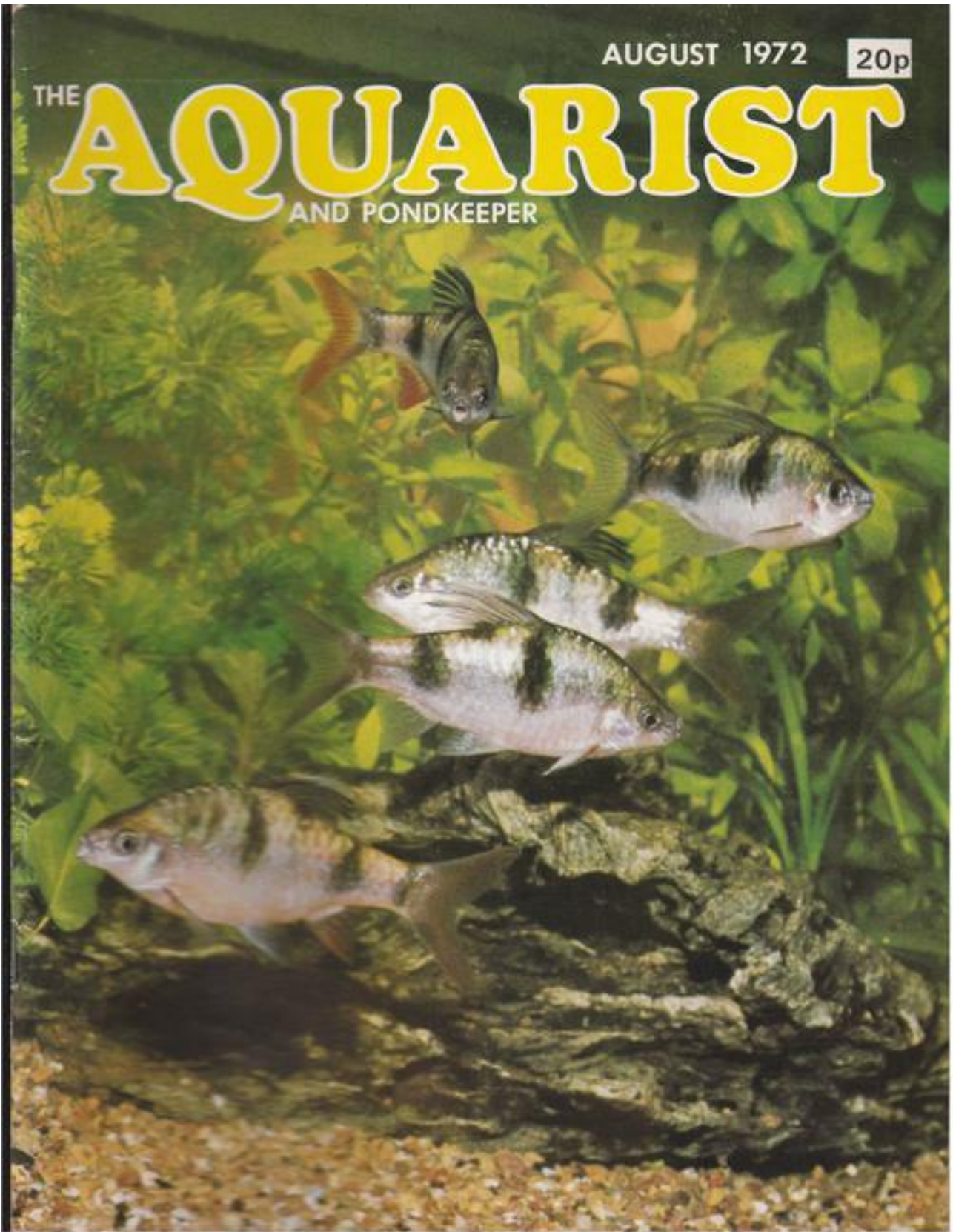


AUGUST 1972

20p

THE **AQUARIST**  
AND PONDKEEPER





# THE AQUARIST

AND PONDKEEPER

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**Our Cover**  
*Barbus arulius*  
(See page 188)

August, 1972

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# WHAT IS YOUR OPINION?

by B. Whiteside

*Photographs by the Author*



WHERE DO I BEGIN? This is the usual question which I have to ask myself each month when I attempt to sort through all the letters which you, the readers, are kind enough to send me. This month's letters come from places as far apart as Norwich and New Zealand.

In the June edition I quoted from a letter which came from Mr. A. D. G. Phillips, Director of Phillips Yeast Products Ltd. (Aquatic Division), makers of Phillips fish foods, who pointed out the advantages of commercially produced fish foods over home made foods. Mr. Phillips' letter has brought the following reply from another manufacturer of fish foods.

It comes from Mr. R. Lester Miller, Senior Partner,

tons of our Pond food! But that is not the point; no one suggests all species of mammals should be fed the same diet; why pretend all fish have the same needs?

"Our experiments, going back 30 years, show you can keep most species healthy on an exclusive diet of our own and other high quality foods, but for superb fish a supplement of fresh home prepared and live foods, based on a particular species' needs, is necessary; and all our sales literature honestly says so. As Elite is a non-flake food we do suggest using it as a mix for fresh home prepared food: for example, to mop up essential juices from chopped spinach or nettles when conditioning live bearers. We will send,



Derhams Fish Foods, Derhams Products, 3 Maybourne Close, London, S.E.26 6HQ, and he writes: "As manufacturers of a specialist's fish feed I must disagree with the Director of the company making Phillips' Fish Foods. I believe all serious aquarists should include home prepared foods in their fishes' diet. Of course commercial manufactured foods are essential; they include (or should) an extensive variety of ingredients which the aquarist cannot hope to duplicate. For example, if you bought the minimum available quantities of the ingredients included in our formula for Elite, and used them all up, you would be left with over a ton of our Tropical food and three

for a stamped addressed envelope, a free list of our home made food recipes.

"With someone nominated by your journal to judge the results, I am quite prepared to test my findings against Mr. Phillips', in rearing under control conditions any five species of fish common to aquarists." (There are certainly some interesting views expressed here by Mr. Lester Miller, and he sent me a sample of Elite Tropical fish food which I hope to review. I would be interested to have readers' opinions on the views expressed by Mr. A. D. G. Phillips and Mr. R. Lester Miller. I would also welcome the views of any other fish food manufacturers on their own

particular foods' merits.)

In the June issue, Nigel Sommerfield asked if it would not be possible to produce *The Aquarist* every fortnight, instead of every month. A number of readers agree with Nigel's suggestion. Mr. M. J. Anns, of 5 Peter's Close, Sarisbury Green, Southampton, Hampshire, sent me a long letter dealing with a variety of topics. He has taken the magazine for 10 years and considers it to be the best in its field, particularly when contrasted with some of the American journals; but one feature does annoy him intensely—the "eight whole sides devoted to 'News from Aquarists' Societies'." He considers that the information contained in these pages is of immense importance to those mentioned, but is of no consequence to anyone else. He doubts if any disinterested party reads a line that is printed in this feature. (What is your opinion?) Mr. Anns continues: "How about using the eight pages concerned for your column, which is by far the most interesting?"

Mr. Anns goes on to comment on fish breeding, and he is intrigued by the stress laid on raising as many of a brood as possible, and using this as a measure of one's success as a fish breeder. He says that in nature a fish will lay upwards of 300 eggs, and perhaps a dozen young will survive to adulthood. He points out that those which do survive are the strong, healthy specimens worthy of maintaining the species; but that man insists on raising the lot—including weaklings, runts, carriers of disease, etc. He states that this means that he buys such fish from a local shop and wonders why they die, have a humped back, introduce whitespot, etc. He was interested recently to see about nine young *kribensis* swimming around in his 2 ft. community tank, as his books tell him that *P. kribensis* is difficult to breed. He says that they may be if he wants to raise 300 at one go—but he doesn't! He just wants contented fish, and he feels that they must be quite happy if they are willing to breed in his tank. He can't claim any credit for raising nine youngsters, but he claims the credit for providing them with amenable conditions. He has never raised Harlequins but has found them very easy to keep healthy. He once had a shoal of them in a 3 ft. tank, when he lived in Scotland, and the tank was planted with a few *Cryptocoryne* and lighted by Gro-Lux. He still thinks that it was the best tank which he ever set up. His fish spawned many times, but that was all that happened. He thinks that marine fishes have a more dramatic appeal than freshwater fishes, but that they are a bit "larger than life". He will probably get some because his wife thinks they are fantastic—but he wants to know a lot more about them before he does.

Unless his fishes are starving, which isn't often, they refuse all food except a well known German brand of flakes (which Mr. Anns does not name) and live foods.

When one of his Gro-Lux tubes stopped operating, he replaced it with a "normal" fluorescent type tube, and there seemed to be no detrimental effect on plants or fishes—but he didn't like the harsh effect of the light and soon got a new Gro-Lux tube. He now uses only Gro-Lux and tungsten strip lighting, in combination—15 watts Gro-Lux and 30 watts tungsten tube per two feet of tank. He finds that some species of plants run riot; others he cannot seem to grow at all. Before Mr. Anns goes on holiday, he feeds his fishes up on live foods for about three weeks; before he leaves, he switches off the lights, opens the curtains to let in the daylight, leaves the undergravel



filter running, and forgets about the lot. When he gets back, he finds that the plants have taken over completely, the water level has dropped by about 2 in. and the fishes need a machete to get about! After a quick "spring clean" all is restored to normal, and the fishes will then eat British flake food.

Mr. J. A. Higham, who writes from 112 Kiln Lane, St. Helens, Lancashire, follows a similar holiday routine when he is away for a week. He raises the tank's hood to let in any available sunlight, and leaves the undergravel filter running. Over the years he has given his fishes less and less food. He never buys any dried foods of any kind, even in winter when live



foods run out, and his fishes live extremely long lives and always look in good condition. (As I type this in June, it does not appear that there will be any sunlight this year!) Commenting on *Cryptocorynes* losing their leaves, Mr. Higham states that he used to have problems with this condition among his plants, but he hit on the "cure" quite by accident. He once put his hand into a tank to clean the glass, and noticed that the temperature was well down. (He says that his thermometer "was one of those little stick-on ones which had taken up its usual position on the gravel".) He replaced a faulty heater and as the water warmed up the *Cryptocoryne* leaf dropping ceased. Since then he has kept his tank at 79-80°F and has never had a return of leaf dropping on an epidemic scale. (This is a most interesting point!)

Mr. Higham goes on to comment on *A. ramirezi*, which he agrees are beautiful little fish. He once bought four rather miserable looking specimens from

large, well planted tank. All four fish seemed perfectly happy and healthy—but after two weeks the ordinary coloured male just turned on its side on the gravel and died, with absolutely no apparent signs of disease or damage. The other ordinary "Ram" seems quite plump and healthy, but I have only seen one of the golden "Rams" at any one time in the past few days; the other fish may be dead, or it may just be hiding in the masses of plants which the tank supports. Perhaps some reader could suggest what might be causing my "Rams" to die off thus? My dealer did make one interesting observation to me: he said that "Rams" need to have a certain proportion of copper in their water, and that it was useful to add an ordinary penny to the water in a "Ram's" tank. As my fish share their tank with several other species, I have not yet decided to try the penny experiment. Have any readers got information about "Rams" needing a proportion of copper in their water? One is usually



a local dealer, placed them in a 14 in. all glass tank with plenty of rocks but few plants, and fed them exclusively on live foods. The fish thrived, and one day he was surprised to see a cloud of fry being escorted by one of the adults. He had had no thoughts of breeding the fish and had seen no signs of courtship. As he had no spare tank to hand, he carefully scooped up the fry and placed them in a plastic filter box which he floated in the tank. There were about a dozen babies which were already feeding. Unfortunately, the filter box sprang a leak one night and tipped the fry into the waiting jaws of the adults—who gratefully scooped the lot! (I recently bought myself another pair of "ordinary" "Rams", and a pair of what my dealer called "golden" "Rams". Photo. 1 shows one. The latter fish are an interesting golden colour, although I do not think them quite as attractive as the ordinary coloured fish. Both pairs were placed in a

advised to keep copper out of fishes' water, except when treating certain diseases. Let me have your opinions on this point.

Mr. D. V. Fleming writes from 97 Woodland Drive, Hove 4, Sussex, BN3 6DF, and he wholeheartedly hopes that *The Aquarist* will soon be published every two weeks. He keeps marine fishes and finds their colours much more distinct and interesting than freshwater fishes' colours. Mr. Fleming states that he has no problems with getting *algae* to grow in marine tanks—in fact he can't stop it, and he admits to encouraging it to grow. His marine tank has been set up for about two months and brown *algae* covers everything. As his tank is kept in a sun-lounge, in front of a window, he hopes that the *algae* will turn green soon. At the moment his 30 in. marine tank is full, containing one *percula* clown fish, one cardinal fish, one 3½ in. angel fish and a small box fish.



"May I start my letter by saying that W.Y.O. ? helps to make *The Aquarist* the best magazine out today for the fishkeeper," is the first sentence in a letter from Jill and Colin White, of 42 Farm Road, Garden City, Deeside, Flintshire, N. Wales, CH5 2HJ. They continue: "*The Aquarist* as a fortnightly magazine—a big 'Yes!'. We have nothing to read after two days, the same as Geoffrey Laws" (June edition). Mr. and Mrs. White go on to say that, at the moment, their 36 in. show tank is lighted by a 20 watt Gro-Lux tube; previously they used two 20 watt warm white tubes; and before those three 25 watt bulbs. With the bulbs they had a good light for growing plants and for seeing fishes, but the temperature of the water would rise too high, and excessive evaporation took place. The warm white tubes again gave a good light, but algae grew all over the plants and the front glass—and the latter had to be cleaned every four days. They think that Gro-Lux is best for plants, and for showing up the colours red and green, but Mr. White finds this tube a bit dull on its own over a big tank; his wife suggests the addition of a warm white tube as well. They hope to try the combination and will let us know what evolves. (I've recently exchanged a Gro-Lux tube used together with a tungsten bulb, for a warm white tube and tungsten bulb, over one experimental tank. I have not noticed any real difference in the growth of the higher aquatic plants, but there has been a very marked increase in the growth of a certain species of green algae on plants and gravel. Fortunately, it is easy to remove with the fingers and thumb, and seems to have kept well clear of the higher plants and the aquarium glass. I'll let the experiment continue for a few more weeks, but I suspect that I'll probably return to Gro-Lux and tungsten bulbs again.)

Mr. L. Drummond's letter comes from 178 Sulgrave Road, Washington, Co. Durham, and Mr. Drummond is a member of Washington Aquarist Society. He has recently been making his first attempt at aquarium photography and he sent me an interesting photograph of his tinfoil barb, which, he says, would be well known to North East readers as the barb has won many show awards in the area. Mr. Drummond photographed his tinfoil barb using FP4 film in a Leica M3 camera, fitted with an f2 Summicron lens. The fish's tank was lighted from the side using a 400 watt photoflood, and had two 20 watt Gro-Lux tubes in the hood. The exposure was 1/25 second at f2.

Mr. D. Seymour's home is at 63 Surrey Street, Norwich, NOR 85B, and he recently had a leak develop at the base of the front glass of his 48 in. x 15 in. x 15 in. tank. With a small screwdriver he scraped the putty from the bottom angle to a depth of about 1/2 in. He then dried off the resulting channel with the corner of a "leather", and pushed in Plastic Padding—the elastic type—and scraped it off level with a wet knife. This medium "goes off", as he says,

in 10-15 minutes, and it effected a permanent cure. He used this method before and has found it to be completely satisfactory. He ends his letter by saying: "Keep up the good work with W.Y.O. ?".

I received another letter—a very long one—from Mr. R. C. S. Hedgman, of 8 Spottiswoode Street, Anderson's Bay, Dunedin, New Zealand, and the letter's envelope bore eight very attractive New Zealand stamps. One stamp showed the scarlet parrot fish, one the lichen moth and one the magpie moth. Mr. Hedgman wrote to twenty aquatic firms in the U.K., enclosing British postal orders for reply postage, asking for information about the importation of aquatic plants. Only one firm bothered to answer his letters! He points out that equipment, etc., for use with aquaria, is limited to a very small range in New Zealand; however, he has recently been to Australia and the hobby is starting to boom there. Mr. Hedgman, who is a vet, points out that Australia has recently banned the importation of goldfish, supposedly because of the risk of infection, and he believes that a ban is going to be placed on many other tropical fishes, with the possible exception of breeding pairs. Despite the high cost of fishes, etc., he has about ninety different types of aquatic plants under cultivation, in tanks containing special growing media, but without fishes. Mr. Hedgman has managed to breed discus—which he has had for two years. He states that a prominent German discus breeder, who lives in Brisbane, Australia, (quote) "now has good proof that many breeding size discus are being sterilized prior to export from the East!" (Interesting point!!!) He also subscribes to two American publications, but he says that "the topics are of little interest and full of advertising, which is the greatest drawback with all these magazines. My whole-hearted congratulations to R. H. Cooke for his *Aquarist* articles—precise, accurate and informative; no secrets. Discus breeding was always a closed shop!" Mr. Hedgman goes on to ask for information about the growth of specific aquarium plants, but as his letter stretches to fifteen and a half pages, I'll have to omit the remainder of its contents and attempt to answer a few of his questions myself.

Mr. J. Rayner has had a lot of problems with his aquarium plants. He has used Gro-Lux over a 24 in. tank, and burned it for six hours per day, but with little success. He then added two 15 watt tungsten bulbs with the same result. Mr. Rayner has now set up a 30 in. x 15 in. tank with one 20 watt warm white and two 30 watt tungsten tubes, all burning for 9-10 hours per day, and he has planted the tank with plants from Mr. D. Smith of Kidderminster. He is now hoping for success but would welcome any advice on the growing of plants. Mr. Rayner's home is 27 Brixham Crescent,

*Continued on page 193*





#### Algae Problems in the Marine Tropical Aquaria

"The only things really worth doing are what the world considers impossible."

Who was it said that? How true time has proved it to be for how often has the tiro made discoveries that have confused the experts for years. Marine algae is such a problem waiting to be solved. Cannot we have a few subscriptions so as to offer a prize of £50 or £100 to encourage researchers. I'd open the list with £10.

For instance, I'm up against a mystery. Three types of algae have started when a tank has been set up on three different occasions in identical conditions. This tank is 12 ft. distant from a 12 ft. East window. Hence, getting all the morning sun there is. The tank is 6½ ft. long, holds 120 gallons of water, plus about 2 cwt. of Cumberland limestone rock and coral. There are two 5 ft. lighting tubes, one a GroLux, about 6 in. above water level. Naturally, glass covers the water from the tubes. Brown algae quickly formed. The water being kept clear by two Eheim's. Then a lovely green algae took over. It was more like a moss, really rooting on the rocks and spreading nicely and rapidly, in spite of the fish which loved it. It could be plucked off the rocks, but would not brush off like the brown. I was very proud, as my frineds had never seen anything like it.

Then Oodinium struck. Where from? Another mystery as no new fish were introduced. It was impossible to catch the infected fish in that maze of tunnels, caves and arches of sharp rocks and coral, and at least six fish showed the infection. Hence, I had to treat the whole tank, which I did with a proprietary cure which was not supposed to kill algae nor plants, but I lost all my precious green moss type, although I only lost two fish, and there were large and small Angels and Butterflies. A fresh lot of rock was sterilized, boiled and soaked, etc.; and the water well filtered, but this time the only algae appearing was the beastly Blue/Green, like a fine film of plastic over everything. This, I periodically brush off the rocks—let it settle on the bottom then siphon it off. It smells horrible on the wool filter, yet the fish are fit, fat and thriving. Does anyone know of any inmate one can introduce which will eat it. I'd give £10 to be rid of it and get my green algae back again, but don't ask me to start from "scratch" again!

Other problems, which will doubtless be solved one

day although seemingly impossible today—a test for the "spore" of Oodinium in water—a test for good and bad bacteria in water and something to kill the bad. One can buy all sorts of live food. Why cannot someone find a way of breeding, transporting and selling half to full sized brine shrimp as a commercial proposition? The problems to be solved regarding the tropical marine aquarist are endless. There is U/G filtration and powerful Ozonizer when and if necessary.

V. V. PIDLAR,  
Uplands,  
Parbold, Lancs.

#### A Lake To Call One's Own . . .

Regarding the letter in the June issue from the lucky gent who is retiring to Norfolk, there is a way to construct a large pool or lake even if the soil is porous.

In our town centre the council did just this for a boating lake. The lake was dug out to the required size and depth then as in a small garden pool polythene sheeting is laid down, this was then covered firstly with rounded pebbles then soil, this was then filled with water making a very nice lake.

It would mean a lot of hard work but I would think the rewards later would be well worth it.

All the best in your retirement, Sir,

L. PASSMORE,  
5 Hilltop Green,  
West Pontnewydd,  
Cwmbran, Mon.

#### . . . fascinated

A new reader to *Aquarist & Pondkeeper*, I was fascinated by the gentleman who wishes to have a private lake to fish in ("Coldwater Queries", June).

Although not mentioned, I wondered if polythene sheeting could be used—R.S.P.B. at their headquarters in Sandy, Beds., created a lake of an acre in this way.

No region is mentioned, but your enquirer may not be aware of one facet of Norfolk life—this is the ditches and the fact that they are often wrongly used as sewerage drains. May I warn him through your column to avoid including ditches or natural ponds in his lake until he is sure they are unpolluted.

Also there is a series of beautiful man-made ponds (for wildfowl) at Gt. Witchingham, which Mr. Philip Wayre maintains with a pipe system.

Personally, I should like to know how large Green Tench have to be before they breed.

I like *Aquarist* very much and shall continue to be a subscriber.

Mrs. S. A. Fox,  
"Orchard Cottage,"  
Hardys Loke,  
Hempnall Green,  
Hempnall,  
NOR 64W.



### Spares Wanted

Could any dealer or reader, give me any idea where I would be able to buy a coil for the Jeto Single Air Pump? Having tried numerous shops, even where I purchased mine from, the answer is always, no spares are available. Surely this should not be the case, yet I have even wrote to "Jeto Hong Kong", only to have the letter returned as Not Known; it makes me wonder, who is Jeto?

Nevertheless, I put my request to you and trust that someone, somewhere, will, through your wide circle of readers, come to my help.

Once again thank you for your editions, which I must say, are really like a friend dropping in and more so one you can trust.

E. D. FIELDING,  
61 Hiley Road,  
Peel Green,  
Eccles,  
Manchester

### Thank You

Please would you publish the following letter in your "Readers Write" column:—

Recently in the Derby Regent Aquarist Society Open Show (Sunday, 14 May, 1972) programme the British Marine Aquarist Association published a full page on how they function and how to attain membership to the Association.

Also published was an article on "Starting Tropical Marines", written by P. Carrington, B.M.A.A., which took up two and a half pages of the programme.

The British Marine Aquarists Association M.C. would like to take this opportunity to thank the Derby Regent Aquarist Society for allowing the B.M.A.A. the use of the programme to publicise the Association.

M. STRONG,  
B.M.A.A. 51,  
Public Relations Officer

### Ubiquitous Duckweed

Permit me to say a few words regarding *Lemna trisulca* in reply to Mr. John L. Gilbert's letter in your issue for June. Baja California is not in South America and your contributor B. Fry is not alone in thinking that ivy-leaved duckweed is not found as an indigenous species in Africa. Professor H. C. D. De Wit, of the University of Agriculture at Wageningen, Netherlands, and one of the world's great botanists, says the same in his book *Aquarium Plants*, published by Blandford Press, London, in 1964.

JACK HEMS,  
Leicester.

### F. British A.S.

For many years, 34 in fact, there has been some doubts regarding the meaning of the "B" in F.B.A.S.

Most Societies' Committees have been under the impression that it referred to the area around London and that the Federation is London based and London bound. Let us now put the record straight.

The Federation has affiliates stretching from Cornwall to Scotland, Ireland to East Anglia; branches of many specialist Organisations such as the F.G.A., the F.G.B.S. and the newly-formed British Cichlid Association are "in," and we have contacts as far afield as New Zealand, Alaska, France, Holland and Canada. Much nearer home, the Federation has also been active in setting up, and encouraging, Area Associations throughout the country (the latest being Teesside) where Societies arrange their own Judges and Speakers panel and shows within the democratically agreed F.B.A.S. Rules and Standards and need not refer to "Whitehall" at every occasion.

Over 170 Societies, i.e., 45 per cent of all the known Societies in the U.K. are enjoying the advantages of affiliation. Truly then, we are the *British Federation* and members of Societies are urged to vote for affiliation to the only NATIONAL organisation representing their interests throughout the country—then it will be a "B" good show!

One final bee in bonnet—the Federation has nothing but admiration for the sterling work put in by the local Associations. Do not allow yourselves to be persuaded that the F.B.A.S. is attempting to usurp these Associations; it is not. What it is attempting to do is to weld together all the Societies, Groups and Associations under a common aim—rationalisation of the multitude of fish standards, judging standards and Show rules that exist today. Surely these aims are the aspirations of all good hobbyists?

DICK DOVE,  
Treasurer,  
F.B.A.S.

### Spider Crabs

With reference to Henry Tegner's article in your May issue, entitled "Lobsters, Crabs and Crayfish" I would like to know what is meant when he says that the Spider Crab (*Maia squinado*) only attains the size of a few inches. Being a keen amateur diver I have seen many of these creatures in their natural environment and state that they are much larger than a few inches. *Maia squinado* has the largest span of all British crabs, sometimes reaching a diameter of approximately 20 inches. Their body is very small and not more than six inches in length. These crabs have very little meat though their legs are quite tasty.

B. E. DINMORE,  
165 Bensham Lane,  
Thornton Heath,  
Surrey, CR4 7EW.



### Painted Frogs

It was with great interest that I read the article, "Painted Frogs" (*Discoglossus pictus*) by H. G. B. Gilpin, B.Sc.

But I must say that I was astonished at his find of *Discoglossus* in the Chadwick Lakes in Malta, as that system of irrigation dams is called, after the great Victorian Hygienist: for my part, in twenty-seven years there, mostly spent as an amateur naturalist and formal student of biology, I was never fortunate enough to encounter a single specimen of the entire genus. By 1968, the year of my last visit, the only Anuran frog to be had was the ubiquitous *Rana temporaria*, known locally as the "Zrinc" (pronounced Srinch) in the vernacular.

I should know—for some years I had the unpleasant and distasteful task of dissecting specimens from all over the place. As for Mr. Gilpin's probable "black form of the dark green Whip Snake", I suspect it was the only known snake in that habitat, the local varietal *Vipera berus* var. *Melitensis*, a species almost identical with the Adder, but unaccountably devoid of venom. (There is an interesting local legend connected with a previous Visitor to that Island, namely St. Paul of Tarsus, but that's another story!) The locals call the indigenous viper or adder, a "Lifgha" (pronounced Le-far). But as for the "Moorish Gecko" spotted by Mr. Gilpin, it was most likely the Mediterranean or Turkish Gecko, *Hemidactylus turcicus*, or even quite possibly a young specimen of the Wall-'newt', *Tarentula mauritanica*; both species occur, are known as a "Wizgha" (pronounced We-zaw) in either case, and are believed by local taxonomic opinion to be evidence, rightly or wrongly, of a former landbridge linking the Islands with Africa (Hamman Lif) as well as Europe (Sicily and the Italian Peninsula) in remote geological times. One thing is certain, no Anuran Saltatorian, i.e., Mr. Gilpin's *Discoglossus pictus sardus*, nor 'my' *Rana temporaria*, could possibly have leaped over the 60-odd mile distance now separating Malta from the nearest (European) land, nor of course swum across. So perhaps there really was a connecting isthmus.

PAUL HAMMETT, M.D.,  
284 Wolverhampton Road West,  
Bentley, Walsall.

I share Dr. Hammet's astonishment at my good fortune in finding *Discoglossus p. picta* in Malta. Both Hans Hyaas and Hellmich record it as an inhabitant of the island, the latter going on to say that the larger sub-species, *Discoglossus picta sardus*, may be found in Sardinia, Corsica, Giglio, Monte Christo and the Hyères Islands.

