation where healthy fishes are infected on introduction to our pools, then things will be really difficult. This proposition is not as far-fetched as it may seem. Aquarists have already noticed that the last two mild winters have not been sufficiently sterilizing with the result that many established fishes have been able to come through the winter with infections of one kind or another.

The basis of the problem I believe, and this applies to many of the commoner imported tropicals as well, is that these fishes are just being sold too cheaply. A custom has developed in this country whereby certain fish species and varieties are expected to be retailed in a ten-a-penny fashion. This does noone any good, least of all the retail customer. Such low prices induce importers, wholesalers and retailers to cut their overheads in this area to the bone so that facilities, food, treatment and time spent with these fishes are all minimal. It is no longer economic for suppliers to medicate and quarantine diseased fishes, the tendency nowadays being to dispose of them quickly through the normal trade channels if possible, or if they are so infected that sale is impossible then often they are killed off or dumped.

Can we actually blame the dealers for this situation? I don't know the answer to this one. If small common goldfish cost, for instance, forty or fifty pence each, would anyone still buy them? I think we would, and then if the suppliers would use the extra money obtained per capita to improve facilities, handling and treatment and would also seek out better sources of supply, then there could be a general significant improvement. The present trading conditions whereby small goldfish can be purchased in quantities of, say, eight or ten for a pound and then quite commonly half or more of these do not survive, are ridiculous. The buying public seem to expect this kind of dealing, as do many tropical fanciers where neons and some other common species are concerned. Bulk retail purchasers, for instance those buying small goldfish for use as prizes at fetes and carnivals (another callous practice) can easily get hold of a hundred for less than ten pounds.

My own experiences with U.D.N. and similar problems have not been happy ones. My large concrete pool is now in its third summer and following the initial difficulties caused by lime seepage (reported in this column) I expected at least moderate success. This has not been the case as far as the goldfish and its fancy derivatives are concerned, and I now suspect that the pool may in fact be a reservoir of certain disease organisms as discussed above. Goldfish simply do not survive, all eventually succumbing to fungus and/or some ulcerative trouble. This spring I had five good-size ordinary red goldfish which had been introduced last summer and had come through the winter apparently in good health. In the early spring, however, they died off one by one, despite treatment in quarantine containers when the infections became obvious. Last year I lost Koi, Shubunkins and other goldfish variations in the same way.

Through all this sequence of upsets however, one light shines brightly. The golden orfe in the same pool are superb. The initial dozen put in when the pool was new are now each about a foot long and last year's introductions are about half that. All were purchased as "splinters". They remain unaffected by disease and are a complete contrast to the occurrences

described above. My conclusion is that this may be because Orfe are probably nearer to being a wild fish than are the goldfish varieties, not having been so messed about by selective breeding, etc., and so perhaps have retained natural immunities and degrees of infection resistance which the fancy fishes have generally lost. Several other pool-owners I know have had exactly the same experience and at the moment the golden orfe is a very popular fish indeed.

The disadvantage of golden orfe is their well-known tendency to die very quickly in conditions where the water's oxygen content is suddenly depleted. This usually occurs during hot, still summer nights in thundery weather, and in well-planted pools this state is accelerated by the reversal of the photosynthetic process in the dark hours. I have a small fountain permanently installed in the centre of the pool which is switched on every evening from about 6 p.m. until about 11.30 p.m. This seems to induce enough artificial oxygenation of the water to allow the fishes to cope through the night. Aquarists with smaller pools might need to run a fountain or an airstone all night to be safe.

★ ★ ★

I was recently asked to compile some advice on the subject of aquarium-keeping in schools, as opposed to domestic fish-keeping. This was an interesting exercise and perhaps my thoughts on this would be useful to others dealing with such aquaria. Nowadays many schools use aquaria, not just as pieces of specific educational apparatus, but also as a decorative means of stimulating biological interest. As such, they are often situated in halls, corridors, general classrooms, and in fact anywhere convenient. These aquaria usually use the same range of environmental equipment as is employed in domestic situations and are broadly set up and looked after in much the same way. Very often such installations are purchased through a school fund or other external monetary source and are intended to benefit the whole of the establishment rather than one section or department.

In such a situation someone must be found who will be individually responsible for the upkeep of the aquarium. Management by committee will not often prove efficient and it is therefore necessary that one willing person devotes a certain amount of time and interest to the exercise. As with all livestock, reasonable regularity of feeding is important and in planted aquaria especially, the application of proper lighting cycles is mandatory. Thus at week-ends and during holidays someone with adequate understanding must feed the fishes to more or less the same schedule as when the school is active, and some arrangements (preferably an automatic electrical time-switch) should be made to ensure that the aquarium's lights are switched on and off as required. A further consideration will be that the aquarium and its equipment should be installed in such a way that it does not constitute a danger to the pupils, especially electrically, and that provision be made to avoid unwanted interference by the pupils, for instance the addition to the water of such things as chalk, chemicals and general rubbish. Smaller children particularly are notoriously inquisitive and meddlesome and even their best intentions may cause troubles in an artificially maintained aquatic environment. All electrical switches and connections, and the temperature and air supply adjustments must obviously not be accessible.

Many schools with craft departments could make their own aquarium and some of its equipment as a constructional project. All-glass aquaria would be very suitable—pieces of glass of the correct thickness being simply cut to size and then stuck together with silicone rubber sealant. This material should be obtained from an aquarists' supplies and must not be confused with industrial or domestic sealants which may contain fungicides, colourings or other constituents harmful to aquatic life. Other components which could be made in some schools are the supporting stand and the lighting hood, or alternatively a carpentry exercise could result in an aquarium being totally enclosed in a smart cabinet, perhaps set flush in an alcove. This last arrangement best solves the pupil interference problem because the whole asembly is then shut away and only the front viewing glass is seen.

Aquatic traders will supply the necessary heating and air-pumping equipment and other parts. Most reputable establishments are only too pleased to give advice and assistance, and some allow reasonable discounts on educational purchases. Hobby aquarists nowadays favour the biological filtration system for the easiest maintenance of water quality, but other methods are usable. Natural systems are employed for planted aquaria and in some marine applications, whilst Sterile conditions are likely to be two specialised to be appropriate for the kind of general aquaria discussed here.

Where a school is installing its first-ever aquarium and this is to be looked after by an inexperienced person, then the first point which must be studied is that of correct feeding. Whatever cleansing equipment the aquarium has, or however much care is taken in other directions, nothing will stop a rapid deterioration of the environment if too much food is put in repeatedly. It is the aquarium which suffers directly as a result of overfeeding, not its inhabitants, although these will, of course, be affected eventually when the environmental conditions worsen as a consequence. The continual addition of food which is not eaten leads to accumulations of rotting material which, through the processes of the bio-chemical Nitrogen Cycle, then create excesses of toxic compounds. This point

Continued on page 200

SO MUCH FOR MATCH OF THE DAY

by R. A. Coulson

HAVING successfully installed and maintained a 70 gallon Marine tank in our lounge for nearly two years, I was prompted by a fellow member of our local Belle Vue Marine Society to record the details of how this was set up and subsequently maintained, for the benefit of other aquarists. I should perhaps explain at this point that before embarking upon this venture I had successfully kept marines in a smaller 20 gallon tank for about 6 months.

The all-glass aquarium, which measures 48 in. × 30 in. × 18 in., is built into a false wall in the lounge with access by means of two louvre doors in the entrance hall (See Fig. 1). The "Hole in the wall" effect was my wife's idea after some very careful thought as to where we could best situate the aquarium. "It will only take a weekend", we thought hopefully, having made up our minds to have a go, but obtaining the materials, preparing the space, and building the wall, proved more time-consuming than setting up the tank itself. We suffered a number of minor set-backs —finding the right type of insulation board for the false wall, ordering the special size of louvre door for the entrance and discovering, too late, that a wooden stand (of 4 in. × 2 in. timber) to support the tank, was more costly to make than buying a ready-made angle iron one. Eventually all materials were delivered and we were able to start what seemed at the time to be a major house reconstruction job.

Firstly a 4 ft. glass partition which had been selected as the tank site, was removed from the lounge, then the wooden stand was built and fixed into the aperture. After checking for levels and covering the top with 1 in.

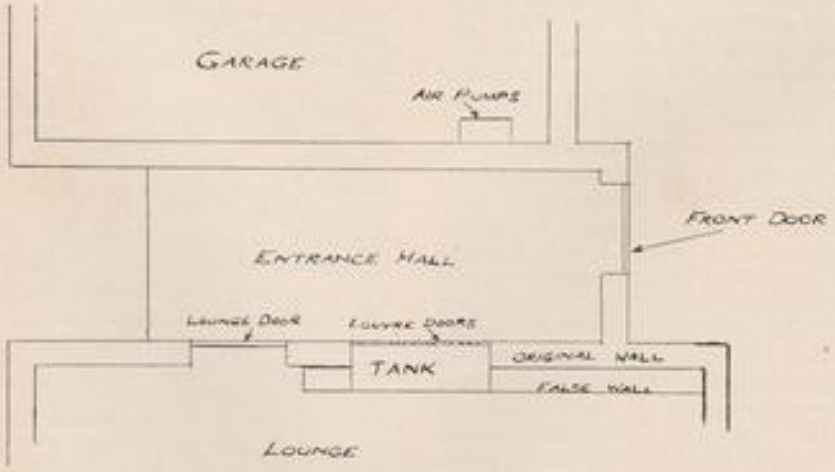

FIGURE 1 PLAN

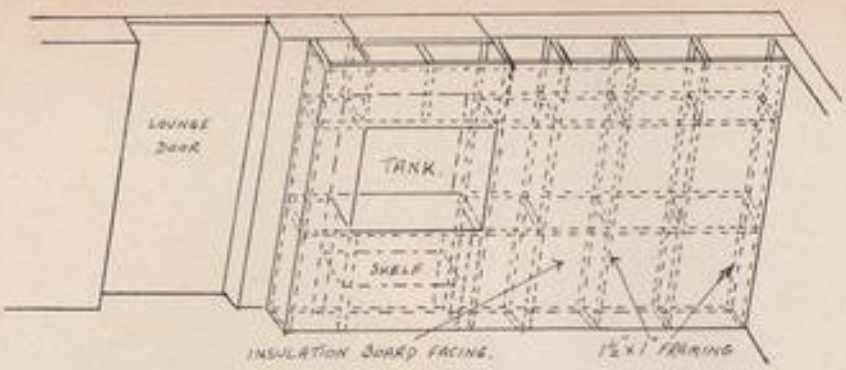

Fig. 2

polystyrene, the all-glass tank was ceremoniously placed in position.

Stage I completed—pause to admire work so far!

The next step was to build a wooden frame around the tank to support the false wall in the lounge (Fig. 2). This was achieved after disposing of what I swear was several hundred screws and wall plugs—the insulation boards were then secured to the frame after first cutting out and beading round the aperture for the front of the tank. Two rolls of wallpaper, a packet of paste, and that was Stage II completed—further pause to confirm this was definitely better than a "Wrought Iron Stand".

The last stage before setting up the tank was to paint and fit the two louvre doors, which slotted into the existing wall structure, at the rear of the tank, in the entrance. By this time we had thought of abandoning the idea of keeping fish and going in for Home Improvements and Decoration, but the prospect of still more screws and wallplugs persuaded us to stay with the marines.

The next stage of actually setting up the tank seemed child's play by comparison with the previous week's work. The back and sides of the tank were painted light blue and insulated with ½ in. polystyrene which was secured with adhesive. Two 150 watt heaterstats, wired in series to an outside thermostat, to safeguard against their "close circuiting" were fitted to provide the heating. Lighting, operated by wall switches in the lounge (which are just visible in the top left-hand corner of the photograph), consisted of one 4 ft. 40 watt (coloured tube) and one 3 ft. 30 watt (North light). The strip-lights were secured by means of plastic-covered spring clips, screwed to the inside of 4 in. diameter plastic guttering (Fig. 3). Filtration-*à-la*-Graham Cox using 4 in. × 1 in. plastic uplifts "welded" to a corrugated plastic base covering the whole of the tank bottom was fitted and connected to three of the larger type vibrator air pumps. These had to be placed some 15 ft. away in our garage as my wife wasn't keen on being subjected to any form of "hum pump torture". Fortunately the length of tubing needed to reach the tank seemed to create a sort of booster chamber and increased the supply of air to the diffusers, which were of the wooden type, planed down to fit inside the 1 in. filter tubing.

During our month's wait for materials, my wife and daughter, under my supervision, had previously washed more than ¼ cwt. of crushed cockle shell, ¼ cwt. of silica gravel and 28 lbs. of coral sand, also bleached 2 cwt. of rocks and coral. Apart from being a little "shell shocked", we were now ready to set up the aquarium. The arrangement of corals etc. had been decided earlier, having played around wedging large lumps of rock precariously on the kitchen work bench with spare bits of wood and insulation board until we achieved the desired effect. This proved very successful as once the crushed gravel and shell had been spread over the filter base we were able to place most of the heavy rocks and coral in pre-determined positions without having to shuffle them around in the tank.

This last stage had been a full day's work and by now the house was looking slightly the worse for wear, with bits of wire, sawn off plastic guttering, crushed shell and air tubing strewn all over the place. "Match

FIGURE 3 STRIP LIGHT COVER

of the Day" was about to start and, having missed the previous week's programme through painting the louvre doors, I was ready to call it quits for the night but my wife insisted in bashing on and filling the tank with water. Having checked for leaks before placing in position, we proceeded to fill the tank, using the garden hosepipe. Firstly the required amount of synthetic salt was emptied into a small plastic bucket; this was then stood on the gravel base inside the tank and water allowed to flow into the tank via the basket of salt; this avoided disturbing the crushed shell and

Left: Louvre doors, to left of lounge door, giving access to service area.

Below: View of tank from lounge.

dissolved the salt at the same time. When the water line reached 3 in. from the tank top, we lifted out the plastic bucket, switched on the air supply and heaters and wearily retired for the night, leaving clearing-up, and hopefully not mopping-up, operations until Sunday. The next morning the tank had cleared and the water heated to 76°F. The few remaining corals and small shells were placed into position and the final 3 in. of water added, correcting the specific gravity to 1·022 in the process.

After leaving for about two months to mature with a small sprinkling of garden soil and a piece of prawn, the fish were added over a period of a further two months. These consisted, in order of purchase, of an Electric Blue Damselfish (*Pomacentrus caeruleus*), Polka-dot Grunt (*Plectorhychus chaetidibiudes*), Majestic Angel (*Euxiphipops navarchus*), Longnose (*Forcipiger longirostris*), Cleaner Wrasse (*Labroides dimidiatus*) and Wimple fish (*Heniochus acuminatus*). Maintenance, once the inhabitants had all settled down, was minimal. The lighting, switched on for about 8 hours a day, provided an adequate but not excessive growth of algae and, apart from a 10 gallon water change every 6 weeks, only an occasional scraping or change of the wooden diffusers was necessary. The front glass of the tank was cleaned with one of the magnetic type cleaners.

The fish lived happily, ate ravenously, and were a joy for all to see for about eighteen months, when tragedy struck—over a period of about a month my wife had started to use an air freshener spray around the house—unfortunately we now find this contained a high percentage of D.D.T. which must have penetrated onto the water surface through the louvre doors. By the time we had diagnosed the symptoms (small pin point red blotches on the fish) it was too late to save all but the Spotted Grunt and Cleaner Wrasse. These fish live happily on to this day and I am pleased to say have now been joined by new occupants in the same tank which has been re-established and set up again on yet another Saturday evening—still, what's one more "Match of the Day" compared with the spectacle of a marine tank.

KEEPING KOI ON A SHOESTRING

by H. Waite

Ten years ago I moved into a new house with a small garden consisting of a lawn and triangular piece of earth in front of my back door. I dug the earth out to a depth of approx. 3 ft. in the middle and cemented the hole making a small pond 10 ft. × 6 ft. × 8 ft. In this pond I kept all kinds of fish until, 4 years ago, I was bitten by the Koi bug. Starting with 5 small 3 in. fish they now measure approx. 8 in. to 9 in. and smaller ones I added over the years make the total up to 15. I might add I winter my smallest ones indoors at a temperature of 50°F, only putting them out when pond temperatures reach about 50°F.

