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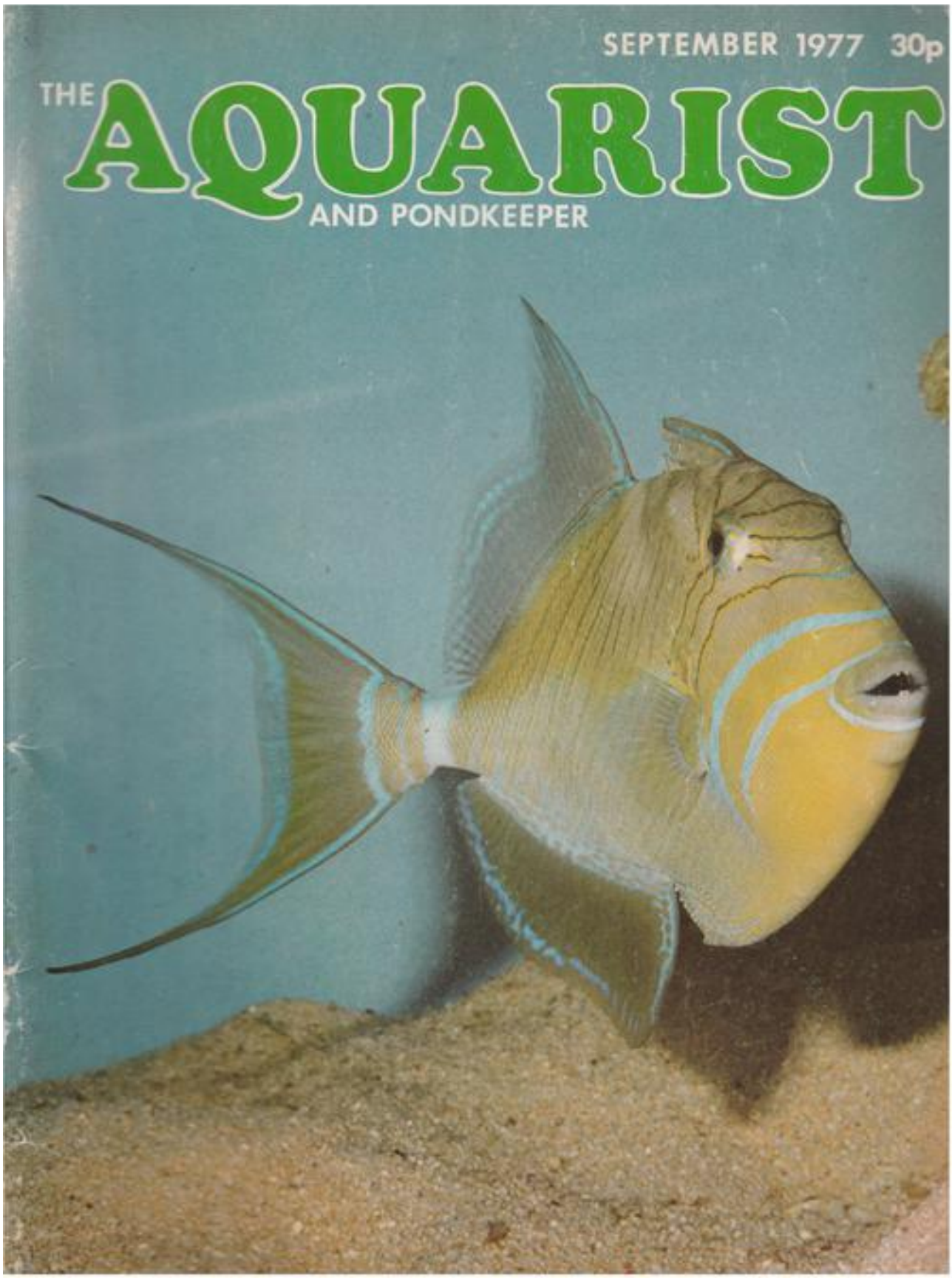
THE AQUARIST AND PONDKEEPER



THE AQUARIST
AND PONDKEEPER

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Queen Triggerfish
(*Balistes vetula*)
Courtesy of Tropical
Marine Centre

Hoplosternum thoracatum

Written & Illustrated by W. Murray

EVERY serious aquarist gets the urge, now and again, to own a fish that is out of the ordinary. Having enjoyed collecting and breeding different species of corydorus catfish, what more natural than to turn to the larger catfish. The one I had in mind was the *Synodontis nigriventris*—the upside down catfish, but when going to the dealers to purchase them, I found, as most other aquarists must have found before me, that the purchase of fish is like a pendulum; for months the dealers' tanks are full of a certain species of fish, then as you want to buy them the pendulum has swung the other way and there is a scarcity of the wanted species, sometimes lasting for months.

So I brought home three small hoplo cats instead. These catfish live on the muddy bottoms of slow-moving waters and ponds all over the Amazon Basin, from as far north as Panama to Paraguay in the south. Being nocturnal in the aquarium, the fish require a lot of shade, usually provided by caves, flower pots, etc. When bought the young fish were about 1½ in. long with an elongated torpedo-shaped body which was brown with black spots (the blotching appears as the fish becomes adult), a broad, flat head, eyes that look too small for the fish and black in colour, and two pairs of barbels. The inner pair point down, the outer pair were always on the move, feeling the area around the fish. Anything edible that the barbels touched was immediately eaten. The sex difference was non-existant at the age and size I bought them. When the fish reached 2½ in. in size there was a marked difference in the pectoral fins. The fish that I now know is the male, has pointed pectoral fins edged with red whereas in the female, these fins are rounded and colourless. On seeing this I gave them a closer examination and found that the bony plates that are at the belly of the fish also showed a difference in that the plates of the female did not meet together in the middle, but showed a gap whilst on the male the plates touched each other.

With plenty of live feeding—*daphnia*, bloodworms, *tubifex*, chopped earthworms and some dried flake food—at a year from purchasing them they were 5 in. long and mature enough to be bred.

I set up a tank 24 in. × 12 in. × 12 in., with well-washed fine gravel, and water to a depth of 8 ins. Furnishings in the tank were three large rocks and two clumps of *cabomba* in the back corners. Under gravel filtration was used and the temperature was 75°F (24°C). The Ph 7·2 hardness was never checked but we have very soft water locally.

As these fish spawn in the bubble-nest manner beneath leaves or on the underside of cave roofs, I had some leaves floating on the surface and deliberately left no caves for them as I wanted to see them spawn. Although the fish were in condition, they chose to ignore the leaves and hid behind the rocks.

I had left the tank as I had set it up with the fish in it and I was seeking more information on breeding this species, and on entering the fish house nearly a fortnight later I noticed that the fish had seemingly lost their timidity and were moving about the tank restlessly.

Seeing the difference in their behaviour, I made myself comfortable near the tank to observe their movements. There was a large Amazon Sword plant leaf (plastic) floating on the surface. The male chose this on which to build his nest but, unlike gouramies, he built his nest under the leaf. He then dropped to the bottom of the tank and the female approached him using sidling movements not unlike that of a female Kribensis approaching a male. She then began touching him with her barbels, starting at his caudal peduncle and stopping when she reached his pectoral fins. The pair stayed in this 'T'-shaped position for some time. When they separated the female made a pouch with her ventral fins into which she laid four eggs. The male was again building up his nest, to which the female swam. Joining her mate, they swam upside down under the leaf, the female's barbels exploring the nest. At last, satisfied with it, she pressed her eggs onto the nest. These actions continued for over three hours. After the female had finished spawning, the male began rebuilding his nest.

Meanwhile the female had retired behind a rock, and thinking the male would attack her as gouramies do, I tried to net her, only to be met with the fiercest attack

I have ever experienced from a fish. It was the male protecting and defending his nest! It was over a week before his aggressiveness diminished, but the female was still in the tank unharmed. On the underside of the leaf there were estimated to be over 700 eggs, 2 mm in size and of an amber colour. At a temperature of 78°F the eggs hatched in 4-5 days. I began feeding the fry microworm and at the end of the second week the fry were moving about using their barbels in the search for food. The young, when they get their colour are very beautiful with their yellow and black stripes. It is very important with all catfish to change at least one-third of the water once a week as the heavy feeding used to bring the fry on tends to leave uneaten food on the bottom, which could foul the water if not cleared away.

When I next spawn *H. thorocatum*, I shall try to hatch the eggs and bring on the fry without the parent fish, as is done in the rearing of Angel fish. Although I never saw the parents eat any eggs, or pay any cullinary attentions to the fry, the actual amount of fry to reach saleable size was about 45, a very small percentage of the eggs laid and hatched. The rest disappeared without trace.

A CUCKOO IN THE TANK

by P. F. Capon

AMONGST our aquarium fishes perhaps those exhibiting the greatest level of parental care are members of the Cichlidae. Many of the cichlids even carry this parental care to the extreme of carrying the eggs and fry about in the relative safety of their mouths. The brooding parent will then allow the fry out of it's mouth to feed whilst remaining on guard against possible predators. When danger threatens the parent will signal to the fry by jerking movements of the fins, and in some cases by sounds, upon which the fry will crowd back into the parent's mouth. As the fry grow the parent becomes less able to accommodate the ever-growing offspring and they become less susceptable to the warnings until this strong association ends.

The group of cichlids where this type of parental care is most common is among the Rift Valley cichlids. In these fishes it is almost always the female that carries out the mouth-brooding.

A. J. Ribbink of Rhodes University was diving in Lake Malawi when he noticed that many broods of cichlids appeared to contain a mixture of species; some of the individual fry were obviously of the same species as the mother whilst others were of a totally different species. A Cuckoo fish was obviously to blame. He was able, over a ten-day study period, to discover that in his diving area there were three different species guarding mixed broods, and he was unable to find a single mono-specific brood.