Nevertheless, having experienced the aridity of Malta in summer, I had small hopes of seeing any

Anurans. I was interested to learn of the presence of *R. temporaria*, apparently in considerable numbers.

Both the Moorish (or Wall) Gecko, *Tarentula mauritanica*, and the Turkish Gecko, *Hemidactylus turcicus*, are common in Malta. I have caught many of both species on nursery and farm land in country areas. Particularly large specimens of the former are to be found in St. Anton Gardens.

I should hate to appear dogmatic about the snake in Chadwick Lakes. The brief sighting I mentioned suggested it might have been the Dark Green Snake, *Coluber v. carbonarius*, which is known to occur in Malta (vide J. W. Steward and Hellmich). I have not been able to examine one myself, but English friends of mine in Malta have told me of a snake, resembling a viper, which country boys handle freely—perhaps the one Dr. Hammet mentions.

H. G. P. GILPIN,  
47 Lime Tree Avenue,  
Findon Valley,  
Worthing.

### Gone Away

My Company is sending me abroad for a very lengthy tour and at present I have no idea when I shall be returning to the U.K.

I have been compelled to cancel all my engagements to Lecture, etc., and if you could find space to advise your Readers that I shall be away, it will save them the bother of writing and wondering why they have had no replies from me.

R. O. B. LIST, Ph.D.,  
30 Garden Close,  
West End Road,  
Ruislip, Middx.

### WHAT ARE THEY?

By Hilary Maynard

My first is in COUNTRYSIDE but not in HEN,  
My second is in SHEEP but not in PEN.  
My third is in HOUSING and also in CLUB,  
My fourth is in BRACKEN and also in SHRUB.  
My fifth is in AQUARIST but not in BREED,  
My sixth is in PLANTING but not in SEED.  
My seventh is in BOOKLET but not in PROSE,  
My eighth is in HAIRLINE but not in NOSE.  
My ninth is in BANKING and also in MONEY,  
My tenth is in SWEETNESS but not in HONEY.  
My whole change their colour and don't like the cold,  
They are minus their scales and related to gold.

Answer in page 179



## OUR EXPERTS' ANSWERS TO YOUR QUERIES

### READERS' SERVICE

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

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

## TROPICAL QUERIES

by Jack Hems

I have two small *Tilapia macrocephala*. At the present time they are living in an 18 in. by 12 in. by 12 in. aquarium. What size tank will they need in the future to allow for proper growth?

You will not go wrong if you give your tilapia a 4 to 5 ft. tank to themselves. It should be carpeted with a 3 in. layer of well-washed sand and have large pieces of non-calcareous stone or "cured" driftwood to take away the bareness and provide a background. No doubt you will be interested to know that *T. macrocephala* should be called *T. heudeloti*.

cyprinid from Indonesia. It has been known to keen hobbyists on both sides of the Atlantic since the 1930s. It is not aggressive and is quite suited to a community tank large enough to provide it with plenty of swimming space. It attains a length of about 4 in. Any live or dried food suits it, and the best temperature is around 75°F (24°C).

Can you recommend a good work on the recognition and treatment of diseases in aquarium fish?



*Tilapia heudeloti*

I should be most grateful for some information on the flying fox. The books in my possession do not mention it.

The flying fox (*Epalzeorhynchus kallopterus*) is a

One of the easiest books to read and understand is C. Van Duijn's *Diseases of Fish*, published by the Butterworth Group. Equally authoritative, but much more technical, is Erwin Amlacher's *Textbook of Fish*



Diseases, a TFH publication.

**I have been told that if I place a lump of coal in my cloudy aquarium it will clear the water in a day or two. Is this true?**

A lump of coal will not clear cloudy water, but pulverised coal, washed free of the fine dust, makes a temporary substitute for carbon in a filter chamber.

**I have several neon tetras in my community tank and two of them show very distended sides. Recently the slimmer ones have been chasing the fat ones into the plants. If these neons are spawning, what must I do to save the fry?**

It is not uncommon for neon tetras to spawn in the aquarium, but raising their fry is far from easy. You see, special conditions are needed such as soft and acid water, scrupulous cleanliness, microscopic live food, and a poor light. Apart from all this, the eggs and fry of any fish that spawns in a community tank are sought

Schubert's barb (*Barbus schuberti* is not a valid scientific name) denotes its readiness to spawn in an unmistakable fashion: the lower sides and underparts of the male become stained with scarlet red, and the body of the female becomes markedly swollen.

**The proprietor of a pet shop told me that 32 oz. glass would be strong enough to glaze a 3 ft. aquarium, yet when I finished the job and introduced the water the bottom cracked. Should I have used thicker glass?**

A 3 to 4 ft. tank should be glazed with quarter-inch glass. Your informant should have known better.

**I would like your advice on keeping a pair of Jack Dempsey fish. Would a 2 ft. tank make a suitable home for a pair? And would plastic plants afford sufficient cover and decoration?**

A true pair of Jack Dempsey fish might get on well together in a two-foot tank, but a larger one would be



*Calamoichthys calabaricus*

out and devoured by the other fishes. Roe-heavy females, and their partners, should be given a tank to themselves.

**I have purchased a livebearer bearing the scientific name of *Limia melanogaster*. I should like to know a few things about this fish such as its maximum size, temperature range, country of origin, and whether it will cross-breed with the platys and mollies in my tank?**

*Limia* or *Poecilia melanogaster* is found in the wild state in Haiti and Jamaica. The male attains about 2 in., the female about 2 in. more. A temperature in the middle seventies (°F) suits it. It has been known to hybridise with *Poecilia sphenops*.

**How can I tell when my *Barbus schuberti* are ready to spawn?**

better; for do bear in mind that a well-grown pair in breeding condition go in for strenuous love-making and in too confined a space one or both of the fish could be seriously injured. Plastic plants will afford satisfactory cover and decoration, but it would be advisable to introduce some non-calcareous rocks also.

**I have seen an eel-like fish labelled *Erpetoichthys calabaricus* in a dealer's showroom. Neither the dealer nor I can trace this generic name in any of the books. It is a greeny fish, with a number of spine-like fins on the back, anal and pectoral fins, but no ventrals. Perhaps it is more like a snake than an eel. What information can you give me on this species?**

I imagine the fish you have seen is a species of reed fish, of the family *Polypteridae*—maybe the fish

described in Sterba's *Freshwater Fishes of the World* under the scientific name of *Calamoichthys calabaricus*. This fish is from West Africa and is said to be inoffensive, though at full size, some three feet, it would no doubt make short work of small fishes. I, also, cannot find a genus called *Erpetoichthys* in my books. An aquarist with a classical education might prefer *Herpetonichthys* as the generic name of a fish that looks like a reptile or is of reptilian shape.

I am new to the hobby of tropical aquarium keeping and I should like some advice on getting plants to grow. All the plants I have bought have rotted away within the space of a few weeks. The tank is 48 in. by 18 in. by 15 in. and is brightened up every night with three 25 watt lamps in a reflector hood.

The answer to your problem is to increase the intensity of the light and keep it switched on for about ten hours a day. Three 60 watt lamps might do the trick but a 40 watt warm white fluorescent lamp would be better.

I placed a large piece of cork bark in my aquarium and after a few days a lot of the fishes died. By this time the water was quite brown. Do you think the dealer who sold me the bark should replace my dead fish?

You cannot hold a dealer responsible for your own thoughtless behaviour. Cork bark should be soaked in several changes of water before it is introduced into the aquarium. The discoloration of the water was brought about by excess acidity which led to the sudden demise of the fish.

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## COLDWATER QUERIES

by Arthur Boarder

I have a 24 by 12 by 12 inch tank which has been functioning well for some time. Recently I reset it with a number of fresh plants and now the water has gone white and I cannot clear it. What is the trouble?

It is possible that the white in the water is from *infusoria*. If a little of the water was placed under a microscope probably many tiny creatures would be seen moving around. It is almost certain that the water will clear in a few days as long as you do not feed the fishes. If not, you can try a little permanganate of potash. Such a small amount is necessary that you should dissolve a few crystals in water and add a little of the liquid to make the water a medium pink in colour. This will not harm the fish or plants and the colour will soon clear.

I intend to make a small pool in my lounge, to be about four-and-a-half by three feet and ten inches deep. I want the water to remain clear and wonder if I can use a filter. Also how could I illuminate it?

You may find that the water in the pool will keep fairly clear as it is not likely to get an excess of light. You say you do not want any plants, but I think some Hornwort, *Ceratophyllum demersum*, would do well as this plant grows without roots and does not resent dull light. There are lamps which can be inserted in the pool and you should get in touch with one of the larger firms advertising pond equipment. A filter could be used but this may not be necessary if you do not over-stock with fish nor over-feed.

Is it practical to make a fish pond in a low-lying area with clay sub-soil. Would it be watertight?

It is quite possible to make a garden pond in your area using only clay. The only snag is that the top spit would be porous and so you would have to save the best of the excavated clay and make a thick layer at the top. If this was done I see no reason why the pond should not be watertight. It is only near the top that you will have to be careful. No soil would be necessary at the base. Plant in plastic containers.

Can you give me some information on the American Sun Bass please?

There are several species of sun bass found in America. One of the most popular is the peacock-eyed sun fish. This species can grow to about seven inches long but in a tank about five inches is more usual. They can tolerate extremes of temperature and will be quite healthy in the same conditions as suit fancy goldfish. They feed better and thrive in a temperature of 70°F., but do not mind one of 55°F., as long as they are not suddenly placed in much cooler water than that to which they have been accustomed. They are carnivorous, like our native perch, but some can be trained to take flake foods. This is done by feeding with chopped garden worms and then adding a little flake food to the mass. This can then be increased in proportion so that eventually the fish will take the flake alone. Some species are difficult to breed in tanks, but some can even do so in a garden pond but such fish should be taken under cover for the winter. They can



be aggressive in a mixed tank and so it is better to keep them in a tank to themselves.

**I have a fantail goldfish which cannot swim properly. It floats to the surface as soon as it stops swimming. What can I do with it please?**

It appears to be suffering from some derangement of the swim-bladder. Some of the short bodied fancy goldfish are subject to this trouble. It may be that the fish was bred from a strain in which some of the fish had suffered from this complaint or it may be that the trouble is only temporary. You can try the following cure:—Place the fish in a shallow container, such as a plastic bowl, and only use enough water to cover the extended dorsal fin. Try to keep the water warmer than the fish had been used to. Do not feed whilst the fish is under treatment and it may recover.

**I have a garden pond lined with one of the plastic liners. I wish to extend the pond and wonder if there is anything I can use to join up a fresh piece of plastic liner?**

It is possible to effect a join with certain liners and it would be wise to contact the makers of your particular type to see if they can supply a suitable fixer. Without knowing the exact type I cannot say which cement would be best.

**One of my goldfish in a tank appears to be ill. It stays at the top of the water and its fins are ragged. It seems to have a form of fungus on the body. What is the cure?**

Your fish is in a bad way and may be too far gone to cure. You can try one of the advertised fungus cures or the salt treatment. Use a tablespoon of sea salt to each gallon of water and if there is no improvement after a couple of days, add the same amount of salt to the solution.

**My garden pond appears to be infested with small leeches. They are all over the water lilies and they completely destroy any fry hatched in the pond. How can I deal with them?**

It is not easy to clear a pond of leeches as they are very tough creatures and what might kill them if put in the water would also kill the fishes. If the pond is too badly infested it will have to be emptied and left to dry completely for a few days. Even if you could catch all the pests their eggs could remain in the pond to hatch out a fresh infestation. It is possible to trap many of them. Some flat stones could be lowered into the pond on string and if inspected in the mornings could have many leeches sticking to the under-surface. A piece of raw meat tied to string and lowered into the pond at night can also make an effective trap. Some fine mesh wire would have to surround the meat to prevent the fishes from eating it.

**I have a fair-sized pond well stocked with water plants and fishes. Recently I have lost a few goldfish. They do not show any signs of injury or disease. I have plenty of newts, frogs, snails and mussels in the pond. Why do the fish die?**

When fish die in a pond and show no outward signs of damage or disease it is reasonable to suppose that the state of the water is suspect. Lack of oxygen will soon kill goldfish and if there is anything decaying in the water many foul gases will be formed and the pond will be polluted. It is not always that all the fish die at once, often the larger fishes go first as they require more oxygen than smaller ones. You state that you have a dozen mussels in the pond. I wonder if you know that they are still alive. They will not live for long in a pond unless there is a good quantity of mud or mulm at the bottom in which they can move around and feed. If any mussel dies it will pollute the water as quickly as anything I know. You may have to empty your pond and catch any that are still alive. The newts can do little harm, except to eat the food you give to your fish, or eat any fry which may hatch. The frogs can harm a fish in the breeding season, when an unattached male can grasp and kill a sluggish goldfish.

**My children have brought home a quantity of perch spawn and I wonder if you can suggest how to feed the young ones?**

Perch spawn is laid in a type of ribbon formation. The fry should be treated as you would the fry of goldfish. *Infusoria* at first and then any kind of small live foods. These fish are carnivorous and the fry are not likely to take anything which does not move. Some aeration in the hatching tank would help to keep any food on the move. Tiny *daphnia* and mashed white worm could follow the *infusoria*; plenty of this can be formed by adding some Liquifry to the water as soon as any fry hatch.

**Several of my fish appear to be ill. They dash about and then lie exhausted on the bottom. They take gulps of air from the surface and open and shut their mouths rapidly as they move backwards. They show no outward signs of disease, so what do you think is the matter?**

The fish may have a parasitic infection or it may be that the water is not to their liking. Their actions indicate that the water may be in a dangerous state. Copper in the water or other minerals could be the cause of their trouble. Change all the water for fresh and make sure that the fresh water is not contaminated by copper. You say you have dissolved a block of salt and added one of the advertised chemical cures to the water. This is rather dangerous as one



does not know what the chemical is or what the "Cure" contains. You may be adding more salt, so that it can rise to a dangerous level. If the fish showed blood streaks on the body the trouble could be of parasitic origin and suitable cures would be called for.

**We have a tank with goldfish and a catfish but we cannot keep the goldfish for long, they soon die but the catfish lives. Why do the goldfish die?**

There may be several reasons why your goldfish die. The fact that the catfish survives may be that it is the culprit. These fish are carnivorous and should never be kept in a tank with goldfish as even if they cannot swallow them they may injure them or worry them. Goldfish should not die if their tank conditions are in order. Losses are usually due to foul water, an excess of minerals there or overfeeding. So many people just cannot resist feeding their fish every hour of the day and then when the water gets foul through decaying uneaten food the fish mouth at the surface for air. The owner thinks that the fish are hungry and give more food and so the conditions go from bad to worse.

**I intend making a garden pool and wonder if it is better to site it in sunlight or not? Also if I have a pump working could I run the water back through a sink with pebbles as a filter?**

If you site your pond in sunlight you can shade out some if necessary but if it is in the shade you can never get any sunlight into it. Plants can shade out any unnecessary light from the water. It is quite possible to include a filter sink in the return flow of water from a fall. You can have granulated charcoal with other fine filters and clean it out occasionally.

**I have a pond with a capacity of 400 gallons. I had thirty goldfish which went through the winter with only two losses. The water is green, what can I do to clear it?**

Any water exposed to the sunlight will soon turn green with *algae*. You may reduce the light to the pond by using more surface plants, such as water lilies. Also some duck weed is a fine plant for this purpose. You have rather overstocked your pond and this all tends to increase the possibility of *algae* forming. You may also have been giving too much food as this appears to make conditions in the water liable to encourage the formation of *algae*.

**There is a type of cat food which contains a small quantity of copper. Knowing how dangerous copper can be to fishes would it be safe to feed Koi with it?**

If there was only a trace of copper in the food it is

not likely to affect the fish. I suppose that there is a trace of copper and other minerals in many foods which we give our fishes. If your fish are in a pond there is less likely to be any danger to the fish as there might be if the fish are in a tank where the mineral content could gradually build up.

**I am considering making a series of three ponds joined together on a falling site. These would be connected and I want to have a pump to raise the water. Could I have windmill or should I have an electric pump?**

Your idea sounds all right but you must remember that if you have a windmill it can only work when there is a good strong wind. The most important time for a waterfall or fountain to operate is in the warm weather, and this is when there is not likely to be much wind. You will be safer with an electric pump; one of about a quarter horse-power would do. When constructing the lower pool make sure that it is of a sufficient depth so that when the pump is switched on it does not lower the water in that pool to a dangerous level.



A new lightweight fish aquarium which uses a frame made from simulated wood-effect structural foam plastics supplied by Belgrave Northwestern Industries Ltd., Bootle, Lancashire. Because of this, the tank is lighter in weight than any previous model, completely corrosion or rust-free in comparison with metal frame types and can be chosen in a frame colour to blend with the customer's own décor.

Known as Gem, the aquarium is designed, assembled and marketed by John Allen Aquariums Ltd., Bury St. Edmunds, with the plastic component production carried out by Plenco Tooling Limited also of Bury St. Edmunds.



# THE FRESHWATER FISHES OF THE SOLOMON ISLANDS

by *W. Noel Grey*

## Introduction

The Solomon Islands, due to their geographical position in the Indo-Pacific region, have a very rich and varied fauna, sharing many of the types of the Indian Ocean, the Western Pacific and Tropical Australia. Some of the fishes have attractive colours or peculiar shapes and attract interest, some are poisonous and should not be eaten and some can inflict painful and even fatal wounds.

The climate is equatorial, modified by the surrounding ocean, with little variation between islands. The shade temperature at midday averages at about 30°C with a high humidity level, but the evenings are cooler, especially in the South-East "season" when the temperature drops to an average of 22°C in the early morning.

There are no seasons as we know them, but in the first quarter of the year the North-West winds bring squalls and occasional cyclones. For the rest of the year, the South-East trade winds blow steadily, but mainly during the day and with not much force.

The islands lie in an area of volcanic activity and there are several extinct or dormant volcanoes, and some islands have hot springs.

## Conditions

The rainfall of places in the Solomons ranges from about 80 inches to 300 inches, depending on location which gives an overall average of 120 inches to 140 inches, and as most rivers are short and have a steep gradient, they are subject to rapid and heavy flooding. This gives rise to clear, fast flowing upper reaches with rocky beds and no plants to dirty, mud-filled estuaries during the rainy season, and virtually dry, bare upper reaches to clear, sluggish or stagnant estuaries during the dry season. With the changes of conditions applicable in a matter of hours the fishes can normally accommodate a wide variety of conditions and in the majority of cases can be acclimatised to aquarium conditions quite readily.

Due to the frequent drying out of the upper reaches of the rivers, there are relatively few truly freshwater fishes, the majority of the river fish being brackish water types living in areas subject to tidal influences.

The pH of the fresh water is nearly always on the alkaline side, the highest so far tested being 7.9. The only occasion when an acid reaction has been found was on the south coast of Guadalcanal at Lauvi Lagoon, when the pH read at 5.6. This lagoon is fed by streams and a few springs which run from the base of the acid, basalt rocks of south-east Guadalcanal.

Water temperatures vary quite considerably. In fast flowing, deep water which has passed through bush country, the temperature may be as low as 20°C, whereas in gently flowing or stagnant estuarine areas which are often open and shallow, the temperature may be well into the 30's. In the author's aquaria, which are kept in shade and sometimes aerated, the daily temperature range is between 26°C and 30°C.

## Methods Used in Catching Fish

All fish mentioned below have been caught by using one of three types of net.

The first is similar to a fine mesh landing net or daphnia net, on a long bamboo pole. The net is made from a plastic netting normally used as mosquito netting, with about one-tenth inch mesh. The net itself measures 60 cm. by 45 cm. by 30 cm. deep attached to a bamboo pole about 150 cm. long. This type is not used very often unless high river banks and narrow streams make it necessary. It is, however, useful for catching crayfish which are used as a food.

The second type is a much larger net but made from the same material, i.e., fine mesh mosquito netting. This measures approximately 150 cm. by 60 cm. by 150 cm. deep and is supported by a heavy wire frame. It is used more often than the others as it is easily wielded by hand and is large enough to be used as a kind of trawl. In the larger rivers it is used by hand to reach underneath the vegetation along the banks

where a great many fish congregate. Using it like this is determined by the depth of water of course as one has to be in the river at the time. It is used as a trawl in cases of small streams or in flood water when it is towed along the bed of the river by walking along the bank.

The third type is a throwing net with a larger mesh, commonly used by the Gilbertese for catching reef fish. It is made from nylon cord and has a mesh of about 2 cm., is circular in shape, approximately 300 cm. diameter, and is weighted around the edge. This one is normally used in the shallow and calm water of river estuaries where the larger fish are to be found. The net is thrown so that it spreads out into a circle before hitting the water, and as the mesh is fairly large, the

Abbreviations used in ray counts are given below. The order in which the descriptions appear do not relate to the order to which they belong, and sizes relate only to those specimens caught.

**Ray Counts**

Arabic Numerals (5): Soft rays which split into two or more branches.

Capital Roman Numerals (V): Stiff, unbranched rays in the form of spines.

Lower Case Roman Numerals (ii): Simple flexible rays, not branched, but too flexible to be regarded as spines.

Comma (,) : Incomplete separation into parts or continuation at even height.

Semicolon (;) : Complete separation into parts which



Location Map of Solomon Islands

net sinks before the fish have time to swim away. This is theoretically true but in practice it has been found that in water more than 1 metre deep the fish can normally escape. By trial and error it has been found to be more profitable to throw some coconut ants on to the surface of the water first of all and then cast the net when the fish come up to take them as, if the fish are on the surface, there is less likelihood of their being able to escape.

**The Fishes**

The following descriptions are based on the author's observations and records. The scientific names given are based upon Munro's "The Fishes of New Guinea."

have no connection, even basally.

- A: Anal fin.
- D: Dorsal fin.
- P: Pectoral fin.
- V: Ventral or Pelvic fin.

All the fishes mentioned below have been acclimatised to fresh water over a period of up to six months and are now living in local tapwater.

1. *Monodactylus argenteus* (Linnaeus), the Silver Batfish or Malayan Angel. D. VII, 29. A. III, 28. V. I, 5. P. ii, 15.

Brilliant silver all over although juveniles can become brownish when frightened. Two almost vertical dark lines through head, the first through the eye and the



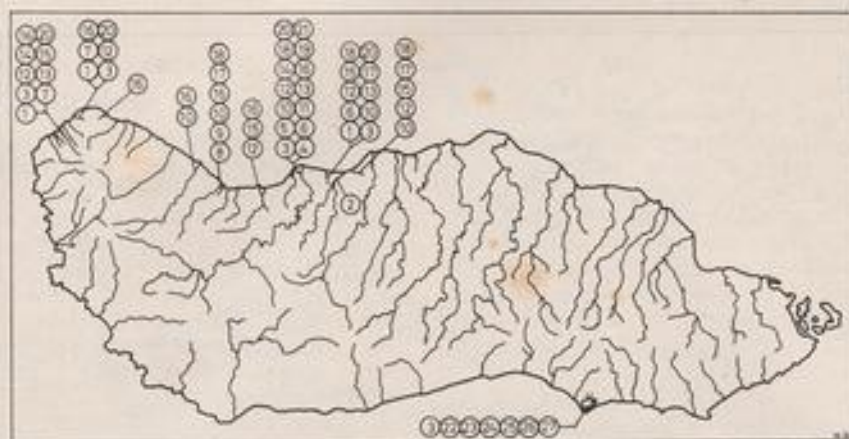
second through the base of the pectoral fin and the edge of the operculum. The dorsal and anal fins are red at the tips changing to yellow and then silver at the base.

This fish has proved fairly difficult to catch due to its habit of congregating around sunken logs and debris which foul the nets. It also takes a little longer to acclimatise to fresh water than some other species. As with most fish, it is easier to acclimatise a juvenile rather than an adult which has lived all its life in brackish water, and for this reason most of the fish kept in the author's aquaria are purposely small (3 in.).

Found in sluggish river estuaries and stagnant pools but not as yet in fast flowing water. Commonly seen with Scats, Archers and Estuarine Glassfish. The

colours vary and may be pink, yellow or brownish green. Differentiated from other Scats by having eleven dorsal spines instead of twelve, the fifth being the longest.

This fish has been fairly easy to catch, certainly in the juvenile stage, once it has been found. Inhabits stagnant or semi-stagnant pools which may be breached at high tide. Prefers the shady parts of the water and is found in similar situations to *Monodactylus*. Not very often seen unless disturbed. Readily adaptable to freshwater conditions and capable of living in the higher temperature ranges. (The specimens caught were often taken from shallow pools with a temperature of 32°C.)



- |                                |                                 |                                      |
|--------------------------------|---------------------------------|--------------------------------------|
| ① <i>Ambassis macracanthus</i> | ⑩ <i>Doryichthys reizi</i>      | ⑲ <i>Signathus vermiculatus</i>      |
| ② <i>Ambassis interruptus</i>  | ⑪ <i>Scatophagus argus</i>      | ⑳ <i>Chanes chanes</i>               |
| ③ <i>Apogon hyalosoma</i>      | ⑫ <i>Monodactylus argenteus</i> | ㉑ <i>Amphitherapon caudavittatus</i> |
| ④ <i>Arothron reticularis</i>  | ⑬ <i>Therapon jarbua</i>        | ㉒ <i>Charax ignobilis</i>            |
| ⑤ <i>Arothron immaculatus</i>  | ⑭ <i>Toxotes jaculator</i>      | ㉓ <i>Megalops cyprinoides</i>        |
| ⑥ <i>Cheilododon patoca</i>    | ⑮ <i>Kuhlia marginata</i>       | ㉔ <i>Lutjanus argentimaculatus</i>   |
| ⑦ <i>Oostethus brachyurus</i>  | ⑯ <i>Ophiocara aporos</i>       | ㉕ <i>Anguilla marmorata</i>          |
| ⑧ <i>Oostethus manadensis</i>  | ⑰ <i>Hypselectris guentheri</i> |                                      |
| ⑨ <i>Bombonia spicifer</i>     | ⑱ <i>Mesopristes argenteus</i>  |                                      |
| ⓪ <i>Bombonia djarong</i>      | ㉖ <i>Rhynchonamphus georgi</i>  |                                      |

Location of fishes caught on Guadalcanal

largest specimen caught was 5 inches but larger ones have been seen. Does not appear to be very common, but when found there are usually up to six in a group. Likes shaded water with plenty of vegetation or submerged wood. Accepts all foods offered.

Indigenous names: Soe Soe and Folo Abe.

2. *Scatophagus argus* (Linnaeus), the Spotted Scat or Butterfish. D. XI, 14. A. IV, 13-14. V. I, 5. P. ii, 15.

Greyish-green body lightening to a silvery yellow belly. Many brownish spots which unite to form wide vertical bands in juveniles. Along the back the interspaces between the spots are red to orange-yellow. Fin

Found in association with Estuarine Glassfish, *Monodactylus*, Toadfish and Spinefeet. The largest specimen caught measured 15 cm., but bigger ones have been seen in the sea. Likes plenty of algae. None have been taken from clear water, but accepts dried foods.

These fish, together with the *Monodactylus*, are gregarious in nature but occasionally there is a rogue amongst them which can become a bad fin-nipper and care should be taken when introducing other types of fish into the aquarium.

Indigenous names: Veche and Mamaloagu.

3. *Therapon jarbua* (Forsskal), the Crescent Perch or

Doctor Fish. D. XII, 10. A. III, 8. V. I,4. P. 13.

Silvery body all over but back and upper half with greenish tinge. Three longitudinally concave dark bands. The upper one joins at the front of the spiny dorsal and the central base of the soft dorsal, the middle one joins at the nape and at the posterior base of the soft dorsal, and the lower one joins at the caudal peduncle and above the eye. The bands may be clearly defined or not, depending on size, condition and mood of the fish. The caudal fin has two converging oblique dark bands and black tips. There are spines on the operculum and care should be taken when handling this fish.