Getting ambitious, I decided more room was needed so I dug out more earth making another pond 12 ft. × 7 ft. and connected the two by means of a 6 in. diam. plastic pipe with a rubber bung to separate them for emptying or cleaning. I have 22 Orfe in this pond, 6 in. to 8 in. long and reared from 1 in. babies. I now needed filtration and aeration so a Lotus pump was installed in the triangular pond and ½ in. plastic hose piping was run (buried) to the top of a water fall running into the Orfe pond. (These fish need cool water and aeration during hot weather.) A fountain was made of concrete, piping and watering-can rose and put in the Koi pool. Also a D.I.Y. filtration plant was made up consisting of a 10 gallon plastic tub half filled with gravel and 6 sponge rubber pillows, water being pumped in at the top and out via outlet pipe at bottom back into pond. The pillows and gravel are washed fortnightly.

The pump is operated with a time switch to run from 6 a.m. to 7 a.m. and from 11 a.m. to 12 noon. So far this seems adequate but dependent on my wife's attitude to Electricity Bills!

I clean the ponds about October and again in April and do not feed at all during these months, in fact I did not see any Koi for 5 months this year. My Koi eat maggots, home made potted meat and Bemax pellets, large flake and garden worms. Also mashed cooked carrot and peas.

I have 7 Lily plants and plenty of *Elodea densa*, Iris and other water plants which I do believe keeps the water clear and sweet. My old cat drinks it and even prefers it to cream or milk and is now at the ripe old age of 20 years.

So Aquarist readers, do not despair, this can be done without spending a lot of money or having a large garden and the joy of keeping Koi can be yours.

OUR READERS WRITE

Hypostomus Catfish

After reading yet another letter (Margaret D. Smith June issue) following one from Mr. C. V. Futcher (March issue) regarding spawning in *Hypostomus* (*Plecostomus*) catfish I feel a few words are needed in clarification.

The fishes in your writer's possession are certainly not true *Hypostomus* species as all the leading authorities point out (Sterba Axelrod etc.) these fish have never been known to spawn in captivity.

The specimens in their tanks are almost certainly either *Ancistris* (*xenocara*) *dolichoptera* or *Ancistris Multispinis* both of which have spawned on many occasions in home aquaria. I myself possess two of the former bred by an aquaintance.

True *Hypostomus* never grow the bushy mouths referred to by your correspondents, but these are the common appendages of Ancistris in its many varieties, and the two species may be easily separated by this.

I think this common mistake is undoubtedly the result of practically all aquatic dealers lumping together all sucker-mouth catfish (with the possible exception of *Loricaria* and *Otocinclus*) under the title "*Plecostomus*" thereby adding to the confusion and false reporting of spawnings in home aquaria.

I have kept many of the Loricarid catfish for a number of years in my own hundred gallon tank. At the present time I have three true *Hypostomus* between eight and ten inches in length a fifteen inch *Pterygoblicheys*, two *Loricaria filamentosa*, two *Panaque* species and three *Ancistris*, one of which has bristles some half an inch long on his snout.

As true identification of many catfish species is exceedingly difficult I feel a really good book on the subject is long overdue, as practically all the other species of fish are covered in a multitude of price ranges but not one decent book has been published on the "Cats".

In conclusion I hope this letter had helped to clear up a few points with regard to our old friend, the "Pleco".

W. J. Davies,
14 Southlands Avenue,
Orpington, Kent
BR6 9NZ

Angel Breeding

I am rather surprised to read in "Viewpoint" that your Mr. Jenno has difficulty in hatching angel fishes eggs, and I think he has read too many articles on medication etc. I too use South Staffs. tap water, usually put in a small tank overnight. I bred angels in Manchester, where the water was perfect, and in Worcestershire where it was hard, and now in the Wolverhampton area, where it is very hard.

There are always signs when spawning is about to take place and a few hours in the aquarium does not matter. My pair is in a community tank, they spawn on a cane and I pinch the eggs and then trot down to the greenhouse with the cane. Fairly clean water, an airline and they hatch in two days or so and swim five or six days later.

I haven't counted how many eggs are laid but from the last lot I've sold two batches of sixty to the dealer in Wolverhampton and have thirty plus left. Once I reared 440 but this was exceptional and I usually average 100-150. The big difficulty is feeding the little blighters!

I assume that Mr. Jenno lives within reach of here and if he rings me I'd be pleased to (dare I say it?) put him right, on a visit, and provide a cup of tea.

I've even read about washing worms and being careful with *daphnia*. Mine eat worms cut up straight out of the ground and water fleas straight from the pond. On this diet, with some other odds and ends, I had a male for nine years and a female for five. My present pair were bought nearly five years ago.

Ernest Boughton,
20 Brooklands Road,
Albrighton,
Wolverhampton WV7 3DW

Froglovers!

We want contact with *you*! Especially the lovers, who keep, or are interested in the following species: *Mantella aurantiaca* (S.p.p.) *Rhacophorus* (S.p.p.) *Atelopus varius*

Because of some urgent reasons it seems very important to us, that these animals are being kept in a responsible way, and especially that they are being cultivated.

In order to come to good results in groups, we kindly ask you to contact

Frans Nijhuis, Kameraplein 6, IJsselstein, Holland. Tel. 03408-4090 or Jan Hoogendoorn, Biezenweg 29, Hagestein, Holland. Tel. 03472-343.

Goldfish Standards

I should like to correct the statement which Mr. Boarder made in the June issue of *The Aquarist*.

On page 116, under the heading "Coldwater Queries," the penultimate question and answer, Mr. Boarder wrote ". . . It is a great pity that the several Goldfish Societies in this country cannot get

OUR READERS WRITE

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True *Hypostomus* never grow the bushy mouths referred to by your correspondents, but these are the common appendages of Ancistris in its many varieties, and the two species may be easily separated by this.

I think this common mistake is undoubtedly the result of practically all aquatic dealers lumping together all sucker-mouth catfish (with the possible exception of *Loricaria* and *Otocinclus*) under the title "*Plecostomus*" thereby adding to the confusion and false reporting of spawnings in home aquaria.

I have kept many of the Loricarid catfish for a number of years in my own hundred gallon tank. At the present time I have three true *Hypostomus* between eight and ten inches in length a fifteen inch *Pterygoblicheys*, two *Loricaria filamentosa*, two *Panaque* species and three *Ancistris*, one of which has bristles some half an inch long on his snout.

As true identification of many catfish species is exceedingly difficult I feel a really good book on the subject is long overdue, as practically all the other species of fish are covered in a multitude of price ranges but not one decent book has been published on the "Cats".

In conclusion I hope this letter had helped to clear up a few points with regard to our old friend, the "Pleco".

W. J. Davies,
14 Southlands Avenue,
Orpington, Kent
BR6 9NZ

Angel Breeding

I am rather surprised to read in "Viewpoint" that your Mr. Jenno has difficulty in hatching angel fishes eggs, and I think he has read too many articles on medication etc. I too use South Staffs. tap water, usually put in a small tank overnight. I bred angels in Manchester, where the water was perfect, and in Worcestershire where it was hard, and now in the Wolverhampton area, where it is very hard.

There are always signs when spawning is about to take place and a few hours in the aquarium does not matter. My pair is in a community tank, they spawn on a cane and I pinch the eggs and then trot down to the greenhouse with the cane. Fairly clean water, an airline and they hatch in two days or so and swim five or six days later.

I haven't counted how many eggs are laid but from the last lot I've sold two batches of sixty to the dealer in Wolverhampton and have thirty plus left. Once I reared 440 but this was exceptional and I usually average 100-150. The big difficulty is feeding the little blighters!

I assume that Mr. Jenno lives within reach of here and if he rings me I'd be pleased to (dare I say it?) put him right, on a visit, and provide a cup of tea.

I've even read about washing worms and being careful with *daphnia*. Mine eat worms cut up straight out of the ground and water fleas straight from the pond. On this diet, with some other odds and ends, I had a male for nine years and a female for five. My present pair were bought nearly five years ago.

Ernest Boughton,
20 Brooklands Road,
Albrighton,
Wolverhampton WV7 3DW

Froglovers!

We want contact with *you*! Especially the lovers, who keep, or are interested in the following species: *Mantella aurantiaca* (S.p.p.) *Rhacophorus* (S.p.p.) *Atelopus varius*

Because of some urgent reasons it seems very important to us, that these animals are being kept in a responsible way, and especially that they are being cultivated.

In order to come to good results in groups, we kindly ask you to contact

Frans Nijhuis, Kameraplein 6, IJsselstein, Holland. Tel. 03408-4090 or Jan Hoogendoorn, Biezenweg 29, Hagestein, Holland. Tel. 03472-343.

Goldfish Standards

I should like to correct the statement which Mr. Boarder made in the June issue of *The Aquarist*.

On page 116, under the heading "Coldwater Queries," the penultimate question and answer, Mr. Boarder wrote ". . . It is a great pity that the several Goldfish Societies in this country cannot get

together and arrange certain shows throughout the country that will supply at least one class for a particular variety of goldfish. In this way it would be possible for a special class for all the standardised varieties of goldfish to be staged in at least one show every year."

Upon reflection Mr. Boarder will, no doubt, agree that this already happens. For many years the G.S.G.B., Bristol A.S. and the Midland Aquarium and Pond Society have staged comprehensive classes for the various goldfish varieties at their annual open shows. More recently the Association of Midland Goldfish Keepers—in conjunction with Coventry P. & A.S., have staged classes for all goldfish varieties covering single-tail, twin-tail and dorsal-less, each being a separate class within its own type section. Additionally, Middleton A.S. stage a similar comprehensive goldfish section and this Lancashire Society is not a specialist goldfish society!

With regard to the goldfish societies "getting together," Mr. Boarder is surely aware of the National Organisation—the Associated Goldfish Societies—which was announced in this magazine earlier this year. This comprises delegates from all of the major Goldfish Societies and it is their hope that through their efforts the Goldfish Hobby will be improved and the problem of standards rationalised.

As I have said, upon reflection Mr. Boarder will, perhaps, agree that his suggestions were a little behind the times?

Yours sincerely,
FRANK W. ORME,
Public Relations Officer,
Associated Goldfish Societies,
94 Newman Way, Rubery,
Birmingham B45 9LZ.

I have done some "reflecting" as suggested and cannot find in any *Aquarist & Pondkeeper*, any list of the shows which are putting on special classes for individual varieties of fancy goldfish. It seems, from the letters I receive, that I am not the only one to have missed such information.

A. BOARDER.

Mammals in Danger

In many parts of the British Isles the Red Squirrel (*Sciurus vulgaris leucourus*) is either on the increase or holding its own. However, the water-shortage and drought affecting vast areas of Britain's countryside is an additional threat which faces not only the Red Squirrel, but many of our small mammals.

They are further endangered by the actual presence of water-tanks, owned by private landowners and the Forestry Commission. This year, the water has evaporated to such an extent that the animals, in an effort to lap the water, fall off the edge and are drowned.

I believe that this is a needless and tragic waste of our ever-diminishing wildlife, though the Red Squirrel and other creatures might easily be saved by simply placing a heavy branch at a 75 deg. angle in the water-tank. Thus, when the water-level is rather low, the mammals would have something to cling on to and avoid disaster.

Finally, in this Tenth Anniversary Year of my founding of the British Wildlife Society—Junior Explorers, I have with the help of our members been able to establish two ponds, using a small amount of plastic sheeting. Further, I believe that it would re-create a depth of understanding and interest in natural history, if parents fortunate enough to have even a tiny garden, established a pond for both their children and themselves. The same might be the size of a washing-up bowl, but with landscaped surrounds and a wilderness effect, it would soon attract the creatures of the wild—our God-given—priceless heritage.

JOHN LODGE, Founder,
The British Wildlife Society-
Junior Explorers,
Mijbil Wildlife Adventure Centre
and Nature Reserve,
Withington, Glos.

In Appreciation

The members of the Merthyr Aquarist Society wish to express their sincere thanks to the members of the Sudbury, Riverside and Kingston Aquarist Societies for making their recent visit to the Sudbury Open Show such an enjoyable and interesting day.

P. WILLIS, P.R.O.,
Merthyr Aquarist Society,
4 Model Cottages, Penyard,
Merthyr Tydfil, Glam.

Tortoise Eggs

A friend whom I work with described a fascinating experience she observed with her daughter's tortoise.

The girl owns three and last Friday evening a female tried two or three times to make a hole in the hard earth of a flower bed without success, but finally scooped away sufficient earth to lay six eggs.

These she carefully covered over with earth until one could not tell the earth had been disturbed.

My friend covered over the spot with a plastic box to try to induce as much heat as possible.

What are the chances of hatching and how long do they take to hatch please?

Yours faithfully,
W. BATEMAN,
4 Chesham Court,
Trinity Road, S.W.18.

Continued on page 198

Pseudotropheus auratus

Male fish

Written and illustrated by Jorgen Hansen & Pamela Stewart

Pseudotropheus auratus was one of the first species of cichlids from lake Malawi to be imported to Europe, no doubt due to its colourful appearance, reminiscent of coral reef fish. Another similarity between the latter and the Mbuna group, to which *P. auratus* belongs, is the high density of fish (60 per square metre in lake Malawi). *P. auratus* is endemic to lake Malawi i.e. is found nowhere else in the world. It is termed an "epilithic algae feeder", which means feeder on the algae which grow on the surface of rocks.

P. auratus grows to a length of 15 cm. The female is lemon yellow with three black longitudinal stripes of which one runs along the centre of the body from the eye to the base of the tail; the second runs just under the dorsal fin, and the third along the dorsal fin itself. Two curved black stripes cross the snout from eye to eye. In the upper part of the tail fin are a number of black spots on a yellow background. The anal fin is yellow with sometimes a black line in the posterior half. The female's colouring darkens with age and finally resembles the male colouring, except for a yellow/golden longitudinal stripe as opposed to the male's blue stripe.

We keep our *P. auratus* in a 200 litre chipboard tank which exclusively contains Mbuna. The interior is built up to resemble a rocky coast: large pieces of coral are glued or put on top of one another right up to the surface along both sides and the back of the tank, in such a way as to create numerous caves and passage-ways. The bottom is covered with gravel mixed with small bits of coal. The water has a pH of 7 and a hardness of 14 DH. A dessertspoon of salt is added for every 25 litres.

The basic body colour of the male is black with the aforementioned blue stripe running from the eye to the base of the tail. The fins are edged with pale blue; on the anal fin is an orange/yellow egg spot about 3 mm. in diameter. The male shifts to female colouring when frightened or as a sign of submission. Immature males have female colouring. The change from male to female colour pattern is under nervous control, such that if a fish becomes afraid or submits to another male it can, via the nervous system, change over to the yellow pattern with the black longitudinal stripes. The change from female to male pattern is on the other hand under hormonal control, but nervous control can also dominate this process. In a community of *auratus* only the most dominant male has the black male colouring, and if this fish is removed, another male will then assume this colouring as nervous control is no longer dominant over hormonal control. It can often be difficult to ascertain which fish are males and which females. Older males also become darker and then lose the ability to shift over to female colouring. If frightened they can, at the most, change over to a dark grey or brown without the blue stripe.

The fish was first described as *Chromis auratus* in 1899 by Boulenger; this name was first changed to *Tilapia aurata* and then to *Pseudotropheus auratus*.

The detailed description of the fish is as follows:

1) The body depth goes 3⅗ times into the total length.

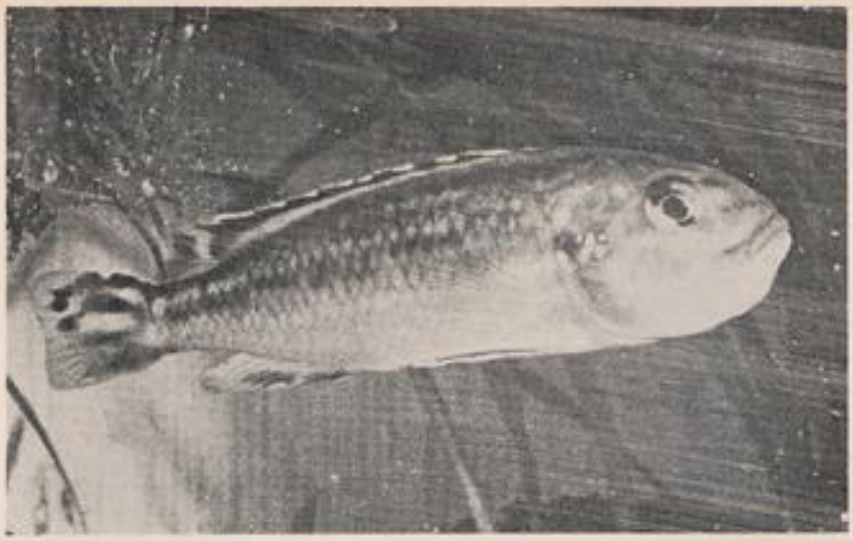
2) The length of the head goes 3⅓ times into the total length.