A mixed brood was caught, reared and eventually identified as *Haplochromis chrysonotus*.

A difficulty now arises since *H. chrysonotus* is a surface living plankton-feeder whilst the foster parents are all predators that live on the bottom. The female chrysonotus has to find a foster mother whose own young are at a similar size and development stage and release her fry amongst them. Once the fry are mixed the foster parent would find it almost impossible to separate hers from the foster fry; all the fry respond to her recall signals and she is programmed not to eat fry that obey her instructions. It is possible that the fry are not mixed but that the eggs are, but this poses problems for the *H. chrysonotus* in that the pair of foster parents, the male in particular, would surely drive off any interlopers during the actual spawning.

A problem with the Cuckoo fry is that usually fry tend to identify with the species that raises them, that is to say they normally only attempt to mate with the same species as their mother. Yet *H. chrysonotus* appears to breed true. Either this identification, or imprinting takes place before the fry are fostered out or the fry are resistant to imprinting as we know it. It is also strange that the foster species do not appear to have evolved a defence against the attentions of the Cuckoo. At least the Cuckoo fish does not seem to actively destroy it's adopted siblings although, of course, it may do so through greater competition for food.

Readers wishing for further information on this fish with it's unusual breeding system will find the original article in Nature Volume 267, p. 243.

DO MALE OSCARS REALLY EXIST?

by Phillip Allen

In 1973 I bought my first oscars (*Astronotus ocellatus*) from a local dealer. At the time I had three tanks, two community tanks and one marine set-up. I introduced the fish (three 2 in. Gold Oscars) into the 30 in. community tank which was being occupied by some livebearers at the time. I realised that they would soon outgrow this tank, so I made a 4-foot all-glass tank specially for them. Unfortunately, I didn't move as quickly as the oscars grow and they had already polished off most of the livebearers.

They grew at an incredible pace in the new tank on a diet of ox heart, earthworms and minnows (1 in. to 2 in. fish caught from the River Severn). The only time their growth was checked was when I introduced a 6 in. Red Devil (*Cichlasoma erythraeum*) to the tank. The Red Devil mercilessly attacked the Oscars and despite the Oscar's greater size (all three were about 9 in. long), they were soon in a sorry state and lay on their sides at the back of the tank. The Red Devil was removed and given to an aquarist friend who placed him in solitary confinement.

To help the Oscars to recover I began changing much larger volumes of water (to keep the bacteria count down) and fed them up even more than before.

In appreciation of this improved treatment, two of the trio paired up and spawned. Unfortunately, I did not witness the spawning which occurred one afternoon while I was at work. The two stood guard over the eggs, refusing food and gently fanning the eggs (about 600) all that evening. I decided to leave the parents with the eggs, which had been laid on a piece of broken flower pot at the front of the tank. This proved to be a mistake as all the eggs had gone the following morning and the fish were back to normal.

A fortnight later the same pair spawned again in the same place, only this time they spawned while I was at home and could observe. Throughout the day the two fish engaged in gill-flairing and trials of strength, locking their jaws and twisting and tugging. Water was splashing out of every gap in the cover glass while they displayed and fought. At 7.00 pm they were still at it but both would occasionally stop and mouth the piece of flower pot.

At about 8.30 pm they started passing over the spawning site. The female, after a few dummy runs, began laying a few eggs at first and then up to 10-12 at a time. After each pass the male, following closely, fertilised the eggs. This continued until several hundred eggs had been laid and the pair stood guard over them. I removed the flower pot covered in eggs, much to the annoyance of the Oscars, and placed it in a small tank, added an airstone, a few drops of methylene blue and water from the breeding tank.

During the spawning the female's ovipositor was approaching ½ in. in length and was quite blunt; the male's tube, however, was hardly visible at all.

The following morning 10-12 eggs were fungussed and I removed these with a needle. By the evening all of the eggs had turned white. What had I done wrong? Should I have used pure water or at least boiled water to hatch the eggs in? I would try this the next time, if there was a next time.

A month and several pounds of ox heart later they spawned again, only this time the "male" laid the eggs! So I possessed two females; perhaps the third fish was a male. I removed one of the females and started conditioning the remaining two fish.

A month later the third fish spawned with the female and on this occasion both fish laid eggs!

I then scoured the shops for a suitable mate for my three females. At a fish house sale I secured a 14 in. Oscar (wild type) which, they assured me, was a male and had sired a number of youngsters. I took my male home and put him in with my largest female now about 11 in. I had a few problems getting him to eat but after four days he accepted a worm and then I had difficulty keeping up with him.

After a few weeks the two fish began pre-spawning activity with the usual gill flairing and jaw locking. I prepared a small tank with boiled water and set it up ready for the eggs. I sensed success. They spawned the following day. My new "male" laid the eggs I could have wept.

I tried two other "males" but both these also laid eggs.

Do male Oscars exist or am I just unlucky? Anyway, I've given up Oscars for the time being.

Today I bought two young Royal Blue Discus.

WHAT IS YOUR OPINION?

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

Photographs by the Author

ALTHOUGH THE excessive summer heat at the moment is making my typing something of a chore, I am pleased to think that it will be helping to cut down on the heating costs of my six tanks. I've just received my electricity bill for April-June and will have to part with almost £87·00; and the previous two bills were for £106 and £102 respectively. Even allowing for the fact that energy is more expensive in Northern Ireland, sums such as those quoted must make me seriously consider cutting down on the small number of tanks that I've kept for a good many years. We don't have central heating at home, and I've tried to economise by cutting down on the number of hours for which my tanks are lit; however, the hefty electricity bills continue to arrive. Have any others had to consider giving up some tropical fishes because of high electricity costs? It will certainly sadden me to have to cut back on my aquatic activities after so many years. Perhaps the answer is to keep coldwater fish in unplanted tanks and to switch the lights on only at feeding or viewing times. Have you any useful tips to pass on about insulating aquaria? If so I'd be pleased to receive them and publish them in a future edition.

The first of this month's letters reached me from Mr. Alan Blackburn, whose home is at 43 Parkinson Street, Burnley, Lancs. Mr. Blackburn writes: "Having been an avid reader of *The Aquarist* for many years it has now come to pass that I must put pen to paper—happily not in anger or annoyance, but in hope and enthusiasm. I am encountering a problem which shows its solution only in patience. Alas, I am not a patient man! The problem: unpaired fish. I have, amongst other fish in different tanks, one female *Pseudotropheus auratus* and two male *Haplochromis burtoni*, and I just can't get hold of the appropriate mates for these fish in local shops or among friends. whilst doing a partial water change on one of my tanks I had a bright idea: why not appeal, plead, beg and beseech *The Aquarist* for help. Maybe you could run a half page each month on 'Hard to Finds,' or an 'Unusual Column,' for such fish.

"I feel sure this must be a problem for a lot of small-town aquarists and a problem which a well read and respected magazine such as *The Aquarist* could, to a large extent, solve. I appreciate that not all my ideas are bright ideas, so if not a page or a half page on 'Hard to Finds' in your next edition, how about just a line or so for an old and loyal subscriber? That's my problem—and a very frustrating one at that. Dare I say it—*W.Y.O.?* Many thanks for your help and all the useful information you have supplied in *W.Y.O.?* over the years. Keep up the excellent work; the aquatic hobby needs you as much as it needs fish. Just one for Mr. Jack Hems before I go: have you any information on *Geophagus pellegrini*? To date I have found no written information on this fish." (I must admit I know nothing about this species; it is mentioned in neither my edition of Sterba's massive work, nor in the F.B.A.S. *Dictionary of Proper and Common Names of Freshwater Fishes*. No doubt Mr. Hems will, by now, have supplied Mr. Blackburn with the required information; however, I'd be pleased to receive any readers' comments on this species. I'll publish any information received.)

I must admit I like Mr. Blackburn's idea of some sort of 'Exchange & Wanted' column or page. Perhaps our editor will consider the idea. For the time being I'll try to include any such requests in this feature. I'll keep the ball rolling this month by asking if anyone could supply me with a male *Apistogramma borelli*. I've been trying unsuccessfully to obtain one for almost a couple of years. If you'd be prepared to sell me one please drop me a line. Anyone who can supply Mr. Blackburn's needs should write direct to him at his home address.

Photograph 1 shows a black neon. Please send me details of your experiences with this attractive little tetra.

Harlequin Racing

Mr. Gerry Corum's home is at 81 Barston Road, Oldbury, W. Midlands. He writes: "In answer to your query in the June issue, I used to be a life-guard at a swimming pool. The main benefit for the aquarist is that he learns about chlorine and pH levels. The main reason for writing this letter is to let you know how we got on down in Sussex for the World Harlequin Racing Championships (see *W.Y.O.?*, June, 1977). Before I give you the result let me explain that the fish are given names for identification purposes. The World Champion is 'Carry on Katie,'

owned by Tom Ramshaw of Brighton & Southern A.S. 'Carry on Katie' beat 'McArthur,' jointly owned by John Gilligan and Sally Johns, by six lengths. Mr. Ramshaw has agreed to defend the world title at the British Aquarist Festival, Belle Vue, Manchester, on 23rd October. I must explain at this point that the world title is not a yearly event but a series of one fish versus one fish challenges. An eliminating series will decide the challenger." (I'm beginning to think that Mr. Corum and his friends are serious! It all sounds a little like an Irish joke . . .).