Inhabits fast flowing river estuaries and is therefore readily adaptable to freshwater conditions. It has proved fairly easy to catch under ideal conditions due to its habit of swimming in shoals. It is capable of great speed which can prove annoying in deeper water and it can burrow quickly in soft sand. Not really a community fish as it is always active and can be troublesome with smaller, more sluggish tank mates if not fed enough. Somewhat similar to the Cichlid family in that it will sift through the gravel, uprooting plants on the way.

Prefers clean aerated water and tends to go pale and sluggish under other conditions. The largest specimen so far caught measured 15 cm., but again, larger ones have been seen in the sea. Prefers fresh and live foods but will soon learn to accept dried ones.

Found in association with Flagtails, Silver Grunters, Toadfish and Pipefish.

Indigenous names: Kaboa, Reka and Kabang.

4. *Ambassis macracanthus* (Bleeker), the Estuarine Glassfish or Perchlet. D. I,VI,I,9-10. A. III, 9-10. V. I,5. P.ii,11.

Silvery yellow body with pearly reflections when seen with side light. Translucent with skeleton visible. Horizontal silver line running through centre of body. The membrane between the second and third spine of the first dorsal is black. The third spine of the anal fin is the longest. The horizontal silvery line should not be confused with the lateral line which is above it and follows the curve of the fish's back. In this species the lateral line is continuous.

This fish is found in slow moving or stagnant estuaries and has proved very easy to catch due to its habit of congregating in large shoals. Quite difficult to keep in aquaria, although readily adaptable to fresh water, as it is a very delicate fish. Great care should be taken when handling as there is a mucus secretion on the surface of the body which is easily removed, the body then being prone to fungus infection. Many spines on operculum which can get entangled in netting when transferring from one place to another. Flesh soft and easily bruised.

A peaceful species although rather timid. Easily frightened, when it may dash madly around the

aquarium colliding with the sides, until it has become accustomed to its surroundings. Spawns in nature in thick carpets of fine algae.

Found in association with Scats, *Monodactylus*, Archers and Pipefish.

Accepts all foods given but seems to prefer brine shrimp even though in possession of a large mouth.

Indigenous names: Bila and Bucho.

5. *Ambassis interruptus* (Bleeker), the Long-Spined Glassfish. D. I,VI,I,10. A. III,10. V. I,5. P. ii, 12.

Silvery body with pearly reflections. Almost transparent with skeleton easily visible. Horizontal silvery line mid-laterally. The third anal spine is just longer than the second. The second dorsal spine is pinkish and is the longest, being almost as long as the body is deep. The membrane between the second and third dorsal spines is blackish, as is the membrane after the ventral spine. The membrane between the second and third anal spine, and also after the ventral spine, is white at the tip. The caudal fin is pinkish or yellowish.

Not as common as *Ambassis macracanthus*, but just as easy to catch when found. The long spiny dorsal, together with a slightly narrower body, make the two species easily distinguishable. Only a few specimens have been caught and these too have proved difficult to keep. These were found in stagnant warmer water and it is suspected that this may have a bearing upon the optimum conditions, together with the fact that only mature, 8 cm., specimens were caught. An interesting find was made when collecting this fish. On counting the rays of the dorsal fin, one specimen was found to have I,VII,I,9 instead of the usual I,VI,I,9 or 10. The extra spine occurred at the posterior end of the spiny portion and makes the fin look noticeably wider than normal. This particular fish is still alive and it has not been possible to do any other counts so it is not known if there are any other differences.

A peaceful fish but timid and retiring at first but gets used to the keeper quite quickly. Accepts all foods given.

Found with small Scats, *Monodactylus*, Pipefish and Rainbow Prigi.

Indigenous names: Bila and Gsumangga.

A possible third species of Glassfish has been found, namely *Ambassis macleayi* (Castelnau), but the available data has not been sufficient to positively identify it. The lateral line in this case is not continuous, being broken below the dorsal fin.

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ANSWER TO WHAT ARE THEY?

## SHUBUNKINS

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# BREEDING AN UNIDENTIFIED TANGANYIKA CICHLID

by A. & M. Beard

AT THE BEGINNING of January this year we purchased a pair of *Lamprologus teleupi*—at least, that is what the dealer had named them.

They were about 2 in. long, with no distinguishing sex characteristics. One is a pinky yellow on the top half of its body, the underside is silvery with metallic lilac overcasts, the dorsal fin is pale blue, pectoral and caudals have a tinge of yellow, the anal fin has one blue band and two bright yellow egg-spots, ventral fins are edged with pale blue and black.

The other fish is very plain in colour, being dull greyish brown on the body and translucent on the fins. The ventrals are edged with pale blue, and the anal has two yellow egg-spots.

They were placed in a well-planted 36 in. by 12 in. by 15 in. tank, along with several other dwarf cichlids, the set-up having plenty of caves for fish to hide in.

Both fish settled down and started to feed; the diet consisted of Beefheart (raw) mixed with spinach, flake food, yeastvite tablets, and *tubifex* on its own occasionally.

After some five weeks in the tank the fish were seen to be circling one of the flat rocks while the more colourful of the two kept all the other fish away. They kept this circling up for some two hours. During this time the other one developed a black band along the body.

After the mating the male took some food, the female did not. She then hid in the rocks with the male hovering above her. When the female emerged, her lower jaw was distended and she appeared to be chewing.

The next day the male was seen chasing her around the tank. A divider was put in the tank but appeared to distress both fish, so it was removed after a short time. After the divider had been removed both fish swam around together; the female again developed black bands on her body, the male started chasing her

until she hid in the rocks, and he took up a defensive position above her.

Both fish were removed from the 36 in. tank and put in a 30 in. divided tank; this allowed the female to swim without being harassed; no plants were present in this tank which made observation much easier.

On the 17th March three fry were seen on the bottom of the tank, all about  $\frac{1}{2}$  in. long (29 days since the mating took place). The female kept moving them around the tank. The fry were first seen at 6.30 p.m. At 9 p.m. two of them were swimming about 1 in. above the gravel. At 11 p.m. there was no sign of any fry. On the following day four fry were seen, all about  $\frac{1}{2}$  in. long. Brine shrimp was put into the tank but this was ignored. (Now, what do you feed them on?)

The female had been left in with the fry so we started to feed her beefheart (after 29 days without eating she was very thin and haggard). She took it then chewed it and swam to where the fry were. They were placed singly about the tank. She then expelled some near each of the fry and this continued to be the feeding pattern for the next two weeks, until they learnt to swim out and take food for themselves.

When they were about four weeks old the male found a way round the divider. After his sortie into her half of the tank we could only find two fry. These were removed into a 18 in. community tank where they continue to thrive and are now nearly 1 in. long.

We still do not know what these fish are, only what they are not!

A second spawning took place which we were able to watch in close detail. This occurred on 23rd April. We went to feed them at 11.30 p.m. and found that the female would not take any food (this was unusual as she never refuses any type of food). Her mouth was slightly distended so we put the male in with her. They both swam over a piece of slate and the female

*continued on page 187*

# From a Naturalist's Notebook

by Eric Hardy

MANY CHANGES have taken place in the waterlife of the great Rift Valley of the Holy Land since I studied its fishes and aquatic plants, from Lake Huleh down the Jordan to the Dead Sea, and later made it the subject of my address to the 1949 general assembly of the Federation of Northern Aquarium Societies, at Manchester's Belle Vue zoological gardens.

Most important has been the drainage of the 15,000 acres papyrus swamp of Lake Huleh, the Biblical Waters of Merom, to control malarial mosquitoes, excepting for a 750 acres reserve. This has so reduced the Jordan's inflow to Lake Kinereth, the Sea of Galilee, as to increase its chemical concentrations from nitrates and phosphate fertilizers off farmland, and the pollution from Tiberias sewage and raw sewage from settlements on its shores. Like Erie in North America, Galilee, historic home of Tilapia comb-fish, of barbel and freshwater terrapins, *Emys orbiculata* and *Clemmys rivulata*, is dying. Severe eutrophication is being caused by this, and by nutrients and bacteria from its local carp-breeding ponds. The oxygen content will be at a dangerously low level in five years time. The Jordan also brings acid peat-washing from the reclaimed Huleh land.

A goldfish discrimination learning tank is part of the equipment in the home experimental kit for people taking part in the Open University course on Biological Bases of Behaviour, running from January to November, 1973, at a fee of £80. I hope that they don't lose any goldfish. London Natural History Society thinks that there are more escaped goldfish in local waters than have been recorded, as these revert to the duller wild colour and are mistaken for crucian carp. Their latest report notes them in the Thames at Barking, Blackwall Point and Brunswick Wharf, in the Surrey Commercial Docks, Perivale Wood Pond, in Pymmes Brook, from Tottenham to Edmonton, and in the River Roding at Woodford Bridge. Hackney has a colony of guppy at the power-station outfall on the Lea.

Fish life is increasing in the central London area of the Thames with improved pollution control. Bleak, roach and 3-spined sticklebacks now inhabit the improved River Lea from Hertford to its junction with the Thames. Lampreys as well as herring and shad were taken from the Thames at West Thurrock last year, but there is no proof of the 10 lb. salmon claimed at Hambleton Weir, or of the sea-trout reputed to have reached Teddington Lock. Carp are increasing

between Richmond and Teddington. Roach and bronze bream most commonly hybridize. Even tench occur in fast water like the Bedfordshire Ouse, though nominally still water fish, while barbel, usually river fish, occur in still water. Roach, commonest of the larger fish, taken from park lakes, have been tagged and released in Thames and Lea. Three-spined sticklebacks occupy even severely polluted water.

With further reference to crayfish distribution, these river crustaceans occur also in the Upper Lea at Hertford, the River Rib at Wadesmill near Ware (Herts.), the River Grade near Watford and the River Cray in Kent.

Vigorous efforts made this year to breed natterjack toads in a friend's garden at Hillside (Southport) for liberation at pools on the dunes where the lowering water-table threatens the future of their major British breeding haunt, are meeting with some success, if enough waters can be found. Spawning was found in artificial golf-course watering ponds, former wartime bomb-craters now permanent pools at Ainsdale, and a large temporary pool behind a new sea-wall at Formby Point; but not at any of the new plastic pools formed in Ainsdale nature-reserve. Dealers collected over 100 for traders in Surrey and Manchester. In April, some 250 common toads were noisily dominating the small Cheshire natterjack colony on West Kirby shore salt-marsh. Liverpool Museum tell me that they are co-operating in a plan to transplant to the reserve the surplus tadpoles from the sea-wall pool.

Leading a meeting of naturalists around Grizedale Forest on old Hawkshead Moor in Lake Lancashire in April, I drew attention with surprise to a mass of frogs spawn glistening in the long grass of a path through the pinewoods near their highest point, and some 30 yards or more from a small peaty pool. The forest is not subject to vandalism or roving youths so that it could hardly have been left there by other than spawning frogs. The long grass would have been damp from frequent rains.

Following three sunny summers, adders appeared more numerous than usual this spring on Whixall Moss near Whitchurch in north Shropshire, and the Worlds End-Minera moor in Denbighshire. Mild winters tend to reduce their numbers, as they reduce many insects, by premature emergence.

Following research at its Manchester (Washington) marine aquaculture station, the U.S. fisheries depart-



ment has started the world's largest commercial salmon-farm, the saltwater rearing of coho and chinook Pacific salmon in floating plastic pens at Clam Bay, Puget Sound, near Seattle. After incubating at 10-12°C and hatching 400,000 out of 700,000 coho eggs purchased from State spawning beds, 10,000 fingerlings were floated in the Sound, in plastic cages, raising fish of 8 to 12 oz. They also obtained 464,000 autumn chinook fry and fed them in a pond. In Japan the culturing of yellowtail fingerlings to marketable size has assumed large proportions, for these mackerel-like Carangidae fish (*Seriola dorsalis*) are one of the world's fastest growing fish growing from 2 cm. to over 40 cm. in 100-120 days in warm water. The fry which they hatch are raised in embankmented ponds on a recipe of frozen scrap-fish. The Japanese are also increasing their artificial propagation of native land-locked red salmon or "kokanee," and of Alaska reds, at the Nishibetsu river (Hokkaido) hatchery.

When we dug out a swamp reed-bed at the Dee steelworks bird-ringing station, to create a large expanse of open mud to attract waders, we found this brackish marsh, created originally by pumping in the tidal water, swarming with spiders. They included the brightly coloured male *Pachygnatha clercki*, with a broad white mark down its side, a common spider at the roots of rushes in watery places, which does not build webs. There were also the common *Pirata piraticus* swarming also among the reeds in standing water, the black-eyed common *Clubiona neglecta*, and *C. phragmitis* which is common in beds of reed-mace (*Typha*) as well as of reed.

The true swamp or raft-spider *Dobsonia fimbriatus* is scarce in the Northwest. It occurs at Bleham

Bog which I visited recently near Hawkshead in Lake Lancashire and is especially noticeable on Shropshire's Whixall Moss, which I visit near Whitchurch. Emerging from hibernation in the damp vegetation in April, this semi-aquatic, hairy-brown spider is about an inch long and marked with yellow. Living along the banks of the drainage dykes there and on the East Anglian fens, this relative of the wolf-spiders is a creature of still waters. It sits on a waterside leaf or the edge of the peat with its long front legs stretched out on the surface of the water, to feel the first vibrations of any struggling insect fallen on to it. Then it runs and seizes its prey. The smaller and less common male swamp-spider uses its delicate sense of touch to court the female. She lays her eggs in a white cup of silk, carrying them around slung between her hind legs for two or three weeks until they are nearly ready to hatch. Then she attaches them to a plant and sits on guard nearby.

She may produce two or more egg-sacs in a summer, each with 78 to 136 eggs, successively declining in number. By the end of summer, when she dies, her mate is already dead. Her young survive the winter to carry on the community. Disturbed at her waterside vigil, she escapes by running down the stem below water. Whixall Moss is one of its best haunts outside The Broads of East Anglia.

Another uncommon spider, *Tetragnatha nigrita*, also inhabiting Whixall Moss, belongs to a genus associated with reeds and rushes near water. Its long, slim, tapering body is almost black and it has long legs, excepting for one pair used to hold on to narrow plant-stems. The female fastens her egg-sac to reeds near her web.

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## THE CASCADURA

by Dennis King

AFTER MANAGING to set my fish-house to rights I decide to try breeding egg-layers as my livebearers were doing well. I had one pair of *Hoplosternon thoracatum* which seemed to get on well and decided I would try with these. I took the fish from a tank at 70°F. and put them in a tank at 76°F. In this tank I suspended a lid from a maggot container just on the water level. Next morning, before going to work, I went to look in the fish-house and beheld an enormous bubble-nest. There were no eggs at this time, but that evening when I arrived home my son informed me that there were 'loads' there. I removed the eggs from the lid and put them into a container with one drop of methylene blue and slight aeration. After two days these eggs fungused.

I fed the fish well and left them at 76°F. After 19 days another nest was blown and another batch of eggs were found on the lid. These eggs are

an amber colour and are very sticky and hard to the touch. This time I took the parents from the tank and left the eggs where they were.

The eggs were seen on May 9th; they eyed up on May 10th and began to hatch on May 11th and 12th.

The young are now about one month old and are about  $\frac{1}{4}$  in long. They are very well marked and are very lively fish, never seeming to stop still for very long. I should think there are about 200 young that hatched out of about 300 eggs. This, of course, is only a rough estimate as they would never stay still long enough for anyone to count them.

When first hatched I fed them on brine shrimp but now they are taking chopped *tubefix* and fine *daphnia*. The next food I shall get them on is chopped earth worms and then I shall know there will be no stopping them.



Water forget-me-not

*Nymphaea odorata*

Marsh marigold

## LORE, LEGEND AND HISTORY FROM THE GARDEN POOL

by Geoffrey R. Nicolle

THERE CAN BE few garden occupations more pleasant than contemplating an attractive pool from a comfortable chair. Discovering the lore and legend of its plants has heightened this interest in my water garden. Perhaps it may also add a little to the appreciation of other garden pools. A water lily, the sacred lotus, was the most revered flower of the Ancient World and as such abounds in lore and legend. My concern, however, has been with the plants I have grown in or around an ordinary pond.

A North American water lily (*Nymphaea odorata*), well known to pool enthusiasts, has a Red Indian

legend to explain its origin. An Indian maiden named Oseetah, though already promised in marriage to another youth, loved the brave Wayotah. One day Wayotah found Oseetah sitting near a cliff top overlooking a lake. Overcome by his passion he tried to make love to her. She turned away and slipping from his grasp fell over the edge of the cliff. Before Wayotah could save her she had disappeared below the surface of the lake. Next morning at the place where Oseetah had drowned, a flower bloomed; the first ever to grow upon water. Its white petals and sweet scent showed Oseetah's purity, while the





Royal fern

golden stamens revealed the love that had burned in her heart. Unlike our own wild, white water lily, *Nymphaea odorata* is well suited to life in the average garden pool. It is also the parent of a number of attractive hybrids.

Another scented pond plant is *Acorus calamus*, the Sweet Flag. This marginal plant has fragrant leaves and roots. It was a favourite herb for strewing upon the floors of church, castle and manor house in the pre-carpet era. The oil of the crushed root is said to have been the chief ingredient of the oil used in Biblical times for anointing Hebrew kings. More recently chewing the root was believed to cure both toothache and indigestion.

According to its scientific name, Yellow Flag is

the false acorus, but in heraldry it is the fleur de lys. *Iris pseudacorus* first became associated with French royalty during the sixth century. Clovis, King of the Franks, was trapped with his army near the town later known as Cologne. A much larger army of Goths forced Clovis back until his escape was cut off by the River Rhine. All appeared lost but the alert king noticed yellow irises growing far out into the river. Knowing the flag to be a plant of shallow water, he guessed that the river at that point could be forded. Carefully following the track marked by the Irises, Clovis and his army escaped to safety. To commemorate the occasion the king adopted the yellow flag as his emblem.

Five hundred years later Louis VII of France revived the iris as the Royal device when he joined the Second Crusade. The flower became known as the fleur-de-Louis or later fleur-de-lys. The yellow flag is rather a rampant grower for the small pool. It has two attractive varieties in *Iris pseudacorus bastardii* which has primrose coloured flowers, and *Iris pseudacorus variegata* which has leaves striped with yellow.

Another golden pondside flower is the Marsh Marigold (*Caltha palustris*). This plant blooms at the time of the Feast of the Annunciation and is thus called Marygold or locally Maryblobs. The common Marsh Marigold and its double form add a welcome splash of spring colour to the water garden, but the most interesting *caltha* is probably *Caltha polysepala*. This is a striking plant with much larger flower cups than the British wild plant. A hundred or so years ago this plant is said to have been grown only in the gardens of the Vatican. The story is told that the Pope himself forbade the removal of any of these plants from the papal ponds. A gardener named Sir Thomas Hanbury, however, visited the Vatican gardens with a group of English ladies. While the ladies were distracted their guide Sir Thomas hooked out a root of the *Caltha* with his umbrella, in the folds of which he then concealed it. Whether this is the true story of how *Caltha polysepala* first came to Britain or not, it is fortunate that this attractive plant is now freely obtainable.

I have never visited the Vatican gardens, but it would be appropriate if the water gardens grew Reedmace (*Typha latifolia*). When Christ was mocked before the crucifixion, the soldiers put a reed in his right hand to serve as a sceptre and "smote Him on the head with it". Tradition has established that this reed was the *Typha* which thus came to be known as reed-mace. Although it is commonly called bulrush this is not the plant associated with the infant Moses. The rush basket in which he was hidden was probably made from papyrus, which was believed to give magical protection from the Nile crocodiles. *Cyperus papyrus* is not hardy out of doors

the sacred lotus, was the most revered flower of the Ancient World and as such abounds in lore and legend. My concern, however, has been with the plants I have grown in or around an ordinary pond.

A North American water lily (*Nymphaea odorata*), well known to pool enthusiasts, has a Red Indian

from the group that lived on the edge of the water. Wayotah could save her she had disappeared below the surface of the lake. Next morning at the place where Osetah had drowned, a flower bloomed; the first ever to grow upon water. Its white petals and sweet scent showed Osetah's purity, while the





in Britain.

For the garden pool too small for the wide spreading *Typha latifolia*, the dwarf *Typha minima* is an excellent marginal plant.

The forget-me-not is one of the few flowers to have been given its name by a legend. There are a number of forget-me-not stories but the most popular sets the naming in Medieval times and clearly concerns the water forget-me-not (*Myosotis palustris*). One evening two lovers were strolling alongside a river. The lady admired a cluster of blue flowers growing at the edge of an island in midstream. The knight chivalrously dived into the water and swam out to pick them for her. He had almost reached the bank on his return when he was seized with cramp. He managed to throw the flowers to the lady before being swept away. As he disappeared without trace over a weir, he managed to cry out to his lover, "Forget me not". From that time the lady wore the blue flowers in her hair and called them the name everyone soon knew—her forget-me-nots.

As gardeners have become more interested in the form and foliage of plants, ferns have regained some of their Victoria popularity. There can be no place in the garden more suitable for the growing of most ferns than at the waterside. During the Middle Ages all ferns were considered to be lucky plants and were associated with fairies and fairyland. As ferns produce no flowers it was thought that they must grow from invisible seed. The Doctrine of Signatures, which suggested that the shape or form of a plant gave a clue to its use as a medicine, dictated that invisible seed could make men invisible. To ensure the collection of fern seed a prescribed ritual had to be strictly followed. Twelve pewter plates must be stacked beneath the fern on St. John's Eve. The invisible seed could pass through eleven of the plates but would be caught upon the twelfth. St. John's Eve was specified as the time for the collection of fern seed because it was believed to ripen and fall only at twelve o'clock on Midsummer night. This was thought to be the precise anniversary of the

birth of John the Baptist. Even the suggested ritual did not ensure success as fairies still had the power to spirit the seed away if so minded. On the other hand, according to an old German story, the use of pewter plates does not appear to have been essential. A farmer returned home on St. John's Night after an unsuccessful search for a lost horse. When, after sitting in his usual chair, he told his wife that the animal could not be found, she reacted most strangely. He asked her what was wrong and she became hysterical. When he took off his shoes the wife realised that her husband was in the room. Fern seed had somehow fallen into a shoe and made him invisible.

The finest fern for the waterside is the Royal or Flowering Fern (*Osmunda regalis*). It does not flower, of course, but the spores are born on upright flower-like fronds which give this plant its inappropriate name. The name Royal presumably expresses its superiority over other ferns. Another name for this fern, Herb St. Christopher, derives from its standing by the water like the ferryman saint, and commemorates his carrying the Infant Christ across the water. The scientific and another local name, Osmund the Waterman, associate this fern with a Scottish legend. Osmund was a waterman who lived on the banks of Loch Fyne. Hearing that Danish pirates had landed nearby, he rowed his wife and family out to a small island in the loch. As he proved useful to them in helping the raiders across the loch, Osmund was safe. His wife and children escaped harm only because they were able to hide amongst the fronds of the fern which covered the island. It was Osmund's daughter who is said to have given this fern her father's name. Should it grow at your pondside, try cutting through one of the stems. The white centre should show the shape of the heart of Osmund the Waterman.

Should any reader know of legend or lore concerning other pond plants or indeed plants from any other part of the garden, I would be most interested to learn about them and add the stories to my collection.



## THE BRITISH AQUARISTS' FESTIVAL,

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## *Platysaurus minor*

by H. G. B. Gilpin

I HAVE ONLY KEPT a single specimen of this handsome little lizard. Native to S. Africa and commonly known as the Red-tailed Rock Lizard, the species has rarely come my way, so that when a chance to acquire one arose I hastened to take advantage of the opportunity.

It arrived, safely packed in soft moss in a canvas bag, a form of transport I have always found satisfactory for lizards. Although active enough, it seemed in rather poor condition, an impression heightened by the extreme flatness and relatively considerable width of these animals.

Red-tailed Rock Lizards are beautiful little creatures. Mine was five and a half inches long from its nose to the tip of its slender tail, which equalled the combined head and body length. Its head, narrow in comparison with the width of its body,

was sharply pointed and the eyes slightly protruberant. The width and shallowness of the bodies of these animals adapts them admirably for life amongst bare, rocky surroundings, enabling them to take refuge from their enemies in crevices and fissures so narrow as to baffle further pursuit.

In colour my lizard was particularly attractive. The dark brown dorsal surface was relieved by a lighter central line. The throat, a vivid blue, matched the bright blue areas on the insides of the legs, contrasting with the mottled brown of their outer surfaces. The flanks and tail were an ostentatious orange-red. One would have thought that this colourful combination of hues would have made this lizard sufficiently conspicuous to attract the attention of any prowling predator in search of a meal. In actual fact, however,

when startled, the lizard, in the absence of a convenient retreat, pressed itself tightly to the ground, hiding the revealing patches of bright blue. One could easily imagine how well the brown and orange areas still exposed would merge with the surfaces of sun drenched rocks.

On arrival, the lizard was placed in a glass-sided, angle iron tank, 32 ins.  $\times$  14 ins.  $\times$  17 ins. high, equipped with a raised metal cover carrying slots for two electric light bulbs. By varying the wattage of the bulbs—two of 25 watts in summer, replacing one or both with 40 watt bulbs in cold weather—a steady temperature of 75°F. was maintained. This temperature appeared to suit the animal very well.

The floor of the tank was covered with two inches of fine gravel. A number of large stones was scattered around, some overlapping and some piled into small heaps, to provide niches and crevices into which the animal could retreat when so inclined. At first it used these hiding places with some frequency, vanishing into incredibly small gaps with surprising ease. It soon became tame, however, and ignored the presence of humans outside its quarters, only disappearing if a hand was introduced and brought too close to it. Most of the time it spent in the open, basking in the heat of the electric light bulbs with intermittent spells of activity when it scampered over and around the various obstacles, moving with considerable speed.

An essential feature of the vivarium was a shallow vessel of water. Experience over many years has suggested that newly acquired lizards, at least those of such species as will drink from a container or will submerge parts of their bodies in it, is a supply of water. This seems to be particularly true of lizards accustomed to a dry environment and which probably absorb water in the form of dew through the skin. Such lizards often become dehydrated for one reason or another during the time, which may amount to several weeks, between capture and their arrival in one's vivarium. In these cases immediate access to water is more important than an opportunity to feed. Indeed, some show no inclination to feed until the water content of their bodies has been restored to normal.

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*continued from page 180*

mouthed the anal fin of the male. She then laid two bright yellow eggs about  $\frac{1}{4}$  in. diameter on the slate; she picked them up in her mouth and then mouthed the anal fin of the male again. During this time the male put on a display of quivering, every fin rigid and his eyes nearly bulging out.

This continued for some two hours and during this time only four eggs were seen to be laid, but the mouthing of the male's anal fin continued practically without a break.

I invariably keep newly acquired lizards under fairly close observation until I am satisfied they have settled down and have started to take nourishment. On this occasion I was relieved to see the *Platysaurus* drinking in less than half an hour. Although supplied with plenty of small locust hoppers, blow-fly maggots and mealworms, it was slower to take food and it was not until it had been in my possession for almost a fortnight that I saw it attack and eat a maggot. Having made the initial attempt, it followed the usual pattern with these animals and fed readily on all three forms of food provided.

If the species as a whole behaves similarly to my specimen, *Platysaurus* makes a good community animal. When it was first introduced to the vivarium, it found itself in the company of several wall lizards, *Lacerta sicula*, and a large grey Gecko, *Tarentola mauritanica*. The latter animal, inclined to be aggressive towards adult members of its own species, took no notice of the other inmates, neither did they disagree amongst themselves. This state of amity continued even when the wall lizards came into breeding condition and deposited several eggs on the gravel.