3) The head is double as long as broad, and the upper part of the profile is deeply curved.

4) The snout is just as long as broad, and shorter than the postocular part of the head.

5) The eye's diameter goes 4 times into the head's length, and the former is slightly longer than the distance between the eyes.

6) The mouth is small, as its breadth is only ⅔ of the head's breadth.



Female with two-day old eggs in mouth. The skin of the lower jaw clearly hangs downwards.

7) The teeth are very small and sit in 5 or 6 rows. There are 42 teeth in the outer row of the upper jaw. There are two different sorts of teeth, both chisel-formed.

8) There are three rows of scales on the side of the head, and the breadth of the scale covered area is less than the eye's diameter.

9) The scales are stenoid.

10) The number of fin rays in the various fins are as follows:

	Spiny rays	Soft rays
Dorsal fin	XVIII-XIX	6 (7)
Anal fin	III	6 (7)
Ventral fins	I	4
Pectoral fins	—	13

The temperature is 25°C and the tank is illuminated by a 30-watt fluorescent tube. A single airstone provides constant aeration. A power filter through which 200 litres of water runs per hour provides mechanical filtration i.e. keeps the water free from impurities. Half the water is changed every week. At the moment the tank contains 30 fish including besides *P. auratus, P. zebra, P. elongatus, P. microstoma, P. tropheops, Labeotropheus fuelleborni,* and *L. trewavasae.* As the surface area of the tank is 0·5 square metres, the density of fish corresponds to that in Lake Malawi.

There were 2 *auratus* in the tank, a male and female. One day we noticed that neither the male or female accepted food. After closer investigation we discovered that the female's mouth was full of eggs and, which surprised us even more, that the skin of the male's throat was similarly extended, this indicating that his mouth too contained eggs. Each fish was immediately removed to a 40-litre's aerated tank of its own.

In the course of the next four days it became clear that the male's mouth was now empty. The throat was no longer extended, and he ate with good appetite the thread algae growing in the tank. The fact that Mbuna males fertilise the eggs in the females mouth indicates that the eggs taken up by the male were perhaps unfertilised; Mbuna males do not generally take the eggs in the mouth.

The female went for 22 days with eggs/fry in the mouth. Sometimes when visitors pushed their heads too closely to her tank, she would compress her throat so that it looked quite normal and we were seriously

Young swimming to mothers mouth.

worried that she had swallowed her young. On the 22nd day, impatient for the fry to be released, we placed a few newly hatched *Artemia* in the tank. Returning to the tank an hour later we perceived a 2 cm. long yellow black-striped baby fish dart into the mother's mouth. The camera was then fetched and we waited patiently. When the female felt that peace and quiet prevailed, she spat out two fry, which immediately began to eat the brine shrimp.

As long as nothing disturbing happened the female remained passive but if the photographer made a movement, she took up an oblique position with head downwards, and then moved slightly backward, whereupon the young themselves swam up to her mouth.

Already the following morning she had lost all maternal interest in the fry, which now skilfully avoided her. We therefore removed her from the tank. There were apparently no more than 2 fry, which is a very small number for *P. auratus*, which can have broods of 40 or more.

We continued to feed the fry with brine shrimp and they grew very fast. At the age of 3 months they were over 4 cm. long and at 10 months over 8 cm. At this stage there were still no signs of sex differentiation.

When the fish were 11 months old we saw one day that one had eggs in the mouth. She was immediately caught and placed in a little container wherein to be transported to a suitable tank. Meantime she spat out 15 large orange eggs, which she would not take in again. We therefore removed them for artificial hatching, and placed the female nonetheless in the intended tank, as she apparently had more eggs left in the mouth. 19 days later the eggs from the artificial hatching had developed into small *auratus*, and 4 days after this the female released 8 fry.

Already 25 days later the female had eggs in the mouth again, which she did not spit out when moved; this was perhaps to do with the fact that she was not moved until 14 days after the spawning. At the moment of writing the fry have not yet been released.

OUR READERS WRITE

continued from page 195

Australian Fluoridation Supporter

As both a chemist and an avid fishkeeper, I feel I must comment on the totally misrepresentative letter concerning fluoride in the April issue of your magazine.

The only redeeming feature of that letter is the point on the morality of mass medication in a democracy. However, this is merely a philosophical point and not relevant to the subject of fishkeeping. The remaining conclusions are grossly inaccurate.

Of course sodium fluoride is poisonous. Any chemical is poisonous if taken in sufficient quantity. The chloroform in toothpaste is poisonous. Common salt (sodium chloride) would be poisonous if we consumed enough. I read recently of an experiment in which rats were force-fed pure water. They died in a few days of massive kidney damage. On this basis pure water is capable of causing death, i.e., it is poisonous! Fluoride, at a level of 1 p.p.m. has been added to the South Australian water supply for a number of years now. The level of tooth decay has decreased and there has been no ill effects on human health.

Fluoride has absolutely no effect on tropical fish either (maybe they have healthier teeth too). When fluoride was about to be introduced here there were prophets predicting the doom of the fishkeeping hobby. However, they were quickly silenced by the sight of fish thriving in fluoridated water. I have kept and bred Discus both before and after the introduction of fluoride to the water supply. Let me assure you that the fluoride had no effect on the fish whatsoever. I hatched and reared over two thousand Discus in two years using only fluoridated water. That, in itself, is evidence enough of the safety of fluoridated water.

Yours sincerely,
BRENTON C. NICHOLSON,
14 Rednall Street,
Tea Tree Gully,
South Australia, 5091,
Australia.

PRESS RELEASE

PHILLIPS FISH FOODS are pleased to announce a marked improvement in the quality of Phillips Flaked Fish Foods.

Through continued experimental and developmental work coupled with the installation of sophisticated machinery Phillips have made a significant breakthrough in flake quality.

The highly nutritious composition of Phillips Flaked Fish Foods has not been changed in any way but we have now greatly improved all our flaked foods so that the flake is soft and delicate with a silky texture.

At the same time we have brought about an intensification in the colours of the flakes.

Packs containing the new flake may be identified by a "New! Finer Texture Flake" flash.

PRODUCT REVIEW

Es-Es Pre-Set-Matic Thermostatic Heater.

Recently I reviewed the latest version of this unit—the model conforming to the new safety regulations. At the time of writing I did not know how much the new safety features would add to the cost of the Pre-Set-Matic. I understand now that the additional features will increase the price by about 50 per cent. (The material used to coat the glass tube is very expensive.) Readers who feel that they are happy enough with present heaters, thermostats, and combined units, with regard to their safety features, might consider it worth their while to buy some extra supplies of their favourite models, at current prices, for future use. New, more expensive models will soon be coming into the shops and old models will probably disappear from stock quite quickly.

If you are happy with the safety element of current models my tip would be to buy some extra ones quickly before everyone else clears the shelves.

(I cannot recall ever having heard of a fatality resulting from the use of "standard" heaters or thermostats. The proprietor of one firm—*not* Singleton Bros. Ltd.—told me that the last fatality he heard about, in connection with our hobby, was in the 1930s—which was before my time. The gentleman who told me about it said that he didn't think it had any connection with either a heater or thermostat. That sounds like a good safety record for our hobby—particularly in the light of the fact that water and electricity could easily be a fatal mixture in the hands of the very careless or the very unlucky. What is your opinion? Have you heard of any more recent fatalities? If so, I'd be pleased to receive details for inclusion in my monthly feature.)

British Air Pumps—a general comment. In the March edition, in *W.Y.O?*, I mentioned that I knew of one British firm that produced excellent, powerful air pumps. In the May edition a reader asked about the pumps in question. Perhaps I should enlarge upon my earlier comment and explain why I have never reviewed the pumps I mentioned. The firm that produces the pumps is not in the aquarium business; they produce pumps for use in industry, etc. For example, their pumps are used by the medical profession in operating theatres. Several years ago the firm approached me and asked if I would test three of their pumps to see if they might be suitable for use by aquarists. I did so and confirmed that the pumps would be very suitable for aquarists and dealers who required powerful pumps supplying a lot of air. The firm asked me to produce appropriate leaflets to go with their pumps. I did so.

Some time later the company informed me that they had decided not to enter the field of aquarium keeping. I returned the test pumps and have not had any contact with the company since then; however, I was rather disappointed that the firm had decided not to try to sell its excellent products to those of us interested in aquarium keeping. The pumps would have required no modifications for use by aquarists.

Nuova Turbo Power Filter, manufactured in Germany. Jointly distributed in the U.K. by Fantasy Pet Products, 13 Nutley Lane, Reigate, Surrey, and Hillside Aquatics, 29 Dixons Hill Road, Welham Green, Nr. Hatfield, Herts. Price £34·96, plus VAT, at time of writing.

The Turbo is the largest power filter in the Nuova range and is similar in design to the Nuova Turbino, my review of which you may have read in a previous edition of *The Aquarist*. The filter, from base to top of motor housing, is approximately 14 in. tall; it is approximately 4½ in. wide by about 7½ in. long. It is supplied fitted with roughly 3 ft. 3 in. of two core cable. (An extra foot would be useful as aquaria are not always close to power points.)

The Turbo is supplied with all appropriate fittings, including an extra washer/seal for the lid, and a spare set of motor bearings. It has a single outlet for returning filtered water to the aquarium, and fittings for three inlets. One, two or three of the latter may be used, as required.

Having given full details of the Nuova Turbino in my earlier review makes it unnecessary for me to repeat them here as the Turbo is similar in most respects, including design. All the components are of high quality—including the flexible tubing used to transport water to and from the aquarium. The following details are provided with the unit: capacity, 150 gallons per hour; total contents, 1¼ gallons; capacity of filter materials, 1 gallon; circuit, water passes through approximately 16 in. of filter media; motor, 30 watt, 220 volt, 2,200 revs. per minute. The filter is supplied with a good instruction leaflet, but it's in German; the additional version in English is not as useful—but I understand that it will be improved when it is reprinted.

Most important: how does the filter perform? In use I found it to be excellent. It produced excellent filtration and water circulation, giving an even spread

of heat throughout the aquarium. With the additional accessories mentioned in my earlier review it can become a very versatile instrument. As it is, it is a superb filter of the finest construction. I have not had it under test for as long as the earlier models but it would appear to be just as reliable.

The Nuova Turbo is not cheap; but it is the finest power filter I have had the pleasure of testing. If you have a large tank and require an excellent power filter for which you are willing to pay, I thoroughly recommend the Nuova Turbo. It would certainly be my first choice!

Nuova Turbino Power Filter, we have been asked to point out that this equipment is now priced at £29·30 plus 12½% VAT and not as stated in our July issue.

Nuova Multiplus Filter, distributed by the above firms.

In a recent review of the Nuova Multiplus Filter I mentioned only its use with an air pump. I have since learned, from Hillside Aquatics, that it can be used attached directly to one of the inlets on any of the Nuova Power Filters. This information is not supplied with the literature accompanying the Multiplus. Hopefully it soon will be as it shows the Multiplus to be even more versatile than I originally thought.

Taxes not Profit

In the July issue of *The Aquarist* we published an advertisement regarding the new heating equipment and the trade prices for the equipment were inadvertently left in the advertisement.

Some of your readers may think that there is rather a large margin between the trade price published and the retail price including V.A.T.

I thought that we should point out that the size of this margin illustrates the cost of government taxes in the total price of a unit, rather than profit made by retailers!

In practice, aquarists in Great Britain are fortunate that retailers take such a small margin. In most other countries they refuse to work on the relatively small profits which are taken by British shops.

J. N. CARRINGTON,
Managing Director,
Interpet,
Curtis Road, Dorking,
Surrey RH4 1EJ.

PRICE INCREASE

We announce with regret that this magazine will cost 30p as from September 1st. Distribution costs such as postage and rail charges have risen by over one third during the past twelve months and this fact coupled with additional labour costs, rocketing overheads and the increased price of materials which has been adversely affected by the recent fall in the exchange rate of the pound has made the decision unavoidable.

The Aquarist is of course, much larger than it was five years ago and reading matter has increased by more than 20 per cent. It may also be relevent to point out that whilst many publications have doubled their price during this period your favourite aquatic magazine currently costs only 7p more than in 1971.

Further improvements in quality and content are planned for the future and bearing in mind that the increase in price represents only a fraction over 1p per week we believe readers will agree that *The Aquarist* remains the best possible value for money!

VIEWPOINT

continued from page 189

cannot be overstressed to the beginner in the hobby—overfeeding must be avoided and feeding must only be done by some responsible person who will take the trouble to understand the inhabitants' requirements.

Several tests can be made on aquarium water samples which indicate the progress and condition of the environment. None are absolutely essential whilst things are going well, but they are instructive and interesting and could be used in study projects. The Nitrogen Cycle products—ammonia, nitrite and nitrate—are all measurable by the appropriate scientific methods and can provide illuminating statistics. Dissolved oxygen and carbon dioxide levels are important, the acidity and hardness of the water change with time and other influences. Temperature and density measurements are fundamental. A natural aquarium could in addition be a rich source of specimens for microscopic examination.

Broadly then, schools should find properly-cared-for aquaria great assets in many educational spheres. Some of the common tropical fishes have their young alive in a fashion analogous to human reproduction for instance, and this is perhaps an easy way of demonstrating such events to small children. There will also be heart-aches of course, such as when a favourite fish eventually dies, but even this can be considered good preparation for the hard facts of adult life.

From a Naturalist's Notebook

by Eric Hardy

THE DISCOVERY of a little bronzey, predatory aquatic diver, the screech beetle, *Hygrobia hermanni*, by two friends this summer in Kirkby's Acornfield Wood pond on the edge of Liverpool was an unexpected find, considering the despoilation of these environs of TV *Z Car's* "New Town". This relative of the common *Dytiscus* water-beetle is a relic of the old Lancashire fenland, though only once previously recorded in the Northwest at Rufford in Lancashire in 1892 apart from an old Shropshire record. It mainly ranges from Askham Bog in the Yorkshire Pennines to East Anglia, measures 7-8 mm., is reddish bronze with yellow bands and zig-zags across the back of its wing-cases and down the side of the wings, and with a yellow spot at the base. It haunts stagnant water in fens and dykes, attaching its eggs to *Elodea*, etc., and emerges in August after an aquatic spring life.

The most interesting part of my week's field-work in Cumbria was the stranding of a sea-horse (not the confused pipefish) in Fleswick Bay at St. Bees, for I have not previously known this north of Barmouth. Adders and natterjacks as usual were on Drigg dunes, opposite Ravenglass.

The Water Authority's recent ruling that the common eel is legally a freshwater fish (though it breeds in the sea), and can only be taken by sea-anglers with a licence, is zoologically unsound. The salmon which breeds in freshwater and matures in the sea has long been ruled a freshwater fish. Ministry of agriculture biologists have recently shown by serum studies that Britain's Atlantic salmon comprise two races. The Celtic race, originally inhabiting our rivers, was destroyed by Ice Age conditions excepting in the milder south-western rivers from the Lancashire Lune through Wales, the West Country and southern Ireland. After the Ice Ages, the rivers north and east of these were recolonised by a boreal or arctic race of the same species. Avon and Stour salmon however show some boreal characteristics in their sera, but the salmon seems clearly to be a marine fish breeding in freshwater!

This difference in biological race between Dorset and Hampshire salmon may explain why all salmon tagged in the Hampshire Avon have strayed only eastwards to Itchen and Test, and those marked in the Devonshire Axe stray only westwards.

One would expect conservation to be free from rival jealousies. Most people had heard of various projects protecting and studying Britain's main natterjack breeding colony in the duneland slacks between Southport and Crosby—from Hesketh golf course to Hightown dunes. 1976 was a very good breeding season for the natterjacks, and also for the rivalries which have been going on behind the scenes for some years, again broke into the public press, involving several Ph Ds, and reps of British Herpetological Society, the Nature Conservancy, county and local naturalists. It follows only a few years after the "rupture" over experts destroying an Ainsdale national reserve sand-lizard colony. I am not entering this pond-digging fray, said to have destroyed at Ainsdale one of Britain's two colonies of the hybrid rush, *Juncus balticus* X *effusus* (this also grows on Hightown dunes), and to have made pools which attracted so many newts as to oust the toads—both the work of Ph. Ds. This is all the result of lack of co-ordination and liaison in an area where too many overlapping bodies, from the county naturalists' trust to academics and amateurs alike, interpret co-operation as a take-over by themselves, with too many ambitious jealousies involved. Incomplete, often misleading, recording is due to this. The county trust doesn't even have its largest and longest-subscribing society represented on its regional committee for this southwest area! Many of us are sick of these constant squabbles in Northwestern natural history, due to poor leadership.