Goldfish with Tropicals

Mr. A. Turner is 17 years old and wrote the following from 16 Grange Close, Cannington, Nr. Bridgwater, Somerset. "Please print this letter in *W.Y.O.?* because I would like to disagree strongly with one view put forward by many people. I am sure this will be interesting to many readers. The point is that fancy goldfish will mix very well with tropicals—at least I have found this to be the case. I am very restricted with space, so I tried mixing cold and tropical fish. At first my temperature was 80°F and I added a gorgeous, 4 in. black moor. It seemed to be perfectly healthy for five months before it died. So, gently, over a period, I lowered the temperature to 76°F. In this 36 in. × 18 in. tank I have 40 fishes consisting of five female angels, five neons, three black neons, four featherfin tetras, two glowlights, two large rams, two *Pseudotropheus auratus*, two guppies, a pair of fighters, a pair of mollies, a 5 in. sucking loach, one kuhli loach, a pair of hi-fin lyretail tuxedo swordtails and seven young discus.

"To these I added two gorgeous calico moors, each 3 in. long. Imagine a fantail with a large amount of blue in it, with the characteristic telescopic eyes of a moor. It was the first time I'd seen anything like them. They were 60p each. They seem to be getting on fine and are always on the alert for more food—the new, fresh type. I did have an attractive terrapin in the aquarium. For its little island I got a 5 in. piece of bark and fixed a sucker to it by using a pin going straight through the centre of the sucker into the bark. It was stuck just above the water line. I also have a truly magnificent pair of axolotls (pronounced *aksolot'l*, if you don't know these strange-looking but interesting creatures that seem as if they should have become extinct with the dinosaur, B.W.) that are 7-8 in. in length. They are hardy enough to winter outdoors in the pond, although they don't feed much. I've had them for two years; they cost me only 90p each. They are now in a 2 ft. tank and fed on earthworms, maggots, live eels and tadpoles.

"I wonder if any of your readers would be able to send me any fancy goldfish eggs through the post—it has been done—in exchange for some plants. My plants, except for swords and *Vallisneria*, thrive. If any aquarist would like to swap something for any of my wistaria or floating *Riccia* he or she should write directly to me. *Riccia* grows like mad for me; also some water forget-me-not, water brooklime, *Glyceria*, plantain, hairgrass, mint or iris. I'm sure an excellent exchange column could be made up in *The Aquarist*. Keep up the good work." (Obviously the idea of an exchange or wanted column appeals to more than one reader. Please send me your views on the idea. Have you any items you'd like to exchange or give away for the cost of postage and packing? If so, please let me know and I'll try to publish your request in a future feature.)

Have any readers received an electric shock recently while working at or touching an aquarium? Recently I raised the lid of one of my tanks, as usual, to feed the fish, and received a slight shock. Immediately I switched off the mains lead and removed the plug. (One should always remove the plug as an extra safety

measure; but don't forget to switch on the heater afterwards. It's easy to forget to replace the plug and flick the switch if, say, a telephone rings.) I traced the fault to a thermostat that had been operating perfectly for so long that I could not remember when I had installed it. What I hadn't noticed, because the 'stat was obscured by plants' leaves, was that the 'rubber' bung at the top had begun to disintegrate and had allowed a little water to enter the glass tube. I've replaced the old heater and 'stat with a new, combined unit. This was certainly a case where the most recent units, conforming to the new safety standards, would have prevented my receiving an electric shock. One tends to ignore heaters and thermostats when they are working normally. Perhaps it would be a good idea to check top sealing plugs at regular intervals. Do any firms supply or fit new sealing bungs for heaters and 'stats? It seems a bit of a waste to have to throw out a unit when the electrical components are still working well; however, it is much wiser to throw the leaking units out than to keep them in use and risk a nasty—or even fatal—shock.

No. 2 Heather Way, Gt. Moulton, Norwich, heads a letter I received from Mr. J. D. Ellingford. He had the following to say: "I am a relative newcomer to the fishkeeping fraternity, my entry having been gained twelve months ago when I obtained an old, dirty and leaking metal-framed tank, for 25p, from a jumble sale. I renovated it and stocked it with tetras, swords and the usual small community fishes. Of course, it started the well-known ichthyological fever and now not only myself but my wife and two children—aged 7 and 11—are avid fish keepers and members of Diss and District Fishkeepers Club. I would recommend anybody involved in the hobby to visit their local club, not only as it is a source of useful information but also for the social life and for meeting new friends.

"I enjoy attempting to breed egglayers—with limited success so far—but I'm learning and have just successfully spawned a pair of hi-fin rosy barbs—a long-finned variety of *Puntius conchonius*—and my 4th brood of Siamese fighters—*Betta splendens*. I recently had a spawning of about 400 opaline gouramies—*Trichogaster trichopterus*—but was only able to raise one fry, the rest dying within a week. I have also been trying to breed golden cichlids—*Pseudotropheus auratus*—but unfortunately the male appears to be too aggressive for the females, as he has killed two previous mates, and I am now trying again with the third—and last!

"The family as a whole now has 17 tanks set up and there is a fish house under construction. Early on I decided to make my own tanks using second-hand ¼ in. plate—33p per square foot—and framing them with plastic angle moulding—3p per sq. ft.—and the saving was considerable, except that as I was able to acquire more tanks than I would otherwise have done I then had to buy even more fish to stock them. My favourite fish at the moment are a 10 in. snakehead—*Ophicephalus micropeltes*—which shares its tank with a snakeskin gourami—*Trichogaster pectoralis*—quite happily, contrary to the experts, and a 7 in. piranha—*Serrasalmus natteri*—rejoicing in the name of Nipper, whose diet consists mainly of beef heart, and large earthworms which he draws into his mouth like a fat string of spaghetti. How's Gnasher getting on? (Last week I asked about Gnasher the piranha and learned that it was thriving in someone's tank. B.W.)

"With regard to the long-standing discussion on using the scientific names of fish: whilst agreeing that asking for a guppy rather than a *Lebistes reticulatus* is preferable, knowing only the common name is often a hindrance when trying to obtain information about a fish. Note some of the queries and answers in this magazine; especially as some names seem to have been coined by the wholesaler or importer. For example, I purchased a lovely little loach as a 'stone capper' and I still have no idea what it is or of any details about it. While not suggesting that retailers should label their show tanks with Latin names, it would be helpful if they could supply them on request as it would remove a lot of possible ambiguity."

Killifish

"In the May edition you published a letter from my wife about the hatching of killifish eggs. Unfortunately, due to the appetites of two *Primadella pictus* catfish, the great majority met with an untimely end; however, my better half is not easily put off and I am sure the housekeeping will shortly be robbed and some more eggs will be purchased. In conclusion, I would like to put a few pointers to newcomers to the hobby: (i) join you local fish club; (ii) buy a good book giving details of various fish species—I found *Handbook of Tropical Fish*, by Axelrod and Schultz, particularly good value at £2·60; and take it with you when purchasing fish; (iii) patronise a dealer who willingly gives advice and who keeps his tanks healthy-looking and clean, even if his prices are a little dearer than those of Joe Bloggs up the road. By listening to his advice you could save yourself pounds; (iv) don't be put off making your own tanks; it is quite simple with a little thought. Thank you for an excellent and informative magazine and a most readable and varied column."

Goldfish experience

Stuart Harrad is 15 years old and his home is at 2 Pembury Close, Worthing, Sussex. He says: "I am writing to tell you about my recent experiences with goldfish breeding. On 7th May this year I awoke with a start to see my two veiltail goldfish threshing about at the surface of the water. As I do a morning paper round I had to dash off; and by the time I arrived home, 40 minutes later, most of the eggs had

been eaten. However, I managed to salvage two bunches of egg-laden *Elodea* and placed them in a 1 gallon *Daphnia* tank. For the next five days the eggs were carefully observed with the aid of a magnifying glass, and despite the rapid demise of about half of them, due to fungus, the rest developed: first a small black eye, and then the spine. On the sixth day the embryo fish could be seen twisting and turning in their attempts to escape from their egg cases; and by evening they had all hatched.

"The next morning found them—a total of ten—hanging to the sides of the tank, still absorbing the yolk from their egg-sacs. They were about ¼ in. long and their general appearance was similar to a splinter of glass with two black dots at the top. A week after birth—two days after hatching—they were free swimming. They were fed on algae, a liquid fry food, and infusoria created by leaving some dried plankton food in solution for a fortnight, during which time they were gradually weaned onto a good flake food for livebearers. A week after hatching they started to eat the baby *Daphnia* provided for them; and at the end of their first fortnight they were ½ in. long. On 28th May a rather pale specimen died, his belly showing signs of fungus.

"On 4th June I made a sieved growth food, comprising a good flake food and colour food, with some freeze-dried *Tubifex* and *Daphnia*. The fish took this larger-particled food readily and by now were starting to show signs of gold, although some of the larger ones were staying the calico hues of their parents. Another weak fish died today, 9th June, suffering from congestion; and in removing it and some of the water from the tank one of the best specimens was caught in the siphon tube and died of shock. So, four weeks after hatching I have seven ½ in. fish, all well-developed and growing well. In *The Aquarist* mention has been made of the keeping of coldwater and tropical fish in the same tank. Since Christmas I have kept two 1 in. fantials and 1 in. calico pom-pom in a 4 gallon tank, along with a pair of guppies and three white cloud mountain minnows. The average temperature is 64°F, although it has dropped to 56°F and risen to 76°F on rare occasions. The guppies breed almost constantly, although the fry are soon eaten; and the white clouds have grown considerably since Christmas.

"Finally, people have asked for the names of good, fast-growing plants. I would recommend *Vallisneria torra* and *Elodea*. I purchased four small specimens of the former in January and they are now firmly established, all fourteen of them, each sending out runners to complete the takeover of the tank. *Elodea* grows so rapidly in both of my tanks that I have to buy a new pack of plant weights to weigh down new bunches every fortnight."