I imagine the Red-tailed Rock Lizard is reasonably long-lived in confinement. Mine survived for two years in perfect health and only succumbed then as a result of an accident. At the time I was rather short of accommodation and placed two young home-bred Ocellated Skinks in the vivarium with the *Platysaurus* and its companions. I thought the skinks, bulkier but scarcely as long as the wall lizards, were small enough to ensure the safety of the others. All went well for a few weeks and then the Rock Lizard was found to have lost a foreleg. This appeared to have been bitten off close to the shoulder. On balance, it seemed one of the skinks was responsible and after their removal no further damage was suffered by the remaining lizards. It showed no signs of being inconvenienced by the loss of a limb and moved around almost as freely as it had done prior to the injury. However, it is probable that more harm was done than the behaviour of the Rock Lizard indicated and some three weeks later it died.

After two hours she lost interest and swam off to hide in a cave. The male was returned to his half of the tank. The female has not eaten since, so we now await results.

Water conditions during both of these spawnings was: temperature 72-76°F; pH 7.1; DH4 (German scale).

The second lot of fry are now free swimming at about  $\frac{1}{4}$  in. long. They feed on finely grated beef-heart. Only three have been seen.

The incubation period was 25 days this time, but the temperature had been raised to 80°F.





# *Barbus arulius*

by Jack Hems

THIS BEAUTIFUL BARB hails from south-east India. It attains a length of about 5 in. in the aquarium but probably grows larger in the wild. In common with the general run of barbs, it is not quarrelsome and gets on well with other tropicals of about its own size.

For the first few months of their lives, both sexes of *B. arulius* are about as alike as peas in a pod, but at nine months, if not before, the dark rays of the dorsal fin of the male start to grow away from the membrane. These feathery extensions sweep back over the hind part of the body in a graceful curve. In course of time, too, the caudal, anal and ventral fins of the male become suffused with red. Thus telling a male from a female (in well-grown fish) is no problem at all.

The general colour of both sexes shades from olive-brown on the back to silvery white on the middle sides and underparts. A greenish sheen shimmers between the head and the tail. Four black bars adorn the sides. A black saddle marking is present on the back. There are green reflections in the iris of the eye and a green spot adds brightness to the gill-covers. The body colours are more pronounced in old fish than in young, and the fins of the female are hyaline.

*B. arulius* is always on the go and frequents—nay, dashes about—in all levels of the water. It is also an avid eater of aquatic vegetation. Naturally, these two characteristics go against it as a species ideally suited to a decorative tank. For apart from its plant-eating propensities, its ceaseless, or almost ceaseless, activity and boisterous movements stir up sediment from the bottom and keep it on the move. Yet these two disadvantages can be dealt with after a little thought. First, good filtration of the water will get rid of swirling dirt, and secondly, plastic plants may be used in place of the real thing.

Temperature requirements for *B. arulius* are not narrow. Nevertheless, for general care and maintenance, a range of about 72°F (22°C) to 75°F (24°C) is to be preferred. For breeding 78°F (26°C) to 82°F (28°C) is about right. A male in breeding condition develops heightened colours and an increased liveliness.

Talking about breeding, this follows the typical *Barbus* pattern. Always the aquarist is alerted as to what is about to take place by the marked exuberance

of the male and the bloated and stronger coloured sides of the female. After some preliminary and sexually stimulating chasing, the spawning drives begin in real earnest. Egg laying may extend over an hour. It is most spirited under a sunny-bright light.

A tank for breeding this species should be spacious, at least 3 ft. in length, and furnished with bunches of bushy vegetation or non-toxic machine-made threads—nylon or the like. These bunched egg-catchers should be placed at both ends of the aquarium.

After spawning is over, waste no time in returning the fish to the home tank. If you do not do this, the eggs will be eaten in next to no time.

As a rule, the eggs hatch out in about two days and the ice-clear fry become free-swimming some three or four days later. Thenceforward the expertise of the aquarist will determine how many of the fry will survive the first fortnight of their lives and grow on to saleable size. Infusorians make the ideal first food: infusorians and cupsful of dense green water. Like the adults, the fry of *B. arulius* are not faddy about their food, and once they make some headway they will accept anything. Mossy green *algae* for them to browse on is beneficial. Large *B. arulius* are fond of this, too, and when *algae* is absent from their aquarium a substitute greenfood such as cooked spinach, turnip tops, lettuce or dried or fresh duckweed should be given every so often.

In America the species is popularly known as the long-finned barb. In America, also, some ichthyologists think that the generic name should be *Capoeta* instead of *Barbus*. Now, while it is clear to all serious students of fish that some revision of the barbs is necessary, if not overdue, it is best to call an aquarium barb a *Barbus* until the ichthyologists both in Europe and America think alike and approve, as a body, the alterations in classification which would lead to the genus being divided up into three or four different genera sporting such labels as *Puntius*, *Capoeta*, *Barbodes* and the rest. At the time of writing, however, there is no uniformity of opinion among the gentlemen of science. Or so it appears when one dips into the books.





## THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 5)

by *Andrew Allen*

### 10. The Spade-foot Toad (*Pelobates f. fuscus*)

*Description.*—This is a compact toad of medium build, growing to a length of 8 cms. in the case of the female, somewhat less in the male. The back is smooth, perhaps with small warts, and the male has a prominent gland on the outside of each upper arm. There are no vocal sacs, and the tympanum is invisible. Webbing on the feet extends to the tips of the toes, and there is a distinctive, horny digging spur on the underside of each hind foot. Dorsal coloration varies between brown (male) and grey (female), with olive spots and red or brown dots. Ventral coloration is a dirty cream, speckled with grey or brown.

*Distribution.*—Widespread throughout much of Europe, including France (except the South-West), the Benelux countries, Denmark, Sweden, Germany, Austria and South-East deep into the Balkans and the Caucasus, to the Urals and the Aral Sea. It is only found in lowland areas where fairly soft, often sandy, soils are encountered, but, being purely nocturnal, will rarely be seen during daylight hours even in regions where it is very abundant.

*Breeding Habits.*—Courtship takes place during April and May, with a lumbar amplexus. Eggs are laid in a single, thin string. The tadpoles are slow to develop, and grow to the remarkable length of 18 cms.

*Care in Captivity.*—The requirements of this batrachian are unusual, but can be complied with fairly easily. The Spade-foot toad is a compulsive burrower, digging with considerable rapidity and power. The indoor vivarium should be filled to a depth of about ten inches with moist, soft soil, preferably sandy in composition. A few green plants will improve the aesthetic appeal of the vivarium, but probably make but little difference to the toads themselves. A small,

shallow water bowl should be sunk into the earth, but will only be used at rare intervals. Access to a greater area of water should be ensured during the breeding season, possibly by transferring the toads to a different vivarium normally inhabited by semi-aquatic species. Hibernation is a fairly simple matter, for the vivarium needs only to be moved to a frost-proof outhouse, and extra insulation provided by a layer of leaves, moss and organic litter.

The Spade-foot toad is reasonably hardy and will survive in reptiliary (in Southern counties only), greenhouse or cold-frame. Its sole requirements in these vivaria are a deep pile of soft earth and a few shelters (and make sure that the foundations are deep enough, for these toads really can dig).

Feeding is simplicity itself, for most small invertebrates will be readily accepted. Earthworms are probably best as a basic diet, supplemented by woodlice, centipedes and all kinds of insect fare. It fits into most communities with ease, provided that you can afford the luxury of nearly a foot of soil in the vivarium. It will only molest very small companies such as juvenile frogs and newts, whilst the strong garlic smell it produces when disturbed should not be relied upon to protect it from predators like snakes or terrapins.

Certainly this species is undemanding in its requirements, but otherwise it can scarcely be recommended to the amateur. It spends nearly all of its time hidden beneath the surface, and only emerges after dark. A vivarium filled with such a depth of soil is scarcely ornamental, and in addition is quite a weight. When on view it is drab in appearance and moribund in habits. In the outdoor vivarium it is a complete non-starter. You would be lucky to see your specimens



more than two or three times in an entire year. This is not to say that the Spade-foot or Garlic toad is without interest, but it certainly lacks many of the positive virtues of other livelier, more colourful Amphibia.

*P.f. insubricus* is a sub-species found in Northern Italy, from the Alps down to the Apennines. It is very similar in its habits.

*P. tyriacus balcanicus* is a separate species found in the extreme South-East of Europe, and is unlikely to be encountered on price lists in this country.

*P. cultripes* is an important species from Spain and South-West France. It grows to a greater size than *P. fuscus*, but demands similar treatment.

#### 11. The Mud Frog (*Pelodytes punctatus*)

(Note that the name "Mud Frog" is not official nomenclature. However, it appears to be widely used when referring to this batrachian, and is generally accepted, as also is the name "Mud Toad." Outside of the families Ranidae and Bufonidae the terms "Frog" and "Toad" have no strict taxonomic significance. Thus within the Discoglossidae we have the Painted "Frog," but also the Midwife and Fire-Bellied "Toads." In fact, these three animals are far more closely related to one another than to either the true frogs or true toads.)

*Description.*—This is a slender frog which grows to a length of about 4 cms. The dorsal surface is covered in small warts, webbing on the feet is restricted to the base of the toes. The male can be distinguished from the female by his more swollen condition, and the dark nuptial pads present during the breeding season. Vocal sacs are internal. Dorsal coloration varies between grey, brown or muddy green, with greenish spots, whilst the ventral surface is white or cream.

*Distribution.*—Widely distributed throughout Spain and Portugal, much of France, and parts of North-West Italy. It has been recorded for Belgium, but is unlikely to be encountered there.

*Breeding Habits.*—In parts of its range this frog may mate twice in the same year, both in the spring and the summer. Amplexus is lumbar. Spawn consists of thick strings, and the tadpoles are large, growing up to 6 cms.

*Care in Captivity.*—This species could not be more different from its close relative the Spade-foot toad. It is aquatic and very lively. Considering its abundance in South-West Europe, it has received little attention in the literature of the subject.

It is well suited to the indoor vivarium, preferably of fairly generous dimensions (more than four foot in length). Probably the best such type of home is an aquarium divided fifty-fifty between land and water. The water should reach a depth of about seven inches in fairly gentle steps, and the terrestrial half should be planted with suitable mosses, ferns and the like. Ideally, the flooring in the aquatic half should be a good

thick layer of mud, with a generous growth of sturdy coldwater plants. The frogs will certainly favour such an arrangement (in Germany this frog is known as a "Mud Diver"), but you may not. A murky mixture of mud and water obviously impairs visibility, and does not help the decor in an average living room or lounge. The alternative is to use a traditional substratum of sand or gravel, and hope for the best. In any event delicate aquatic plants are to be avoided, for they are unlikely to enjoy a very long life. Almost equally good for accommodating this species is a vivarium with a large pool sunk into the soil.

Outdoor vivaria of all the major types (greenhouse, coldframe or reptiliary) are to be preferred to indoor aquaria and vivaria. This species is tolerably hardy, and will survive our winters with ease, at least in Southern parts. But the extra protection from extreme conditions afforded by a greenhouse is a wise precaution. In outdoor vivaria natural hibernation can take place, a process highly preferable to over-wintering, especially as this is an aquatic species with all the hazards so-implied. All that it demands are a good sized pool of fair depth with a considerable layer of mud on the bottom, and a surrounding region of dense greenery.

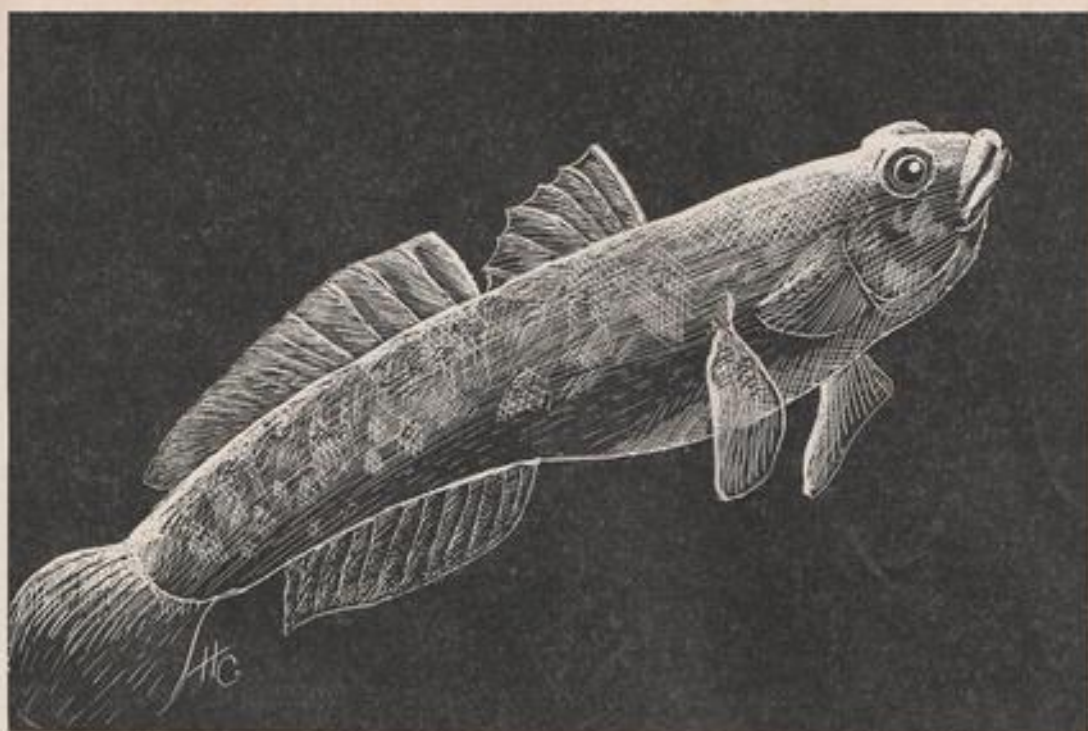
Feeding is a matter of supreme simplicity. Most invertebrates of appropriate size will be taken, provided that they show sufficient movement. Unlike some of the animals that we have considered, notably the newts and salamanders, Midwife and Spade-foot toads, this is an extremely active species, and thus can capture a wider range of prey.

The Mud-frog is very small in size and lacks protective coloration or virulent poisons. As a result it can fall victim to a large number of more bulky reptiles and amphibians, both in and out of the water. Indoors it makes a good companion for all the newts and salamanders, Midwife, Fire- and Yellow-Bellied toads and the Painted frog. Outdoors it can safely be housed with most small newts, frogs and toads, and the smaller lizards. But remember that the juvenile frogs may fall prey to even such inoffensive members of the community as these.

*Pelodytes punctatus* has both virtues and faults as an inmate of the vivarium. In its favour are its lively and vivacious habits, the readiness with which it breeds, and the simplicity of its requirements. On the other hand it is unspectacular in appearance and dull in coloration, is largely nocturnal, and can be rather nervous when first imported. But I believe that unless it is intended to be purely ornamental, the amateur will find it to be an interesting and rewarding species, and one that will amply repay the attention devoted to it.

There are no sub-species.

The next article will consider the European Tree frog, perhaps the most spectacular of hardy batrachians.



## MARINES: WHY NOT START WITH GOBIES?

by Huw Collingbourne

*Gobius minutus* is one of the commonest and smallest fishes around the coast. Luckily for the aquarist, it is also one of the most suitable species for inclusion in the marine aquarium. It is undemanding and will live through just about everything which all but the most clumsy of us could contrive to put it through.

Of course, it does best in cold sea water (10 to 12°C.) but it will tolerate temperatures considerably higher. It is wise, also, to keep the sea water at the specific gravity of the water where the fish was caught, but gobies have a very wide tolerance and will live in either very salty water or very diluted sea water. Indeed, gobies penetrate quite far into our freshwater rivers. However, fish living in brackish water will usually only attain a length of about 6 cms., whereas those from coastal waters, of the same species, may reach 9 cms.

The fact that gobies have such a tremendous range of tolerance, raises the question: *Why can they adapt*

*to these conditions?*

Perhaps their natural environment has something to do with it. The rocky, shoreline areas which are frequented by gobies provide an ever changing environment. It must be common for gobies to find themselves washed into small, stagnant pools where the water conditions can undergo very rapid changes in the few hours between tides. On a hot day the water would become warm, evaporation would rapidly take place, and the salinity would increase very quickly. In addition, a small body of water would soon become comparatively airless with less than normal oxygen dissolved in it.

On rainy days, things would suffer a total reversal. The water would almost certainly remain cool, the salinity would decrease rather than increase, and due to constant agitation, the water would become greatly aerated and more than usual oxygen would dissolve into the water.



So, it is hardly surprising that the Common Goby, (*G. minutus*) is so hardy and makes such an excellent aquarium fish. Indeed, a well kept aquarium must be much more stable than the coastal environment.

But the goby has much more to recommend itself to the aquarist. Its temperament is good, certainly, and only when guarding eggs does the male become aggressive. But in other ways, the goby can prove to be a fascinating fish.

At low tide, if stranded, gobies can flip across the wet sand or stone until they find water. This behaviour, however, is shared by many shoreline fishes which have evolved a variety of means of getting to water. The blenny, of course, uses its great fins to walk across the sand, and the butterfish slithers snake-like from place to place.

But, in addition to this ability, the goby is able to attach itself to the smooth surfaces of rocks to allow it to stay in one place against the buffeting of the tide. It achieves this by sticking itself on by a sort of "sucker" formed by the two pelvic fins which are joined to form a cup.

The goby has two dorsal fins. Its head is flattened and its eyes are quite high up and close to the lips.

Catching gobies is no difficult operation, especially along a coast with fairly clear and unpolluted water

where they can even be a nuisance, getting caught in shrimping nets. However, as comparatively few of us have access to such areas these days, let me outline a method of capturing these fishes which I have found to be useful.

First of all, it will be necessary to select a spot where these fish are likely to be found. The best places to look, in my experience, are among the rocks where the water drains back along sandy channels. Such places are usually found along the margins of the really massive, rocky areas.

Look under the stones and keep an eye open for small "jets of sand". In actual fact, these are often optical illusions and turn out to be well camouflaged gobies flitting over the sand. Once you have found the fish, place a large fine-meshed net between the gobies and the sea (or the direction of the sea, to where the water is flowing). It can be of use to use a smaller net to help you, but you may find this unnecessary. The next thing you have to do, is to persuade the gobies to retreat on to dry land by chasing them in that direction with your net. Once on land, it is quite simple to catch them. In actual fact, once you have caught one or two gobies, you will find it easy to collect more and gradually you will learn simpler methods, just as you probably did when catching tiddlers as children.

## BOOK REVIEWS

**Collins Guide to the Freshwater Fishes of Britain and Europe** by Bent J. Moss. Price £2.25p.

One hundred and thirty species of fish are described and illustrated with excellent colour paintings by Preben Dahlstrom in this very compact but comprehensive volume. Alongside each fish portrait are colour drawings of principal foods, predators, the fish in its larval state, the eggs, location maps and aquatic plants. This section of approximately one hundred and fifty pages forms the main body of the book. The remaining seventy pages comprise an illustrated introduction to fish and the study of their functions, anatomy, environments and characteristics, and a history of fishing methods, fish-farming, pollution and the general relationship existing between fish and man.

One of the first effects of our forthcoming entry into the European Community is the wider field embraced by our natural science literature and we shall need to lengthen our species lists in all realms to include many erstwhile "foreigners". For example, we have hitherto recognised only two loaches as indigenous to the British Isles but as Europeans the following must be included: The Golden Loach (*Cobitis aurata*), Balkan Loach (*C. elongata*), Rumanian Loach (*C. romanica*), Bergatino Loach (*C. larvata*), Italian Loach (*C.*

*conspersa*).

The book's title should be taken in the widest possible sense for it embraces exotic species introduced by man to many areas. E.g.: The Black Bass (*Micropterus salmoides*), Pumpkinseed (*Lepomis gibbosus*) and, more surprising, the Mosquito Fish (*Gambusia affinis*), now to be found in Southern France, Italy, Spain, Southern Russia and Central Asia.

Feral goldfish are widely found in lakes and lower reaches of Asiatic and European rivers which habitats it shares with the Crucian Carp. Nearer the seeming area of origin in China and Eastern Siberia, males and females appear in equal numbers but in many parts of Europe, we learn, the whole goldfish population comprises females. The females pair with males of related species (Crucian and Common Carp etc.) but true fertilisation does not follow spawning. Apparently, the spermatozoa penetrate the egg's outer membrane but perish before the combination of their nuclei. The sperm's presence causes the egg nuclei to commence dividing and new individuals are produced but as they have received heritable genes of the female only, they can only become females. This rare form of reproduction is known as gynogenesis.

This is a quite delightful book, informative for both aquarist and angler alike and presented so attractively that it appeals to those who like books for their own sake.



**Collins Guide to Aquarium Fishes** by Arne Schiøtz. Price £2.50p.

Uniform with the book reviewed above, and presented in the same style, the splendid illustrations are from paintings by Preben Dahlstrom who has depicted more than four hundred fish and over fifty species of aquarium plants.

For each fish there are notes on place of origin, habits, temperature, lighting, feeding and social requirements. Introductory chapters deal with structure, colour and pattern, relationship of fishes, fish names and distributions. The principal section of the book is divided into three parts dealing with freshwater, brackish and saltwater aquaria. The final chapters cover plants, 'visitors,' diseases, the water, furnishing the aquarium, foods and feeding, breeding etc.

It is only when one handles a book of this quality that one can appreciate how coloured drawings can be superior to colour photographs. For identification of species and a real appetite-whetter for the newly-hooked aquarist, this book is a must.

**Observer's Book of Sea Fishes** by T. B. Bagenal. Published by Fredk. Warne & Co. at 50p.

For many years, since before the war, this wonderful series of pocket guides sold for five shillings each. There was a price increase of a shilling a few years ago but only now, with entirely revised editions, has there been any marked increase in price. Value for money still remains exceptionally good. The series extends to over forty titles and must be familiar to everyone, so wide is the field of interest covered.

The volume under review is aimed at a wide readership and can appeal to schoolboy, naturalist and angler alike. Just as companion volumes on Birds or Insects or Wildflowers should accompany the country rambler on his walks, this book, should be slipped into the pocket of the naturalist on his seaside holiday. The coloured and black and white plates are first class for identification and the comprehensive text is most informative. Over two hundred fish species are covered and all this in under two hundred pages and crammed into a little book measuring but  $3\frac{1}{2}$  in. by  $5\frac{1}{2}$  in. by  $\frac{3}{4}$  in.

*W.Y.O. ? continued from page 167*

Ruislip, Middlesex, HA4 8TU. (It's difficult to give general advice about how to get specific plants to grow in specific aquaria. At the moment, I have my most successful growth of plants in a 30 in.  $\times$  15 in.  $\times$  15 in. tank. The tank has a low fish population, soft water, is lighted by two 60 watt pearl tungsten bulbs for about 15 hours per day and (and I think that this is possibly an important factor) the tank's temperature is kept at between 80-85°F, and outside power filtration is used for about 10 hours per day to ensure a good water circulation. Many factors influence plant growth, as most aquarists know, but I feel that many aquarists do not provide their plants with nearly enough light—and few aquarists seem to share my view that the most important place in the aquarium for heat to be supplied to plants is at their roots. My own view, although I have never had an opportunity to test it properly, is that plants would grow much better if tanks were heated from the base—as opposed to a single tank heater placed near the surface of the gravel at the back of the tank. As you know, hot water rises up through cooler water, and this often means that the roots of aquarium plants are often relatively cool compared with the water at the top of a tank. Forced circulation of aquarium water helps overcome this problem. Another point is that with the normal type of aquarium stand, the base of the aquarium is left uncovered. If this is the case with your tank, why not cover the outside base glass of your tank with a sheet of polystyrene to keep the heat in and the cold out! I do not use undergravel filters myself, at the moment, although, in practice, these should ensure that plants' roots are bathed in uniformly warm water;

however, I do feel that such filters also remove useful mineral salts from the areas in which plants spread their roots in search of "food". The polystyrene will also exclude outside light from getting at plants' roots, and this is another factor which, I consider, can affect aquatic plant growth.

Photograph 2 shows one of my young marble angelfish. It's many years since I last kept angels in any of my home tanks, but when I recently lost my school angelfish, I decided to add a few to one of my home tanks. I still feel that angels are amongst the most attractive of aquarium fishes, and must surely have attracted many newcomers to the hobby. Would you agree? Finally, Photograph 3 shows another recent addition to my stock—a large, green sailfin molly. I recently bought quite a large pair which cost me £1.25. The male is the larger of the two fish, and has most attractive colours and markings; the female is much less attractive, but the day after I introduced the pair to their new home, the female delivered about a dozen babies. The youngsters are now growing quite well.

For next month I look forward to receiving your opinions on the following questions: (a) What have been your experiences with the keeping and breeding of green sailfin mollies? (b) Under what conditions have you bred angelfish? (c) What are your opinions on Mr. Anns' view that many aquarists try to raise far too many youngsters from a brood of fry, and by so doing can produce a large proportion of poor quality fish which we may end up by buying from dealers? (d) How did your fishes fare during your summer holiday? (e) What is your favourite make of aquarium pump, and what are its advantages?





Drawing prepared with technical advice from Museum of Natural History in New York

## ORIGIN OF THE MIDDLE EAR?

*by Michael Lorant*

THE origin of the hearing mechanism of man has been traced to members of a family of prehistoric fish, according to a new theory of the evolution of the middle ear. The theory says the middle ear originated some 50 million years earlier than had been thought before.

Previous theories of hearing assumed that the ear-

drum and stirrup bone, major components of the middle ear, first appeared some 300 million years ago in the primitive amphibians. But, a study by Dr. Willem A. van Bergeijk, staff scientist of Bell Laboratories in the United States, indicates that a middle ear existed 350 million years ago in a family of fish called Rhipidistia, ancestors of the amphibians.

Some of the members of this family of fish, particularly *Eusthenopteron*, had an air-filled "spiracular pouch" or sac in their heads which was very similar to man's middle ear. According to Dr. van Bergeijk, studies of this sac structure show that these fish also must have had an outer eardrum, although this soft structure was not preserved in the fossils. The Bell scientist calculations, based on the size of the eardrum and the air sac, indicate that this fish would have been able to hear sounds not only through the water but also sounds carried through the air.

The hearing mechanism of mammals is very complicated, inaccessible, and difficult to study. Researchers, therefore, are studying very simple primitive hearing organs, such as those in primitive fish, the hearing capability of which provide insight into the hearing capabilities of higher animals, including man.

Hearing capability of a very primitive sort first appeared in early fish as a lateral-line system. (This is a system of sensory cells that appears on the sides and head of almost all fish. This system responds to water motions, however, and not to pressure or "sound" waves in the conventional sense.)

Later, the fish developed an inner ear labyrinth which, initially, had nothing to do with hearing. This structure was located deep inside the skull and detected movements of the animal's own body.

At some later time during evolution, the fish acquired a swim-bladder which probably functioned originally as a buoy or an aid in respiration. Being a gas bubble, the swimbladder obeyed the gas laws and changed volume when pressure changed. The labyrinth was physically close enough to this bladder to become excited by any of its volume changes. Thus, the labyrinth became sensitive to these pressure waves, and, in a sense, could "hear".

This fish swimbladder, and the extensions or ossicles it developed later, could be considered a middle ear, and the labyrinth an inner ear, according to Dr. van Bergeijk. The basic description of the swimbladder—a trapped air bubble changing volume under the influence of pressure waves—is the same as for man's middle ear. But this mechanism was incapable of locating the source of sound, something which can be done by man's ear.

The Rhipidistians (*Eusthenopteron*, for example), had special pouches that extended from the back of the mouth cavity. These air-filled pouches were distinctly superior to the swimbladder middle ear in other fish because, for one thing, the air bubble rested almost directly against the inner ear. In addition, this ear allowed directional hearing.

Studies show that the *Eusthenopteron* also possessed a functional eardrum which consisted of a double-layered membrane between two bony shields in the head. Theoretically, the fish could have made the water-to-air transition with practically no loss in hearing acuity. Pressure waves carried by the air could be transmitted to the inner ear through the eardrum by a primitive stirrup bone or hyomandibular.