No such behind the scenes in-fighting mars the continued good work of San Diego Society of Natural History, who recently sent me two excellent technical publications. B. M. Burr's illustrated 17 page *Review of the Mexican Stoneroller*, a variable cyprinodont fish *Campostoma ornatum*, distinctive from the rest of its genus in having breeding tubercles in male and female, very small scales and intestintal loops which rarely coil around the bladder, suggests it is close to the ancestral stock of the genus. N. M. Moffat and D. A. Thomson's 10-page account of the Gulf Grunion *Leuresthes sardina* supports its continued separation from the California grunion (*tenuis*). Their distribution is restricted more by available spawning beaches than by sea-temperature.

In Australia, the freshwater Welch's grunter or lake bream (*Therapon welchi*) has been spawned in captivity for the first time, by hormone injection. Inhabiting Lake Eyre and Bulloo River, this sport fish may have stocking potential in Queensland. Similar technique is being tried to spawn the sooty grunter or eastern black bream, *fuliginosus*, during the 1976-7 season.

A Bristol breeder of British shubunkins, and member

of British Aquarists, asks for details of the late L. R. Brightwell, and the whereabouts of his writings and drawings, as his widow died some years ago. Brightwell, a pre-war contributor to *Aquarist* and a member of the Marine Biological Association, is best remembered for his whimsical yet accurate illustrations of fish and other animals. After an apparently unhappy year at Lambeth Art School, he gained his practical experience at zoos, farms and cattle-markets and by 1936 had illustrated over 50 books, from those of Wells to Huxley. He visited much of the continent and served in France in the first world war, when he began contributing to Punch. He had an illustration in the Proceedings of the Zoological Society. I always understood he began work in New Zealand, painting labels for a boot-polish factory. He once said his most difficult subject was a tropical bull frog. One of his associates was William Saville Kent (1845-1908) first curator of Brighton Aquarium, author of "The Great Barrier Reef" and, my correspondent tells me, brother of a celebrated lady murderess! Maybe readers have some of Brightwell's material.

Above: L. R. Brightwell and below, his whimsical self-portrait.

Though Travis Jenkins' well known "Fishes of the British Isles" stated that the rock-goby was found "all over the British coasts", a specimen taken in the Blackwater Estuary of Essex in 1974 appears to be not only the first recorded on the east coast of Britain, but from the North Sea. How, then, did Jenkins make this mistake? He was a marine biologist, but mainly with west coast experience as superintendent of Lancashire & Western Sea Fisheries, based at Preston. Its distribution is south from the British Isles. The southern North Sea lacks the rocky coasts it requires as where we find it in Anglesey's seaweeds. The Blackwater specimen probably strayed from the English Channel where it occurs up to Dover.

Anxiety has been raised for the future of the Welsh char, or torgoch, in the deep, gold glacial Llanberis lakes if their water temperature is raised by discharges from the new CEGB hydro-electric plant at Dinorwic, on the shores of Llyn Peris. Welsh pride aside, this is only a subspecies of the land-locked arctic char *Salvelinus alpinus* with other subspecies land-locked after the Ice Ages in the deep waters of Lakeland, Ireland and Scotland. It is not supposed to survive in water more than 59°F. It still occupies Llyn Quellyn and Barmouth's Llyn Bodlyn (western Merioneth) in lesser numbers. American brook-trout, *S. fontinalis*, introduced to several British waters, is more tolerant. This fondness for "splitting" local variations off a widely distributed fish was once popular among trout-recorders. Their once numerous British "species" have been lumped back into the aggregate common type. The Loch Leven and Orkney (Loch Hellyal on Hoy) and Lough Neagh char are now believed to be extinct. The char is not really a land-locked species of salmon, as one recent Welsh book stated, though it belongs to the salmon family. Char have teeth on the head of the vomer bones in the roof of the mouth; salmon have teeth on the body of the vomer as well. They have smaller scales and the spots are not black or red. There are only certain parts of the lakes where they occur. A label on a specimen in Chester Museum added that it was formerly in Denbighshire, but there's no proof of it outside Caernarvonshire and Merioneth in Wales.

AQUATIC SPHAGNA

by Andrew Allen

Sphagnum is a genus of quite magical plants. Like beech and mangrove, the sphagna dominate, ecologically and visually, entire ecosystems—vast tracts of the Northern hemisphere lying beneath the carpets of this one humble group of mosses. From the peat bogs of Ireland to the domed mires of Quebec, one can survey carpets of sphagna that stretch to the horizon, broken only by isolated spruce trees and dark peat pools.

In a broad sense, all sphagna are aquatic. Some live down in the peat pools, others grow across their surface until the pools close, others create pools for themselves. Their cells are large and empty, the walls perforated with pores, and they absorb and store water from atmosphere or soil until bloated, until the sphagnum carpet is a sodden sponge with the water table raised to the surface. Through this strategy sphagna drown their competitors; a canny move.

The waterlogged sphagna constitute poor food, their calorific content lowest among the plants. A herbivore could munch sphagnum all day, every day, yet die of starvation with an iron certainty. And the cells are loaded with antibiotics which guard against the attack of microbes.

Each strand is a tireless ion pump, withdrawing nutrients from the water, exchanging hydrogen in their place. The surrounding water grows poor; competitors warp and die. The expelled hydrogen lowers the pH of the water, until it becomes an acid bath (sometimes as acidic as your stomach), an acid bath to kill invaders that seek a niche.

It comes then as small surprise that there are few other plants on these mires, and that those few are specialists, like the insectivorous sundews that seek their nutrients from a source other than the thin water. And because food is so scarce, animals are rare. Stand at the heart of a true mire and you will hear no birds sing, see no insects fly past; there is no calcium with which to build bones, scant nitrogen with which to build protein. Sphagna create a wet desert as inhospitable and still as the Saharan sands.

Speaking loosely, each sphagnum strand is immortal. As it grows at its tip, so it dies at its base; because the water is so airless and acid the strands do not rot, but compact into a peat that preserves ten thousand years of history layer by layer, even to the Iron Age peoples who were sacrificed there to Nerthus, the Earth Mother.

Each species has its own appeal, born in an individual colour and texture:

Sphagnum cuspidatum colonizes the peat pools; the submerged strands have that soft delicacy of cotton wool, their colour a gentle pastel green.

S. pulchrum grows over the pool edge. Jump up and down: the carpet rolls and undulates uneasily at your beck. This is the true quaking mire. Do not jump too high, however: the carpet is thin above water that is black and deep. This species is robust and well formed, with a prominent head, its colour yellow or buff tinged with a deeper brown.

S. magellanicum is large and bloated, with chunky leaves. In colour it is the aesthete's sphagnum, sometimes pink, suffused often with an intense purple that nature might have copied from a novel by Oscar Wilde.

S. rubellum is more delicate, coloured the deep carmine of Old Burgundy, a most rich and luscious shade. Its carpets extend for hundreds of yards, one sheet of pure and living colour.

To run one's fingers over *S. plumulosum* is to touch silk, silk of an elusive sheeny violet that appears to glow from within.

S. fuscum crowns the hummocks, only an honorary aquatic for the day. Besides, it is a boring little sparrow of a moss, brown and dingy.

Knowledge of the sphagna demands a good key and a microscope. The species grade into one another in colour and form, and only the cellular characteristics are reliable. There are numerous species beyond those indicated here.

For the herpetologist, sphagna prove invaluable in the transport of reptiles and amphibians; dry or moist at need, antiseptic properties a guard against infection, softness a guard against knocks and injury. Similarly, they proved invaluable during the First War as

swabs and bandages more absorbent than the expensive cotton that was required for the guns.

But it is a mistake to employ sphagna or peat as a substrate in the vivarium. Remember that few amphibian species inhabit the mires, and only a small proportion of imported species will be adapted to such acid conditions. To house any amphibian thus is to ask for trouble, and doubtless many mysterious deaths could be traced to this practice.

If aquarists and water gardeners rarely cultivate sphagna, this is largely the fault of the moss! In traditional tanks or marsh gardens they will either perish because the pH is too high, or pump out hydrogen until the acid water kills their competitors, *your* prize plants (in most ponds, with an external input of nutrients from leaves or fish food, the former is the more probable result). Sphagna are not accommodating plants.

Yet they could form the core of a most attractive design. A tank or small pool of coloured sphagna would itself be a visual glory, composed of shades never seen on the flank of a fish or those traditional and rather boring plants of the everyday aquarium. They are the colours of the mire, and never to be found in stream or lake.

And other fascinating mire plants may be grown with the sphagna: bog orchids, bladderworts (*Utricularia* sp.), Pitcher plants (see my article of January, 1976), sundews (*Drosera* sp.), the last three being predators, bizarre in colour and morphology, with habits that quite elevate them above the realm of mere vegetables!

STONEWORK

by B. Fry

THE NOVICE aquarium keeper will, no doubt, be surprised to learn that outbreaks of disease such as fungus or fin-rot, and even the sudden demise of newly purchased fishes, may very often be attributed to the stonework introduced into a tank for its decorative effect.

To those who already know something about the proper and safe way of furnishing an aquarium, the reason is not far to seek. Indeed, it must be said at once that the vital factor when choosing stones to add attraction to a tank is to make certain that they will not alter the chemistry of the water to the detriment (healthwise) of the fish. Hence metal bearing stones or stones that dissolve out calcareous salts should be avoided like the plague. It is fortunate that the former are not thick on the ground. The latter, however, are ubiquitous. Lumps of limestone, marble, alabaster, spars and other crystalline formations jump to mind. Artifacts made of a mixture of cement and sand, unless properly cured, are dangerous in the extreme.

Now, although some freshwater fishes inhabit hard and alkaline waters in the wild—take, for instance, the wondrously coloured inhabitants of the Rift lakes—the self-announced or transparently apparent beginner would never be persuaded or allowed by the reputable dealer to purchase such species without their specialized requirements being made clear.

To emphasize the importance of a suitable environment for the general run of fishes let us take, for example, a common goldfish. Place a common goldfish in a concrete pond not treated for free lime and, usually, physical distress and death will follow before a few days are out. Why? Because the toxic properties of free lime will have worked their evil effect. To make a new concrete pond safe, then, the excessive alkalis held in solution must be removed by repeated changes of water. Alternatively, they must be sealed against leaking out by applications of a suitable pond dressing obtainable from any well-stocked aquarium shop or garden centre.

Of the stones most suitable for the aquarium, and among the easiest to procure, are the various granites. Splendidly shaped pieces in a sort of heather-mixture of green, grey, red or blue may be found in stonemasons' yards, dealers' shops, a few demolition sites and the great outdoors. Slate, also, is obtainable in quite a number of pleasing colours. Westmorland stone, waterworn and sometimes deeply incised with horizontal splits or fissures is another harmless stone. Quartz, likewise, and flints free of chalky accretions are recommended. Quartz and flint, however, often have sharp and jagged edges. These should be blunted by rubbing with an abrasive pad or a fine-notched file. Pumice stone makes an interesting feature to include in an artistically laid out underwater scene. As it is buoyant, it should be stuck with non-toxic Araldite to a heavy piece of glass or slate and then given a good soaking before use.

Tall pieces of coal, without traces of metallic streaks, can be used to create a spectacular background in a tank housing a collection of brilliantly hued fishes such as neon tetras, ruby sharks, fiery hued platies, swordtails, and the like.

News from AQUARISTS' SOCIETIES

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

EARLY in June the **Loughborough & District A.S.** held a highly successful open show. Entries were received from all over the country and totalled 380. Results of the open show were:—Male Fighters: 1, J. Stevewright (Corby); 2 and 4, R. Elliott (Corby); 3, R. Harlow (Derby). A.O.V. Anabantids: 1, I. Fuller (Rugeley); 2, Lee's (Corby); 3, T. Herrick (Queen of Midlands); 4, K. Prendergast (Boston). Named Characins: 1, 2 and 4, R. Elliott (Corby); 3, R. Onslow (Kingsclere). A.O.V. Characins: 1 and 4, R. Elliott (Corby); 2, R. White (Rugeley); 3, P. Mills (N. Warwickshire). Named Cichlids: 1, H. Bostock (Loughborough); 2, A. Blake (Individual); 3 and 4, P. Simpkins (Long Eaton). Angel Fish: 1, R. Onslow (Kingsclere); 2, 3 and 4, Lee's (Corby). A.O.V. Cichlids: 1, S.M.A.B. (Jones & Shipman); 2, Mr. Whitehouse (Darlaston); 3, N. Campbell (Corby); 4, Mr. and Mrs. Marson (N. Warwickshire). Named Barbs: 1, 2 and 3, Mrs. Cruickshank (Ealing); 4, A. and M. Crew (Wellingborough). A.O.V. Barbs: 1, Mrs. Cruickshank (Ealing); 2, A. Crew (Wellingborough); 3, L. Godwin (Leics. Aquarist); 4, W. Neville (Grantham). Corydoras: 1, T. Cruickshank (Ealing); 2, L. Godwin (Leics. Aquarist); 3 and 4, S.M.I.N. (Nuneaton). A.O.V. Catfish: 1, N. Campbell (Corby); 2, J. Sutcliffe (Queen of Midlands); 3, A. Chafer (Loughborough); 4, P. Mills (N. Warwickshire). Swordtails: 1, L. Godwin (Leics. Aquarist); 2, B. Ward (Doncaster); 3, K. Prendergast (Boston); 4, B. Envis (Leics. Aquarist). Platies: 1 and 2, G. Upsall (Boston); 3, H. Chafer (Loughborough); 4, A. Allcock (N. Warwickshire). Mollies: 1, G. Roberts (Joseph Bamford); 2 and 4, G. Moore (Individual); 3, B. Baalham (Corby). Guppies: 1 and 2, S.M.I.N. (Nuneaton); 3, D. Forster (Queen of Midlands); 4, B. Baalham (Corby). A.O.V. Livebearer: 1, Mrs. Cruickshank (Ealing); 2, S.M.I.N. (Nuneaton); 3, B. Jackson (Doncaster); 4, A. and M. Crew (Wellingborough). Loach: 1, J. Booth (Loughborough); 2, S. Neville (Grantham); 3, R. Elliott (Corby); 4, A. Allcock (N. Warwickshire). Livebearer (pairs): 1, Mrs. Cruickshank (Ealing); 2, R. Wilson (Corby); 3, B. Jackson (Doncaster); 4, Mr. and Mrs. Redfern (Hinckley). Egglayer (pairs): 1 and 2, R. Elliott (Corby); 3, Mrs. Cruickshank (Ealing); 4, A. Caudwell (Derby). Rasboras: 1, H. and S. Bostock (Loughborough); 2, R. Elliott (Corby); 3, R. Onslow (Kingsclere); 4, I. Fuller (Rugeley). Danio W.C.M.M.: 1, T. Cruickshank (Ealing); 2, S. Elliott (Corby); 3, R. Onslow (Kingsclere); 4, H. and S. Bostock (Loughborough). Killies: 1, A. and M. Crew (Wellingborough); 2, B. and F. Hirst (Coventry); 3, A. Caudwell (Derby); 4, Lee's (Corby). Egglayer Broods: 1, Mr. Whitehouse (Darlaston); 2, B. and F. Hirst (Coventry); 3, B. Jackson (Doncaster); 4, R. Wilson (Corby). Livebearer Broods: 1 and 2, B. Jackson (Doncaster); 3, Mr. and Mrs. Redfern (Hinckley); 4, R. Elliott (Corby). A.O.V. Tropical: 1, G. Biggs (Riverside); 2 and 4, R. Illiott (Corby); 3, A. and M. Crew (Wellingborough). Singletail Goldfish: 1, A. and M. Crew (Wellingborough); 2, N. Richardson (Loughborough); 3 and 4, S. Andrews (Jones & Shipman). Twintail Goldfish: 1, S. Poynton (Leics. Aquarist). A.O.V. Coldwater: 1, I. Fuller (Rugeley); 2 and 3, S.M.I.N. (Nuneaton); 4, A. and M. Crew (Wellingborough). Society with most entries: Corby A.S. Society with most points: Corby A.S., runners-up being Ealing A.S. Best fish in Show: I. Fuller (Rugeley).

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IN June, **Southern Independent A.S.** held a discussion meeting when plans were formulated for the coming year, as the Society has only just re-formed after several months. Mrs. Sue Henderson, publicity officer, stated that the club will have many fund raising events to help build up the club funds for the future.