Angels

Photograph 2 shows one of my breeding angels—and leads me to the following letter, written by Mr. D. E. Green, of 26 Lord Derby Road, Gee Cross, Hyde, Cheshire. ". . . I have followed, with interest, your readers' ups and downs with angels. I think some of the weakness with angel fry is inherited as I have had trouble only with fry from one pair of fish, and I have bred many hundreds of angels. I raise my fry on micro worms and crushed trout pellets, progressing to chicken liver, white worms, earthworms and cat biscuits. Water changes are very important: at least 90% each week, fresh from the tap; but check

the temperature with the thermometer in the tank containing the fry: thermometers can vary by as much as 6-8°F. I must also say that tap water in the Hyde area is very soft.

"I have found that combined heater/stat units are very good for large tanks: the wiring, for one, is much neater; but in a small tank separate units are better. I keep Oscars and find that large cichlids are very time consuming as regards keeping the water clean. I have a power filter in a 6 ft. tank but I still have to pump out considerable quantities of mulm and half-eaten food at least twice per week. My local dealer is mainly concerned with other pets but the service he does give is good, if somewhat limited. He is one

of the few dealers who will not, under any circumstances, sell you a diseased fish—even if it only had white spot and you told him you could cure it.

"Sterba's *Freshwater Fishes of the World* is the best book I have seen on general fishkeeping. However, my edition is getting more and more out of date, and I have been told the new one is not as good."

Java Moss

Regrettably I have now to withdraw my offer of starter samples of Java moss. Many requests have reached me as a result of my offer in the July issue: in a period of seventy-two hours this week alone I received requests from ten more readers. Unfortunately my supply tank has almost been denuded and I'd like to retain a small piece for myself as the tank in question is leaking and has had to be dismantled for re-sealing. When I get the tank going again I'll resume my offer—if the piece I retain thrives and spreads as well as it did before. Several people who requested samples asked about the conditions under which the plant thrived for me. Some of my findings, on taking the tank apart, may surprise you. The tank had housed a collection of small tropicals: *Corydoras*, neons, cardinals, dwarf pencilfish, brass tetras and guppies. It had remained untouched for a number of years, kept clean by only an outside filter, containing synthetic filter wool, and operated by an air stone. Lighting came from an 18 in. Truelite tube and a 40 watt rough-service tungsten bulb lit for about six hours per day. The temperature was about 80°F and the tank was in a fairly dark corner and received no direct sunlight. Other plants that thrived in the tank were Java fern, dwarf *Sagittaria*, another unidentified water fern and *Hydrocotyle*—as well as duckweed which was introduced by accident. The calcium carbonate-free gravel was fairly fine and, on removing it from the tank, it was found to contain vast quantities of mulm down to base glass level. No water changes were ever made and no use was ever made of a siphon or vacuum cleaner. The water was crystal clear and both plants and fishes thrived. One interesting and astonishing fact came to light when I washed some of the mulm out of the gravel (I don't want it to be too clean when I return it as many people's plants fail because tanks are kept too clean): it contained *sixty-seven* small pieces of lead that had, over the years, been used as plant weights. These had been cut, using rose pruners, from a length of old lead gas piping banged flat using a hammer. Lead certainly poisonous to animal life and will dissolve slightly in soft water; however, this large amount obviously affected neither fishes nor plants. I assume the water in the tank was very hard; I have saved some samples of it for testing and note that it is an attractive amber colour. I'll take a break from typing now and go and carry out some pH and hardness tests to let you know more about its chemical qualities.

pH and dH

I've just tested the old aquarium water and must admit that the results have surprised me. They read as follows (using a Wardley kit for pH; and a Tetra kit for hardness): pH 6·2; general hardness—31°dH; carbonate hardness 2°dH; non-carbonate hardness—29°dH. (The instruction leaflet with the Tetra kit uses the symbols °dH for 'German Hardness'; °DH seems to appear in print more often in other publications. Tetra gives 1°dH as being equal to 10 mg. of calcium oxide in 1 litre of water.) I'm surprised that the water is so acidic, that the non-carbonate hardness is so high, and that the carbonate hardness level is so low. Make of that lot what you will. It may be of interest to you to know that I always top up tanks with water straight from the tap; and that its pH is 7·4, and carbonate hardness 4°dH.

Glazing

While removing the glass from my leaking aquarium, prior to re-glazing, I managed to break one pane. I attempted to obtain glazing compound ('putty') in three local pet shops but none stocked it. In the end I purchased a sheet of 32 oz. glass, size 19¼ in. × 11¼ in., and 3 lb. of metal putty, from a local glazier's shop; the bill came to £1·80. A 77 cc. tube of silicone rubber aquarium sealant cost me £1·49; the total—£3·29! Obviously the metal putty was not what I wanted as it is rather soft; but it was better than none—and some bedding was required for my metal-framed tank. The sealant should provide double protection and keep the putty out of contact with the aquarium water. No doubt a lot of putty will be exuded around the outside of the glass and frame when the tank is filled with water. Have other readers found it difficult to obtain glazing compound specifically made for use in aquariums? The end pin electrical lead sockets on my fluorescent lighting unit have deteriorated over the years and I attempted to buy a new pair locally. The pet shops did not stock them and, finally, I had to order a pair from a local electrical shop. No doubt I will have to wait some weeks before they arrive—judging by past experiences in ordering other non-aquarium items such as parts for a popular make of electric fire.

Recently I ordered four plant plugs from a Dorking firm. The plugs appear to come in two sizes and *seem* to be composed of a mixture of peat, loam, sand and vermiculite, bound together. The pack states that the plugs are made from "an organically bound combination of highly nutrient growing medium enriched with natural hormones and minerals." The plugs "will not cloud the aquarium" and "plant growth (is) no longer affected by undergravel filters." One inserts a plant or cutting into a slit in the top of the plug and places the plug in the sand or gravel without covering the

crown of the plant. It will be interesting to try some of the more difficult aquatic plant species in this potless 'pot.' I'll report my findings in a future issue.

Discus

The names of George and Linda Middleton, who live at 31 Maltby Road, Chessington, Surrey, will be known to many discus breeders. They write: "We were very interested to read Mr. Robin Maudsley's comments on keeping and breeding discus. We have been breeding a male blue heckel with a female brown for quite a while now. We have been breeding discus for five years; we started with a Singapore turquoise × brown, royal blue × brown, blue haraldi × brown, Lake Tefe green × brown, blue heckel × brown, browns and straight blues. During this time we have read various articles and letters in *The Aquarist* and the one thing that appears to be apparent is that no one ever seems to mention a colourful female; it always seems to be a colourful male. Other than brown females I have only one other female which is blue; and although pretty it is not of the same standard as the male blues that I have or have had.

"As most people have had, in the past, to obtain their discus from wild stock, it appears that the majority of wild stock imported are males—certainly the well-marked ones; thus the lack of females made the breeding of discus a very difficult task. Now that there are more tank-bred brown discus available there seems to be a 50/50 ratio of males to females in home bred discus. People have had far more success breeding them by putting a tank bred female in a tank with a wild male discus. In the right conditions they almost breed at will. At the moment there are people who claim to be breeding with a Lake Tefe green female—and they might well be; but to us, those that we have seen appear to us to be no more than browns with a few spots, and in no way bear comparison with the males.

"We are continually on the look-out for new stock and obviously will buy the most beautiful fish, where possible; but before we even have it home we know that it's a male. It seems that the colourful females are few and far between; and to further our search in the hope of finding one we have become very interested indeed in turquoise discus. There are now many people keeping and successfully breeding with discus they obtained, as young, from us, and as most people who have contacted us know, we are very pleased to help them if we can with the keeping of these most fascinating and beautiful fish; but there is always something new to learn every day and we never tire of learning."

I was interested to receive and read the current (summer '77) edition of the F.B.A.S. Bulletin. I trust the Federation and the Editor of the Bulletin, Mr. R. C. Mills, will not mind my quoting a paragraph from its Editorial: " . . . Simple ideas have the happy knack of turning into great ones, and the *What is Your Opinion?* column in *The Aquarist* magazine is an excellent example of this. B. Whiteside has been its creator and perpetuator for 10 years now and through his efforts many of the questions that novices to the hobby were afraid to ask have now been answered by the popular 'open forum' method. It's a strange thing that people would rather pose questions in print and be happy to accept written answers, yet are rather shy about having a jolly good natter about it at a club night. . . ." The Bulletin contains its usual quota of interesting articles about fishes, plants, the trade, the various clubs and, of course, the F.B.A.S. itself.

Rising costs

I was saddened to learn, from a friend in the wholesale side of the hobby, that business in general in the hobby has been very slow in some quarters of late. Indeed he told me of one good retail shop that would be closing its doors in the near future because business had been slow, while increasingly high bills for rent, rates, water, electricity, etc. continued to arrive. My friend pointed out that for many years we had enjoyed one of the cheapest hobbies but that now that prices were rising to more realistic levels many aquarists were having to limit their expenditure on fishkeeping. Sadly, the closure of even one shop will be a loss not only to its owner but also to wholesalers and ordinary hobbyists alike. No doubt the unemployed—and the many youngsters who keep fishes—will be particularly badly affected by rising costs. We in Northern Ireland are badly hit by the fact that electricity costs here are anywhere around 20-40% higher than in Britain. I hope that as many people as possible—on both sides of the hobby—will be able to hold on until the black gold from the North Sea will, hopefully, raise the general standard of living.