Dr. van Bergeijk based his calculations on the difference in pressure between a sound source in water and in air. A sound in air produces only 1/63 of the pressure developed by the same sound made underwater. Since the middle ear is a pressure sensitive device, it must be able to overcome this difference to hear both in water and air.

The Bell scientist's study of the hearing system of *Eusthenopteron* indicates that the size of the eardrum relative to the middle ear cavity was sufficient to compensate for the difference in pressure.

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## THE GARDEN POND IN SUMMER

by Arthur Boarder

Most garden ponds will have become well established by this time of the year provided that they have been constructed for some months. It is probable that by now many of the water plants will have grown well and some may need attention. Dealing with the water lilies first, as this will enable one to inspect the underwater plants more easily, it is often found that too many leaves have grown so that they cover too much

of the surface. This is not likely if the lilies have only been planted this year, but older established plants are almost sure to have grown strongly and then their leaves can cover so much of the surface of the water that the fishes can rarely be seen. In such a case the pondkeeper may be pleased to note that the water has kept clear of green *Algae*, as the leaves will have shaded out much of the sunlight which encourages the forma-



tion of this troublesome tiny plant.

If the pond is a small one and too large a type of lily has been used, it is possible that when the surface has been covered with leaves, many others will have to grow up into the air. This tends to spoil the whole look of the pond as one of the features of the water lily is that its leaves can lie flat on the surface thus giving shade and a welcome spot for fishes during a hot spell. It is not always easy to deal with such a condition, as one is reluctant to cut off many of the leaves, but the task must be done to improve the look of the pond. A sharp knife tied to a long pole can be used to cut through the stems of the leaves and they can then be removed with a net. Care must be taken that no flower buds are removed.

It is also a good plan to remove all the dead flowers as they fade. This can be done as for taking off the superfluous leaves. Too many dead flowers could cause trouble in the water as once they start to decay the water can become polluted. The same can be said of the dead lily leaves, always remove these as soon as possible. If there are a number of other water plants around the pond, some of these may need pruning, but most of them may not need any attention until the late autumn. Such plants round the edge of the pond can add greatly to the attractiveness of the pond, as not only will their flowers provide a brave show but if near the water their reflections in it will improve the scene very much indeed. Not that these plants are likely to be of much value in improving the condition of the water if they are in a bog garden adjoining the pond. It is when they are planted in the water at the side of the pond that an extra dividend can follow. This is because their roots can protrude from their containers and extract much of the waste matter in the water. The dissolved salts and minerals from decaying matter and that voided by the fishes can tend to keep the water in a purer condition.

The under-water oxygenating plants can receive attention once the surface plants are dealt with. Unless these have become very dense there may be no need to interfere with them at all. Some types such as *Elodea canadensis* can become rather a mass if not attended to and some may have to be removed. However, one must be careful if the fishes have spawned as it is probable that eggs or fry may be among the dense vegetation. One problem which sometimes arises is that of blanket weed. This can become a nuisance when it gets entangled among under-water plants. One sure way of removing a quantity of it is to twist a broken stick among it, when plenty of it can be drawn away from the weeds.

There is no doubt that a good supply of oxygenating plants will tend to keep the water clear but the only snag about this is that if one is using the pond as a breeding pool, the fish may spawn all over the pond

and many of the eggs cannot be recovered for hatching in safety away from the attentions of the parent fish. However, there is the possibility that with so many plants in the pond many of the eggs will hatch out and the fry will be able to escape from the larger fishes by hiding among the dense vegetation.

If there is a quantity of floating duck weed on the surface of the pond it can become so thick as to completely cover the top of the water. Although this has its advantages in reducing the light reaching the water, when it is so thick the fishes cannot be seen. It is quite easy to remove any that is surplus to requirements by playing a hose on one side of the pond and rolling the mass of duck weed to one side when it can be removed with a rake. Always leave some in the pond as if the goldfish get hungry they can eat the duck weed; some fishes prefer this to many kinds of food and some pondkeepers inform me that they can never keep much of this plant in their pond as the fishes eat it almost immediately. I must say that my fish are not as fond of it as this and once I put a fair amount on the pond surface it remains and increases at a fair rate, although with me it never gets a problem, as I consider it easy to control.

There may be a number of fry which have appeared in the pond and one may wonder what is the best way to deal with them. It is probable that they may be just the normal goldfish fry and so it is not very important whether they are eaten or not, but many pondkeepers get a special thrill from being able to breed even a few. On the other hand if they are from a good strain of fancy goldfish it may be important to catch them up and move them to a separate container or pond for growing on. The chief difficulty to be found when goldfish are allowed to breed indiscriminately in the pond is that many of them may never change colour from their original bronze to the desired gold. It can often be noticed in public pools that among the goldfish can be seen several fish, often quite large, which have never coloured up. Such fish left with the others will breed with them and so there is the possibility that more and more young goldfish will fail to change colour in future years. It is therefore better to catch as many fish as can be seen so that they can be kept under observation to ensure that none which have not coloured within a reasonable time are left in the pond. The annual cleaning out of the pond, which I often advise, is the time when such fish can be removed. If the pond is a large one it may not be possible to empty it and so it is likely that many of the young goldfish which have not changed colour cannot be caught without a lot of trouble.

The feeding of the fishes should continue well into the autumn but care must be taken to ensure that the water remains in good condition or the fish will go off their food. It is so important to see that no food is offered unless the fish are hungry. They will never



eat at their maximum unless the water is in good condition. By this I mean that it is well oxygenated and free from foul gases. A very little floating food can be given and if no fish rises to take it within a few minutes then no more should be given that day. The fish are not likely to die of hunger in any fairly well planted pond, as they will be able to find some sustenance from the plants or from any live creatures which are almost certain to be in the water.

The question of leaking ponds often arises and if a pond continually leaks there is always the worry that the water may drop to a dangerous level whilst one is away from home on holiday. There are several ways of dealing with a leaking pond and the method of dealing with such ponds varies with the amount of water being lost and the type of pond. Most troubles will come from the concrete constructed pond especially if it was not correctly made in the first place. I have two ponds, one has never leaked a drop in thirty-five years whilst the other has been a source of trouble at various times, although both were made at the same time with concrete. The larger pond was cracked soon after construction by being filled too soon and as it was joined to the smaller pond, the weight of water caused a break at the side where the ponds were joined.

I have, over the years, treated any crack seen by cleaning it out and forcing in a quick drying cement with equal parts of fine sharp sand. This lasted for some time. I then floated over the whole surface with a coat of cement and sand. This also lasted for a time, but it is difficult to get fresh cement to adhere to old, and so after a time leaks occurred again. My next method was to paint the whole surface with Pondseal. This lasted well for a couple of years, but I then found that once the water level dropped a little, the exposed part of the pond was subjected to a drying out and the Pondseal curled away from the concrete. Month after month this curling increased until I had to try another cure.

This time I feel that I have at last stopped any leaks. I have covered the whole pond with a Butyl lining and so I assume that my troubles will now be over. The only point against this method is the cost, which if the pond is of a fair size can be considerable, but when compared with the cost of previous methods and their lack of success, I feel that the expense is well worth it. To estimate the size of the sheet of Butyl required one has to take the measurements of the length and breadth and add twice the maximum depth to each. If the pond is a regular shape this will be all right, but when it is of an irregular shape, as mine is, the size has to be large enough to cover the whole site which means that much has to be cut to waste. It is no use getting the liner too small and so allowance must be made for such irregularities.

The pond has to be emptied and cleaned out well.

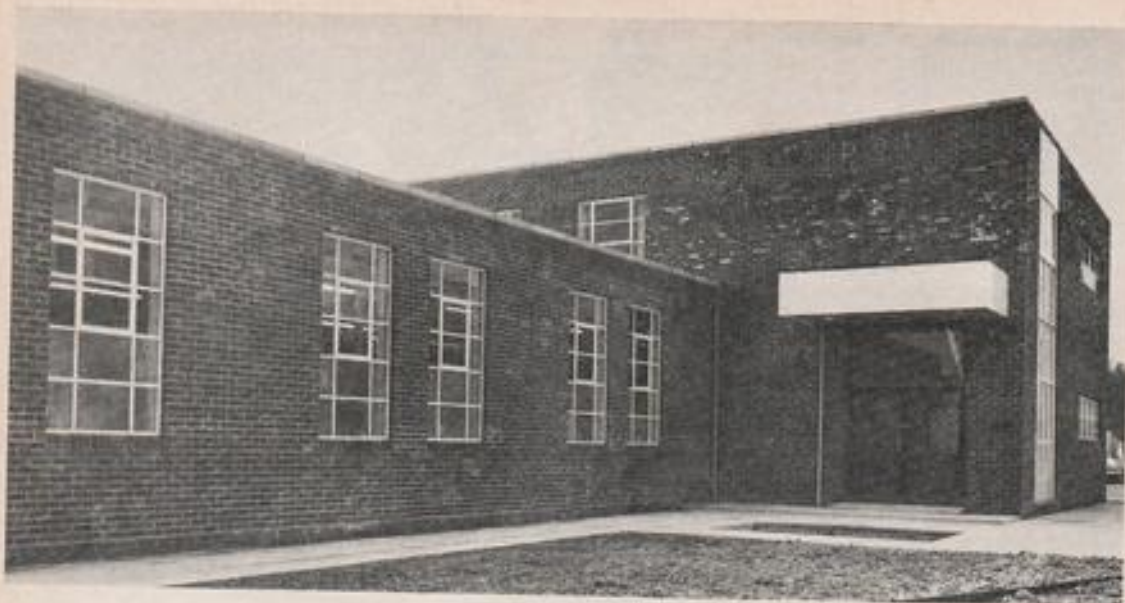
Any sharp points on concrete must be rubbed down smooth and no stones should be left on the bottom which might damage the liner. The pond need not be dry and the liner can be laid across the pond with some broken flag stones at the sides to anchor the liner in position. The water is then run in and the liner will take the shape of the pond quite easily. Once in position the surround of the pond can be paved with flag stones, seeing that a good overlap of the liner has been left at the edges first. The stones can be cemented into position and if it can be so arranged that these stones protrude a couple of inches or so over the water, the effect will be bettered as no part of the liner will be seen. If the pond is either square or oblong, it will be better to use flag stones of an equal shape, that is either square or oblong, good types are one and a half feet by one or one foot square. For an informally shaped pond it may be better to use broken paving stones, when a crazy path round the pond will look very attractive.

To reduce the labour of cutting these stones to fill in any triangles it is better to fill them with mixed concrete which will be found far easier. I do not recommend using any of the cheap types of liner as they may not last as long as the more expensive ones which can last one's lifetime with care. The Butyl is black but it is surprising how soon this colour disappears once the pond is filled with water and planted up. Fishes can be put in right away and no harm has come to mine when I did just this. I used a little soft sand under the edges of the liner round the edge of the pond to save any possible rub on sharp concrete and a little of this sand trickled down on the liner and made it look quite attractive, but after a month the normal greening has taken place and it is almost impossible to see that the pond has been lined.

I feel that it is only right that I should point out that the makers of Pondseal state that it is wise to paint the concrete of the pond with a special primer before adding the two coats of Pondseal. I did not do this, and so it is possible that the rubber-like material would not have peeled from the top of the drying concrete had I used the primer. Also, had I always been on hand to keep the water level up to the top of the pond, this peeling may not have occurred. I must say that the material under the water did not appear to have deteriorated at all during the time it was there, and so if one could be sure that no evaporation caused a drop in the level the material could be quite satisfactory.

With regard to the use of liners, either as a repair or for constructing a new pond, it is possible for these to be obtained at very large sizes but these would have to be specially constructed by the makers, but I have been informed that it is quite possible to make ponds of over 120 feet in length. I have also heard of very large tanks having been made with these liners which are, in fact, almost small reservoirs.





## A VISIT TO INTERPET

by B. Whiteside

FEW AQUARISTS will not have heard of Interpet, and of the wide range of aquarium products which is marketed by this progressive company. Having used many of the hundreds of products marketed by Interpet, I was most interested to hear that the company was moving into new purpose-built head offices, situated at Curtis Road, Dorking, Surrey, RH4 1DP, in the last week of March this year. I was pleased to have been invited to the official opening of the new factory, but was disappointed at not being able to make the journey to England for the reception; however, one week later, in early April, I was in London for a few days' holiday, and I was invited to spend a day at Interpet by Dr. Neville Carrington, the son of the founder of the Liquifry Company. On arriving at Dorking, by train, I was met by one of Dr. Carrington's secretaries, and whisked off to the new factory at Curtis Road.

I must admit that when I met Dr. Carrington I was rather taken aback; I was expecting a rather elderly, high-powered business tycoon—but found him to be very much younger than the mental picture I had built up, and much more of a practical scientist than a business tycoon.

From the photograph you will see that the impressive new Interpet plant is of modern design; it covers an area of 8,000 square feet, and consists of ground

floor assembly, warehousing, and laboratory facilities. The second floor offices include facilities for sales, administration, and accounts, and is complete with staff canteen—and a computer to speed up "paper work." In front of the entrance doors you will notice the rectangular pond which, in time, Dr. Carrington hopes to get planted and stocked, making an appropriate focal point for a firm which produces aquatic goods.

The Liquifry Company was originally formed by Dr. Carrington's father, the late O. L. Carrington, twenty years ago, in 1952, to manufacture and market the famous Liquifry food, formulated by Dr. Carrington when he was studying pharmaceuticals at London University. Liquifry was originally sold via a half-page advertisement in *The Aquarist*, and is now exported to more than seventy countries. When Mr. O. L. Carrington died in 1963, his son, now having gained his Ph.D., left industry to concentrate on the family business.

To cut down on the cost of imported lines, and to ensure regular supplies, it was decided that the company should extend its own manufacturing "side." Today the company still imports various goods from different countries, but the majority of products are now made in the U.K., and the company's range includes items extending from stainless steel aquaria

and treatments for fish diseases, to power filters and combined heater/thermostats—as well as the world-famous Liquifry food. The company also has interest in other pet products, and in home wine-making.

Despite the extensive growth of the company, one of its main attractions to my mind is that it is still, essentially, a family business; this latter point is emphasised by the fact that in the new factory facilities have been provided for meetings of members of the trade, and for reasonably sized aquarium clubs.

On entering Dr. Carrington's own private office, one is left in no doubt that his interest in aquaria and fishes extends far beyond a financial one. A most attractive stainless steel tank, fully planted and well stocked with fishes, graces one corner. Needless to say the whole unit is equipped and stocked with Interpet items—including plants and fishes—and the fact that Dr. Carrington is a professional scientist, as well as an aquarist, is evident from the fact that the tank's lighting is operated by an original system on which Dr. Carrington is still working. The new process remains in the experimental stages, and Dr. Carrington did not want to tell me too much about it until he has completed his experiments—but I have a feeling that something very interesting could result from this experiment. I'll certainly be watching out for it! Another interesting idea was the method by which the tank's two Minimatics were held in position. A small, rectangular piece of glass, about 3 in. by 1 in., was fixed across the rear angle of the corner of the tank, about half way down, using a silicone/rubber aquarium sealant, and a combined heater/stat unit was held firmly—and simply—in position by this simple holder. However, Dr. Carrington did point out that one has to be careful that fishes don't get trapped in this holder.

Having had a chat with another director of the company, Mr. Maurice Martin (himself a keen aquarist, and looking too young to fit my inaccurate picture of a "company director"), I was shown round the new factory, and saw a wide variety of Interpet products being made or packaged. Something which has always intrigued me is how filter tubes are bent into the required shape. The secret process was remarkably simple, and seemed as if it would be very easy to do; so I accepted the kind offer of the lady operator in charge and "had a go" at bending one of the tubes. Having tried the process, and having made a complete mess of the tube on which I experimented, I decided that it should be left to the expert, and quickly moved on to another area where stainless steel tanks were being made.

Dr. Carrington and I then set off for some lunch, and later drove to Walton-on-the-Hill so that I could visit the company's thriving fish importing business. My mouth still waters when I think of what I saw!

On arrival at the fish farm, my first visit was to the covered sheds which house the hardier coldwater fishes. Hundreds of beautifully coloured fishes were housed in large, shallow ponds, lined with black polythene, and well aerated with air hoses. An outside covered area, consisting of a large number of sunken concrete ponds, was just being completed, and should provide space for many more hardy fishes for coldwater fanciers.

But the inside of the extensive fish house contained the "gems" of excitement for the tropical fish fancier. Several rows of tanks housed a wide variety of tropical aquarium plants, and a small selection of imported Koi which had just arrived. As my visit was made during the Easter holiday week, the stock of marines on view was low, but I saw some very beautiful marine fishes. Because of the high level of light in this particular fish house, it was possible for *algae* to thrive in the tanks, and these were appreciated by the marine animals, I was told. Very large anemones, and sea horses, were among the other marine creatures which interested me especially, and I was sorry that I had not packed my photographic flash outfit with my camera when I had filled my case before leaving home for England. Only coloured photographs could show the beauty of these creatures!

I find it rather difficult to describe the two houses which contained the tropical freshwater fishes. Thousands of fishes, worth thousands of pounds, in hundreds of tanks, are difficult to describe—especially when one was as over-awed as I was by the wonder of the sights before my eyes. Rows of spotless tanks, containing dozens of healthy fishes, in a multitude of varieties—both English and foreign raised—left me almost drooling at the mouth. My only regrets were that Dorking was hundreds of miles from my home, and that the fishes were for wholesale supply only; had conditions been otherwise, I would probably have bought so many fishes that I would have had to empty my home and fill it with fish tanks to be able to house them.

As time was something of which I had lost count, I suddenly realised that my train would be leaving soon, and sadly left the fish farm to be driven to the station by Dr. Carrington. In less than an hour I was back in London's West End, heading for a theatre and the world of "make-believe." One theatre ticket cost much more than my ticket to Dorking—but I didn't see any theatre shows to equal the show of fishes, equipment and kindness which I had enjoyed at Interpet; it was the "high-light" of my holiday, and I hope to visit Interpet again some day. Meanwhile, I wish every success to Interpet and its directors in their new premises, and I have no doubt that in the next twenty years Interpet will continue to provide aquarists with the usual high quality goods which we have come to expect from them.





## from AQUARISTS' SOCIETIES

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

FOR the **Half Moon A.S.** Show there were 263 entries, the results being as follow: Guppies: 1, Mr. and Mrs. Sowerby (Mount Pleasant); 2, Mr. and Mrs. Kilvington (Doncaster); 3, K. Hornby (Stockton); 4, Mr. Ryan (Billingham); Molly: 1 and 2, D. Stead (Swillington); 3, C. Emwright (Houghton); 4, R. Fawcett (Half Moon); Swords: 1 and 3, Mr. and Mrs. Sowerby (Mount Pleasant); 2, Mr. and Mrs. Kilvington (Doncaster); 4, R. Hiskop (Swillington); Flats: 1, D. Stead (Swillington); 2, Mr. and Mrs. Fleet (Billingham); 3, K. Hornby (Stockton); 4, Mr. Wells (Doncaster); Characin (Large): 1, Mr. Perkins (Hemsworth); 2, Mr. Welford (Cleveland); 3, P. McGee (Half Moon); 4, J. A. Hellens (Houghton); Characin (Small): 1, Mr. and Mrs. McClenachan (Cleveland); 2, P. P. and E. Reynolds (Swillington); 3, Mr. Kell (B.A.S.); 4, Mr. and Mrs. Blackwell (Billingham); Cichlids (Large): 1, H. Peacock (Stockton); 2, C. Emwright (Houghton); 3 and 4, J. Lockwood (Half Moon); Cichlids (Small): 1, N. Watson (Hartlepool); 2, K. Greenley (Half Moon); 3, J. A. Hellens (Houghton); 4, P. P. and E. Reynolds (Swillington); Barbs (Large): 1, J. A. Hellens (Houghton); 2, C. Emwright (Houghton); 3, Mr. and Mrs. Brown (Half Moon); 4, Mr. and Mrs. Sowerby (Mount Pleasant); E.L.T.C. (Ras. Dan. Minnows): 1 and 2, P. Sonley (Independent); 3, Mr. and Mrs. McClenachan (Cleveland); 4, Mr. and Mrs. Evans (Doncaster); Labyrinth: 1, D. Clarke (Half Moon); 2, P. P. and E. Reynolds (Swillington); 3, Mr. and Mrs. Kilvington (Doncaster); 4, K. Barrett (Doncaster); Angel: 1, C. Emwright (Houghton); 2 and 3, Mr. and Mrs. Blackwell (Billingham); 4, Mr. Crossley (Billingham); Fighters: 1 and 3, Mr. and Mrs. Walker (Stockton); 2 and 4, K. Hornby (Stockton); Catfish: 1, Mr. and Mrs. Wells (Doncaster); 2, P. P. and E. Reynolds (Swillington); 3, J. Gamesby (Half Moon); 4, Mr. and Mrs. Kilvington (Doncaster); Sharks Razas: 1 and 3, K. Ross (Independent); 2, Mr. and Mrs. Marshall (Half Moon); 4, K. Adams (Hartlepool); A.O.V.: 1, P. Skillin (Hartlepool); 2, J. A. Hellens (Houghton); 3, Mr. and Mrs. Wells (Doncaster); 4, D. Stead (Swillington); Breeder (Egglayers): 1, 2 and 4, F. Sonley (Independent); 3, P. Fulman (Half Moon); Breeder (Livebearer): 1, Mr. and Mrs. Kilvington (Doncaster); 2 and 3, Mr. and Mrs. Marshall (Half Moon); 4, Mr. and Mrs. Fleet (Billingham); Pairs (Egglayers): 1, J. A. Hellens (Houghton); 2, K. Hiskop (Swillington); 3, Mr. and Mrs. Fleet (Billingham); 4, J. Gamesby (Half Moon); Pairs (Livebearers): 1, R. Hiskop (Swillington); 2, P. McGee (Half Moon); 3, Mr. Simpson (Half Moon); 4, Mr. and Mrs. Fleet (Billingham); Furnished Aquarium: 1, K. Hornby (Stockton); 2, D. Clarke (Half Moon); 3, J. Bennington (Half Moon); 4, D. Fleet (Billingham); Furnished Jars: 1, Mrs. Hardman (Cleveland); 2 and 4, Mr. and Mrs. Marshall (Half Moon); 3, Mr. and Mrs. Brown (Half Moon); Junior: 1, S. Brown (Half Moon); 2 and 4, K. Howlands (Half Moon); 3, K. Barrett (Doncaster).

OVER forty members of the **Chelmsford A.S.** enjoyed a very interesting talk by A. Fisher of the East London A.S. on Marine Fish Keeping. Many questions were asked by members on the particular aspect of the hobby.

A full Table Show of Tropical Pairs and Mini-Tanks was judged by A. Fisher and D. Bird. Tropical Pairs result: 1, J. Newiss; 2, C. French; 3, P. Meadows. Mini-Tank results: 1, J. Henderson; 2, K. Turner; 3, Mrs. Jane Henderson.

AT the first meeting in June of the **Whitley Bay A.S.** the club held their Bi-Annual Show. The Jar Show was judged by A. Bailey, a well-known Northern judge. The Bi-Annual Show shield was won by R. Robinson and the plaque for Best Fish in Show was won by J. T. Burn. The society's secretary, M. Rodgers, announced his decision to resign due to pressure of business. The society offered their thanks to Mr. Rodgers for a job of work well-carried out. R. Malison was nominated acting secretary. The results were: Furnished Jars: 1 and 2, M. Rodgers; 3, R. Massingham; Plants: 1 and 2, R. Massingham; 3, M. Rodgers. The trophy for the entry with most points, which was donated by the chairman, Mr. Emmerton, was presented by him to the winner M. Rodgers.

THE committee elected at the first annual general meeting of the **Banbury and District A.S.** is as follows: President: E. B. Lee of Messrs. Lee Reid & Co. (London) Ltd.; Chairman: I. Ward; Secretary: B. Hall; Treasurer: Miss H. Keen; Social Secretary: I. Poole; Show Secretary: P. Hill; Committee: C. Sykes and T. Cooper.

A shield was awarded to I. Poole for the best selection of fish throughout the year. Future meetings will be held on the second and fourth Sunday of each month at the Commodore Club Room, Banbury, at 7.00 p.m. New members always welcome.

MEMBERS of the **Torbay A.S.** have been enjoying some excellent lectures and slide shows this year. At the last meeting they were entertained by D. V. Jones from the Southampton A.S. His slide and lecture about fishkeeping and breeding was well appreciated. The first of this season's inter-club Shows was held in Torbay when Torbay won with a total of 45 points. Mrs. Lucas of Plymouth won the special award for the Best Fish in the Show. Results: Danio and W.C.M.M.: 1, Mr. and Mrs. Taylor (Plymouth); 2, M. Sangson (Torpoint); 3 and 4, J. Bragg (Torbay); Characins: 1, Mrs. Lucas (Plymouth); 2, Mr. Kirby (Plymouth); 3, T. Bowhay (Torbay); 4, S. Garrows (Torpoint); Breeders and Egglayers: 1 and 2, M. Poole (Torbay); 3, M. Leeder (Plymouth); 4, Mr. Kirby (Plymouth); Single Tailed Goldfish: 1, Mrs. Griffiths (Torbay); 2, J. Davis (Torbay); 3, G. Thompson (Torbay); 4, J. Southcott (Torpoint); Twin Tailed Goldfish: 1, M. Poole (Torbay); 2, G. Thompson (Torbay); 3, M. Mathews (Torbay); 4, Mr. Hodge; Shubunkins: 1 and 2, M. Poole (Torbay); 3, Mr. Gardner (Plymouth); 4, M. Hoskins (Plymouth).

RESULTS of **Glossop A.S.** Annual Open Show were as follow: Guppies: 1, S. Dobbs (Independent); 2, M. Titterton (Hyde); 3, Mr. and Mrs. P. H. Haydon (Hyde); Swordtails: 1, R. Holmes (Derby Regent); 2, Mr. and Mrs. Lofthouse (Huddersfield); 3, Mr. and Mrs. Hampson (Glossop); Mollies: 1, Miss A. Gregory (Nelson); 2, R. I. Payne (Merseyside); 3, Mr. and Mrs. Grimshaw (Sunnybrow); Pairs: 1 and 3, P. Ebbrell

(Hyde); 2, L. Kaye (Top Ten); Small Gouramis: 1, K. Parkes (Merseyside); 2, Mr. and Mrs. Blades (Cresswell); 3, Miss Gullane (Buxton); A.O.V. Labyrinth: 1, Miss Gullane (Buxton); 2, Miss A. Gregory (Nelson); 3, Mr. and Mrs. Lofthouse (Huddersfield); Fighters: 1, P. North (Glossop); 2, Mr. and Mrs. J. Gabe (Chesterfield); 3, R. Wood (Kraft); Barbs (Small): 1, Mr. and Mrs. Blades (Cresswell); 2, Miss A. Gregory (Nelson); 3, Mr. and Mrs. Jewell (Derby Regent); Barbs (Large): 1, I. Rowbottom (Hyde); 2, Mr. and Mrs. D. Stone (Chesterfield); 3, R. Lowe (Bolton); Cichlids (Dwarf): 1, Miss Gullane (Buxton); 2, Mr. and Mrs. Blades (Cresswell); 3, M. Trotman (Bolton); Cichlids (A.O.V.): 1 and 2, I. Rowbottom (Hyde); 3, Master Millin (North Staffs); Angels: 1, I. Rowbottom (Hyde); 2, A. Coffey (New Mills); 3, Mr. and Mrs. T. Gabe (Chesterfield); Characins (Small): 1, Mr. and Mrs. Blades (Cresswell); 2, D. Greenwood (Nelson); 3, Mr. and Mrs. Jewell (Derby Regent); Characins (Large): 1, I. Rowbottom (Hyde); 2, E. Tennant (Independent); 3, Mr. and Mrs. Norris (Loyne); A.V. Killifish: 1, Mr. and Mrs. Lofthouse (Huddersfield); 2, Thorne and O'Brien (B.K.A.); 3, Mr. and Mrs. T. Gabe (Chesterfield); Cats: Corcoran: 1, P. and H. Batchelor (Loyne); 2, R. Helms (Derby Regent); 3, Mr. and Mrs. Grimshaw (Sunnybrow); Cats (A.O.V.): 1, A. Millin (North Staffs); 2, J. Mooney (Glossop); 3, D. Buxton (Hyde); Loaches: 1, F. Mulla (Merseyside); 2, Mr. and Mrs. Norris (Loyne); 3, T. Smith (Sheffield); Sharks, Flying Fox and Laboon: 1, T. Smith (Sheffield); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, J. Mooney (Glossop); Danios, Rainbow and White Clouds: 1, T. Smith (Sheffield); 2, P. and H. Batchelor (Loyne); 3, L. Dunn (Ashton); A.O.V. Tropical: 1, K. Parkes (Merseyside); 2, B. J. Rodgers (Cresswell); 3, Mr. and Mrs. Shipman (Grantham); Fancy Goldfish: 1, Mr. Whitney (Accrington); 2, B. J. Rodgers (Cresswell); 3, Master R. A. Kaye (Top Ten); A.O.V. Goldfish: 1, Mr. and Mrs. Breatley (Belle Vue); 2, B. J. Rodgers (Cresswell); 3, Mr. Whitney (Accrington); A.O.V. Coldwater: 1 and 3, Mr. Whitney (Accrington); 2, Mr. and Mrs. Blades (Cresswell); Mini Jars: 1, R. Holmes (Derby Regent); 2, Mr. and Mrs. Blades (Cresswell); 3, Mrs. D. Robertson (Derby Regent); Pairs Egglayers: 1, Miss A. Gregory (Nelson); 2, Mr. and Mrs. Blades (Cresswell); 3, I. Rowbottom (Hyde); Pairs Livebearers: 1, Mr. and Mrs. T. Gabe (Chesterfield); 2, Mr. and Mrs. Shipman (Grantham); 3, Mr. Emwhistle (Bolton); Breeders (Egglayers): 1, Thorne and O'Brien (B.K.A.); 2, Mr. and Mrs. Shipman (Grantham); 3, Mr. and Mrs. Blades (Cresswell); Breeders (Livebearers): 1, Master A. Kaye (Top Ten); 2, P. Spittlehouse (Workshop); 3, I. Rowbottom (Hyde); Best Fish in Show: Miss Gullane (Buxton).