Plans were also made for a large inter-club contest. All the clubs to participate will be contacted shortly as this will be a weekend event. Plans were also made for the club's first Open Show.

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MEMBERS of the **New Forest A.S.** were entertained at their June meeting to a colour slide lecture on Marine Fishkeeping, but thought that although the colours were magnificent, the prices quoted were rather alarming.

The chairman announced that there would be a three-way Quiz and Bottle Competition with Pisces A.S. and Bournemouth A.S. (the first leg to take place in August). The table show results were:—Guppy: 1 and 2, P. Norup; 3 and 4, R. Travers. Shubunkins: 1 and 2, R. Travers. Gourami: 1 and 3, M. Aust; 2, P. Norup; 4, D. Laraman.

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THERE were 594 exhibits at the **Merthyr A.S.** Open Show, the results being as follow:—Class AB: 1, B. Watkins (Merthyr); 2, D. C. Davies (Aberdare). Class BA: 1, J. F. Edwards (Llantwit Major); 2, E. M. Brown (Blaenau Gwent); 3, M. Thomas (Rhondda); 4, R. Brown (Blaenau Gwent). Class CA: 1, 2 and 3, C. Turner (Cardiff); 4, M. Nethersell (Riverside). Class C: 1, C. and J. Richards (Sudbury); 2, D. W. Parry (Gloucester); 3, C. Turner (Cardiff); 4, R. Satterly (North Gwent). Class DA: 1, T. Edwards (Port Talbot); 2 and 3, P. Thomas (Independent); 4, M. C. Guthrie (Barry). Class DB: 1, P. Thomas (Independent); 2 and 4, J. Egan (Port Talbot); 3, C. Turner (Cardiff). Class DC: 1, R. Dore (Newport); 2, C. Morrison (Port Talbot); 3, D. Hall (Aberdare); 4, M. Thomas (Rhondda). Class D: 1, M. Guy (Cardiff); 2, J. Taylor (Merseyside); 3 and 4, J. Egan (Port Talbot). Class E: 1, E. Morgan (Merthyr); 2, E. Jones (Port Talbot); 3, D. Warmeant (Cardiff); 4, C. Turner (Cardiff). Class EA: 1, C. Davies (Port Talbot); 2 and 3, C. and J. Richards (Sudbury); 4, P. D. Corbett (Independent). Class F: 1, J. Dunn (Port Talbot); 2, M. Chick (Llantwit Major); 3, C. and M. Morgan (Merthyr); 4, M. Addicott (Caerphilly). Class G: 1, G. Biggs (Sudbury); 2, C. Turner (Cardiff); 3, J. P. Edwards (Llantwit Major); 4, C. and J. Richards (Sudbury). Class H: 1, W. G. Best (Llantwit Major); 2, M. Nethersell (Riverside); 3 and 4, P. Moye (Sudbury). Class J: 1, M. S. Parsons (Rhondda); 2, W. G. Best (Llantwit Major); 3 and 4, C. Turner (Cardiff). Class K: F.B.A.S. Championship: 1, P. Moye (Sudbury); 2, R. Dore (Newport); 3, T. A. Cruickshank (Ealing); 4, C. Turner (Cardiff). Class L: 1, P. Moye (Sudbury); 2, P. Thomas (Independent); 3 and 4, C. Turner (Cardiff). Class M: 1, C. Turner (Cardiff); 2, M. Chick (Llantwit Major); 3, G. Biggs (Sudbury); 4, P. Brain (Merthyr). Class N: 1 and 3, C. and J. Richards (Sudbury); 2, M. Bywater (Nailsea); 4, A. Morgan (Merthyr). Class O: 1 and 3, C. Short (Newport); 2, D. W. Parry (Gloucester); 4, D. Westacot (Port Talbot). Class P: 1 and 2, C. and J. Richards (Sudbury); 3 and 4, B. Davies (Rhondda). Class Q: 1, C. Turner (Cardiff); 2, T. Edwards (Port Talbot); 3, B. Bow (Merthyr); 4, D. W. Parry (Gloucester). Class R: 1, P. Moye (Sudbury); 2, M. C. Guthrie (Barry); 3, B. Ashcroft (Rhondda); 4, R. Perkins (Port Talbot). Class S: 1, B. Ashcroft (Rhondda); 2, R. Satterley (North Gwent); 3, T. A. Cruickshank (Ealing); 4, B. Davies (Rhondda). Class T: 1, B. Bow (Merthyr); 2, D. W. Parry (Gloucester); 3, M. Guy (Cardiff); 4, C. Morrison (Port Talbot). Class U: 1, 3 and 4, C. Rupert (Port Talbot); 2, M. C. Guthrie (Barry). Class V: 1, C. Rupert (Port Talbot); 2, 3 and 4, F. W. Orme (Birmingham). Class W: 1, 2, 3 and 4, C. Rupert (Port Talbot). Class XB-M: 1, C. Turner (Cardiff); 2, R. Purdy (Merthyr); 3 and 4, P. Moye (Sudbury). Class XO-T: 1, M. C. Guthrie (Barry); 2, B. Bow (Merthyr); 3, M. Bywater (Nailsea); 4, C. Turner (Cardiff). Class BMY: 1, B. Bow (Merthyr); 2, C. Jones (Merthyr); 3, P. and S. Taylor (Merseyside); 4, N. Clifford (Merthyr). Class O-TY: 1 and 3, C. Morgan (Merthyr); 2, A. Parker (Dow Corning); 4, M. Burton (Independent). Best Fish in Show: G. Biggs (Sudbury). Highest Aggregate Points: C. Turner (Cardiff). Best Junior Entry: B. Bow (Merthyr).

The show was late in opening to the public and exhibitors, and the Society wish to apologise for any inconvenience caused by the unexpected delay.

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THE **Southern Independent A.S.** held their first club meeting early in June when the main event of the evening was the election of officers. These are as follow: Chairman, J. Henderson; secretary, Mrs. A. Adams; show secretary, B. Saxby; treasurer, Mrs. J. French; F.B.A.S. delegate, T. Thompson; publicity officer, Mrs. S. Henderson. Meetings are going to be held every two weeks.

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THE **Catfish Association of Great Britain** Open Show was another success and entries reached 259, which was a further increase on the previous years totals.

Best Fish in Show winner was May Nethersel with a Synodontis clarias, and the Best Junior entry was a Corydoras aeneus owned by Master David Winder. Results:—Class Ge: 1, D. Lambourne (Riverside); 2, B. Nichols (Mid Kent); 3, C. Turner (Cardiff); 4, W. F. Sutton (Catfish Assoc.). Class Gf: 1, W. F. Sutton (Catfish Assoc.); 2, T. Woolley (Catfish Assoc.); 3, Pat Lambourne (Riverside); 4, P. Rushbrooke (Reading). Class Gg: 1, M. Sandford (Reigate & Redhill); 2, P. Jones (Catfish Assoc.). Class Gh: 1, T. Woolley (Catfish Assoc.); 2, 3 and 4, W. F. Sutton (Catfish Assoc.). Class Gk: 1, C. Turner (Cardiff); 2, J. Dickinson (Havant); 3, P. A. Moye (Sudbury); 4, L. G. Tilley (Saracens). Class Gm: 1, May Nethersell (Riverside); 2, Fran Rogers (Catfish Assoc.); 3, W. F. Sutton (Catfish Assoc.); 4, Mrs. D. Raggett (Catfish Assoc.). Class Gn: 1, Mr. and Mrs. Rooney (Brighton); 2, Fran Rogers (Catfish Assoc.); 3, May Nethersell (Riverside); 4, B. Nichols (Mid Kent). Class Gq: 1, Maureen Crewe (Wellingborough); 2, C. Turner (Cardiff); 3 and 4, C. Rumsby (Gt. Yarmouth). Class Gr: 1, D. Allison (Hendon); 2, C. Box (Brighton); 3, P. and L. Hills (Aylesbury). Class Gz: 1, C. Turner (Cardiff); 2, M. Sandford (Reigate & Redhill); 3, J. Dickinson (Havant); 4, W. F. Sutton (Catfish Assoc.). Class Ha: 1, V. Vallely (Roehampton); 2, T. Fraser (Basingstoke); 3 and 4, May Nethersell

(Riverside). Class Hb: 1, V. Vallely (Roehampton); 2, B. Sayers (Brighton); 3, P. A. Moye (Sudbury); 4, K. Taylor (Havant). Class Hc: 1, B. Bryden (Aylesbury); 2, May Nethersell (Riverside); 3, P. A. Moye (Sudbury); 4, K. Taylor (Havant). Class Hz: 1 and 2, J. Carpenter (Newbury); 3, Fran Rogers (Catfish Assoc.); 4, Mr. and Mrs. Sharp (Sittingbourne). Class NG: 1, Pat Lambourne (Riverside); 2 and 3, Fran Rogers (Catfish Assoc.); 4, Maureen Crewe (Wellingborough). Class NH: 1, J. Carpenter (Newbury); 2, V. Vallely (Roehampton); 3, May Nethersell (Riverside); 4, P. A. Moye (Sudbury). Class XG: 1 and 2, P. Rushbrooke (Reading); 3, C. Turner (Cardiff). Class XH: 1 and 3, Mr. and Mrs. Sharp (Sittingbourne); 2, T. Duffy (Bracknell); 4, P. A. Moye (Sudbury). Class SPECIAL: 1, Fran Rogers (Catfish Assoc.); 2, T. Woolley (Catfish Assoc.); 3, Gina Sandford (Reigate & Redhill); 4, W. F. Sutton (Catfish Assoc.).

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MAIN item at the June meeting of the **Suffolk Aquarist & Pondkeepers Association** was a taped lecture with slide illustrations on a specialised subject. This was supplemented by a second slide show entitled "Fishes from around the World." Both items proved extremely popular.

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PRIZEWINNERS at the **Bournemouth A.S.** Annual Open Show which was held in May were as follow:—Barbs: 1, T. Burvill; 2, A. Weare; 3, R. Hard; 4, L. Yates. A.O.S. Characins: 1, Mrs. K. Clarke; 2, B. Riste; 3, C. Turner; 4, C. Robinson. Hemis, Hyphess, Cheirodon: 1 and 2, C. Turner; 3, K. Connolly; 4, E. Chatfield. A.O.S. Cichlids: 1, W. Knight; 2, K. Taylor; 3, R. Adams; 4, K. Connolly. Apisto, Pelmats, Nann: 1, A. Weare; 2, C. Turner; 3, L. Yates; 4, B. Smith. Labyrinths: 1, A. Weare; 2, K. Connolly; 3, P. Brown; 4, B. Gale. Toothcarps: 1, A. Weare; 2, R. Bebb; 3, P. Brown; 4, D. Jackson. Tropical Catfish: 1, B. Riste; 2, C. Turner; 3, W. Knight; 4, R. Adams. Corydoras Brochis: 1 and 3, K. Taylor; 2, W. Knight; 4, K. Clarke. Rasbora: 1, A. Weare; 2, C. Turner; 3, A. Chaplin; 4, R. Bebb. Danio-W.C.M.M.: 1, J. Bailey; 2 and 3, L. Yates; 4, I. Dibble. Loach: 1, R. Bond; 2, R. Adams; 3, M. Kerr; 4, A. Weare. A.O.S. Tropical Egglayers: 1, V. Connoly; 2, M. Ellick; 3 and 4, R. Bond. Pairs: 1, A. Chaplin; 2, K. Connolly; 3, B. Riste; 4, Mr. Kenwood. Guppy: 1 and 2, L. Yates; 3, L. Netton; 4, N. Wannerton. Swordtail: 1, 2 and 3, R. Bebb; 4, E. Chatfield. Platy: 1, 3 and 4, R. Hard; 2, I. Dibble. Molly: 1, A. Chaplin; 2, B. Riste; 3, M. Ellick; 4, R. Walters. A.O.S. Livebearer: 1 and 4, T. Burvill; 2, W. West; 3, E. Chatfield. Common Goldfish: 1, R. Adams; 2, E. Binstead; 3, H. Greenhalch; 4, W. Crockford. A.O.V. Singletail Goldfish: 1, 3 and 4, D. Lanedon; 2, B. Coombes. A.O.S. Coldwater: 1, B. Coombes; 2, D. Humphries; 3, E. Binstead; 4, M. Ellick. Breeders Tropical Egglayers: 1, K. Connolly; 2, R. Bebb; 3, B. Epton; 4, P. Brown. Breeders Tropical Livebearers: 1, C. Turner; 2, R. Bebb; 3, Mr. Kenwood; 4, L. Yates.

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DURING May the **Amersham and District A.S.** had mixed results in their away matches. At Aylesbury they were defeated in an eight-a-side match but at High Wycombe they won a mini-furnished aquarium competition, with junior members C. Churchman and G. Gisborne beating all the other competitors, including the adults.

Meetings, first and third Wednesdays of each month (except August) at 8 p.m. at the Amersham Community Centre. All enquiries to secretary Mrs. P. Hearn, Orchard End, Park Grove, Chalfont St. Giles. Tel: Little Chalfont 3538.

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THE **Rhondda A.S.** held their June meeting at the new headquarters, The Rhondda Buxmans Club, Porth. This meeting actually completed a full circle, because one of the first meetings in 1968 was held there and despite many changes in location the club has now returned. At the meeting, members discussed the plans suggested for the coming year by the new committee.

Table Show results were as follow: Class IIa-IIz: 1, 2 and 4, M. Thomas (Junior); 3, A. Click. Knock-Out Class: 1, 2 and 3, G. Legge 4, M. Parsons.

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RESULTS of **Whiteway and District Fishkeepers Society's** Fourth Open Show: Guppy (male): 1, Miss T. Sullivan; 2 and 4, I. Dibble; 3, Master D. Sullivan. Guppy (female): 1, J. Egan; 2, S. Daniels; 3 and 4, R. Harvey. Platy: 1 and 3, I. Dibble; 2 and 4, B. Ashcroft. Swordtail: 1, M. Parsons; 2, H. Franklin; 3, S. Daniels. Sailfin Molly: 1, 3 and 4, B. Ashcroft; 2, Master N. Pothecary. A.O.V. Molly: 1, C. Russell; 2, M. Butcher; 3, B. Ashcroft; 4, Master N. Pothecary. Specified Barb: 1, C. Russell; 2 and 3, R. Harvey; 4, L. Menhennet. A.O.V. Barb: 1, D. Kenwood; 2, M. Thomas; 3 and 4, C. Russell. H. and H. Characin: 1, 2 and 3, D. and R. Clark; 4, P. and Y. Watts. A.O.V. Characin: 1, D. and R. Clark; 2, I. Dibble; 3, K. and N. Owen; 4, P. and Y. Watts. Siamese Fighter: 1, G. Legge; 2, S. Coffin. A.O.V. Anabantid: 1 and 2, J. Egan; 3, J. Menhennet; 4, Mr. Cowles. Corydoras and Brochis: 1 and 3, G. Legge; 2, B. Ashcroft; 4, D. and R. Clark. A.O.V. Catfish: 1, D. and R. Clark; 2 and 3, F. Rowsell; 4, M. Parsons. Botia, Loach and Eel: 1, M. Parsons; 2, C. Larcombe; 3, K. and N. Owen; 4, G. Legge. Rasbora: 1, D. and R. Clark; 2, D. Kenwood; 3, M. Parsons; 4, R. Harvey. Danio and Minnow: 1, 2, 3 and 4, I. Dibble. Shark: 1, J. Oakley; 2, G. Lucas; 3, B. Ashcroft. Dwarf Cichlid: 1, H. Franklin; 2 and 4, J. Egan; 3, D. and R. Clark. Angel: 1, Mrs. J. Harvey; 2, S. Coffin; 3, Mr. Cowles; 4, P. and J. Watts. A.O.V. Cichlid: 1, G. Legge; 2, D. Kenwood; 3, P. and Y. Watts; 4, M. Thomas. A.V. Pairs: 1, I. Dibble; 2, D. Finchett; 3, C. Russell; 4, Master D. Sullivan. Killifish and Toothcarps: 1, G. Legge; 2, D. and R. Clark; 3, M. Parsons; 4, J. Menhennet. A.O.V. Tropical: 1 and 2, D. Kenwood; 3, D. Overment; 4, D. and R. Clark. Breeders (Livebearers): 1, 2 and 3, I Dibble; 4, M. Butcher. Breeders (Egglayers): 1, W. Holland; 2 and 3, M. Thomas; 4, R. Harvey. Shubunkin: 1, 2 and 4, G. Jennings; 3, Miss C. Rupert. Single Tail Goldfish: 1 and 3, Miss C. Rupert; 2, L. Menhennet; 4, M. Butcher. Twin tail Goldfish: 1, Miss C. Rupert; 2, G. Jennings; 3 and 4, B. Webb. Juvenile (any fish): 1, Master S. Owen; 2, Miss K. Fielding; 3, Miss T. Sullivan; 4, Master D. Sullivan. Furnished Jar: 1, Miss T. Sullivan; 2, Master D. Sullivan; 3, Miss K. Fielding. Best Coldwater Fish in Show: G. Jennings. Best Tropical Fish in Show: D. and R. Clark. Best Shubunkin in Show: G. Jennings. Highest Numper of Points, Junior Club Member: Miss T. Sullivan. Highest Number of Points, Club Member: G. Jennings. Best Fish in Show: D. and R. Clark.