Decorative wood

The last of this month's letters for which there is space reached me from Mr. R. Paul, of Shimpling Place, Shimpling, Bury St. Edmunds, Suffolk. He writes: "In the July edition you asked for opinions on wood as a form of decoration in aquariums. I use wood in all my big aquariums, with spectacular results. Wood is a very useful, and sometimes vital, addition to a tank of cichlids, where plants cannot be grown and bullied fish need shelter. It provides clear demarcation lines for territories to be set up and is at the same time very attractive. In planted aquariums wood has its place also. It contrasts beautifully with the bright green of, say, *Vallisneria*; and seems to get better the longer you have it as algae grow very well on it in many different forms. The situation is ideal for my *Plecostomus* catfish, because the particular piece of wood in its aquarium provides it with all it wants:

Continued on page 242

Poecilia nigrofasciata

Written & illustrated by Jack Hems

ONE OF THE most interesting and attractive and yet sadly neglected—at the present time—members of the family *Poeciliidae* (Viviparous Tooth-Carps) is *Poecilia nigrofasciata*, which was long called *Limia nigrofasciata* or *L. arnoldi*. Native to Haiti, it was first introduced to German aquarists (pioneers in the keeping and breeding of tropical freshwater fishes) in 1912. Little over a decade later it was no stranger in the heated aquariums of hobbyists in this country and the U.S.A.

For the first few months of their lives both sexes are garbed in almost identical colours: brownish olive on the back, brassy to olive-green lower down, shading to white tinged with yellow on the belly. Eight to twelve black vertical bars are spaced out rather irregularly on the sides. The scales, and more particularly those placed anteriorly, reflect silvery to golden green lights. It is the rule, rather than the exception, for the scales of the male to shine out more brightly as it increases in size. Furthermore, the area slightly to the rear of and under the gill-plates assumes a more pronounced dark brown to blackish coloration interspersed with patches of lemon-yellow to light orange. About the same time, the dorsal fin becomes larger and strikingly banded and spotted with black on a yellow ground. The caudal fin displays similar colours. More interestingly, the body deepens and becomes more compressed and the forward slope of the back develops a hump.

Christopher W. Coates, writing about this livebearer (under its outdated generic name of *Limia*) in his *Tropical Fishes as Pets* (Jonathan Cape, London, 1934) observes '. . . it is difficult to visualize any environment which calls for such a hump on the elderly males of this particular species under discussion.' Indeed, why some fishes do develop humps as they age is always a matter of interest and speculation.

Ordinarily the male hump-back or black-barred limia—to give the fish its popular names—attains a length of about 2 in. The heavier-built female rather more. Apart from his smaller size, brighter colours and peculiar shape (and it is necessary to stress that the hump does not develop until the fish is well-grown or some nine months to a year old), the mature male is easy to recognise by his typical livebearer rod-like copulatory organ (an elongation of certain rays of the anal fin) or gonopodium.

The hump-backed limia is peaceable and makes a colourful and lively addition to a community tank. All the same, it is far more sensible, if the perpetuation of the species as an aquarium fish is the first consideration, to give it a tank to itself.

A tank measuring about 18 in. by 12 in. by 12 in. is not too small for a pair, but the larger the tank, for breeding, the better. The bottom should be covered with well-washed fine grit or coarse white sand to a

depth of about 2 in. Into this set stems, with brown, ends pruned away, of suitable species of *Myriophyllum* or *Limnophila*. Alternatively, thickets of hair grass (*Eleocharis*) along the back and ends, or wads of riccia, and the like, to form a counterpane of foliage over most of the surface. Both fish and plants benefit from a good natural or artificial light. For general maintenance a temperature of about 72°F (22°C) to 75°F (24°C) is suitable. Delivery of young, however, is more frequent if the temperature is raised, for part of the year at least, to about 77°F (25°C).

It is easy to know when a female is about to have young because her abdomen becomes noticeably distended and she tends to swim less in the open and hides in the plants. About every eight weeks, at a temperature in the upper seventies (°F), fry are born. A large female may deliver 50 or more faintly barred fry. The babies are smart enough to make themselves scarce, if they can, from the moment they enter their small world. Not a few, however, will be snapped up and eaten by their parents. For all that, if the parent fish are kept well-supplied with gnat larvae, white-worms, minute particles of raw red meat, crushed flake, and so on, they will make no great effort to seek out and make a meal from their offspring. Always sufficient of the fry survive among a thick planting to add to the population of the tank and, when they have made good progress, distribute among interested dealers or fellow hobbyists.

The fry themselves grow well on a mixed diet of powder-fine dried food and living things such as freshly hatched gnat larvae collected from a water-filled container stood outdoors, Grindal worms and so on. Daphnids (water-fleas) taken from a natural pond or lake are best given several changes of mains water before feeding them to fish. This lessens the possibility of introducing pests and disease into the aquarium.

"OSCAR" 1977 TO NORWAY

10.00 o'clock on Sunday the 24th April Gunnar Lundin, the editor of Tidskriften AKVARIET, let the audience at "Akvariet's Day" know that the "Oscar" winner this year was Jan Carlen, a well-known aquarist from Haugesund, Norway. The applause confirmed that the choice of winner was popular. In the picture by Lennart Lundin, Mr. Carlen is standing left. Next to him Edwin Brorsson, the founder of Tidskriften AKVARIET, and to the right a previous "Oscar" winner, Åke Westlund.

Jan Carlen is well known to the Scandinavian aquarists as a prize winner of the yearly contests arranged by the Swedish, Norwegian and Danish central organisations in order to stimulate the production of dia-speaches on the hobby. He has written many articles which have been published in Tidskriften AKVARIET. Later on the Sunday he also held a wonderful lecture and there is no doubt about it: Jan Carlen is a well-qualified "Oscar" winner.

Other speakers at "Akvariet's Day" 1977 were Åke Westlund, Arne Schiötz (manager of Danmarks Akvarium, Copenhagen), Gerhard Brünner, Hamburg, and Søren Neergaard, Copenhagen.

1977 Tidskriften AKVARIET celebrates its 50th anniversary and the "Oscar" trophy has now been given to a distinguished aquarist since for the past 10 years. The enthusiasm of those who took part in the celebrations, their gifts and friendly speeches, illustrate the gratitude of the readers.

The Pet Trade Association fight to maintain transport service for Livestock

The Pet Trade Association is currently engaged in representations to British Rail on the question of a reduction in the numbers of TCF stations accepting livestock. Currently about 1,000 stations are listed as providing TCF livestock facilities, but British Rail expects to have to reduce the number to about a third as part of a "streamlining" programme.

The PTA will be urging British Rail to maintain the service at as many stations as possible, and in order to produce a properly documented case, it would be helpful if shippers could let us know as soon as possible those stations which they consider to be most important to their business.

Shippers will also be interested to know that the PTA will be making recommendations concerning the use of a standard label with trade shipments of livestock, and the use of standard containers. The latter will probably be based on the container specified in the recommendations of the International Air Transport Association.

Information or representations on any of these subjects should be addressed to the National Organiser of the Pet Trade Association, 151 Pampisford Road, South Croydon, Surrey CR2 6DE.

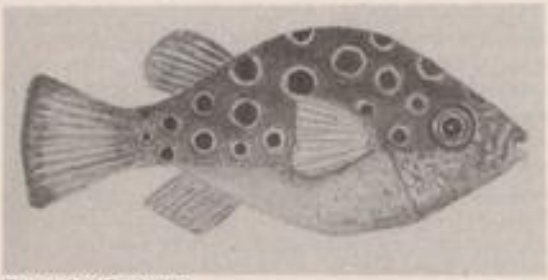
OUR EXPERTS' ANSWERS TO YOUR QUERIES

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

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

TROPICAL QUERIES

by Jack Hems



Tetraodon fluviatilis

How much and how often should salt be introduced into a freshwater tank in order to keep puffer fish such as *Tetraodon fluviatilis* in good condition?

Stir in about a teaspoonful of ordinary cooking salt (not specially prepared table salt) to every gallon of water in the tank. Thereafter no more. Every time the tank is topped up, to make good losses by evaporation or cleaning, use unsalted mains water that has been boiled first and then cooled to aquarium temperature.

How can the aquarist tell *Labeo frenatus* and *L. erythrurus* apart? To my inexpert eye both species look alike in shape and coloration.

Given plenty of swimming space in well-aerated water, the species *L. erythrurus* attains a length of at least 4½ in. *L. frenatus* reaches only about 3 in. In addition, the body of *L. erythrurus* is a sort of greenish charcoal in colour or charcoal overlaid with lavender blue. The fins are fiery red. The body colour of *L. frenatus* is more olivaceous or washed out greeny grey and the fins less glowing red.

I am thinking of buying a number of young kissing gourami (*Helostoma temminckii*) and would appreciate some information on feeding, temperature and behaviour in the community tank.

It is essential to supply the kissing gourami with vegetable food such as mossy algae, cooked spinach, scalded lettuce, and the like, in addition to a first class flake food, and swallowable live food such as whiteworms, brine shrimp and gnat larvae. A temperature in the middle to upper seventies (°F) suits the species all right. Two or more kissing gourami usually keep themselves to themselves and do not trouble other fishes.

I spread John Innes potting compost over the floor of my aquarium before covering it with well-washed grit. I then added plants, installed a suitable fluorescent light and introduced fish. A fortnight has passed and the fish appear to be in good health. The water, however, is becoming increasingly cloudy. Where have I gone wrong?

I am not certain you have gone wrong. In all probability the plants have not had time to establish a good rooting system. After they have settled in and take up more space with their foliage and draw on the nutrients in the water it should clear. You can hurry along the process by introducing more plants along the back and ends of the tank to almost hide the glass from view. Go in for plants such as species of *Cryptocoryne* and *Vallisneria*.

I have a 24 in. by 12 in. tank stocked with four firemouth cichlids, two convict cichlids, two angel fish and two kribensis. Please give me some details about breeding the kribensis.