A very interesting lecture was given by Mr. Prince of the Romblais Water Board at the June meeting of the **Shipley Privatereers A.S.** Results of the monthly Table Show were as follow: Carps and Minnows: 1, J. Bostock; 2, D. Moorhouse; 3, A. Payne; A.O.V.: 1, D. Moorhouse; 2 and 3, A. Payne.

THE "West Midland Group" of the B.M.A.A. went on their first outing with the "Wilfrid Sub Aqua" group recently to Merfa Nefyn on the North Wales peninsula. Due to the shocking weather that prevailed the divers were unable to collect specimens as the visibility in the sea was almost nil. The few pools in the area were very poor in fauna so the party returned home almost empty handed.

At the end of May the Group had their first venture with the "Endavour Deep Sea Group" at Aberystwyth. B.M.A.A. Members arrived at the harbour in stormy weather once again and were not surprised to find the boat had yet out. While waiting for the boat's return they explored the pools that abounded there. Within a few hours the list of specimens found was quite good considering the weather, and included: *Gilania mustela* (5 bearded rockling); *Phobos ginnellus* (hutterfish); *Taurulus bobalis* (scorpion) including 1 in. fry; *Berlinus pholis*



(shanny); *Gobius paganelus* (rock goby); *Anquida anquilla* (common eel). Crabs were very plentiful and an unidentified species was found. Small hermit crabs, brittle stars and the small flat periwinkle (*Littorina littorea*) were also in abundance. Two types of sponge, various coloured beaded and the common prawn made up the list. On the other beach two egg cases of the Thornback ray (*Raja clavata*) and three cases of the Lesser spotted dogfish (*Scyliorhinus canicula*) were found. On examination they were found to contain live embryos in various stages of development.

NEARLY two thousand visitors came to the Littlehampton and Hogon A.S. second Tropical and Coldwater Fish Exhibition. Ninety fully furnished aquaria were on show to the public, and the interest shown in the fish and in joining the L.B.A.S. was most encouraging. On the second day there was also an Inter-Club Table Show when the visiting clubs were: Beahill A.S., Croeydon A.S., East Dulwich A.S., Hastings A.S., Mid Sussex A.S., and Runnymede A.S.

Results were as follow: Livebearers: 1, R. Mills (L. & B.); 2, K. Dryers (Croy.); 3, P. Bates (Bex.); 4, D. Soper (Mid. Sx.). Labyrinth: 1, D. Norman (Run.); 2, D. Cary (Hast.); 3, R. Wright (E. Dul.); 4, J. Shrad (Bex.). Danios and W.C. M.M.: 1, D. Norman (Run.); 2, K. Smith (Run.); 3, S. Gould (Croy.); 4, L. Derrick (Croy.). Coldwater: 1, K. Dryers (Croy.); 2, M. Quennell (E. Dul.); 3, D. Pope (Croy.); 4, P. Bates (Bex.). Catfish: 1, R. Wright (E. Dul.); 2, M. Quennell (E. Dul.); 3, C. Jones (Bex.); 4, D. Soper (Mid. Sx.). Characins: 1, R. Wright (E. Dul.); 2, Mrs. N. Quennell (E. Dul.); 3, C. Meers (Run.); 4, D. Jolliffe (Bex.). Rasboras: 1, C. West (Mid. Sx.); 2, D. Jolliffe (Bex.); 3, P. Stapely (Hast.); 4, M. Quennell (E. Dul.). Barbs: 1, L. Derrick (Croy.); 2, J. Sheid (Bex.); 3, K. Smith (Run.); 4, D. Sutton (E. Dul.). Cichlids: 1, L. Derrick (Croy.); 2, P. Tees (Mid. Sx.); 3, C. Meers (Run.); 4, A. T. Smith (Croy.).

Points awarded to the Clubs were as follow: Croeydon 21 (three firsts), E. Dulwich 21 (two firsts), Runnymede 17, Beahill 13, Mid Sussex 9, Hastings 5, and Littlehampton and Hogon 4.

The "Beahill Trophy" for the winning club went to Croeydon A.S. The Trophy for the Best Fish of the Show went to R. Wright of E. Dulwich for his winning Catfish. F.B.A.S. Judges for the afternoon were C. Brown and Mr. Tompkins, both from London.

RECENTLY the Brentwood A.S. had a visit from Roy James, who gave a lecture on his successful breeding of Discus. Mr. James told the full story of his attempts at breeding Discus starting with his early failures and going through his various ideas and experiments which culminated in the successful spawning and rearing of Brown Discus. A most interesting evening was had by all those present. At the end of June, Mr. Mills gave a talk about Angels. This too, was an interesting lecture covering all aspects of these beautiful fish.

Table Show results were as follow: Cichlids: 1, I. Quarby; 2, K. Canham; 3, L. Dwight. Angels: 1, D. Green; 2, L. Dwight; 3, K. Canham. The Brentwood A.S. have vacancies for members and anyone interested should phone Upminster 27555 for Publicity Officer.

THE Yeovil and D.A.S. (F.B.A.S.) Inter-Club Tropical Fish Show with Weston-super-Mare T.P.C. resulted in a win for the latter club. The Show consisting of fourteen classes was judged by Mr. Lennox (Salisbury) and Mr. Cavill (Taunton) with results as follow: Platies: 1 and 2, Yeovil. Mollys: 1 and 2, Weston. Swordtails: 1 and 3, Yeovil; 2 and 4, Weston. Breeders (Livebearers): 1, Weston; 2, Yeovil. Barbs: 1 and 2, Yeovil; 3, and 4, Weston. Characins: 1 and 3, Yeovil; 2 and 4, Weston. Labyrinth: 1 and 4, Yeovil; 2 and 3, Weston. Large Cichlids: 1 and 3, Weston; 2 and 4, Yeovil. Small and Medium Cichlids: 1 and 2, Yeovil; 3 and 4, Weston. A.O.V. Bigglayers: 1 and 4, Weston; 2 and 3, Yeovil. Breeders (Egglayers): 1 and 2, Weston; 3, Yeovil. Catfish: 1, Yeovil; 2 and 3, Weston. Egg-laying

Toothcarps: 1 and 2, Weston. Male Fighters: 1 and 3, Weston; 3, Yeovil. Best Fish in Show: Shubertii Barb, entered by M. Fisher (Yeovil). Results: Yeovil 57 points; Weston-super-Mare 68 points. During the judging J. Walker of Poole gave a very interesting talk on Breeding Worms. He produced various cultures for inspection which showed the methods of keeping and feeding.

AN interesting lecture on keeping and breeding Cichlids was given by L. Jordan at the Slough and District A.S. June meeting. Table Show results, judged by T. Cruickshank, were: A.V. Guppy: 1, R. J. Miles; 2, V. W. Young. Swordtail: 1, F. E. Bayley; 2, B. Withers. Platy: 1 and 2, V. W. Young. Molly: 1, F. E. Bayley; 2, A. N. Young.

On 16th August there will be a talk by R. Feeder on Plants. The Table Show is for Barbs and Characins.

AT the first meeting of the month Mr. Sellick of Hemel Hempstead gave Hastings and St. Leonards A.S. an illustrated lecture on Rift Valley Cichlids. The result of Hastings-Tonbridge inter-club competition, judged by C. West, P.B.A.S., was: Characin: 1, B. Rood (T); 2, J. Bellingham (T); 3, R. Taylor (T). Barbs: 1, 2 and 3, I. Bellingham (T). Corydoras: 1, D. Mathieson (T); 2, I. Mathieson (T); 3, T. Adams (H.). Labyrinth: 1, D. Carey (H); 2, D. Mathieson (T); 3, B. Rood (T). Livebearers: 1, I. Mathieson (T); 2, T. Elliot (H); 3, A. Adams (H). Fish of the Show: Mr. Bellingham (T) with an Chola Barb. The result of the earlier Table Show for Cichlids was 1, 2 and 3, C. Meeching.

OPEN SHOW results of the Riverside A.S. were as follow: Furnished Aquaria: 1 and 3, M. Goss (Riverside); 2, J. Batts (Baling). Barbs: 1, Mrs. J. Ross (East London); 2, S. Mason (Roehampton); 3, J. Batts (Baling); 4, D. MacKay (Kingston). Characins: 1 and 3, J. Pollard (Kingston); 2, S. Mason (Roehampton); 4, P. Coyle (Indp.). Cichlids: 1, J. Batts (Baling); 2, R. Bowers (Indp.); 3, W. Goodwin (Blenchley); 4, D. Howe (Anson). Angels: 1, J. Batts (Baling); 2, J. Healey (Jaling); 3, M. Chapman (Basingstoke); 4, M. Nethersell (Riverside). Class D: 1, M. Chapman (Basingstoke); 2 and 3, W. Goodwin (Blenchley); 4, A. Brook (Hounslow). Labyrinth: 1, G. Greenhalf (Kingston); 2, D. MacKay (Kingston); 3, D. Armour (Riverside); 4, J. Batts (Baling). Siamese Fighters: 1 and 2, J. Vickers (East London); 3, A. Taylor (Anson); 4, Mr. Lymster (Leytonstone). Bigglayers Tooth Carps: 1 and 4, W. Goodwin (Blenchley); 2 and 3, T. Glass (Hendon). Tropical Catfish: 1, 2 and 4, G. Greenhalf (Kingston); 3, J. Batts (Baling). Corydoras and Brochis: 1, V. Mash (Indp.); 2, R. Sellers (Baling); 3, R. Bowers (Indp.); 4, P. Mash (Baling). Rasboras: 1 and 3, J. Mash (Baling); 2 and 4, D. MacKay (Kingston). Danios and W.C.M.M.: 1 and 3, R. Bowers (Indp.); 2, A. Mosey (Apex); 4, T. Kilg (Erith and District). Loach: 1 and 4, M. Carter (Bracknell); 2, Mr. Lymster (Leytonstone); 3, L. Leslie. A.O.S. Tropical Egg-layers: 1, J. Garrad (Runnymede); 2, D. Childs (Bracknell); 3, R. Bowers (Indp.); 4, P. Mash (Baling). Male Guppies: 1, T. Cruickshank (Baling); 2, S. Mason (Roehampton); 3, M. Chapman (Basingstoke); 4, A. Taylor (Anson). Female Guppies: 1, P. Mosey (Apex); 2, A. Taylor (Anson); 3, R. Bowers (Indp.); 4, J. Garrad (Runnymede). Swordtails: 1, S. Mason (Roehampton); 2 and 3, T. Cruickshank (Baling); 4, A. Blake (Basingstoke). Platys: 1 and 4, A. Blake (Basingstoke); 2, A. Loveday (Hounslow); 3, D. Cruickshank (Baling). Mollys: 1 and 4, P. Mosey (Apex); 2, M. Nethersell (Riverside); 3, D. Cruickshank (Baling). A.O.S. Livebearers: 1, T. Kilg (Erith and District); 2, B. Bisson (Basingstoke); 3 and 4, A. Blake (Basingstoke). Single Tail Goldfish: 1, 3 and 4, P. Feeder; 2, J. Pollard (Kingston). Twinstail Goldfish: 1, 2, 3 and 4, Stefanini (Riverside). A.O.S. Coldwater: 1, T. Batts (Baling); 2, M. Strange (Basingstoke); 3, M. Goss (Riverside); 4, I. Batts (Baling). Breeders (Egglayers): 1, R. Newman (Uxbridge); 2, D. Childs (Bracknell); 3, D. Post

(Basingstoke); 4, J. Boss (E.L.A.P.A.). Breeders (Livebearers): 1, A. Blake (Basingstoke); 2, M. Strange (Basingstoke); 3, S. Powell (Riverside); 4, J. Bisson (Hounslow). Plants: 1, R. Furnell (Uxbridge); 2, M. Strange (Basingstoke); 3, M. Gollies (Hounslow); 4, M. Goss (Riverside). Best Fish in Show: G. Greenhalf

THE results of the first leg of the Inter-Society Show between Hucknall and Bulwell A.S. and Alfreton A.S. were: Alfreton 18 pts., Hucknall and Bulwell 14 pts. An entry of sixty-eight fish were benched and the Best Fish in the Show went to Mrs. Linley of Alfreton with an angel fish. The judge was H. Inman. The return will be held at Alfreton in October, the dates yet to be arranged. Anyone wishing to join Hucknall and Bulwell A.S. should contact Mrs. B. Richardson, 11 Newlyn Drive, Western Blvd., Nottingham. Telephone 72049.

ANOTHER interesting evening was spent at Arden Road School, Smethwick, when the Smethwick and District A.S. met to hear a very interesting talk by Don Johnstone on good and bad aquaria equipment. He showed examples dating from 1945 up-to-date. Results of the Table Show for Characins were: 1 and 3, D. Johnstone; 2, A. Layton. Anabantids: 1, P. Troth; 2, E. Woodward.

A BUSY and interesting evening was enjoyed by members at the June meeting of the Welbeck A.S., Castleford. Members discussed breeding, rearing and the general wellbeing of tropical fish. Gordon Thickbroom answered numerous questions put to him by members of the Society. A small Table Show was judged by Master Gary Thickbroom, the results of which were as follow: A.V. Male: 1, P. Baker; 2, G. Newbould; 3, D. Pitchford. A.V. Female: 1, D. Pitchford (Best in Show); 2, G. Newbould; 3, L. and S. Pitchford. Juniors: 1, P. Baker; 2, Philip Baker; 3, A. Barrett. Meetings are held on the third Wednesday of each month at the British Legion Club, Welbeck Street, Castleford, at 7.30 p.m. Any new members wishing to come along will be made very welcome.

AT the June meeting of GKN P. and A.S., which took place in the Works Canteen in Salisbury Street, Darlston, after thanking the Club for the great effort made in the highly successful promotion of their first Open Show, the president handed over to Doctor Paul Hammett for a talk on the properties and capabilities of the aquarist's medium—water. The show results: Rasboras: 1, 2, 3 and 4, T. Lowe. Danios and White Clouds: 1, 2, 3 and 4, A. Wright. A.O.V. Tropical: 1 and 3, D. Rickuss; 2, A. Wright. Best in Show: A. Wright.

AT the June meeting of the New Forest A.S., A. Williamson gave a talk on how to make a pond in a weekend, after which there was a discussion and some of the members came forward with their own ideas. The Table Show results were as follow: Guppy: 1 and 2, B. Higginson; 3 and 4, A. Williamson. London Shubunkins: 1 and 2, D. Lane; 3, A. Williamson. Bristol Shubunkins: 1, L. J. Percy; 2, A. Williamson.

THE Independent A.S. commenced June with a challenge match against Walthamstow A.S., which the Independent won by 25 points to 15. This was followed by a coldwater show. Whist J. Kettle was judging, the members present took part in a fishy version of the radio game "Just-a-Minute." The subjects were devised by T. Laughlan for members to talk on for a minute. The last meeting of the month was a preview show for the next N.W.L.G.A.S. being held at the Independent venue.

AT the inaugural committee meeting of E.A.F.A. (East Anglian Federated Aquarists) at Bury St. Edmunds, in May, Bury St. Edmunds, Great Yarmouth, Ipswich and Norwich Societies were each represented by four members. The aim of E.A.F.A. is to promote open shows, competitions, films and slide shows, also a classification board for speakers and judges within the East Anglian



area, by federated societies agreed participation in a self-supporting I.A.F.A. It was agreed to accept application for membership into I.A.F.A. from any other aquarist club or society (large or small) in the East Anglian area. All interested should write to the secretary: J. H. C. Wood, 47 Moose Lane, Blackthorpe-Rougham, near Bury St. Edmunds, W. Suffolk. Other elected officials were: Chairman, W. Card (Ipswich A.S.); treasurer: D. Gantam (Great Yarmouth A.S.); secretary: C. Williamson (Norwich A.S.).

The first E.A.F.A. only Open Show was held in June to discover how such a show would succeed. Each society supplied one judge to E.A.F.A. Judges secretary, plus many members who supplied entertainment with a film and slide show, raffle and that wonderful personal contact and knowledge; that made a grand first timer with 119 entries being shown in eighteen classes in two very crowded halls. The Junior section produced seventeen entries and a result that proved the keenness of competition throughout the show, with the first three places going to Great Yarmouth, Bury St. Edmunds, Ipswich. "Best of Show" was won by Mrs. White (Great Yarmouth) with a Ruby Shark. The next show will be held in September and it is hoped that even more clubs in East Anglia will join this proven, capable venture that can only increase their societies' interest and facilities.

**THE Alfreton A.S. and Sherwood A.S. met again for the first leg of an Inter-Society match at the end of May. Ken Colton (Sheffield) was the judge and Best in Show was B. Clarke of Sherwood. Six classes were arranged and on the night 68 fish were benched. The results were as follows: Characins (small): 1, Mrs. J. Lindley; 2 and 3, M. Darrington. Cichlids (Dwarf): 1 and 2, M. Footitt; 3, Miss M. Lindley. Barbs (Large): 1, B. Clarke; 2 and 3, A. West. Killifish: 1, 2 and 3, S. Hill. Sharks and Rasboras: 1, W. Downing; 2, J. Wright; 3, S. Dooley. Danios and Minnows: 1, B. Clarke; 2 and 3, M. Footitt. Points for the show were: Alfreton A.S. 24; Sherwood 12.**

DESPITE the inclement weather many exhibitors travelled long distances to attend the Boston A.S. Open Show, and the following were the results: Livebearers—Guppies: 1, Mr. Kirk and Son (Grimby); 2 and 3, B. K. Rodgers (Creswell). Mollies: 1, J. Igoe (Sherwood); 2 and 3, S. Harrison (Sherwood). Swordtails: 1, Mr. Kirk and Son (Grimby); 2, R. Hilsop (Swillington); 3, Mr. and Mrs. Copley (Doncaster). Platies: 1, C. Ward (Doncaster); 2, D. Stead (Swillington); 3, Mr. and Mrs. Dases (Doncaster). Barbs (under 3 in.): 1, Mr. Jenson (Grimby); 2, Mr. Footitt (Alfreton); 3, D. Wright (Alfreton). Large Barbs: 1 and 2, R. Clarke (Sherwood); 3, Mrs. Rawling (Lincoln). Characins (Small): 1, Mr. and Mrs. Blades (Creswell); 2, Mr. Pogson (Scunthorpe); 3, Mr. D. Moody (Boston). Characins (Large): 1, J. A. Whiteley (Alfreton); 2, Messrs. Haines and Whitehead (Grimby); 3, Mr. and Mrs. Downing (Sherwood). Killifish: 1, J. S. Hall (Alfreton); 2 and 3, B. Cooper (King's Lynn). Minnows and Danios: 1, Mr. and Mrs. Blades (Creswell); 2, R. Clarke (Sherwood); 3, Mr. Footitt (Alfreton). Sharks and Foxes: 1, Mr. and Mrs. Blades (Creswell); 2, Mr. Robinson (Grimby); 3, Mr. Holmes (Derby). Rasboras: 1, R. Hilsop (Swillington); 2, Mr. Kenridge (Harlow); 3, Mr. and Mrs. Blades (Creswell). Dwarf Cichlids: 1, Mr. Reynolds (Swillington); 2, H. Kuhn (Lincoln); 3, B. J. Rodgers (Creswell). Large Cichlids: 1, J. A. Whiteley (Alfreton); 2, D. Robertson (Derby); 3, Mrs. Rawling (Lincoln). Angels: 1 and 3, Mrs. Lindley

(Alfreton); 2, R. Clarke (Sherwood). Catfish: 1, B. Belley (Sherwood); 2, Mr. and Mrs. Downing (Sherwood); 3, Mr. Jackson (Workop). Loaches: 1, Mr. Dammis (Skegness); 2, Mr. Keen (Bury St. Edmunds); 3, B. Belley (Sherwood). Fighters: 1, Mr. and Mrs. Toyne (Sheffield); 2, Mr. Pogson (Scunthorpe); 3, Mr. Mawson (Workop). A.O.V. Anabantids: 1, Mr. Summers (Doncaster); 2, J. A. Whiteley (Alfreton); 3, Mr. Kirk and Son (Grimby). A.O.V. Tropical: 1, Mr. Hilsop (Swillington); 2, Mr. Summers (Doncaster); 3, J. S. Hall (Alfreton). Breeders (Egglayers): 1, H. Kuhn (Lincoln); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Blades (Creswell). Breeders (Livebearers): 1, J. A. Whiteley (Alfreton); 2, Mr. Jackson (Workop); 3, Mr. Spittlehouse (Workop). Pairs: 1, J. A. Whiteley (Alfreton); 2, Mr. and Mrs. J. Igoe (Sherwood); 3, M. Bower (Sherwood). Goldfish and Comets: 1 and 3, J. S. Hall (Alfreton); 2, B. J. Rodgers (Creswell). Shubunkins and Fancy Goldfish: 1, 2 and 3, J. S. Hall (Alfreton). A.O.V. Goldwater: 1 and 2, J. S. Hall (Alfreton); 3, T. Sands (Boston). Best Fish in Show: Mr. and Mrs. Blades (Creswell). Best Tropical Fish: Mr. and Mrs. Blades (Creswell). Best Goldwater Fish: J. S. Hall (Alfreton).

THE first annual general meeting of **Hinckley and District A.S.** was held in June when the following officers and committee were elected for the ensuing year: President, N. Pywell; Hon. Secretary, K. J. Bates (re-elected); Hon. Chairman, A. Clarke; Hon. Treasurer, Mrs. Fielding; Librarian, Master Ian Shipley (Junior Member); Auditor, to be elected; Committee, T. Redfern, Mr. and Mrs. K. Geary. N. Pywell presented the awards for the 1971/2 meetings, which were as follows: The "Norman Pywell" trophy for Highest Annual Points: K. J. Bates; the "Dave Sparrow" trophy for Best Fish of Year: A. Saunders; the "King British" trophy for Most Individual Entries: K. J. Bates; the "Society" trophy for Best Egglayer Pairs: Mr. and Mrs. Hutt; the "Maureen Best" trophy for Best Livebearer Pairs: K. J. Bates. Awards to the Juniors: The "June Bates" trophy for Highest Annual Points: Ian Shipley; the "Ken Bates" trophy for Best Fish of the Year: Keith and David Bates; the "Mick Beard" trophy for Most Individual Entries: Ian Shipley; the "Society" trophy for Best Egglayer Pairs: Ian Roberts.

AT the June meeting of the **Keighley A.S.** Mr. Foden of Huddersfield again gave a very interesting talk on general topics on connection with tropical fish. The results of the monthly Table Show were: 1 and 2, Fish of the Month: Characins: Mr. Hart; 3, Mr. Hinds. A.O.V.: 1, Mr. Mosley; 2, Mr. Ibbotson; 3, Mr. Hart. Novice A.O.V.: 1 and 3, Mr. Ibbotson; 2, Mr. Hart. Junior A.V.: 1 and 2, Miss Sagar; 3, Master Murray.

MEMBERS of the **Bradford and District A.S.** heard a talk from G. Fairclough on Marines at the June meeting. For the August meeting the speaker will be W. H. Fordham. It is also planned to organise a trip to Belle Vue Aquarium for a look behind the scenes, which should be of great interest to all members.

INSTEAD of the usual film show or lecture at the **Kettering A.S.** June meeting, members gave short talks on their personal experiences with the breeding of various fishes. A total of 58 fishes were shown and these were judged by D. Page of Carby A.S. First and third places in the Any Variety Tropical Class were awarded to Mrs. K. Dainty, who entered two Angel Fish; second place going to J. Dainty for a Green Sailfin Molly. In the third leg of the Fish of the Year Competition A. Weatherly took first place with a Rasbora Sarawakensis; J. Dainty was second with a Cichlasoma Severum and K. Taylor was third with a pencil fish. The present positions in the Fish of the Year Competition are 1, J. Dainty; 2, A. Weatherly; 3, K. Taylor.