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JUNE has been an eventful month for the **Blaenau Gwent A.S.** There has been a change of name, and the system of electing officers has also been changed.

Also, a complete tank of fish has been installed at the Local Disabled Centre, but more about this after next month's official presentation. A fund raising stall was organised at a fete at the Local Geriatric Hospital to obtain funds to furnish a new ward and the excellent sum of £76·95 was presented by the members of the Society to the Hospital League of Friends.

The month ended with an F.B.A.S. Aquatalk entitled "G for Catfish." This was the first of these series the Society has had and was thoroughly enjoyed by all present. The commentary was clear and easy to understand and the slides excellent.

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FROM a nucleus of seven people a few years ago the **Scarborough and District A.S.** has grown to a 130 strong Society, with new members joining at almost every meeting.

At the first meeting in June Mr. Rodney Moody gave a talk on coldwater marine aquariums. He started from scratch twelve months ago, knowing nothing about fish-keeping but determined to keep the marine creatures he found in rock pools on local beaches alive and well in his own home. After seeking advice from local aquarists who keep tropical marine fish and who helped him with the basic setting-up of the twenty gallon tank he uses, he began by trial and error to learn how to keep things like starfish, mussels, weever fish and bull head fish, but he soon found that certain things which appeared to live together quite happily in rock pools could not co-exist in his tank.

The chairman, Mr. Derek Willey, thanked the speaker, and members added their personal thanks and extracted a promise from Mr. Moody that he would return next year and let the club know how his experiments were progressing.

The results of the home aquarium competition were announced at the second meeting in June. The cup winner was W. Sowersby with 83 points, second being Mrs. D. Jewison, 76 points, and third, Mr. and Mrs. Ellaker, 75½ points. Table show results were: A.O.V. Coldwater: 1, E. Ellaker. A.O.V. Livebearer: 1, G. Flinton; 2, M. Scott; 3, K. Halifax. Large Cichlids: 1, K. Halifax; 2, E. Ellaker; 3, M. Bell. Best in Show: G. Flinton. During the meeting the club decided to try something new and enter a float in next year's carnival parade.

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SHOW results of **Corby and District A.S.** were: Class C: 1, R. Elliott (C.A.D.A.S.); 2, Mrs. Nethersell (Riverside); 3, T. Fraser (Basingstoke); 4, C. McAllister (Kettering). Egglaying Toothcarps: 1 and 2, A. Crew (Wellingborough); 3, T. Woolley (Catfish Assoc.); 4, T. Fraser (Basingstoke). Danios and WCMM: 1, Marge and Dave (C.A.D.A.S.); 2, 3 and 4, R. Elliott (C.A.D.A.S.). Swordtail: 1, 2, 3 and 4, A. Noronha (Orpington). Mollies: 1 and 4, R. Roberts (J.C.B.); 2, P. Moye (Sudbury); 3, T. Woolley (Catfish Assoc.). Platy: 1, A. Noronha (Orpington); 2, P. Moye (Sudbury); 3, Mrs. Cruickshank (Ealing); 4, A. Worth (Dunstable). Class G: 1, Mrs. Nethersell (Riverside); 2, T. Woolley (Catfish Assoc.); 3, P. Moye (Sudbury); 4, N. Campbell (C.A.D.A.S.). Corydoras: 1, Mrs. Nethersell (Riverside); 2 and 4, P. Moye (Sudbury); 3, T. Cruickshank (Ealing). Class M: 1 and 4, R. Elliott (C.A.D.A.S.); 2, A. Worth (Dunstable); 3, L. Brazier (Sudbury). Breeders (Livebearers): 1, 2, 3 and 4, A. Noronha (Orpington). Pairs (Livebearers): 1, 2, 3 and 4, A. Noronha (Orpington). Guppy: 1, R. Elliott (Corby); 2 and 3, C. Richards (Sudbury); 4, S. Tite (Kettering). Angels: 1, Mrs. Crew (Wellingborough); 2, P. Eady (Leics.). Cichlids: 1, Mrs. Nethersell (Riverside); 2, L. Ross (Ely); 3, T. Woolley (Catfish Assoc.); 4, Butt and Knight (Northampton). Twintails: 1 and 2, N. Giles (Leics.); 3, K. Sykes (Jones & Shipman); 4, M. Swain (Aylesbury). Dwarfs: 1, A. Noronha (Orpington); 2, N. Campbell (C.A.D.A.S.); 3, M. Brainbridge (Jones & Shipman); 4, C. Wiffin (Aylesbury). Class Db: 1, D. Cunningham (Northampton); 2 and 3, A. Worth (Dunstable); 4, T. Woolley (Catfish Assoc.). Singletails: 1, A. Crew (Wellingborough); 2 and 4, T. Woolley (Catfish Assoc.); 3, K. Sykes (Jones & Shipman). Class G: 1, I. Fuller (Rugely); 2, A. and M. Crew (Wellingborough); 3, A. Anslow (C.A.D.A.S.); 4, R. Elliott (C.A.D.A.S.). Labyrinths: 1, I. Fuller (Rugely); 2, M. Swain (Aylesbury); 3, Mr. and Mrs. P. Newson (Cambridge); 4, R. Elliott (C.A.D.A.S.). Class Ca: 1, Mrs. Nethersell (Riverside); 2, I. Fuller (Rugely); 3, R. Elliott (C.A.D.A.S.); 4, R. Wilson (C.A.D.A.S.). Barbs: 1 and 4, P. Moye (Sudbury); 2, Mrs. Cruickshank (Ealing); 3, A. and M. Crew (Wellingborough). Brochis: 1, Mr. Fraser (Basingstoke); 2, J. Myrtle (Ealing); 3, Mrs. Nethersell (Riverside). Loach: 1, P. Moye

(Sudbury); 2, A. Noronha (Orpington); 3, S. Elliott (Corby); 4, J. Butler (Corby). Breeders (Tropical Egglayers): 1, A. Noronha (Orpington); 2, P. Moye (Sudbury); 3, B. White (Sudbury); 4, R. Wilson (Corby). Pairs (Egglayers): 1, R. Elliott (Corby); 2, C. Richards (Sudbury); 3, H. Munro (C.A.D.A.S.); 4, D. Page (C.A.D.A.S.). A.O.S. (Livebearer): 1, 2 and 3, A. Noronha (Orpington); 4, A. Onslow (Corby).

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THE newly formed **Clwyd A.S.** held their first table show at the June meeting. Results (A.O.V. Tropical) were as follow: 1 and 3, J. Davies; 2, K. Taylor. The Society meets at St. Pauls Church Institute, Rhiw Road, Colwyn Bay, on the second Monday of each month at 8 p.m. Prospective members are assured of a warm and friendly welcome, or they may contact the secretary, T. Davies, 42 Maes Hyfryd, Glan Conwy, Colwyn Bay, Clwyd LL28 5NE.

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OPEN Show results of the **Northwich and District A.S.** were as follow: Guppies: 1, D. Armour (Ind.); 2, Mr. and Mrs. Campbell (Mac.); 3, A. Whittaker (Mac.). Swordtails: 1, Mr. and Mrs. Houghton (So.); 2, L. and D. Thorne (No.); 3, J. Buckley (No.). Mollies: 1 and 3, Mr. and Mrs. Houghton (So.); 2, D. Hughes (Ind.). Platies: 1, T. and J. Selby (Wyt.); 2, P. Atkinson (So.); 3, P. Smith (Wr.). Barbs (small): 1, F. Oliver (Wr.); 2, E. Winstanley (Ru.); 3, J. Buckley (No). Barbs (large): 1, B. Black (Fl.); 2, Mr. and Mrs. J. Taylor (Mer.); 3, Mr. and Mrs. Goddard (Mac.). Characins (small): 1, Miss S. Goddard (Mac.); 2 and 3, Mr. and Mrs. Houghton (So.). Characins (medium): 1, Mr. and Mrs. Houghton (So.); 2, Poulton Bros. (So.); 3, W. Brown (V.R.). Characins (large): 1, Mr. and Mrs. Bond (So.); 2, Mr. and Mrs. Houghton (So.); 3, Mrs. P. Ridley (He.). Fighters: 1, P. Atkinson (So.); 2, Mr. and Mrs. Tomlinson (Mac.); 3, H. Buckley (No.). Anabantids (small): 1, P. Jones (Wr.); 2, P. and A. Squirrell (Wyt.); 3, Mr. and Mrs. J. Taylor (Mer.). Anabantids (A.O.V.): 1, Mr. and Mrs. Goddard (Mac.); 2, Mr. and Mrs. Bond (So.); 3, B. Hitchen (V.R.). Angels: 1, C. and K. Davies No.); 2 and 3, S. White (So.). Cichlids (Dwarf): 1, P. Tomlinson (Mac.); 2, A. and D. Bolan (Wyt.); 3, P. Jones (Wr.). Cichlids (large): 1, J. Ridley (He.); 2, S. Wolstenholme (He.); 3, Mr. and Mrs. Taylor (Mer.). Danios and Minnows: 1, R. Lamb (So.); 2 and 3, Mr. and Mrs. Houghton (So.). Rasboras: 1, T. and J. Selby (Wyt.); 2, L. and D. Thorne (No.); 3, Mr. and Mrs. Houghton (So.). Sharks: 1, Mr. and Mrs. Houghton (So.); 2, Mr. and Mrs. P. Smith (V.R.); 3, R. Smith (Wr.). Flying Foxes: 1, D. Armour (Ind.); 2, T. and J. Selby (Wyt); 3, H. Buckley (No.). Catfish, Corey and Brochis: 1, Mr. and Mrs. J. Taylor (Mer.); 2, Mr. and Mrs. Houghton (So.); 3, S. White (So.). Catfish A.O.V.: 1, Mrs. J. Freer (Pa.); 2, S. White (So.); 3, Mr. and Mrs. Houghton (So.). Loach and Botias: 1, S. Ashton (He.); 2, B. Newport (Ru.); 3, Poulton Bros. (So.). Toothcarps (Killies): 1 and 3, Mr. and Mrs. J. Taylor (Me.); 2, R. McLean (Mac.). A.O.V. Tropical: 1, J. Midgley (Wyt.); 2, R. Lamb (So.); 3, P. and A. Squirrell (Wyt.). Pairs (Livebearers): 1 and 2, T. and J. Selby (Wyt.); 3, Poulton Bros. (So.). Pairs (Egglayers): 1, F. Oliver (Wr.); 2, P. and A. Squirrell (Wyt.); 3, Poulton Bros. (So.). Breeders (Livebearers): 1 and 2, Poulton Bros. (So.); 3, Mr. and Mrs. Campbell (Mac.). Breeders Egglayers 1-10): 1 and 2, J. Ridley (He.); 3, R. Mathers (Wr.). Breeders (Egglayers 11-20): 1, P. and A. Squirrell (Wyt.). Section R30: 1, B. Newport (Ru.); 2, R. Dingley (He.); 3, H. Buckley (No.). Coldwater: 1, H. Buckley (No.); 2, B. Newport (Ru.); 3, R. Downing (So.). Section R32: 1, J. Buckley (No.); 2, Mr. and Mrs. G. Harvey (Sa.); 3, R. Whittaker (Mac.). Section S33: 1, P. and S. Taylor (Mer.); 2, P. and A. Squirrell (Wyt.); 3, J. and J. Ashton (He.). Section S34: 1, C. Armour (Ind.); 2, J. and J. Ashton (He.); 3, P. and A. Squirrell (Wyt.). Section T35: 1 and 3, E. Jones (Wr.); 2, F. Oliver (Wr.). KEY:—Mac.—Macclesfield; Fl.—Fleetwood; He.—Heywood; So.—Southport; No.—Northwich; Wr.—Wrexham; Wyt.—Wythenshawe; Mer.—Merseyside; V.R.—Vale Royal; Ind.—Independant; Pa.—Partington; Ru.—Runcorn; Sa.—Sandgrounders. Number of entries: 312. Best Fish in Show Trophy winner: J. Ridley, with a *Aequidens thayeri*. Society Gaining Most Points Trophy winner: Southport A.S.

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HIGHLIGHT at the first fortnightly meeting of the **Port Talbot and District A.S.** in June, was a slide-show and talk on certain species of fish, given by two prominent members of the club, A. Fouracre and R. Perkins. The presentation was enjoyed by all present.

The other meeting took the form of a table show for members only, judged by the ever popular G. Best and trainee judge C. Davies. During the meeting, members were entertained by a lecture and demonstration on all-glass aquaria making given by club member D. Couch. Also during the month, the club organised a visit to London where members visited the Sudbury Open Show and distinguished themselves by winning three "firsts." The club would like to thank the Sudbury A.S. for the wonderful welcome extended to them. Results of Table Show: Class B: 1, Mrs. E. Perkins; 2, T. Edwards; 3, Mr. and Mrs. Cotton; 4, J. Egan. Class M: 1, J. Egan; 2, Mrs. J. Davies; 3, C. Morrison; 4, Mrs. E. Jones. Class T: 1, R. Perkins; 2, B. Fouracre; 3, Mrs. E. Perkins; 4, Mrs. S. Callister. Best Fish in Show: R. Perkins (Platy).

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ENTRIES for the **Rotherham and District A.S.** Open Show totalled 360 and the results were as follow: Best Fish in Show: Mr. and Mrs. Feasey. Platies: 1, Mr. Simpson; 2, A. and L. Petty; 3, N. Blundell. Mollies: 1, Mr. and Mrs. Petty; 2, Mr. and Mrs. J. Riley; 3, J. Teece. Swordtails: 1, J. Teece; 2, Mr. and Mrs. Tyson; 3, Mr. and Mrs. Roberts. Guppies: 1, Mr. and Mrs. Blades; 2, Mr. and Mrs. Chester; 3, Mr. and Mrs. J. Riley. A.O.V. Livebearers: 1, D. Cavill; 2, B. Jackson; 3, Mr. and Mrs. Richardson. A.V. Egglaying Toothcarp: 1, D. Greenwood; 2 and 3, A. Young. Small Barbs: 1, G. Allen; 2, Mr. and Mrs. Hopkinson; 3, B. Jackson. Large Barbs: 1 and 3, Mr. and Mrs. Copley; 2, Mr. and Mrs. Roberts. Small Characins: 1, Mr. and Mrs. Chester; 2, Mr. and Mrs. Hopkinson; 3, Mr. and Mrs. Richardson. Large Characins: 1, Mr. and Mrs. Hopkinson; 2 and 3, Mrs. G. Frisby. Sharks, Foxes: 1, M. Woods; 2, Mr. and Mrs. Copley; 3, Mr. Brocklesby. Corydoras: 1, Mr. and Mrs. Feasey; 2, R. Horner; 3, W. Blundell. A.O.V. Catfish: 1, Mr. and Mrs. Morrissey; 2, Mr. and Mrs. Lake; 3, J. Stanton. Loaches: 1, 2 and 3, A. Binns. Rasboras, Danios and Minnows: 1, Mr. and Mrs. Tyson; 2, S. White; 3, Mr. and Mrs. Copley. Dwarf Cichlids: 1, Mr. and Mrs. Morrissey; 2, A. Binns; 3, S. Green. Large Cichlids: 1, Mr. and Mrs. Sellars; 2, Mr. and Mrs. M. Wainwright; 3, D. Chadlow. Angels: 1, Mr. and Mrs. Sellars; 2, Mr. and Mrs. Kirk; 3, P. Mangles. Fighters: 1, J. Riley; 2, M. Lake; 3, P. Lewis. A.O.V. Anabantid: 1, A. Clayton; 2, Mr. and Mrs. Lowes; 3, Mr. and Mrs. J. Riley. A.O.V. Tropical: 1, A. Mawson; 2 and 3, S. Green. Livebearers (1 to 10): 1, G. Andrews; 2, Mr. and Mrs. Chester; 3, Mr. and Mrs. Steels. Livebearers (11 to 20): 1, B. Jackson; 2, Mr. and Mrs. Richardson; 3, Mr. and Mrs. Hopkinson. Egglayers (1 to 10): 1, Mr. and Mrs. Sellars; 2, A. Young; 3, B. Jackson. Egglayers (11 to 20): 1, S. White; 2, A. Young; 3, A. Lane. Pairs (Livebearers): 1 and 3, Mr. and Mrs. Daines; 2, B. Jackson. Pairs (Egglayers): 1, Mr. and Mrs. Chester; 2, S. White; 3, Mr. and Mrs. Morrissey. Goldfish and Comets: 1, Mr. and Mrs. Bull; 2, Mr. and Mrs. Steels; 3, A. Fisher. Shubunkins: 1, Mr. and Mrs. Hopkinson. Fancy Goldfish: 1, F. Lewis. A.O.V. Coldwater: 1, Mr. and Mrs. Blades; 2, W. Blundell; 3, L. Waller. Mini Jars: 1, Mr. and Mrs. Chester; 2, P. Rylett; 3, W. Stroughair. Plants: 1 and 3, Mr. and Mrs. Roberts; 2, Mr. Kilvington.