The kribensis will need the 24 in. by 12 in. tank to themselves. Stock it with plants along the back and ends, introduce an overturned flower pot, maintain a temperature in the upper seventies (°F) and then await courtship procedure (you may have to wait months before this takes place) followed by spawning in the flower pot. As things stand, your tank is too overcrowded with a bad choice of fish. Firemouth cichlids can attain a length of about 6 in. and are not

Cichlasoma nigrofasciatum

always peaceable. It follows, therefore, that your 2 ft. aquarium is hardly large enough to support two large firemouths in comfort. Convict cichlids (*Cichlasoma nigrofasciatum*) are compulsive bullies and should not be kept in a smallish tank with other fishes. Angel fish require peace and quiet. It is difficult to imagine they will last long in your set up.

I set up my first aquarium less than a week ago. A few hours after I had filled it with water and added some plants, I introduced a number of fish. Next morning, I noticed that the fish kept rubbing their bodies against objects inside the tank. The fish are feeding all right but the rubbing persists. Do you think the fish have developed a disease?

Unless you can see tiny white spots on their bodies and fins, I very much doubt it. Leave well alone for the time being and give the water time to age. The fishes are more likely to stop rubbing their bodies against objects as the plants take root and the water loses its 'newness.' Give no more dried food than the fish can clear up in about a couple of minutes and if any food remains uneaten from previous feedings waste no time in siphoning it away.

I acquired a pair of *Rasbora kalachroma* **sometime ago and I should very much like to breed them in a spare 24 in. by 15 in. by 12 in. tank set up with clean grit and plenty of plant life. Where can I find some detailed information about this fish? It is not mentioned in any of the books I possess.**

Articles about this extraordinarily handsome cyprinid have appeared in various magazines over several decades. It is not so easy to run down in the less comprehensive books. I can tell you, however, that this rasbora can grow to a length of about 3½ in., is native to Malaya, and flourishes best in peaty acid and soft water. It accepts live and dried foods and requires a temperature of about 75° F (24° C).

Please can you give me the names of some dealers who stock the less common livebearers? I am interested in obtaining *Heterandria formosa*, *Belonesox belizanus* **and various species of** *Gambusia*.

Uncommon livebearers reach up-and-doing dealers every now and again, but they are snapped up within a matter of hours rather than days or weeks. Just keep haunting the better-class dealers' establishments. There is a specialist society devoted to livebearers. It is situated at Newcastle upon Tyne. If this interests you, get in touch with Mr. D. Renton, Chairman, Newcastle Guppy and Livebearer Society, 146 Chillingham Road, Heaton, Newcastle upon Tyne NE6 5BU.

I am a beginner in tropical fishkeeping and have a problem that I hope you can solve. A few months ago, I bought two angel fish of roughly 1½ in. body length. They have about doubled in size and fight too frequently for my peace of mind. One looks in a very poor way, with bruised sides and tattered and shortened ventral and anal fins. Is there anything I can do to stop or check this chronic animosity?

Yes. Introduce a few more angel fish of not too small a size into the tank. The bully will be so distracted by the presence of others of his own kind that he will pay less and less attention to his old victim. With plenty of tall-growing plants in the tank to afford shelter, angel fish usually manage to lead a comfortable life though a certain amount of bullying will always take place.

Brachygobius xanthozona

I have some bumble-bee fish and would like to know how to sex them.

In mature specimens, the female is the heavier-built of the two and the more subdued in coloration. I suppose, however, that you referred in your letter to the goby called *Brachygobius xanthozona* and not to the catfish known to science as *Microglanis parahybae*. (I have even come across the name of bumble-bee fish applied to the catfish *Leiocassis siamensis*.)

Has the pH, DH and temperature of the water any adverse effect on the growth of the barbels of some catfish? The barbels on my *Corydoras*

punctatus punctatus **have dwindled away to stumps. I do not think my tapwater is ideally suited to tropical fishkeeping and I do maintain a temperature in the high seventies** (°F).

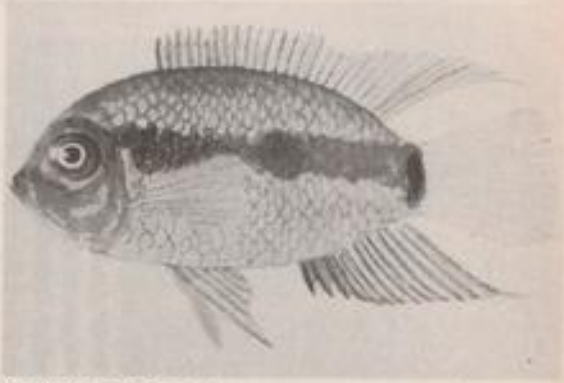
An abrasive planting medium is the cause of your trouble. Use a soft sand or small rounded pebbles as a bottom covering. If your local mains water is on the hard and slightly alkaline side it should suit most, if not all, species of *Corydoras* very well. A temperature in the upper seventies is not harmful, though a temperature in the lower to middle seventies (°F) usually makes for a longer life.

I have owned a tropical freshwater aquarium for a few years but now feel an urge to change over to marine tropicIas. Would my existing tank, emptied of its present contents, make a suitable home for saltwater tropicals?

Firstly, I must stress the fact that salt is strongly corrosive and a metal framed tank must be sealed against its damaging effects by a coating of silicone rubber aquarium sealant all along the internal joints and under the top (and over the edges) of the angle bars. An all-glass tank is recommended. Secondly, you did not mention the size of your freshwater tank. It is waste of time and effort setting up a marine system in a tank holding less than 20 gallons of water.

Can you please name some plants that I can look at with pleasure and feel fairly certain that they will not disintegrate in a week or two? Up to now plants have had me beaten. My tank is 36 in. by 15 in. by 12 in. and is given 20 watts fluorescent light for about six hours a day.

To begin with I must emphasize the fact that you need a 30-watt fluorescent lamp kept switched on for about 14 hours a day. Next, you must make a point of choosing plants that have been favoured by knowledgeable aquarists over a long period of time. I suggest, therefore, plants such as *Cryptocoryne affinis, C. beckettii, C. wendtii, C. griffithi, C. willisii, Vallisneria spiralis, Hygrophila polysperma* and *Ceratopteris thalictroides*. More recent introductions such as *Microsorium pteropus* are well-suited to aquarium conditions.



Aequidens portalegrensis

Could you please give me some information on the brown acara?

The brown acara or *Aequidens portalegrensis* grows to some 6 or 7 in. in captivity. It is native to southern Brazil and thereabouts and requires a temperature in the middle to upper seventies (°F), the latter for breeding. Its tank should be furnished with a thick carpet of well-washed grit and some non-calcareous rockwork rather than plants which require a rooting medium and which are usually uprooted every so often. Food such as red or white worms, small water snails, unwanted livebearer fry and narrow strips of raw red meat should be supplied.

COLDWATER QUERIES

by Arthur Boarder

I am changing over from keeping Tropicals to coldwater fishes and would like to keep Perch. How many could I keep in my tank, 48 12 15 inches. Where can I get small Perch and what plants do you advise for the tank?

Perch, (*Perca perca*) are very handsome fish for a cold tank. However, you must realise that they are carnivorous and feed on live foods such as:— Garden worms, white worms, meal worms, maggots, crushed water snails, the larvae of various insects and small fishes such as Minnows and Sticklebacks. The last-named may seem rather strange because of their prickles, but I have found several inside Perch I have caught. These fish are not usually offered for sale and I can only suggest that you contact the man who I know specialises in coldwater fishes . . . You may be able to catch some small ones as you suggest (but be careful that you do not trespass in an Angling Society's water). They may be caught by running a net through the water plants at the side of a pond.

Is is possible to keep Sun fish in a tank?

Several species of Sun fish can be kept in a coldwater tank. The Peacock-eyed and the Pumpkin seed are the ones most often offered for sale. They are handsome fish and do not, as a rule, rush about in a tank but may remain stationary for some time in the usual manner of carnivorous fishes. They only take live foods as a rule but it is possible to train them to take other foods. A good way is to crush garden worms with some flake food. After feeding with this for a time, the flake is gradually increased in proportion. These fish come from North America and can be kept in garden ponds in most parts of the country where the winters are not too severe.

In the June issue of *The Aquarist & Pondkeeper* you state that a pond 8 ft. × 5 ft., should only hold 24 inches of body length of fish but on page 6 of your book *Coldwater Fishkeeping* you give the rule as an inch of fish, body length, to each 24 square inches of surface area. This does not seem to make sense to me.

The rule given in my book is for a tank, not for a pond. The rule is also the limit required and it is always better to err on the liberal size. Once the rule of stocking is reached it is possible that the fish will stop growing or one might grow at the expense of others. Space is most important in promoting growth and so as the fish in a tank grow it is important to reduce their numbers so that their growth is not retarded. As for a rule for stocking a garden pond, a lot depends on the type of fish one wants to keep. For instance, one for Orfe or Koi would need to have much more surface area per fish than would a pond solely for types of goldfish. In my opinion it is well to allow a square foot of pond surface area to each inch of body length of fish as I think that a pond never looks right when it is overstocked with fishes and the inhabitants never thrive. If one could take a random section of water from a number of lakes and rivers, I doubt if the number of fish found there would be more than two, unless one was lucky enough to strike on a shoal.

I wish to breed Golden Orfe and would like some information on the subject?

Golden Orfe breed in a manner similar to that of goldfish but the eggs are slightly larger. The males chase the females through water plants near the edges of a pond to encourage them to lay their eggs. The chase can be quite violent. I used to think that Orfe did not spawn until they were of a good size, at least a foot long, but I have since seen them spawning in a friend's pond much smaller than that. The fish in question were not more than six inches in body length. To get the fish to spawn it is imperative that the pond water is quite pure and well oxygenated. A fountain or a waterfall is a help in keeping the water in a good condition. Some fine-leaved water plants should be provided near the water's edge so that the fish can spawn there. If some bunches can be provided for the reception of eggs it will make it easy to collect them for hatching in safety away from the parent fish. The hatching and rearing follows the pattern of that of goldfish and a book on the subject will be of help to you.