RESULTS of the Annual Open Show of the **Accrington and District A.S.** were as follows: Guppies: 1, 2 and 3, L. Leadbetter (Blackpool); Platies: 1, L. Kay (Top Ten); 2, J. S. Hall

(Alfreton); 3, B. Black (Blackpool). Swordtails: 1, P. Cooke (Huddersfield); 2, C. Beckenham (Oldham); 3, Mr. and Mrs. Cobb (Belle Vue). Mollies: 1, R. Payne (Merseyside); 2, H. and A. Wareing (Lytham); 3, B. Black (Blackpool). A.O.V. Livebearers: 1, 2 and 3, J. S. Hall (Alfreton). Characins (under 3 inch): 1, M. Tonge (Oldham); 2, Mr. and Mrs. Roberts (Valley); 3, G. Kaye (Top Ten). Characins (over 3 inch): 1, D. and R. Standen (Loyne); 2, Mr. and Mrs. Walker (Morecambe); 3, B. and B. Booker (Morecambe). Cichlids (under 3 inch): 1, M. Tonge (Oldham); 2, R. Lowe (Bolton); 3, Mr. and Mrs. Norm (Loyne). Cichlids (over 3 inch): 1, R. Dyson (Blackpool); 2, B. and B. Booker (Morecambe); 3, D. Scott (Morecambe). Angels: 1, M. Wild (Accrington); 2, P. Myerrough (Accrington); 3, Miss A. Gregory (Nelson). Barbs (under 3 inch): 1, P. Gregory (Oldham); 2, A. Gregory (Oldham); 3, J. Tomlinson (H.P.A.). Barbs (over 3 inch): 1, R. Lowe (Bolton); 2, M. Goodchild (Valley); 3, R. Croft (Blackpool). Rigg-laying Toothcarps: 1, M. Tonge (Oldham); 2, D. Mosley (Keighley); 3, J. Mosley (Keighley). Carps and Minnows: 1, D. Scott (Morecambe); 2, B. Dawson (Middleton). Labeco, Sharks and Foxes: 1, Mr. and Mrs. Kennedy (Valley); 2, C. Whitey (Accrington); 3, R. I. Payne (Merseyside). Fighters: 1, R. Mitchell (Blackpool); 2, J. S. Hall (Alfreton); 3, Mr. and Mrs. Kenady (Valley). Labyrinth: 1, M. Jones (Valley); 2, Miss A. Gregory (Nelson); 3, Mrs. A. Lord (Valley). Danios and Rasboras: 1 and 3, P. and H. Batchelor (Loyne); 2, B. Black (Blackpool). Pairs (Livebearers): 1, L. Leadbetter (Blackpool); 2, J. Hesketh (Accrington); 3, K. Young (Leigh). Pairs (Egglayers): 1, R. Dyson (Blackpool); 2, Miss A. Gregory (Nelson); 3, P. Gregory (Oldham). Breeders (Livebearers): 1, A. Kaye (Top Ten); 2, L. Leadbetter (Blackpool); 3, J. S. Hall (Alfreton). Breeders (Egglayers): 1, R. Dyson (Blackpool); 2, M. Tonge (Oldham); 3, D. Charlton (Merseyside). Catfish and Loach (under 3 inch): 1, A. Gregory (Oldham); 2, D. Scott (Morecambe); 3, Mr. and Mrs. Cobb (Belle Vue). Catfish and Loach (over 3 inch): 1, Mr. and Mrs. Norris (Loyne); 2, D. Charlton (Merseyside); 3, P. and H. Batchelor (Loyne). A.O.V. Tropicals: 1, P. and H. Batchelor (Loyne); 2, C. Beckenham (Oldham); 3, J. S. Hall (Alfreton). Common Goldfish and Comets: 1, H. Pennall (Ostram); 2 and 3, J. S. Hall (Alfreton). Shubunkins: 1, J. S. Hall (Alfreton); 2, Mr. and Mrs. Cobb (Belle Vue); 3, S. Walsh (Accrington). Moors: 1, A. Philpott (Independent); 2, S. Walsh (Accrington); 3, R. Duckworth (Accrington). Veiltails: 1 and 2, C. Whitey (Accrington); 3, J. S. Hall (Alfreton). Koi Carp: 1, S. Walsh (Accrington); 2 and 3, J. S. Hall (Alfreton). Fantails: 1, H. Pennall (Ostram); 2 and 3, S. Walsh (Accrington). Lionheads: 1 and 3, J. S. Hall (Alfreton); 2, C. Whitey (Accrington). A.O.V. Goldwater: 1, C. Whitey (Accrington); 2, S. Walsh (Accrington); 3, J. S. Hall (Alfreton). A.O.V. Fancy Goldfish: 1, L. Leadbetter (Blackpool); 2, C. Whitey (Accrington); 3, J. S. Hall (Alfreton). Coldwater Breeders Single Tail: 1 and 2, J. S. Hall (Alfreton). Coldwater Breeders Twin Tail: 1 and 2, J. S. Hall (Alfreton). Juniors: 1, S. Price (Loyne); 2, R. Norris (Loyne); 3, D. Greenwood (Nelson). A.V. Marins: 1, L. Leadbetter (Blackpool). Ladies Class A.V.: 1, Mrs. Standen (Loyne); 2, S. Mitchell (Blackpool); 3, K. Young (Leigh). The Best Fish in the Show was a Siamese Tiger, owned by Mrs. Standen (Loyne) and was awarded 84 points.

DISAPPOINTMENT was expressed by A. Dawes, chairman of the **Brighton and Southern A.S.** that so few members supported the away inter-club table shows. During the evening Brian Baker (J.R.A.S. "A" class judge) lectured on labyrinth fish, describing how these fish first developed their breathing systems, and went on to detail the best way to breed these fish in an aquarium. Any further information on the Society may be obtained from the secretary, C. P. Corbin, 80 Marlborough Drive, Burgess Hill 41632. Please note that the Brighton and Southern A.S. Open Show is on

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the 10th September at the Marmion Centre, Marmion Road, Hove, Sussex. Schedules from C. P. Corbin, address above.

**OPEN SHOW** results of the Coventry Pool and A.S. were as follows: Broad Tail Guppies: 1, K. L. Brown (M.T.A.); 2 and 4, T. A. Cruickshank (Haling); 3, S. M. Smith (Coleshill Sel.); A.O.V. Male Guppy: 1, D. Basingwood (Coventry); 2, T. A. Cruickshank (Haling); A.V. Female Guppy: 1 and 4, R. Holmes (Derby); 2, R. Patterson (Coventry); 3, L. J. Hooper (W.A.S.); A.V. Molly: 1 and 2, D. Cruickshank (Haling); 3, Mr. Jeffs (Nuneaton); 4, D. Wilson (Lower Gornal); A.O.V. Livebearer: 1, G. Turner (Pelsall); 2, D. Cruickshank (Haling); 3, S. Hooper (W.A.S.); 4, D. White (Bedworth); A.V. Brachydanio, Dumbo and W.C.M.M.: 1 and 4, R. Kerridge (Harrow); 2, Mrs. Moore (Bedworth); 3, B. Kirk (L.A.P.S.); A.V. Rainbow: 1, K. L. Brown (M.T.A.); 2, R. North (Pelsall); 3, Mr. Gillett (Nuneaton); 4, Mr. Jeffs (Nuneaton); Barbs (M.A.A.S. Section A): 1, G. Turner (Pelsall)\*; 2, M. Petton (Wellingborough)\*; 3, F. Underwood (Spa A.D.G.); 4, Mr. Bates (Hinkley); Barbs: 1, D. Cruickshank (Haling)\*; 2, P. Hinde (Coventry)\*; 3, B. and F. Hirst (Coventry); 4, J. and A. Simmons (Coventry); A.O.V. Barbs: 1, P. Underwood (Spa A.D.G.); 2, A. Gregory (Haden); 3, Mr. and Mrs. Bird (Spa A.D.G.); 4, D. Stone (Cherterfield); Cichlids—Aptistogramma, Pelmatocrochis, Nannochromis and Nannacara: 1, K. Ankers (North Staffs.); 2, R. Kerridge (Harrow); 3, K. L. Brown (M.T.A.); 4, R. Barnett (W.A.S.); Cichlids—Angelfish: 1, Mr. Bates (Hinkley); 2, R. Hough (M.T.A.); 3, E. Shobby (Coventry); 4, P. Lees (Stone); A.O.V. Cichlids: 1, A. Kinsey (Independent)\*; 2, G. R. S.\*; 3, J. Fox (Hayden)\*; 4, R. Roberts (GKN); Characins—Hemigrammas, Hyphessobrycon and Cheirodon: 1 and 3, Mr. and Mrs. Jewell (Derby); 2, D. Robertson (Derby)\*; 4, Mr. Noble (Bristol); Characins: 1, B. and F. Hirst (Coventry)\*; 2, Mr. and Mrs. Jewell (Derby)\*; 3, Mr. and Mrs. R. Crosser (Tamworth); 4, S. Applin (Independent); A.O.V. Characins: 1, Atrowood and Williams (Rubery); 2, L. Hooper (W.A.S.); 3, B. C. Roberts; 4, Mr. Gillett (Nuneaton); Emulating Toothcarps: 1, G. Turner (Pelsall); 2, B. and F. Hirst (Coventry); 3, B. Hughes (Stone and H.K.A.); 4, L. B. Jimmy (Ipswich); Male Siamese Fighters: 1 and 2, Mr. Evans (Stone); 3, F. Underwood (Spa A.D.G.); 4, T. Hamshire (Beivord); A.O.V. Anabantid: 1 and 2, K. Smith (W.A.S.); 3, Mr. and Mrs. Hall (Nuneaton); 4, R. Barnett (W.A.S.); Catfish—Corydoras and Brochis: 1, G. Turner (Pelsall); 2, A. Kinsey (Independent); 3, J. Short (Coely); 4, T. A. Cruickshank (Haling); A.O.V. Catfish: Mr. Noble (Beivord); 2, A. Gregory (Haden); 3, R. Hough (M.T.A.); 4, C. Sadler (Rubery); Loaches: 1, G. Turner (Pelsall); 2, R. Kerridge (Harrow); 3, K. Ankers (North Staffs.); 4, A. Gregory (Haden); Livebearer Pairs: 1, Mr. and Mrs. Gale (Cherterfield); 2, B. Moore (Bedworth); 3, K. L. Brown (M.T.A.); 4, G. and S. Egglayer (Pais); 1, R. Hough (M.T.A.); 2, P. Hinde (Coventry); 3, T. A. Cruickshank (Haling); 4, Whitfield and Massey (Rubery); Livebearer (Broods): 1, Mr. and Mrs. Simpson (Bedworth); 2, Mrs. Moore (Bedworth); 3, S. M. Smith (Coleshill Sel.); 4, P. Underwood (Spa A.D.G.); Egglayer Broods: 1 and 4, R. North (Pelsall); 2, S. M. Smith (Coleshill Sel.); 3, R. Trippas (M.T.A.); Labos and Sharks: L. B. Grougaze (North Warwick); 2, J. A. Clayton (Luton); 3, I. Poed (Hayden); 4, D. Basingwood (Coventry); A.O.V. Tropical: 1, R. Kerridge (Harrow); 2, K. Ankers (North Staffs.); 3, Mr. Jeffs (Nuneaton); 4, E. Watkins (Coventry); Pedigree Single-tailed Goldfish: 1, F. Watts (Coventry)\*; 2 and 3, D. Basingwood (Coventry); 4, R. and R. Commander (Tamworth); Pedigree Twin-tailed Goldfish: 1, R. and R. Commander (Tamworth); 2 and 3, B. Bromfield (Coventry); 4, Mr. and Mrs. M. Deakin (Nuneaton); A.O.V. Goldfish: 1 and 2, C. Cartwright (Leicester Ag.); 3, M. Shilton (Polesworth); 4, C. Higgs (Gloucester); A.V. Pond and River Fish: 1, K. Ankers (North Staffs.); 2, N. Wood (Gloucester); 3, M. Shilton (Polesworth); 4, Mr. and Mrs. M. Deakin (Nuneaton); Miniature Furnished Jar: 1 and 3,

Mrs. D. Ketchell (Coventry); 2 and 4, G. and S. \*Gold Star Awards (80 pts. and over). Society with most entries: (Out of 33 societies represented at the show, coming from as far afield as Bristol, Chesterfield, London, Derby, Ipswich and Gloucester, as well as most of the local clubs, Bedworth A. and P.S. entered 52 fish. Society with most points: Nuneaton A.S. with eight awards.

**RESULTS** of the first Area Group Table Show of Leytonstone and Stratford District A.S. were as follows: Female Guppies: 1, I. Murdoch (Harrow); 2 and 4, K. Nutt (Totterham); 3, L. Clements (Totterham); Male Guppies: 1, A. Kimberley (Leytonstone); 2 and 4, K. Nutt (Totterham); 3, I. Murdoch (Harrow); Fighters: 1, R. Kerridge (Harrow); 2, J. Duncan (Harrow); 3, Mrs. H. Lugmayer (Leytonstone); 4, V. Stone (Leytonstone); Toothcarps: 1, Mrs. H. Lugmayer (Leytonstone); 2 and 4, K. Nutt (Totterham); 3, D. Bundy (Bethnal Green); Best Fish in Show: Mrs. M. Lugmayer with Male Rivalus. Overall points: 1, Totterham (14); 2, Harlow (13); 3, Leytonstone (11); 4, Bethnal Green (2).

**RESULTS** of the Southend, Leigh and District A.S. Open Show were: Individual Furnished Aquaria: 1, K. Appleby (Thurrock); 2, Mrs. J. J. Arrow (East London); 3, E. Nicol (Thurrock); 4, H. Preston (Southend); Barbs: 1, S. H. Boss (East London); 2, R. Bisson (Basingstoke); 3, R. Argent (East London); 4, Mr. and Mrs. Hubert (Southend); Characins: 1, R. Graves (Southend); 2, S. Mason (Rochampton); 3, R. Argent (East London); 4, D. M. Cheswright (Southend); Cichlids: 1 and 2, K. Adams (Southend); 3, and 4, Mr. and Mrs. Hubert (Southend); Angelfish: 1, E. Booth (Southend); 2, R. S. Alborough (Thurrock); 3, P. O'Bryan (Thurrock); 4, G. M. Pareson (East London); Aptistogramma, Pelmatocrochis and Nannacara: 1, R. Bisson (Basingstoke); 2, R. Kerridge (Harrow); 3, D. M. Cheswright (Southend); 4, P. H. Vicker (East London); Betta Splendens: 1, F. H. Vicker (East London); 2, K. Graves (Southend); 3, R. Kerridge (Harrow); 4, P. Nicholls (Southend); Labryrinths: 1 and 4, D. Adams (Bethnal Green); 2, D. Lambourne (Rochampton); 3, D. Little (Southend); Toothcarps: 1 and 3, K. Appleby (Thurrock); 2, M. Thorley (Southend); 4, L. A. Riddles (Thurrock); Tropical Catfish: 1, D. Lambourne (Rochampton); 2, B. Wright (Thurrock); 3, J. London (Thurrock); 4, D. Lambourne (Rochampton); Corydoras and Brochis: 1 and 4, P. A. Moye (Apex); 2, P. O'Bryan (Thurrock); 3, D. King (Kingston); Rasbora: 1, P. O'Bryan (Thurrock); 2, F. H. Vicker (East London); 3, K. Adams (Southend); 4, L. R. Baker (East London); Danios and W.C.M.M.: 1 and 2, B. Bisson (Basingstoke); 3, R. Kerridge (Harrow); 4, F. Gardner (Southend); 1, D. M. Cheswright (Southend); 2, P. Gardner (Southend); 3, J. London (Thurrock); 4, D. Adams (Bethnal Green); A.O.S. Tropical Egglayers: 1, Mr. and Mrs. Hubert (Southend); 2, 3 and 4, D. Adams (Bethnal Green); Pairs: 1, B. Wright (Thurrock); 2, 3 and 4, K. Adams (Southend); Guppy (male): 1, W. Wood (Southend); 2, K. Graves (Southend); 3, D. Adams (Bethnal Green); 4, S. Norris (Southend); Guppy (female): 1 and 2, P. A. Moye (Apex); 3, D. C. M. Durrant (Southend); 4, G. Coe (Southend); Swordtails: 1, S. Mason (Rochampton); 2, P. Mephum (Southend); 3, J. W. Pezler (Thurrock); 4, P. O'Bryan (Thurrock); Platy: 1, R. Oxford (Southend); 2, B. Wright (Thurrock); 3, J. London (Thurrock); 4, L. R. Baker (East London); Molly (F.B.S. Championship Class): 1 and 2, D. King (Kingston); 3, J. London (Thurrock); 4, G. Coe (Southend); A.O.S. Livebearer: 1, M. Strange (Basingstoke); 2, F. H. Vicker (East London); 3, D. M. Cheswright (Southend); 4, S. Adams (Bethnal Green); Singletail Goldfish: 1, B. Pescoc (Walthamstow); 2, Miss L. Tomlin (unattached); 3 and 4, K. Adams (Southend); Twintail Goldfish: 1, G. A. Fleming (O.S.G.B.); 2, 3 and 4, P. S. Kadnell (G.S.G.B.); A.O.S. Goldwater: 1, D. Cheswright (Southend);

2, P. S. Kadnell (G.S.G.B.); 3, Miss L. Tomlin (unattached); 4, W. D. Broderick (unattached); Breeders (Egglayers): 1, S. H. Boss (East London); 2, R. Kerridge (Harrow); 3 and 4, G. M. Pearson (East London); Breeders (Livebearers): 1 and 2, D. M. Cheswright (Southend); 3, F. H. Vicker (East London); 4, S. Mason (Rochampton); Tropical Marines: 1 and 2, D. M. Cheswright (Southend); Plants: 1, D. Finch (Southend); 2, Mr. and Mrs. Burlton (Southend); 3, P. O'Bryan (Thurrock); 4, Mr. and Mrs. Mitchell (Southend); Special Class—Junior Tropical: 1, K. Bisson (Basingstoke); 2, S. Adams (Bethnal Green); 3, P. Arrow (East London); 4, M. Thorley (Southend); Special Class—Junior Goldwater: 1, P. Mephum (Southend); 2 and 3, S. Adams (Bethnal Green); 4, C. Cheswright (Southend); Best Fish in Show: S. H. Boss (East London); Checker Barb.

**THE Weymouth A.S. June meeting** commenced with a slide show and talk on Barbs given by P. Carter. This was an interesting talk and well received by the Society members. T. Hatton also spoke, his subject being "Why our fish do not always win." This was of great interest to the show members and everybody was impressed by Mr. Hatton's wide knowledge of showing. Table Show results: A.O.V. Characins: 1, M. Medway; 2, A. Worth; 3, R. Wallbridge; 4, R. Peel. H. H. and C.: 1, M. Medway; 2 and 4, R. Sutherland; 3, C. Newton.

**NEARLY** four hundred fish were entered at the Bournemouth A.S. annual Open Show. The results were: Class B: 1, B. Bisson; 2, H. and S. Parish; 3, T. Hatton; 4, H. Greenhalgh. Class C: 1, H. Peel; 2, D. Brooks; 3 and 4, I. Goddard. Class Ca: 1, M. Strange; 2, J. Jeffery; 3, P. Coyle; 4, R. Bowes. Class D: 1 and 3, R. Weston; 2, H. Meary; 4, H. Peel. Class E: 1, G. Fisher; 2, R. Hemmings; 3, R. Watkins; 4, A. Hillier. Class F: 1, M. Collins; 2, K. Brooks; 3, D. Brooks; 4, H. Meary. Class G: 1, E. Jones; 2, Mr. and Mrs. Medway; 3, J. Edwards; 4, D. Jones. Class H: 1, M. Squibb; 2, M. Strange; 3, R. Bowes; 4, J. Medway. Class J: 1, I. Medway; 2, M. Squibb; 3, R. Gale; 4, G. Fisher. Class K: 1, R. Bowes; 2 and 3, L. Little; 4, J. Jeffery. Class L: 1 and 6, G. Fisher; 2 and 3, B. Bisson. Class M: 1, K. Clough; 2, P. Coyle; 3, R. Bowes; 4, H. Meary. Class N: 1, R. Gale; 2, B. Bisson; 3, M. Alexander; 4, M. Mansbridge. Class O: 1 and 4, R. Hemmings; 2, E. Chatfield; 3, T. Hatton. Class Q: 1, D. Real; 2, P. Coyle; 3, R. Adams; 4, H. Greenhalgh. Class R: 1, A. Loveday; 2, R. Bowes; 3, B. Bisson; 4, P. Hoppembrewer. Class T: 1, R. Bowes; 2, M. Strange; 3, M. Mansbridge; 4, Mr. and Mrs. Lane. Class U: 1, 2 and 4, R. King; 3, K. Whitting. Class Va: 1, A. Loveday; 2, R. Adams; 3, H. Greenhalgh; 4, J. Jeffery. Class Vb: 1 and 3, V. Collins. Fantail (Best Coldwater Fish in the Show): 2, R. King; 4, B. Coombes. Class W: 1 and 2, V. Collins; 3, V. Hunt; 4, R. Travers. Class Xa: 1, H. and S. Parish; 2 and 3, D. Jones; 4, M. Strange. Class Xb: 1, B. Bisson; 2 and 4, L. Little; 3, M. Strange.

**IN** June Mixenden T.F.S. held their return match with Huddersfield T.F.S. and there was an exciting finish. After being 19 points down on the first leg, Mixenden won the second leg 74-54 to gain a win by one point. This is the first time Mixenden have beaten Huddersfield in this annual Table Show since it commenced some years ago. Results: Livebearers: 1 and 2, F. Cooke (Huddersfield); 3, S. Leatham (Mixenden); Barbs: 1, T. Brooke (Hudders-

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field); 2 and 3, S. Leadham (Mixenden). Cichlids: 1, P. Cooke (Huddersfield); 2, T. Brooke (Huddersfield); 3, R. Ilstob (Mixenden). Characins: 1, W. Ostrowski (Mixenden); 2, L. Thompson (Mixenden); 3, M. Jessop (Huddersfield). Anabantids: 1, R. Turner (Mixenden); 2, J. Douglas (Mixenden); 3, Marry D. Brough (Mixender). Toothcarps: 1, P. Cooke (Huddersfield); 2, A. Robinson (Huddersfield); 3, S. Leadham (Mixenden). Danios and Rasboras: 1, W. Ostrowski (Mixenden); 2, R. Turner (Mixenden). Cams and Loaches: 1, W. Ostrowski (Mixenden); 2, M. Jessop (Huddersfield); 3, N. R. Gibson (Huddersfield). Pairs: 1, J. Brown (Mixenden); 2 and 3, N. R. Gibson (Huddersfield). Breeders: 1 and 2, N. R. Gibson (Huddersfield, A.O.V.); 1, J. Brown (Mixenden); 2, R. Elstob (Mixenden). Coldwater: 1, A. Bradley (Mixenden); 2 and 3, I. Brown (Mixenden). Sharks and Foxes: 1, M. Jessop (Huddersfield); 2, N. R. Gibson (Huddersfield); 3, S. Leadham (Mixenden). Furnished Jars: 1 and 2, S. Leadham (Mixenden); 3, J. Brown (Mixenden). Best in Show: A. Bradley (Mixenden). 5th November is our Open Show date.

AT their June monthly meeting, S.P.A.S.S. members brought along their collection of Singletails, Comets and Common Goldfish to be judged by C. A. T. Brown. First and fourth was S. Pitham, second being E. Chick and third P. Bismachi, all being Common Goldfish. While judging was going on, the members had a lively discussion about the forthcoming Open Show with K.D.A.S., a visit to the Isle of Wight in September and a new innovation to the Club—a Novices Cup. Two new members were also welcomed. The evening was rounded off with a talk from C. Brown in his usual inimitable style.

THE Bristol Tropical Fish Club staged their finest three-day Open Annual Show in June, for which there were 329 entries. The results were as follows: Best Fish in the Show: L. Littleton; Highest number of points: Mr. and Mrs. Eager. Highest number of points gained by club member: Mr. and Mrs. Eager. Siamese Fighter: 1, 2 and 3, J. Hampshire. Labrynthis: 1, S. Green; 2, J. Hampshire; 3, G. Furber. Barbs: 1 and 2, Mr. and Mrs. W. Eager; 3, S. Bethell. Hemmi and Hyph.: 1, S. Green; 2, N. Loris; 3, Mrs. B. Petersen. A.O.V. Characin: 1 and 3, R. Hyett; 2, Mr. and Mrs. Eager. Angelfish: 1, D. Warmann; 2, Mr. and Mrs. Eager; 3, J. Hampshire. Dwarf Cichlids: 1, D. Noble; 2, Mr. and Mrs. Eager; 3, M. Billick. A.O.V. Cichlid: 1, Mr. and Mrs. Eager; 2, S. Green; 3, Mrs. B. Petersen. Corydoras: 1, L. Littleton; 2, R. Lawrence; 3, D. Tremlett. A.O.V. Catefish: 1, N. Gray; 2, S. Green; 3, R. Lawrence. A.V. Danios and Rasboras: 1, R. Day; 2, D. Noble; 3, P. Lewis. A.V. Sharks and Loaches: 1 and 2, A. Whitrow; 3, J. Hampshire. Mollies: 1, S. Bethell; 2, D. Warmann; 3, M. Billick. Swordtails: 1, R. Lawrence; 2, S. Bethell; 3, J. Hampshire. Platies: 1, Mrs. K. Martin; 2, G. Furber; 3, Mr. and Mrs. Eager. Guppy (Male): 1, Mr. and Mrs. Eager; 2, R. Parsons; 3, M. Billick. Guppy (Female): 1 and 3, P. Lewis; 2, Mr. and Mrs. Eager. A.O.V. Tropical: 1, R. Day; 2, G. Furber; 3, L. Littleton. Breeders Englayers: 1, J. Hampshire; 2, D. White; 3, S. Anderson. Breeders Livebearers: 1 and 3, Mrs. K. Martin; 2, P. Lewis. Killifish: 1, R. Chapman; 2, P. Lewis; 3, Mrs. B. Petersen. Sexed Pairs: 1, J. Branken; 2, J. Roberts; 3, R. Hyett. A.V. Englayers (Junior): 1 and 3, Nigel Gray; 2, Mark Eager. A.V. Livebearer (Junior): 1, Mark Eager; 2 and 3, Nigel Gray. Individual Furnished Aquaria: 1, P. Lewis; 2, R. Bennett; 3, G. Furber.

RECENTLY members of the Hounslow and District A.S. enjoyed a slide show and talk presented by two of the society's most experienced aquarists, H. Pratt and B. Nelhams. The members were invited to test their knowledge of fish by listing the names as each species was shown on the screen. A summary had been prepared with information on each fish and

this included details of size, colour, habits and environment of each fish.

The Rummymede A.S. were hosts to the Hounslow members in a twelve-fish, six variety, tropical contest. A very interesting talk on live-bearing Toothcarps was given by F.B.A.S. judge Adrian Blake. Hounslow won on points, having taken second, third and fourth places, the first place having been filled by a Rummymede member.

GUEST speaker at the monthly meeting of the Derby Regent A.S. was Ian Sellick of the "House of Fishes," Hemel Hempstead. He gave a most interesting talk, illustrated by colour slides, on the African Cichlids of the Lake Malawi and Rift Valley areas of Tanganyika. Ray Skipper, who accompanied Mr. Sellick, also gave a brief but informative talk on the breeding and care of the Discus fish. The members greatly appreciated the opportunity to ask acknowledged experts all their questions on these rare and exotic species of tropical fish.

THE members of the Lincoln and District A.S. were given a lecture on "Rigging Tooth Carps" by P. Bird, a former member of the Society. The month's Table Show was held with the following results: Barbs: 1, Mr. Raabe; 2, Miss Chenbire; 3, Mr. Perliaman. Livebearers: 1 and 2, Mr. Postmann; 3, Mrs. Woodliffe. Best in the Show: Mr. Raabe.