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RESULTS of the **Llantwit Major A.S.** Open Show which was held in June were:—Class Ad: 1, Mr. and Mrs. M. C. Guthrie (L.M.A.S.); 2, G. Lewis (L.M.A.S.). Class Ag: 1, Miss D. Lewis (L.M.A.S.). Class Ba: 1 and 3, M. Thomas (R.A.S.); 2, J. F. Edwards (L.M.A.S.); 4 G. Legge (R.A.S.). Class B: 1, L. Lynch (D.C.A.S.); 2, W. G. Best (L.M.A.S.); 3, Mr. and Mrs. M. C. Guthrie (L.M.A.S.); 4, Mr. and Mrs. R. Dore (N.A.S.). Class Ca: 1 and 2, W. G. Best (L.M.A.S.); 3, H. Chick (L.M.A.S.); 4, Mr. and Mrs P. Greenwood (Cheltenham). Class Cb: 1, Mr. and Mrs. T. Edwards (P.T.A.D.A.S.); 2 and 3, C. and J. Richards (Sudbury); 4, W. G. Best (L.M.A.S.). Class C: 1, W. G. Best (L.M.A.S.) 2 and 3, J. Huddinott (N.A.S.); 4, P. and Y. Watts (R.A.S.). Class D: 1, Mr. and Mrs. R. Dore (N.A.S.); 2, C. Morrison (P.T.A.D.A.S.); 3, Mr. and Mrs. M. Brown (Cheltenham); 4, Mr. and Mrs. J. Taylor (Merseyside). Class Da: 1, P. and Y. Watts (R.A.S.); 2, Mr. and Mrs. T. Edwards (P.T.A.D.A.S.); 3 and 4, P. Thomas (S.A.S.). Class Db: 1, P. Thomas (S.A.S.); 2 and 3, J. Egan (P.T.A.D.A.S.); 4, G. Lewis (L.M.A.S.). Class E: 1, Mr. and Mrs. C. and J. Davies (P.T.A.D.A.S.); 2, J. Egan (P.T.A.D.A.S.); 3, J. Taylor (Merseyside); 4, E. Jones (P.T.A.D.A.S.). Class Ea: 1 and 4, C. and J. Richards (Sudbury); 2, Mr. and Mrs. C. and J. Davies (P.T.A.D.A.S.); 3, Mr. and Mrs. M. C. Guthrie (L.M.A.S.). Class F: 1, G. Legge (R.A.S.); 2, C. and J. Richards (Sudbury); 3, M. Lanser (Cowbridge); 4, C. and M. Morgan (M.T.A.S.). Class G: 1, A. Ibberson (L.M.A.S.); 2, Mrs. M. Guy (C.A.S.); 3, C. and J. Richards (Sudbury); 4, J. F. Edwards (L.M.A.S.). Class H: 1, Mr. and Mrs. J. Taylor (Merseyside); 2 and 4, B. Ashcroft (R.A.S.); 3, H. Chick (L.M.A.S.). Class By-Sy: 1 and 3, Master A. Parker (D.C.A.S.); 2, Master R. Jenkins (A.A.S.); 4, Master C. Barnsley (D.C.A.S.). Class J: 1 and 4, W. G. Best (L.M.A.S.); 2, S. R. Dench (D.C.A.S.); 3, E. Hurley (C.A.S.). Class K: 1 and 4, I. H. Dibble (Nailsea); 2, C. and J. Richards (Sudbury); 3, Mr. and Mrs. M. C. Guthrie (L.M.A.S.). Class L: 1, H. Chick (L.M.A.S.); 2, L. Lynch (D.C.A.S.); 3, P. Thomas (S.A.S.); 4, M. S. Parsons (R.A.S.). Class M: 1, H. Chick (L.M.A.S.); 2 and 3, A. Ibbertson (L.M.A.S.); 4, Mr. and Mrs. M. C. Guthrie (L.M.A.S.). Class N: 1, P. Willis (M.T.A.D.A.S.); 2 and 3, C. and J. Richards (Sudbury); 4, C. Morrison (P.T.A.D.A.S.). Class O: 1, Mrs. E. Brown (B.G.F.C.); 2, C. and J. Richards (Sudbury); 3, N. Clifford (A.A.S.); 4, I. H. Dibble (Nailsea). Class P: 1 and 2, C. and J. Richards (Sudbury); 3, R. S. Wigg (L.M.A.S.); 4, Mr. and Mrs. P. Greenwood (Cheltenham). Class Q: 1, Mr. and Mrs. B. Davies (R.A.S.); 2, W. G. Best (L.M.A.S.); 3, A. E. B. Fouracre (P.T.A.D.A.S.); 4, A. Ibberston (L.M.A.S.). Class R: 1, R. Perkins (P.T.A.D.A.S.); 2, W. G. Best (L.M.A.S.). Class S: 1 and 2, B. Ashcroft (R.A.S.); 3, A.E.B. Fouracre (P.T.A.D.A.S.); 4, W. G. Best (L.M.A.S.). Class T: 1, L. J. Brazier (Sudbury); 2, C. Morrison (P.T.A.D.A.S.); 3, M. Bywater (Nailsea); 4, J. F. Edwards (L.M.A.S.). Class Xb-m: 1 and 3, A. Ibbertson (L.M.A.S.); 2, W. Holland (Nailsea); 4, J. Thomson (L.M.A.S.). Class Xo-t: Mr. and Mrs. M. C. Guthrie (L.M.A.S.); 2, Mrs. M. Guy (C.A.S.); 3, J. F. Edwards (L.M.A.S.); 4, C. Morrison (P.T.A.D.A.S.). Class U: 1, 2 and 3, Miss C. Rupert (P.T.A.D.A.S.); 4, Mr. and Mrs. M. C. Guthrie (L.M.A.S.). Class V: 1, Miss C. Rupert (P.T.A.D.A.S.); 2, 3 and 4, F. Orme (Rubery). Class W: 1, 2, 3 and 4, Miss C. Rupert (P.T.A.D.A.S.). The F.B.A.S. Trophy was won by W. G. Best (L.M.A.S.). The best fish in show winner A. Ibbertson (L.M.A.S.). The club meets on the second Tuesday of each month 8 p.m. in the Red Dragon club R.A.F. St. Athan. Anyone interested in fish keeping is cordially invited to attend.

CHANGES on the new committee of the **Merthyr A.S.** are as follow:—G. Blackburn, Show Secretary, Mrs. M. J. Hagerty, Club Secretary, P. Willis, P.R.O.

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AT the first June meeting of the **Kingsclere and District A.S.**, the home society entertained **Wessex A.S.** to a return Table Show. Three classes were chosen from the F.B.A.S. list by each club, and each club entered two fish in each class.

While the judging was taking place, all present were treated to a very interesting talk by Mervyn Strange on the history of various Aquarist Societies in the British Isles. He was warmly thanked for a very interesting and informative talk.

The results of the Table Show were then announced and Kingsclere emerged good winners by 39 points to 21 points, being winners in five of the six classes. Kingsclere's winners were R. Onslow, M. Shore, M. Cook, A. Lawson, J. Miles, A. Stepp, W. Osbourne and E. Moubley. The Best Fish in the Table Show was won by Wessex member P. Brett with a magnificent Discus.

Meetings in July of the Kingsclere and D.A.S. will be held on the 13th and 27th., at The Crown, Kingsclere, commencing 8 p.m.

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RESULTS of the open show of the **Salisbury & District A.S.** were as follow: Class B: 1, Miss J. Mills; 2, T. Burvill; 3, K. Doswell; 4, Mrs. D. Cruickshank. Class Ba: 1, Mrs. J. Eidlestein; 2, R. F. Adams; 3, L. Tubb. Class C: 1, S. Crabtree; 2, R. Hellings; 3, B. Riste; 4, A. C. Tull. Class Ca: 1, R. Onslow; 2, M. Bishop; 3, T. Burvill; 4, W. West. Class D: 1, M. Nethersell; 2, A. Rigby; 3, D. Jackson; 4, P. Brown. Class Da: 1, C. and D. Finniss; 2, Mrs. M. Weaire; 3, M. Bishop; 4, Mrs. J. Hawkins. Class Db: 1, P. Moye; 2, Mrs. M. Beattie; 3, A. E. Weaire; 4, Mr. and Mrs. Stacey. Class Dc: 1 and 3, W. A. Knight; 2, A. Rigby; 4, D. Eidlestein. Class E: 1, A. E. Weaire; 2, R. F. Adams; 3, M. Jerkins; 4, D. Kenwood. Class Ea: 1, W. A. Knight; 2, D. H. Mills; 3, Mrs. J. Griffiths; 4, Mrs. S. Batten. Class F: 1, Mr. and Mrs. Bebb; 2, A. E. Weaire; 3, D. Jackson; 4, P. Brown. Class G: 1, Mrs. M. Nethersell; 2, Mrs. D. Eidlestein; 3, W. A. Knight; 4, K. Doswell. Class H: 1, K. E. Taylor; 2 and 4, Mrs. M. Nethersell; 3, P. Moye. Class J: 1, A. E. Weaire; 2, Mr. and Mrs. Bebb; 3, A. C. Tull; 4, G. Palmer. Class K: 1, A. E. Weaire; 2, M. Knight; 3, I. H. Dibble; 4, P. Moye. Class L: 1, S. Crabtree; 2, I. H. Dribble; 3, P. Moye; 4, K. Doswell. Class M: 1, D. Kenwood 2, R. F. Adams; 3, L. A. Yates; 4, M. J. Ellick. Class N: 1, B. Riste; 2, G. Arnold; 3, C. and D. Finniss; 4, M. Bywater. Class O: 1, 2 and 3, L. A. Yates; 4, D. Jackson. Class P: 1, D. Arnold; 2, Mr. and Mrs. Bebb; 3, F. Cripps; 4, Mrs. J. Hawkins. Class Q: 1, and 2, Mr. and Mrs. Bebb; 3, P. Moye; 4, C. and D. Finniss. Class R: 1, M. Bishop; 2, P. Moye; 3, M. Wannerton; 4, C. and D. Finniss. Class S: 1, 2 and 4, Mr. and Mrs. Bebb; 3, B. Riste. Class T: 1, Mrs. D. Cruickshank; 2, M. Bishop; 3, W. West; 4, Mrs. S. Batten. Class U: 1, R. F. Adams; 2, Mrs. J. Griffiths; 3, T. Coombes; 4, R. Woods. Class V: 1 and 2, G. J. Axe; 3, Mrs. J. Griffiths; 4, J. A. Young. Class W: 1, E. Binstead; 2 and 4, G. J. Axe; 3, K. R. Forward. Class Xb-m: 1, and 4, F. Willis; 2, P. Moye; 3, W. E. Holland. Class Xo-t: 1, M. Bishop; 2 and 3, W. West; 4, Mr. and Mrs. Bebb. Class Y: 1, S. Pitcher. Class Z: 1 and 2, K. Forward; 3, R. F. Adams; 4, W. West.

This year's improved entry total of 463 was no doubt helped by the F.B.A.S. Championship Trophy for Class R—Platies, which drew 36 entries. The trophy was won by M. Bishop of Cheltenham T.F.C. and the Best Fish in Show award went to S. Crabtree of Havant & D.A.S. The Mike Glossop Cup, for the most successful Salisbury club member was won by R. F. Adams.

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THE **Torbay A.S.** wishes to inform other Societies that they have the first two—of five—slide/tape talks available for hire; all the photography is by Noel Gray during his stay of 4½ years in the Solomon Islands, and he also gives the talk on tape. Programme No. 1 is on "Plants" and Programme No. 2 is on "Dangerous Marine Fishes." All enquiries to and full details from:—M. F. Orsman, 75 Home Park, Ashburton, Devon.

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A VERY successful coach outing to Loughborough Show was organized in June by the **King's Lynn A.S.** Following meetings included a tape slide show called "What's Your Verdict ?" which gave advice on showing fish and at the July meeting a talk by a local vet. on Fish Diseases. A trip to the British Aquarists Festival Silver Jubilee at Belle Vue Manchester is being arranged for October.

Meetings are held at 8 p.m., the second Thursday of each month at the Victoria Public House, Loke Road, King's Lynn and new members are always welcome. Club Secretary is D. Mackay, 9, Cedar Close, Downham Market.

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OPEN show results of the **Sudbury A.S.** were:—Best in Show: K. Purbrick, Hendon. F.B.A.S. Championship class for male Guppies: C. Martin (Southend). Class B: 1, D. McKay (Kingston; 2, A. E. Weaire (Soton); 3, C. and J. Richards (Sudbury); 4, B. Sayers (Brighton). Class C: 1, G. Dickens (Sudbury; 2, W. R. Dale (Bethnal Green); 3, M. West (Kingston); 4, G. Lucas (Sudbury). Class Ca: 1, J. Randell (Midhurst); 2, C. Turner (Cardiff); 3, M. Strange (Basingstoke); 4, L. J. Brazier (Sudbury). Class Cb: 1, 2, and 3, G. Dickens (Sudbury); 4, P. Lambourn (Riverside). Class D: 1, W. A. Knight (Gosport); 2, K. Connolly (Gosport); 3, J. W. F. Hughes (Rosehampton); 4, Mr. and Mrs. Houghton (Brighton). Class Da: 1, Mr. and Mrs. T. Edwards (Port Talbot); 2, J. N. Jackson (Basingstoke); 3, J. Nethersell (Riverside); 4, K. Connolly (Gospoet). Class Db: 1, P. and L. Hills (Aylesbury); 2, A. E. Weaire (Soton); 3 and 4, J. Egan (Port Talbot). Class E: 1, E. Jones (Port Talbot); 2 and 3, C. Turner (Cardiff); 4, C. Goddard (Sudbury). Class Ea: 1, Mr. and Mrs. C. and J. Davies (Port Talbot); 2, B. N. Barford (Saracens); 3, K. Connolly (Gospoet); 4, Mrs. M. Shirley (Haslemere). Class F: 1, A. E. Weaire (Soton); 2, R. A. Ott (Haverhill); 3, T. Woolley (Saracens); 4, M. A. Pyrie (Gosport). Class G: 1, C. Turner (Cardiff); 2, P. A. Moye (Sudbury); 3, P. and L. Hills (Aylesbury); 4, D. Lambourne (Riverside). Class H: 1, B. Bryden (C.A.G.B.); 2 and 4, P. A. Moye (Sudbury); 3, K. Nicholls (M. Kent). Class J: 1, T. Ramshaw (Brighton); 2, C. Turner (Cardiff); 3, A. Rollinson (Aylesbury); 4, D. Winder (E. Dulwich). Class K: 1, D. Winder, (E. Dulwich); 2, J. F. Edwards (L. Major); 3, P. A. Moye (Sudbury); 4, Mr. and Mrs. Yates (Petersfield). Class L: 1, K. Purbrick (Hendon); 2, G. Sanford (R. and R.); 3, C. Goddard (Sudbury); 4, D. Winder (E. Dulwich). Class M: 1 and 2, K. Connolly (Gospoet); 3, L. J. Brazier (Sudbury); 4, Mr. and Mrs. M. Rooney (Brighton). Class Nbm: 1, B. Bryden (C.A.G.B.); 2, P and L. Hills (Aylesbury); 3, R. Willis (Merthyr); 4, P. A. Moye (Sudbury). Class No-t: 1, 2 and 4, A. E. Noronha (Orpington); 3, L. J. Brazier (Sudbury). Class O: 1, C. Martin (Southend); 2, Mr. and Mrs. Yates (Petersfield); 3 and 4, B. N. Barford (Saracens). Class P: 1, A. E. Noronha (Orpington); 2, S. Spicer (Southend); 3, J. Randell (Midhurst); 4, J. H. Jackson (Basingstoke). Class Q: 1, A. E. Noronha (Orpington); 2, T. Ramshaw (Brighton); 3, G. Nicholls (Mid Kent); 4, M. Collins (M. Kent). Class R: 1 and 4, P. A. Moye (Sudbury) 2 and 3, R. Perkins (Port Talbot). Class S: 1, J. Smith (Brighton; 2, D. W. Crowe; 3, T. Skeet (Croydon); 4, S. Spicer (Southend). Class T: 1, Mr. and Mrs. Purdy (Merthyr); 2, A. E. Noronha (Orpington); 3, J. Willie (Sudbury); 4, L. J. Brazier (Sudbury). Class Xb-m: 1, K. Connolly (Gosport); 2, A. E. Noronha (Orpington); 3 and 4, M. Strange (Basingstoke). Class Xo-t: 1 and 2, A. E. Noronha, 3, Mr. and Mrs. Purdy (Merthyr); 4, C. Turner (Cardiff). The number of fish benched was 741.