I am starting to keep a number of freshwater fishes in aquariums and would like you to give me a list of water weeds to plant in the aquariums. Will tropical plants do as well?

Some tropical plants can grow in a tank which is kept in a living room, but there are so many suitable coldwater plants available that they need not be considered. You can use *Vallisneria spiralis; Egeria densa; Lagarosiphon major; Ceratophyllum demersum* and *Hygrophila polysperma*. However, there is no need to use too many kinds of plant as some are more rampant than others and could take over to the detriment of the weaker growing kinds. It must also be realised that it is possible to overstock a tank with plants. It may be all right in the day time when they are giving off oxygen but at night they cease to do so

PLANT QUERIES

by Vivian De Thabrew

I am fairly new to the aquatic hobby and so far I have had little success with my plants. My tank is equipped with a 40 watt white strip-light which is left on for about 12 hours a day. The gravel is fairly large and I keep it very clean, I do not use an undergravel filter. The tank is completely free of algae, being situated in a shady position. Soon after being introduced into my tank, the plant leaves go yellow, detach themselves from the rest of the plant and float to the top of the tank. No roots develop at all. The water in our area is very soft. Could you please tell me what I am doing wrong? Is the tank too clean? The plants which have died are *Vallisneria*, Indian Fern, Amazon Sword and *Hygrophylla*.

According to your information you are giving plenty of artificial light but very little natural lighting. First of all may I suggest you cut down the period of artificial lighting to about 8 hours per day and position your tank in such a manner that it receives more sunlight.

You are maintaining your tank bottom very clean which means there is hardly any detritus or organic matter in the medium, which is an all-gravel medium. I think it is extremely difficult for an aquarium plant to develop in such a sterile medium. A few of the species which will grow in such a condition are, some *Ceratophyllum*, *Cabomba*, *Myriophyllum* and *Nitella* species.

The main reason why your leaves go yellow and drop off is lack of nourishment. This condition can be remedied by improving the tank-bottom. This can be done by adding some organic matter such as aquarium peat to your gravel or even using a liquid fertiliser available on the market. However, I would strongly recommend the use of clay or peat mixed with your gravel.

All the plants which you have attempted to grow do require a substantially fertile tank bottom and a temperature range of 72 -78 F. Of the four species mentioned, only Indian Fern requires a very high range of acidity, i.e. 5·00-6·5 pH.

I have purchased an *Aponogeton ulvaceous* about a month ago. It looked all right, had some root and two leaves. However, since then the two small leaves have sprouted, the original two have died off. I was not very happy with it, so lifted out to check and discovered the base of the corm has gone black and the roots have gone brown. Though the corm smells a little bit, it is still quite firm. The pH exactly neutral and temperature 75 -78 F. Please can you advise me on where I am going wrong?

From your description of its growth pattern it appears that the tank condition has not been quite suitable for its healthy growth. The requirements of the species are:-

1. Soft and slightly acid water. A certain amount of Calcium is strongly preferred.
2. Clear and still or slightly turbulent water.
3. Moderate light, not too strong, even shade.
4. Water temperature 70 -75 F. During its natural rest period which is January to May, the temperature should be lowered to around 60 F.

Your corm has not quite come out of the dormant stage but being forced upon to do so has sprouted. But such a premature attempt can only break down cell-chains which are not developed for the next stage of its life-cycle. The browning of the roots and the pungent smell indicate that the corm is deteriorating. The firmness of the corm is no indication of its soundness. Please remove the corm and dispose.

I want to set up a 36 in. × 14 in. × 12 in. tank with some of the following Hygrophilas. Please can you tell me if they are of the small varieties and will they grow well together? They are: *Alternanthera sessilis*, *Alternanthera versicolor*, *Hygrophila salicifolia*, *Hygrophila polysperma*.

Alternanthera sessilis, also known as *A. rubra*, has upright stalks bearing narrow spear-shaped leaves up to one and a half inches long. This is really a plant which grows emersed; that means the lower part under water and the crown above water. It also grows in the wild as a marginal or even a land plant. If grown underwater it will die after six or seven months, though I have known this plant to survive for more than a year in an aquarium.

A. versicolor, known only to the trade by this name, has very similar characteristics. The true name of this species is in dispute as some believe it to be a hybrid. *Hygrophila salicifolia* is correctly known as *H. angustifolia*. It is quite a big plant requiring adequate room. The leaves are lance-shaped, up to eight inches long, growing on short leaf-stalks. They are bright to deep green on the uppersides and greyish white on the undersides.

H. polysperma is densely branched bearing bright green oval or elongated leaves. Perhaps the easiest plant to grow in the aquarium, it forms dense tufts pushing forth branched stems to the water-surface.

Of the above four varieties, *A. sessilis* is easily contained underwater. *A. versicolor* (*A. variegatum*)

and give off carbon dioxide. Fish in an over planted tank could die in the night for lack of oxygen, especially in hot weather.

Are water lilies essential in a garden pond?

Water lilies are not essential in a pond but as long as a pond is large enough to accommodate one, I consider that no pond is complete without at least one such plant. These plants are not oxygenators as their leaves float on the surface but their roots will attract much of the waste matter from the fishes and so tend to keep the water in good condition. Their flowers are a great attraction in the summer months and so help to make the garden pond a colourful part of the garden. There are types of water lily to suit most ponds from the miniature kinds to the very large ones. When purchasing a water lily it is well to tell the supplier the size and depth of your pond so that a suitable one may be obtained.

I have a 6 in. goldfish in my pond which has a kind of deformity. Its body is bent and one side of its belly is fatter than the other. Is there a cure for this?

I doubt very much if the fish can be cured. The curvature of the spine may be the result of an injury or it may have been passed on from parents. I would not keep such a fish in with others in a pond as if it bred, the tendency for deformity could be passed on to any youngsters. There are enough poor specimens of goldfish about without taking the risk of breeding more.

I have purchased several plastic tubs which are 16 inches in diameter and 10 inches deep. I have planted several kinds of water plants in them but they do not appear to be growing. Some of the leaves have fallen off the stems and many have gone soft. None appear to be growing well. Can you offer any explanation?

It may be that the plastic tubs are toxic to the plants and they may have contained something which is harmful to the plants. Otherwise I see no reason why plants should not grow as long as you have something on which they can feed in the tubs. As you have no fishes in them you must provide some form of nutriment and some good loam should be in the base and there is no need to have gravel or sand. Try to find out what the tubs were used for and you may have to paint the insides with a protective sealant before they will be of any use.

I have planted some Zebra rush in my margin of the pond. I can only give it two inches of depth and the wind has blown it over. Can you offer any suggestion to improve its growth?

Obviously there is insufficient depth of soil for the roots to get a good anchorage against the wind. I suggest that you construct a type of rockery round the plant. Place some large stones or small rocks round the stems and this should anchor the plant better. If done carefully this should not look unsightly.

I have a concrete garden pond about 6 ft. 3 ft., and it has sprung a leak. Is there anything I can paint on it to seal it?

You can use a sealant such as Pondseal. This is type of rubberised paint and can be painted on concrete surfaces. The concrete must be quite dry before being treated and you could give it two coats to make sure. The first coat must be dry before adding the next.

What size do you recommend a garden pond to be so that it can function well?

I realise that the size of a pond has to be regulated to a certain extent by the size of the garden. If one is made too large and the rest of the garden is dwarfed, it will not look well. I am certain that a large pond is less trouble to keep in good order than a small one but the pond must not be too large for the garden or the whole effect will be spoiled. I would not recommend any pond to be made less than six feet by four, and not less than eighteen inches deep. Even then such a small pond will be rather exposed to severe weather and bad icing could take place. Although the original cost of making a large pond can be high, it will be less trouble thereafter and will be easier to keep in good order especially during the winter. On the other hand, if the pond is too large it may present a problem when it needs cleaning out. I suggest that a pond ten feet by six is a good one for the rather small garden and allows plenty of scope for the pondkeeper who wishes to keep and breed a few fishes such as fancy goldfish. A pond for Koi and Orfe should be larger than this as these fishes can soon grow to a large size.

Is a fibre glass pool a good buy or do you recommend any other type?

There is no doubt that a fibre glass pool is easy to install but those I have seen are hardly large enough or deep enough to function well for long. The danger is that in a small area of water there is the tendency for trouble when there are extreme changes in the weather. In the hot weather the water can become dangerous through lack of oxygen and in the winter much of the water can freeze up. Any pond should be at least eighteen inches deep, and even then it is not enough to prevent a severe freeze up. I am not sure how the price of a fibre glass pool compares with the cost of making a similar sized pond with a liner, but the latter could be made to a better depth.

is of similar structure to the former and hence will blend well with the others. Of the two *Hygrophila* species, *H. polysperma* is ideally suited to be grown with the above species. *H. angustifolia* however is best grown on its own as a central attraction. All the above four species are ecologically compatible and can be grown together.

As the trial and error method in growing plants is both costly and slow, and as advertisers' plant lists are not informative on this and other requirements of the plants, I wonder if you can recommend to me a comprehensive book on coldwater and tropical aquarium plants which would help me to avoid needless expense and dissapointment.

Concerning books dealing with the subject there are only two or three which are suitable for the aquarist. Amongst these the one which is fairly useful and readily available is Dr. Jiri Stodola's "Encyclopedia of water plants." Much of the information in this book is useful. However, there are sections which are irrelevant to the British aquarist. The classic on the subject is Dr. H. C. De Wit's "Aquarium plants." This is an excellent book, but a bit outdated on technical data. However, its fundamental and practical information is accurate and the subject matter well handled. This book is now out of print, but can be obtained through your local library.