A TOTAL of 389 entries was received at the Bishop Auckland A.S. Annual Open Show. The results were: Best Fish in Show: Mr. Drummond (Washington). Best Individual Effort: Mr. Hubbard (S. Shields). Guppy: 1 and 2, Mr. and Mrs. Mitchell (Blackpool); 3, Mrs. Ruffell (S. Shields). Molly: 1, Mr. and Mrs. Kennard (Ashington); 2, H. Hubbert (Peterlee); 3, Mr. Sowerby (Newcastle). Sweedtail: 1, Mr. Southall (S. Shields); 2, Mr. McCafferty (S. Shields); 3, Mr. and Mrs. Sowerby (Mount Pleasant). Platy: 1, Mr. and Mrs. Haas (Ashington); 2, Mr. Dunkanson (Priory); 3, Mr. and Mrs. Lowe (Cleveland). L. Cichlids: 1, Mr. Newworthy (Peterlee); 2, Mr. Tate (S. Shields); 3, Mr. Bebbington (Peterlee). Cichlids (Apia, Pelm, Nann): 1 and 3, Mr. Watson (Hartlepool); 2, Mr. and Mrs. Gate (Castleford). S. Characins: 1, Mr. A. Richardson (Houghton-Le-Spring); 2, W. Elliot (Bp. Auckland); 3, Mr. Hellens (Houghton). L. Characins: 1, Mr. and Mrs. Wellford (Cleveland); 2, Mr. Dunkanson (Priory); 3, Mr. Hellens (Houghton). Fighters: 1, Mr. Hubbard (Peterlee); 2, Mr. and Mrs. Walker (Stockton); 3, Mr. and Mrs. Liddle (Ashington). A.O.V. Anabantid: 1, Mr. Nixon (Peterlee); 2, Mr. Tate (S. Shields); 3, Mr. Turnbull (Hetton). Danio, Rasbora, Minnow: 1, Mr. Hubbard (Peterlee); 2, Mr. Drummond (Washington); 3, Mr. Gardner (Washington). E.L.T.C.: 1, Mr. Gandler (Bp. Auckland); 2, Mr. Ross (Hartlepool); 3, Mr. Dunkanson (Priory). S. Barbs: 1, Mr. Worrall (Peterlee); 2, Mr. Atwell (Billingham); 3, Mr. Inright (Houghton). L. Barbs: 1, Mr. Drummond (Washington); 2, Mr. Adams (Hartlepool); 3, Mr. Watson (Hartlepool). Breeding Pairs (B.L.): 1, Mr. Cutting (S. Shields); 2, Mr. Hellens (Houghton); 3, Mr. Gough (Bp. Auckland). Breeding Pairs (L.B.): 1, Mr. McGee (Half Moon); 2, Mr. Hubbard (Peterlee); 3, Mr. and Mrs. Hornsby (Stanley). Breeders Class (E.L.): 1, Mr. Hornsby (Stanley); 2, Mr. Lister (Stanley); 3, Mr. Finn (Bp. Auckland). Breeders Class (L.B.): 1 and 2, Mr. Elliott (Stanley); 3, Mr. Fleet (Billingham). Corydoras Brochis: 1, Mr. Atwell (Billingham); 2, Mr. Hubbard (Peterlee); 3, Mr. Elliott (Bp. Auckland). A.O.V. Catfish: 1, Mr. Bebbington (Peterlee); 2, Mr. Williams (Hartlepool); 3, Mr. and Mrs. Lowe (Cleveland). Sharks, Flying Fox: 1, Mr. Drummond (Washington); 2, Mr. Ross (Hartlepool); 3, Mr. and Mrs. Gate (Castleford). Loach: 1, Mr. and Mrs. Walker (Stockton); 2, Mr. Ross (Hartlepool); 3, Mr. Elliott (Bp. Auckland). A.O.V. Trop. (E.L.): 1, Mr. and Mrs. Liddle (Ashington); 2, Mr. Cutting (S. Shields); 3, Mr. Skillen (Ind.). A.O.V. Trop. (L.B.):

1, Mr. Hubbard (Peterlee); 2, Mr. Ross (Hartlepool); 3, Mr. and Mrs. Dickenson (Castleford). Coldwater: 1, Mr. Furlong (S. Shields); 2, Mr. Sowerby (Newcastle); 3, Mr. Turnbull (Hetton). Junior Tropical (L.B.): 1, Mr. Millson (Hetton); 2, Mr. Brown (Half Moon); 3, Mr. Ruffell (S. Shields). Junior Tropical (E.L.): 1, Mr. Bedford (Castleford); 2, Mr. Dickenson (Castleford); 3, Mr. Fleet (Billingham). Furnished Jar: 1, Mr. Dunkanson (Priory); 2 and 3, Mr. Glass (S. Shields).

THERE were 450 entries for the Mount Pleasant A.S. Open Show, the results being as follows: Class 1: 1, J. Robertson (M.P.A.S.); 2, A. Duncanson (Priory); 3, G. Glass (South Shields). Class 2: 1, M. Hope (Washington); 2 and 3, L. Leadbetter (Blackpool). Class 3: 1, G. Brown (M.P.A.S.); 2, N. Buglass (Blyth); 3, I. Smith (M.P.A.S.). Class 4: 1, J. Robertson (Ashington); 2, D. Stread (Swillington); 3, R. and D. Shanks (M.P.A.S.). Class 5: 1, Mr. and Mrs. Sowerby (M.P.A.S.); 2, P. McCafferty (South Shields); 3, J. Atkinson (M.P.A.S.). Class 6: 1, C. Enright (Houghton); 2, J. Whitley (Aireborough); 3, L. Leadbetter (Blackpool). Class 7: 1, J. Whitley (Aireborough); 2, H. Hubbard (Peterlee); 3, J. Adams (Hartlepool). Class 8: 1, T. Moore (Washington); 2, A. Duncanson (Priory); 3, J. Foster (M.P.A.S.). Class 9: 1, P. Reynolds (Swillington); 2, B. Pichard (M.P.A.S.); 3, A. Duncanson (Priory). Class 10: 1, M. Gray (M.P.A.S.); 2, J. Foster (M.P.A.S.); 3, J. Whitley (Aireborough). Class 11: 1, R. Newworthy (Peterlee); 2, Mr. and Mrs. Stephenson (Sherwood); 3, D. Turnbull (M.P.A.S.). Class 12: 1 and 3, K. Hornby (Stockton); 2, R. Newworthy (Peterlee). Class 13: 1, R. Newworthy (Peterlee); 2, W. Karren (Peterlee); 3, M. Gray (M.P.A.S.). Class 14: 1, K. Ross (Hartlepool); 2, T. Douglas (Hull); 3, G. Spoons (South Shields). Class 15: 1, C. Inright (Houghton); 2, A. Atkinson (M.P.A.S.); 3, J. Whitley (Aireborough). Class 16: 1, J. Walker (Houghton); 2, H. Hubbard (Peterlee); 3, J. Gardner (Washington). Class 17: 1, J. Gandler (Bishop Auckland); 2, J. Robertson (M.P.A.S.); 3, H. Greenacre (M.P.A.S.). Class 18: 1, H. Hubbard (Peterlee); 2, C. Mallaby (M.P.A.S.); 3, L. Leadbetter (Blackpool). Class 19: 1, R. and D. Shanks (M.P.A.S.); 2, J. Gardner (Washington); 3, G. Burton (Borden). Class 20: 1, J. Robertson (M.P.A.S.); 2, J. Robertson (Ashington); 3, Mr. and Mrs. Stephenson (Sherwood). Class 21: 1, R. Atherton (M.P.A.S.); 2, B. Cooper (Peterlee); 3, Mr. and Mrs. Sowerby (M.P.A.S.). Class 22: 1, K. Hornsby (Stockton); 2 and 3, Mr. and Mrs. Stephenson (Sherwood). Class 23: 1, J. Forster (M.P.A.S.); 2, J. Robertson (M.P.A.S.); 3, R. Smith (M.P.A.S.). Class 24: 1, A. Duncanson (Priory); 2 and 3, G. Andrews (Hull). Class 25: 1, L. Leadbetter (Blackpool); 2, R. Newworthy (Peterlee); 3, W. Hall (Washington). Class 26: 1, H. Furlong (South Shields); 2, G. Lowthian (Priory); 3, R. and D. Shanks (M.P.A.S.). Class 27: 1, K. Nixon (M.P.A.S.); 2, R. Atherton (M.P.A.S.); 3, M. Liddle (Ashington). Class 28: 1, A. Shanks (M.P.A.S.); 2, Miss Cooke (Ashington); 3, P. Laidler (Ind.). Best Fish in Show: L. Leadbetter (Blackpool). Club Trophy won by Mount Pleasant A.S. Exhibitor with Most Points: J. Robertson (M.P.A.S.).

THE Hoylake A.S. Open Show results were as follows: Guppies: 1, Mr. Pierce (Hoylake); 2, J. Worsley (Merseyside); 3, M. C. Ward (Doncaster). Mollies: 1, Miss D. Gregory

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(Nelson); 2, R. Payne (Merseyside); 3, M. Swain (Grimwood). Swords: 1, H. R. Sefton (Grimwood); 2, A. Jones (Hoylake); 3, Mr. and Mrs. Wells (Doncaster). Plates: 1, Master A. Barton (Hoylake); 2, Mrs. S. Seymour (Merseyside); 3, Mr. and Mrs. Wells (Doncaster). Fighters: 1, Mr. Lawson (Workop); 2, Miss S. Rowlands (Hoylake); 3, A. Thompson (Runcorn). A.O.V. Anabantids: 1 and 2, D. Charlton (Merseyside); 3, Miss V. Jones (Wrexham). Small Barbs: 1, Miss A. Gregory (Nelson); 2, D. Farnworth (Hoylake); 3, W. Ormisher (Sandgrounders). Barbs: 1, F. Mulla (Merseyside); 2, R. Cliff (Sandgrounders); 3, A. Miffin (North Staffs.). Dwarf Cichlids: 1, A. Jones (Hoylake); 2, D. Crew (Merseyside); 3, A. Miffin (North Staffs.). Large Cichlids: 1, H. Ormisher (Sandgrounders); 2, K. Daniels (Merseyside); 3, Mr. Adamson (Unattached). Angels: 1, Miss A. Gregory (Nelson); 2, T. Wayles (Hoylake); 3, W. Kell (Ellesmere Port). Small Characins: 1, H. Ormisher (Sandgrounders); 2, D. Charlton (Merseyside); 3, C. Pritchard (Wrexham). Large Characins: 1 and 2, B. B. Bookler (Morecambe); 3, K. Parkes (Merseyside). Rasboras, Danios, Minnows: 1, Mr. and Mrs. Howarth (Morecambe); 2, D. Charlton (Merseyside); 3, F. Seymour (Merseyside). Tooth-cars: 1 and 2, P. Jones (Ellesmere Port); 3, D. Crew (Merseyside). Flying Foxes and Sharks: 1, J. Armour (Ellesmere Port); 2, Mr. and Mrs. Howarth (Morecambe); 3, R. Payne (Merseyside). Corydoras Catfish: 1, D. Walker (Runcorn); 2, Miss S. Rowlands (Hoylake); 3, R. Payne (Merseyside). Loaches and Botias: 1, F. Mulla (Morecambe); 2, Mr. and Mrs. Scott (Morecambe); 3, M. Swan (Grimwood). A.O.V. Catfish: 1 and 2, D. Charlton (Merseyside); 3, J. Phillips (Whitchurch). Pairs (Livebearers): 1, D. Walker (Runcorn); 2, Mr. and Mrs. Kilvington (Doncaster); 3, B. Coyle (Hoylake). Pairs (Egg-layers): 1, F. Mulla (Merseyside); 2, C. Charlton (Merseyside); 3, Miss D. Gregory (Nelson). Breeders (Livebearers): 1 and 2, Mr. and Mrs. Tasker (Sandgrounders); 3, Mr. and Mrs. Wells (Doncaster). Breeders (Egg-layers): 1 and 3, Mr. and Mrs. Kilvington (Doncaster); 2, B. H. Bookler (Morecambe). Juniors (Livebearers): 1, Master P. Bussey (Ellesmere Port); 2 and 3, Miss P. Kitchen (Hoylake). Juniors (Egg-layers): 1, Miss D. Gregory (Nelson); 2, Master A. McMahon (Hoylake); 3, Master J. Kell (Ellesmere Port). A.V. Coldwater: 1, Mrs. B. Jenkins (Merseyside); 2, S. Kell (Ellesmere Port); 3, W. Rogers (Skinnerdale). A.O.V. Tropical: 1, B. H. Bookler (Morecambe); 2, A. Miffin (North Staffs.); 3, Mr. and Mrs. Millington (Whitchurch). Lady with Highest Points: Miss D. Gregory (Nelson). Best Fish in Show: B. B. Bookler (Morecambe)—Anostomus Anostomus.

AN inter-club meeting was arranged in May at the Lancaster University, by **Loyne Aquarists**. Clubs attending were: Blackpool A.S.; Lytham A.S.; Morecambe Bay A.S.; Fleetwood A.S.; Fancy Guppy Association (Lancaster Branch). A fish drive was held during the evening, and while the judging was in progress, a slide show was given and comments read by Loyne Aquarists' president, David James. The Best Fish in the Show award was won by L. Graham of Loyne Aquarists. The judges—one member from each society, were: R. Francis (Loyne); I. Peck (Fancy Guppy Association); Mr. Booker (Morecambe Bay A.S.); Mr. Hough (Lytham A.S.); Mr. Woodage (Fleetwood A.S.) and Mr. Walsh (Blackpool A.S.).

THE first round of the season's R.H.K.R. was held on the Kingston A.S. premises. The judge, Morris Carter, commented on the very high standard of the entries. First place was taken by Kingston with twenty points, followed by Rochampton, Runnymede and Hounslow in fourth place with two points each. The Society's meetings are held at 8 p.m. on alternate Wednesdays, at St. Stephen's Church Hall, Whitton Road, Hounslow. Visitors are welcome.

WINNERS at the Priory A.S. Open Show were: Class 1; 1, B. Pickard; 2, Mr. and Mrs. Cawton; 3, A. Sowerby. Class 2; 1, B. Pickard; 2, J. Edgar; 3, Mr. and Mrs. Kennard. Class 3;

1, L. Southall; 2, P. McCafferty; 3, R. Massingham. Class 4; 1, A. Duncanson; 2, W. Rutter; 3, R. Skyles. Class 5; 1 and 2, W. Worell; 3, A. Gunning. Class 6; 1, H. Greenacre; 2, Mr. and Mrs. Hunt; 3, M. Gray. Class 7; 1 and 3, J. Foster; 2, B. Pickard. Class 8; 1, A. Duncanson; 2, R. Varty; 3, M. Duncanson. Class 9; 1, M. Gray; 2 and 3, R. Stewart. Class 10; 1, Mr. Neworthy; 2, R. Varty; 3, J. Donnelly. Class 11; 1, H. Hubbard; 2, Mr. and Mrs. Liddle; 3, G. Emmerton. Class 12; 1, R. Shanks; 2, R. Stewart; 3, J. Donnelly. Class 13; 1, H. Hubbard; 2, R. Varty; 3, J. Robertson. Class 14; 1, H. Greenacre; 2, M. Senior; 3, G. Petersen. Class 15; 1 and 2, H. Hubbard; 3, J. Miller. Class 16; 1, G. Lowthian; 2, J. Williams; 3, Mr. Bebbington. Class 17; 1, G. Lowthian; 2, R. Shanks; 3, Mr. Bebbington. Class 18; 1, D. Turnbull; 2, H. Greenacre; 3, W. Worell. Class 19; 1, H. Hubbard; 2, G. Petersen; 3, S. Smith. Class 20; 1, G. Foster; 2, H. Greenacre; 3, D. Turnbull. Class 21; 1, J. Robertson; 2, Mr. and Mrs. Hunt; 3, R. Mallon. Class 22; 1, G. Fraser; 2, G. Lowthian; 3, Mr. and Mrs. Liddle. Class 23; 1, R. Milson; 2, T. Burn; 3, C. Gray. Class 24; 1, E. Sowerby. Class 25; 1 and 2, A. Duncanson; 3, I. Ross. Class 26; 1, M. Nixon; 2, Mr. Neworthy; 3, S. Smith. Class 27; 1, G. Fraser; 2, D. Glynn. The Wilson Cup (for Best Fish in Show) was won by G. Fraser. The Chairman's Cup (for competitor with most points) was won by H. Hubbard. The Priory Shield (for Society with most points) was won by Mount Pleasant A.S.

SINCE the annual general meeting, the **High Wycombe A.S.** has enjoyed a varied entertainment with talks and slide shows from various well known speakers, beginning with T. Wilkinson early in February. I am sure club members everywhere will miss Tony's talk as he is a hive of fishy information. Tony gave us an interesting talk on various aspects of the hobby and finished with some slides of past events. Also in February, Uxbridge A.S. were entertained to a twelve-a-side friendly, which began in the middle of a power-out. The contest was won by Uxbridge. In March the guest speaker was Pete Genger of Uxbridge, who gave an excellent slide show on Barbs and a description of their habits. Guest speaker in April was Frank Tomkins from London, who gave a fine talk on Livebearers, which covered a wide range of topics and was greatly appreciated by the members. During May there was an invitation night to Hemel Hempstead A.S. for a twelve-a-side friendly, which was won by High Wycombe, and there was also a talk by guest speaker Bob Eason, who spoke on his experiences with Daphnia. In between club meetings, the society competed in the Three Counties Fish League and Quiz contests. New members are welcome to come along to the "White Horse," West Wycombe Road, High Wycombe, on alternate Thursdays.

APART from the monthly table show, at the June meeting of the **Hford and District A. and P.S.**, the main part of the evening was devoted to the election of the members of the committee for the coming year. The committee for 1972-73 is as follows: President, H. Berger; vice-president, L. Smith; chairman, J. Sanders; vice-chairman, W. Rowe; treasurer, M. Brill; assistant treasurer, G. Irish; secretary, R. Both; assistant secretary, J. Hartam; show secretary (tropical), D. Seaman; show secretary (cold-water), H. Berger; Press secretary, M. Perry; Arts Council representative, L. Smith; librarian, Mrs. Stanley; committee members, J. Rendell and C. Olley. A lecturer is in the process of being obtained for the August meeting which is to be followed by the auction in September. The monthly Table Show results are as follows: A.V. Goldfish: 1 and 3, W. Rowe; 2 and 4, F. Hartam. A.V. Coldwater Fish: 1, 2, 3 and 4, W. Rowe. Breeders Class: 1 and 3, Miss J. Frostick; 2 and 4, W. Rowe.

THE **Merseyside A.S.** Open Show results in May were as follows: Guppies: 1, S. Mitchell (Blackpool); 2 and 3, L. Leadbetter (Blackpool). Mollies: 1, L. Leadbetter (Blackpool); 2, R. I. Payne (Merseyside); 3, Miss A. Gregory (Nelson). Plates: 1, L. Kaye (Top Ten); 2, B.

Black (Blackpool); 3, Mrs. Roberts (Valley). Swords: 1, C. Beckenham (Oldham); 2, D. Walker (Runcorn); 3, A. Darby (Hyde). S. Barbs: 1, H. Ormisher (Sandgrounders); 2, L. Leadbetter (Blackpool); 3, R. Tompkins (Glossop). L. Barbs: 1, K. Parkes (Merseyside); 2, I. Rowbottom (Hyde); 3, J. Higham (Warrington). Labos, Sharks and Foxes: 1, Mr. Kennedy (Hoylake); 2, Mr. Frediani (Merseyside); 3, F. M. Howarth (Morecambe Bay). Loaches: 1, C. Beckenham (Oldham); 2, D. Walker (Runcorn); 3, J. Cobb (Merseyside). S. Catfish: 1, S. Berry (Valley); 2, D. Charlton (Merseyside); 3, L. Kaye (Top Ten). A.O.V. Cats: 1 and 3, P. Batchelor (Loyne); 2, R. Davies (Belle Vue). Anabantids: 1, A. Gregory (Nelson); 2 and 3, D. Charlton (Merseyside). Fighters: 1, Mrs. Lord (Valley); 2, Mr. Kennedy (Valley); 3, W. Foxall (Warrington). D. Cichlids: 1, J. Higham (Warrington); 2, P. T. Richardson (Merseyside); 3, S. Hooton (Sandgrounders). L. Cichlids: 1, R. Dyson (Blackpool); 2 and 3, R. Rowbottom (Hyde). Angels: 1, Miss Gregory (Nelson); 2, L. Leadbetter (Blackpool); 3, T. Wayles (Hoylake). S. Characins: 1, G. Holt (Valley); 2, D. Charlton (Merseyside); 3, N. West (Blackpool). L. Characins: 1, T. Richardson (Merseyside); 2, B. Bookler (Morecambe Bay); 3, J. Cobb (Merseyside). Tooth-cars: 1, J. McGinty (Merseyside); 2 and 3, D. Crew (Merseyside). Rasboras and Danios: 1, D. Charlton (Merseyside); 2, L. Dunne (Ashton); 3, J. Alcock (Warrington). Breeders and Egg-layers: 1, R. Benon (Blackpool); 2, D. Charlton (Merseyside); 3, J. V. Hill (Ashton). Breeders and Livebearers: 1, M. Burke (Merseyside); 2, J. Higham (Warrington); 3, S. Hooton (Sandgrounders). Pairs (Egg-layers): 1, Miss Gregory (Nelson); 2, P. T. Richardson (Merseyside); 3, B. Lawson (Middleton). Pairs (Livebearers): 1, 2 and 3, L. Leadbetter (Blackpool). A.O.V.: 1, M. Berry (Valley); 2, C. Beckenham (Oldham); 3, J. Alcock (Warrington). Juniors: 1, M. Titterton (Hyde); 2, Miss Chapman (Valley); 3, R. Jones (Ellesmere Port). Ladies: 1, D. Stander (Leyton); 2, Mrs. Roberts (Valley); 3, S. Mitchell (Blackpool). Fancy Goldfish: 1 and 2, S. Walsh (Accrington); 3, C. Whitney (Accrington). A.O.V. Coldwater: 1 and 2, E. C. Harris (Nelson); 3, S. Walsh (Accrington). Common Goldfish: 1, A. Ingram (Blackpool); 2 and 3, D. Charlton (Merseyside). Trophy for Best Barb: K. Parkes. Trophy for Most Individual Points: D. Charlton. Best in Show: Mrs. Stander (Ladies Section) (Loyne).

**CLASS H.P.F.**  
The recently formed **United Aquarist Society** will be holding an open air furnished aquaria competition on Sunday, 17th August about 2 p.m. at the Hollow Ponds, Whapps Cross, Leyton.

Entries will be restricted to classes H.P.F. (hollow ponds furnished) and H.P.A. (hollow ponds aquascapes). Competitors will bring only tanks and tools, everything else, including gravel, plants, discs!! etc. will be borrowed from the natural resources in the area, and set up within the allotted time of two hours. Scriba diving gear will be allowed but any competitor found using a bathoscope, mini-sub or stingray, will be disqualified. All the members will be there with their families, enjoying the vast picnicking area available.

The public will be asked to judge the completed set-ups, and it is hoped in this way to promote interest in aquatic life in general, and furnished aquaria in particular. At the same time, with the aid of one or two posters, and by returning all the items collected to the ponds, it would encourage the public to join the fight against pollution and help preserve these natural environments.

In a lighter vein, the Society would be very pleased to see aquarists from other clubs come along to give moral support, cheer, boo, advise or perhaps even learn a thing or two. The society secretary is B. Salisbury, 161 Church Lays, Harlow, Essex.

**VENUE CHANGE**  
The **Hetton County A.S.** wish to announce that their new meeting place is now in the lounge at the Hetton Community Association Centre, South Market Street, Hetton-le-Hole.



second and fourth Tuesdays in the month, commencing at the new time of 7 p.m.

#### NOTICE

The Leicester Fishkeepers Club are reviving their Open Show in September. Further details later.

#### CHANGE OF ADDRESS

Loyne A.S.: Secretary, new address, Mrs. N. E. Gardner, 161 Fairfield Road, Heysham, nr. Morecambe, Lancs. Tel. Heysham 52271.

#### SECRETARY CHANGES

Banbury and District A.S.: B. Hall, 4 Prescott Close, Banbury.  
Portsmouth A.S.: Mrs. J. C. Stillwell, 34 Salcombe Avenue, Copnor, Portsmouth, PO3 6LD, Hants.

Bradford and District A.S.: E. J. Brown, 8 Garden Field, Wyke, Bradford, Yorks.

Chesterfield and District A.S.: J. W. Tomlinson, 16 Bradbury Drive, Wingerworth, Chesterfield, Derbyshire, S42 6SL.

Hetton A.S.: R. Riley, 32 The Meadows, West Rainton, Houghton-le-Spring, Co. Durham, DH4 6NP.

#### AQUARIST CALENDAR

1972

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

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

6th August: Blackpool and Fylde A.S. Secretary, G. Howard, 56 Stamford Avenue, Blackpool. Tel. 42676.

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

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

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

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

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

13th August: Bedford A. and P.S. Open Show, Nicholas Chamberlaine School, Bulkington Road, Bedford. Schedules from I. Paget, 74 Lister Street, Aylesborough, Nuneaton.

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

19th August: Kingston and District A.S. and South Park A.S.S. Second Combined Open Show at new venue, Ham Hall, Ham Close, Ham, Richmond, Surrey. 50 classes judged to F.B.A.S. and G.S.G.B. Schedules apply to G. Greenhalf, Show Secretary, 39 Garth Close, Morden, Surrey. Tel: 01-537 4042.

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

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

20th August: Salford A.S. Open Show at the Broughton Liberal Club in Great Clowes St. L. Broughton next door to the Great Clowes

St. warehouse. Schedules from J. Lamas, 37 Beech Street, Lr. Broughton, Salford, 7.

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

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

20th August: Newport A.S. Open Show. To be held at St. Johns Parish Hall, Victoria Avenue, Malpas, Newport, Mon. Further details from the Show Secretary, Mr. P. B. Jordan, Bsq., 60 Caesar Crescent, Caerleon, Mon.

27th August: Tamworth and District A.S. First Open Show at Moorgate School Tamworth. Show schedules available from the Secretary P. J. Rollins, 35 Fontenay Rd., Coton Green, Tamworth, Staffs.

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

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

3rd September: Whitley Bay A.S. Open Show to be held in the Elizabeth Ballroom, Whitley Bay. Show schedules from R. Mallion, 85 Appletree Gardens, Hillheads Estate, Whitley Bay, Northumberland.

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

3rd September: Morecambe Bay A.S. First Open Show, to be held at the Ambulance Hall, Alice Street, Morecambe. Time of benching 12 noon-2 p.m. Show Secretary, Mrs. B. Booker, 18 Gringley Road, Morecambe.

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

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

10th September: Brighton and Southern A.S. Open Show, Marmion Centre, Marmion Road, Howe, Sussex. Schedules from C. P. Corbin, 80 Marlborough Drive, Burgess Hill, Sussex.

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

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

10th September: Huddersfield T.F.S. Open Show at Huddersfield Town Hall, 44 Plaques. Further details from the Show Secretary, M. Jessop, 8 Ryedale, Kirkheaton, Huddersfield.

10th September: British Killifish Association (Collingham Group), Collingham Memorial Hall, Collingham, near Wetherby, Yorks. Further details later.

10th-10th September: Bristol A.S. Open Show, St. Michael's Parish Hall, Bishopston, Bristol. Details from H. C. B. Thomas, 2, Grove Park, Bristol, BS6 6PP.

10th September: Havant and District A.S. Second Annual Open Show will take place at the Deverell Hall, Purbrock. The show secretary is V. B. Hunt, "Caegla", 120 London Road, Widley, nr. Portsmouth, Hants.

10th September: Hounslow and District A.S. Open Show at Hounslow Youth Centre, Cecil Road, Hounslow.

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

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

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

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

24th September: Oram Open Table Show, Recreation Hall, Refust Street, Shaw, Oldham.

24th September: Torbay A.S. Annual Open Show will be held at The Torquay Town Hall. Schedules from I. R. Davis, 6 Harewell Close, St. Marychurch, Torquay.

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

24th September: Northampton and District A.S. Open Show, Drill Hall, Clare Street, Northampton. Show schedules from Mr. G. Allatt, 80 Chiltern Avenue, Northampton.

24th September: Washington A.S. Open Show at the Oval Community Centre, Washington, Co. Durham. Details from show secretary, I. Gardner, 62 Douglas Terrace, Washington, Co. Durham, or W. Hall, 17 Gladstone Terrace, Washington, Co. Durham.

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

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

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

1st October: Hetton A.S. Second Annual Open Show, Hetton Community Association Centre, South Market Street, Herton-le-Hole, Co. Durham. Further details from secretary, K. Riley, 32 The Meadows, West Rainton, Houghton-le-Spring, Co. Durham, DH4 6NP.

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

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

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

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

26th October: Doncaster and District A.S. Third Open Show.

29th October: Newcastle Guppy and Live-bearer Society. Open Show at Central Hall, Gosforth, Newcastle upon Tyne 13. Live-bearer classes, 17 Egg-layer Classes. Schedules from J. A. Laidler, 19 Aln Avenue, Gosforth, Newcastle upon Tyne 3.

5th November: Mixenden T.F.S. Open Show at the Mixenden Community Centre, Clough Lane, Mixenden, Halifax, Yorkshire. Further information from the Secretary, S. Leedham, 74 Clough Lane, Mixenden, Halifax.

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

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

20th November: Aireborough and District A.S. Annual Open Show, Yeadon Town Hall, Schedules from secretary, 3 Greenlea Avenue, Yeadon, nr. Leeds, Yorkshire.

3rd December: Horforth A.S. Third Open Show at the New Civic Hall, Bradford Road, Stanningley, Pudsey. Schedules from the hon. show secretary, Miss Helm, 29 Wellington Road, New Wortley, Leeds, 12. Phone Leeds 21025.