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CHANGES in the officials of the **Thorne A.S.** are as follow: Secretary: B. Banks, 75 Marshlands Road, Moorends, Doncaster DN8 4SY; Chairman: R. Clarkson; Treasurer: K. Bailey. The club meetings are now held at the Moorends Hotel at 8 p.m. and every other Sunday commencing 6th June. All new member's including juniors are welcome to attend two meetings without obligation to join.

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DELEGATES of the **Associated Goldfish Society** met in May when a number of items were discussed and amongst these was the matter of Standards. It was agreed that some time would be needed before anything could be produced as a number of points would need to be resolved. However, it was decided that the first point to be considered was coloration of goldfish varieties. A new approach was agreed upon that any new Standard should include a colour guide of the desired colours and, therefore, at a future meeting Printers Colour Standards would be studied to see whether these colours could be related to the colours found in the goldfish varieties. By including a colour guide in any future Standards it will be made clear just what is meant, and required, where a particular colour is stated.

The Nationwide Cup was presented to the Society by Mr. W. Leach, and, after a little clarification of the class for which the trophy is to be awarded, it was given in to the safe keeping of the Bristol A.S. who will include the class in their 19th September Coldwater Open Show. The class will be for Adult Bristol Shubunkins with a body length of three inches and over, and entry will be restricted to exhibitors who are members of one of the A.G.S. affiliated societies. The class will be judged by two judges—one to the standard of Goldfish Society of Great Britain and the other to the International Competitive Standards for Pedigree Goldfish Varieties. It was decided that these Standards should be recommended for use by societies staging coldwater classes until such time as a new set of Ideal Show Guides for Exhibition Fishes can be produced. The Chairman for this meeting was Mr. W. Leach of the G.S.G.B.

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ON the 28th August the **Welsh Aquarist Association** which has fifteen affiliated societies, features its third open show after a lapse of a few years. The Show has been revived with a new type of image, and the committee with plenty of hard work and effort has got the Show ready.

This is a new type of display for Wales, but it is hoped to use it as a stepping stone for bigger things to come and eventually stimulate the interest and surpass the other shows featured throughout the country. The venue will be held in the Sophia Gardens Pavilion, Cardiff, which is the foremost hall in the principality, and right in the centre of the city. The hall has a floor area of 18,000 sq. ft. and major company trade stands and specialist groups will be displaying at the Show. There will be 40 classes of fish.

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AFTER the early discussion at the June meeting of the **Mid-Sussex A.S.** Mr. C. Cergin talked about the various types of catfish included in the table show for Classes G and H which he judged, while Mr. C. West judged Class C. Results: "C" Characin: 1 and 4, E. & T. Tester; 2 and 3, S. Burtles. "G" Tropical Catfish: 1, 2 and 3, Mr. and Mrs. Houghton; 4, D. Soper. "H" Corydoras and Brochis: 1, R. Stanger; 2 and 3, Mr. and Mrs. Houghton; 4, E. and T. Tester. Further details from the Secretary, Mr. B. Slade, "Sundown," Bolney Road, Ansty. (H. Heath 53747).

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CHANGE OF NAME

THE **Blaenau Gwent A.S.** is the new name of the old Blaenau Gwent Fish Club. Meetings will continue to be held on alternate Tuesdays at 7.30 p.m. at the Blaenau Gwent Working Mens Club Lounge, Lewis Street, Abertillery and past, present and new members are assured of a welcome. Further details and programme of events can be obtained from the Secretary, J. W. Taylor, 55, Ansel View, Abertillery, Gwent. Tel: Abertillery 2919.

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SECRETARY CHANGES

Mount Pleasant A.S.: R. Kirkup, 8 Broadway, Sheriff Hill, Gateshead NE9 5PX, Tyne and Wear.

Trowbridge and District A. and P.S.: J. Bowery, 13 Dean's Close, Melksham, Wilts. Phone: Melksham (0225) 708143.

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SHOW CANCELLATION

THE **Ealing and D.A.S.** regret to announce the cancellation of their Open Show which was scheduled for the 3rd October.

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SHOW DATE CHANGE

DUE to a clash of dates the **Glossop A.S.** open show, which had been fixed for the 12th September, has been held over until early next year.

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AQUARIST CALENDAR

1st August: Tonbridge & District A.S. Fifth Open Show. Schedules from Secretary, J. Feast, 19 Eardley Road, Sevenoaks, Kent TN13 1XX.

7th August: Newport A.S. Open Show at St. John's Hall, Victoria Avenue, Maindee, Newport, Gwent. Details from Show Secretary J. Iliffe, 1 Hawarden Road, Newport, Gwent. Tel: 74506.

7-8th August: Tottenham & District A.S. will be holding its annual open show at the Harringay open show. As is usual it will be for Coldwater fish with a special tropical exhibition.

8th August: Blackpool and Fylde A.S. will be holding their open show at Blackpool Boys Club, Laycock gate off Devonshire Road, Blackpool.

8th August: Grimsby & Cleethorpes A.S. are holding their Fifth Open Show at the Memorial Hall, Cleethorpes. Show schedules are available from the Show Secretary, L. Curtis, 4 Sweyby Drive, Cleethorpes, South Humberside.

15th August: Huddersfield T.F.S. annual Open Show, the venue being the same as last year at The Deighton Civic Youth Centre, Deighton Road, Deighton, Huddersfield. Benching from 12 noon. Judging commences 2.30 p.m. Further details and show schedules from B. Garrett, 23 Ryefields, Scholes, Holmfirth, Nr. Huddersfield.

15th August: Oldham & District A.S. Annual Open Show, Werneth Park, Oldham. Schedules obtainable from A. Chadwick, 341, Broadway, Chadderton, Oldham. 061-652 0809.

15th August: Stroud A.S. Open Show at the Subscription Rooms, Stroud. Show Secretary, J. Cole, 13 The Hill, Randwick, Stroud, Gloucestershire. Tel.: Stroud 4504.

15th August: B.K.A. Severnside Killifish Show: incorporated in the Stroud Open Show and open to everyone at the Subscription Rooms, Stroud. Show schedules from the Show Secretary J. Cole, 13 The Hill, Randwick, Stroud, Gloucestershire. Tel: Stroud 4504.

21st August: Hounslow & District A.S. Open Show will be held at the Hounslow Youth Centre, Cecil Road, Hounslow, Middlesex. All enquiries to Show Secretary, H. Pratt, 23 Woodlawn Drive, Feltham. Tel: 01-894 0923.

21-22nd August: Yorkshire Aquarists Festival.

22nd August: Long Eaton A.S. Open Show at Gregory's Rose Garden Centre. Further details and schedules (s.a.e. please) from Show Secretary D. Anthony, 50 Dean Street, Derby DE3 3PT.

28th August: The third Welsh National open show to be held at the Sophia Gardens Pavilion, Cardiff. Further details available from: C. Turner, 146 Arran Street, Roath, Cardiff. Tel.: Cardiff 498982. M. Guthrie, 4 Nurston Close, Rhoose, Glamorgan. Tel.: Rhoose 710649.

29th August: Castleford A.S. Open Show at The Civic Centre, Castleford. For further information and schedules please contact P. Hayes, Show Secretary, at Winton, 20 Park Ave., Castleford WF10 4ST. Telephone Castleford 2782.

29th August: Macclesfield A.S. Open Show at Park Royal School, Athey Street, Macclesfield. Details from Show Secretary, J. Sutherland, 4 Lincoln Walk, Prestbury, Macclesfield or Hon. Secretary, M. J. McDermott, 7 Oakland Ave., Huchington, Crewe. Tel: Crewe 585230.

29th-30th August: Gt. Yarmouth & District A.S. Tropical and Coldwater Fish "Exhibition 76" to be held at the Hopton Village Hall (on A12 between Gt. Yarmouth & Lowestoft).

4th September: Yate & District A.S. 10th Open Show at the Y.M.C.A. (Whitfield School Rooms) Park Road, Kingswood, Bristol, Avon (Nr. Clock Tower). Schedules after 1st August from C. Stickland, 20 Burgage Close, Chipping Sodbury, Nr. Bristol.

5th September: Hoylake A.S. 7th Open Show at the Y.M.C.A., Hoylake, Wirral, Cheshire. Show Secretary, P. L. Sanders, 18, Drake Road, Leasowe Wirral, 051-630 1171.

5th September: Midland Koi Association Open Show at Budbrooke School, Hampton Magna, Nr. Warwick. Secretary: R. Hunter, 46, Olive Avenue, Wyken, Coventry. Tel: Coventry 617615.

5th September: Wellington & District A.S. Open Show at the Weavers Sports Centre, Weavers Road, Wellingborough. Further details and show schedules will soon be available from the Show Secretary A. J. Crew, 67 Swinburne Road, Wellingborough.

5th September: Bethnal Green Aquatic Society Open Show, at the Bethnal Green Institute, 229, Bethnal Green Road, E.2. Schedules and further details available from the show secretary, R. Dale, 14, Rutland Road, Wanstead, London E11 2DY, tel: 01-989 9015.

5th September: The Killingworth Aquarist Association is to hold their second annual open show at Communicare, Killingworth. Schedules from W. Kidd, 75 Hartlands, Bedlington, Northumberland.

11th September: Kingston and District A.S. Open Show at Sutton Adult School, Benhill Avenue, Sutton. Benching, Friday 10th, 7 p.m.-10.30 p.m. Saturday, 7 a.m.-10.30 a.m. Anybody wishing to visit convention arrangements can be made regarding debenching.

12th September: Blackburn Aquarist Waterlife Society, King Georges Hall, Northgate, Blackburn. Secretary, Mrs. S. A. Newton, 217 Richmond Terrace, Darwen, Lancs. BB3 0HG.

12th September: Barnsley T.F.S. Annual Open Show at Mapplewell Staincross Village Hall, Darton, nr. Barnsley. Schedules from A. Waddington, Show Secretary, 112 Racecommon Road, Barnsley, Yorks S70 6AP.

12th September: Buxton and District A.S. Open Show at the Pavilion Gardens, Buxton. Details from J. Wells, 9 Byron St., Buxton, Derbyshire.

12th September: Cleveland A.S. Open Show to be held in the Hall, Hall Close, Ormesby. Details from B. Welford, 50 West Road, Loftus, Saltburn, Cleveland.

12th September: Harlow A.S. open show.

12th September: Sunday—Midland Aquarist League, six class open show, Bulkington Parish Hall, Bulkington, Nr. Nuneaton. Details C. Chamberlain, 2 Stanley Court, Sydenham Drive, Leamington Spa. Tel: 28957.

18th September: Bristol A.S. Coldwater Open Show. Schedules from Show Secretary, E. N. Bowden, 12, Stoneleigh Walk, Bristol, 4. 775355. Postal entries close 31st August. Venue Bishopston Parish Hall.

19th September: Bassetlaw Fishkeepers A.S. First Open Show. Schedules from K. Clarke, 4, Big Lane, Clarborough, Retford, Notts.

19th September: Priory A.S. Tynemouth. Open-Show. Schedules later from W. J. Walton, 25, Rutherford St., High Howdon, Wallsend, Tyne & Wear NE28 0AW.

19th September: Wythenshawe and District A.S. Open Show at The Forum Hall, Civic Centre, Wythenshawe, Manchester. Tropical, Marine and Coldwater Sections. Show secretary. S. Barratt, 14 Piperhill Avenue, Northenden, Manchester M22 4DZ.

19th September: West Cumberland Aquarists' Club Open Show, The Civic Hall, Whitehaven, Cumbria.

19th September: Severnside Aquarist Association first Open Show at Stroud Subscription Rooms (not to be confused with Stroud and District A.S. Show to be held on 15th August). Details can be obtained from Denise Cole, Hon. Sec., Avignon, The Hill, Randwick, Stroud, Glos.

25th September: Goldfish Society of Great Britain. Annual Open Show Sutton Adult School, Sutton, Surrey.

26th September: Mount Pleasant Open Show will be held at St. Joseph's Hall, Gateshead on Tyne. Show Secretary, T. Wilson. Schedules later.

26th September: Northampton & District A.S. Open Show at the Sports Hall, Lings Forum, Weston Favell Centre, Wellingborough Road. Schedules being peepared.

26th September: Chesterfield and District A.S. Annual Open Show. Venue, Clay Cross Social Centre, Chesterfield Road, Clay Cross, nr. Chesterfield, Derbyshire. Exit 29 off M1. Follow signs four miles to show. The venue is on the A61. Further details from Show Secretary, C. Lee, 21 Farnsworth St., Hasland, Chesterfield, Derbys.

2nd October: East London Aquarists and Pondkeepers Association annual show breeders, to be held at Ripple Road School, Barking. Entry forms can be obtained from Mr. J. London, 41 Maybank Avenue, Hornchurch, Essex.

2nd October: Goldfish Society of Great Britain, Open Show, to be held at Wimbledon Community, St. Georges Road, S.W.19. Schedules from G. E. Herring, 94 Penwith Road, S.W.18.

3rd October: Newbury & District A.S. Fourth Annual Open Show at the "Plaza," Market Place, Newbury. Schedules and full details from, Mrs. S. Cannings, Show Secretary, 6 South End, Thatcham. Tel: Thatcham 64254.

3rd October: Eboracum Aquarists Open Show at Nunthorpe Grammar School, Scarcroft Road, York.

10th October: A. A. Jones and Shipman A.P.S. First Open Show will be held at their Works Canteen, Watergate Lane, Leicester (¼ mile from M1 Junction 21). Benching 11.00 a.m.-1.30 p.m. Schedules now available from Mr. M. Braimbridge, 123 Martin Street, Leicester. Tel: Leicester 667319.

10th October: Hartlepool A.S. Open Show at Lonsdale Hall, Seaton Carew, Hartlepool. Further details from Mrs. A. Lion, 1, Loyalty Court, Hartlepool, Cleveland.

10th October: Immingham A.S. first annual show.

17th October: Torbay A.S. annual Open Show at Torbay Chalet Hotel, Marldon, Paignton. Schedules from: Mr. J. R. Davis, 43, Haldon Road, Torquay, Devon.

17th October: Sunday—Midlands Aquarist League, six class open show, Bulkington Parish Hall, Bulkington, Nr. Nuneaton. Details C. Chamberlain, 2 Stanley Court, Sydenham Drive, Leamington Spa. Tel: 28957.

23-24th October: British Aquarists' Festival Silver Jubilee, Belle Vue, Manchester. Further details shortly. See display advertisement pages.

31st October: Doncaster & District A.S. Open Show. Benching 12 noon to 2 p.m. (Note change of venue) The Carcroft Miners Welfare Hall, Carcroft.

7th November: Halifax A.S. Open Show at The Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Details from D. Shields, Cobblestones, Gainest, Kings Cross, Halifax. Phone Halifax 60116.

14th November: Bradford & District A.S. Open Show will be held at Textile Hall, Westgate, Bradford.

20th November: Goldfish Society of Great Britain. General Meeting, 2 p.m., Conway Hall, Red Lion Square, London, W.C.1.

27th November: Fur, Feather and Aquaria Show, King's Hall, 39 Lower Clapton Road, London E.5. Schedules from Sybil Hedges, Koi Korner, 150 Ashburton Ave., Seven Kings, Ilford, Essex IG3 9EL. Tel: 01-590 3239.