My own book deals only with tropical aquatic plants. It gives the essential botanical and practical information on ninety popular aquarium plants available to the British aquarist, and is exclusively written for him.

I have a tank 39 in. × 15 in. × 12 in. and have had *Elodea* and *Vallisneria* growing for the last thirteen months, but the last four months I have noticed a black hair like growth on the weed. It is worse on the *Elodea*. Could this be due to the fact that I had a leak on the tank five months ago. I repaired and filled the tank with water from the tap and added a well-known water treatment. Since then this black hair has appeared. I have a Growlux light on about eight hours daily.

The black hairlike growth you mention is not due to the leak on your tank. It is a fungus growth stimulated by the water condition. There must be some chemical element or elements which had stimulated this growth. *Elodea*, Amazon Sword and *Vallisneria* are quite prone to it. Therefore I suggest the following:—

Empty about half the water from your tank and fill new water to the original level. Mix about two dessert spoonfuls of aquarium salt into it. Check your lighting condition, too. You may not be giving intensive light from above, therefore check the wattage. Give plenty of artificial light from above, about ten hours per day, and substantial natural light from the front and sides.

Most chemicals have limited efficacy and ideally should only be used when all means of improvement have failed. A well balanced water condition will help your plants more than any chemical.

My plants do well in my 24 in. × 15 in. tank, *Vallisneria*, Wistaria and Water Sprite all doing well together. My problem is Amazon Sword. Nothing will grow with this plant. I have tried *Vallisneria torta*. This grew to eight inches and stopped. The Wistaria died. I need a tall flowing plant for the back and sides. The temperature is 76 -78 F. Lighting is two 15 watt bulbs left on for ten to twelve hours. If you could please give me advice on which plants would be best and needing least attention, I would be very grateful.

Ideally Amazon Sword (*Echinodorus paniculatus*) should be grown with several other *Echinodorus* species, or even on its own. But other plants will grow with it provided that the water condition, temperature and light requirement of *E. paniculatus* are very similar to those required by them too.

However, as you can see, aquarium plants come from many regions of the world, some from swampy areas, some from hill districts, some from dry zones and some from flat uncomplicated terrain. Therefore, all these plants have their own special requirements as to temperature, humidity, water condition and growing medium. This means that it is extremely difficult to grow many aquatic species under the conditions favoured by one species.

Vallisneria torta, correctly known as *V. asiatica* is another species which prefers to grow in its own colony. Though it will survive amongst other species it will not thrive. Water Wistaria (*Synnema triflorum*) loves the company of most *Cryptocoryne*, *Hygrophila*, *Potamogeton*, *Ceratopteris* and *Limnophila* species, the requirements of all these being very similar to its own.

It requires soft and slightly acid water of a pH of 6·5-6·8. A temperature range of 74°-78°F. is best suited for steady and sturdy plant growth. It is also not very fussy about the planting medium. On the other hand *E. paniculatus* requires a lower temperature range and medium hard and neutral water condition for perfect growth. The planting medium should also be rich in organic matter.

If you require a good, sturdy, colourful tall plant, I can readily recommend *Aponogeton rigidifolius*. It is slow growing but will develop to a nice cluster of tall plants. Other plants of similar stature but vigorous are *A. crispus*, *A. undulatus* and some *Cryptocoryne* species such as *C. beckettii*, *C. lutea* and *C. thwaitesii*.

KOI QUERIES

by Hilda Allen

I have five Koi, now all about eight to nine inches long which I have had for about two years. Can you please tell me what to feed them on to grow them into large fish? They have been fed mainly bread and pond pellets but I would like to know how to grow my Koi into the 12-20 inches you referred to in the May issue.

As you did not supply the details of your pond-size, (a most important factor in growing Koi to a large size) I can only tell you what Koi apparently thrive on, but first a word of warning. It would be quite unrealistic to hope for Koi of around 20 inches or more if your pond is only a small, shallow one. Small Koi grow into large Koi if they have been provided with the basic essentials, and these are (a) a sufficiently large volume of water and (b) adequate feeding—and in that order. Deep water produces strong fish, its temperature remains more constant during rapid weather changes, it affords greater protection from winter frosts and large Koi may be up to eight inches or more deep between dorsal and pelvic fins. Obviously such fish would not be happy in about eighteen inches or so of icy water.

There appear to be three different types of Koi-keepers. There are those who are content to keep a few Koi to grace their ornamental ponds; there are those who are determined to grow small Koi into large Koi and those who can afford to buy large Koi to put into small ponds. The various factors involved do complicate the questions about feeding, keeping and growing Koi in a wide variety of ponds. Please supply all the relevant details when sending a query otherwise this leads to long, complicated replies.

Regarding feeding Koi, I would not profess to be an expert on fish nutrition but I do know that Koi will eat practically everything, as often as possible, if the amounts given are only small enough for them to eat during the few minutes you can stand and watch them. Nothing must be left after about five minutes. Never overfeed; the shortest cut to disaster is to pollute the pond with uneaten food. During hot weather it may seem impossible to overfeed Koi but you will certainly overfeed the water. Healthy Koi should always be searching for food, as in nature. Wholemeal bread is a useful Koi food and pond pellets are usually relished. Pellets should be as fresh as possible and it might be a good idea if the various suppliers of pellets could be persuaded to date-stamp their products. Koi will eat all the proprietary foods sold for goldfish, etc., but it becomes quite expensive to feed large Koi on branded fish foods. Many Koi-keepers enjoy making up their own Koi food and such a diet would include wholemeal bread, boiled wheat and rice, cooked green vegetables, mashed potato, carrots, etc., Bemax, cooked and chopped liver, eggs, ox-heart, shrimps, etc. There is no end to the list of foods enjoyed by Koi but all food should be fresh and soft and small enough to be swallowed as Koi have no teeth as such, but just pharyngeal plates in the gullet. Infant and growing Koi require more body-building protein contained in meat, fish and eggs whilst older Koi appreciate vegetables and larger amounts of the carbo-hydrates. A good, varied diet will provide all the essential protein, vitamins and minerals necessary for good growth. Live food is invaluable and earthworms, bloodworms, mosquito larvae, etc., contain factors necessary for good digestion.

The growth rate of Koi depends upon the three essentials of space available, good water hygiene and adequate feeding.

Would you please advise me. I hope to introduce Koi into my pond, which is new. It is already planted with water lilies and oxygenators but I would like to know what condition the water should have reached before introducing the Koi. What type of Koi should I start with and I would like to start with a breeding pair.

As you did not say whether your pond was a concrete or liner pond it is difficult to advise you. If liner ponds have been filled and left exposed to sunlight for a few days there are not usually any problems with the water. Concrete ponds must be filled and emptied several times to neutralize the high alkalinity of new concrete. Pond walls should be scrubbed well with a stiff brush, or they can be sealed with any one of a number of compounds available. Even so, water-changing is advised for some time after the introduction of any fish as the free lime may continue to leak into the water and kill the fish.

The type of Koi is entirely a matter of your own choice; no one can decide another's preference between the coloured, patterned varieties or the beautiful metallic Ohgons. I feel that your hopes of purchasing a breeding pair at a reasonable price is somewhat remote. It is not easy to sex Koi, especially out of the breeding season and even experienced breeders can make mistakes. I would suggest that, as you are presumably a newcomer to Koi-keeping, you buy at least five or six smaller Koi to grow on. It would be unlikely that all would be of the same sex and you will gain not only the pleasure, but also the experience in keeping and observing Koi.

When breeding Koi it is usual to have two or more male fish to each female to ensure good fertilization

of the eggs, and the spawners are usually placed in a separate pond when the indications are that a spawning is imminent. The parent Koi are returned to the main pond afterwards and the eggs left to hatch undisturbed.

Breeding good Koi is most Koi-keepers dream but do not be over anxious or impatient. There are no easy answers and no short cuts but experience in Koi-keeping should come first, there is no substitute.

Ideally, parent Koi should be as large as possible, at least 15-16 inches in length and at least 3-4 years old. There is a great deal of pleasure to be gained from growing Koi up to this size when they are mostly quite tame and friendly with their owners. I have sent you the name and address of an English breeder who breeds all his own Koi.

WATER FLEAS

by Huw Collingbourne

LOOKING into a bag full of these small crustaceans, "hopping" and jerking through the water like tiny aquatic insects, one need ponder little the reason for their earning the popular name of water fleas.

When sold as fish food, water fleas are generally referred to as *Daphnia*. However, although this description may occasinally be accurate, it should be remembered that Daphnidae is just one family of the suborder Cladocera and a bag of "Daphnia" is quite likely to contain all sorts of other creatures too (with quite different and frequently unpronounceable Latin names!) Not that this need concern unduly the aquarist who simply wishes to feed his fish on something nutritious; no doubt the fish are equally unaware of the differences! There do exist, nevertheless, several differences of form and behaviour which are worthy of mention for their own sake and I shall outline some of the most striking of these later in this article.

Water fleas of the suborder Cladocera share many characteristics. They all possess one compound eye which rotates and may be observed to do so under a microscope. This organ is probably capable of distinguishing little more than the varying intensity of the light, but this it does effectively and the animal will react accordingly. On dull days, for example, water fleas will be seen in profusion just beneath the water's surface whereas, on sunny days, they will remain in rather deeper water.

Water fleas possess two types of antenna; the first type is small and is a sensory organ of smell; the second are the typical "arm" projections which can be seen even with the naked eye as they jerk up and down, for these are the organs of locomotion.

The transparent body covering of a water flea renders it an interesting subject for microscopic study for, when magnified, its internal organs may be clearly seen. The gut is one of the most easily observable features. It is often green, taking the colour from the microscopic plants on which the animal feeds. The eggs or embryos in adult females may also be distinguished with ease; these occur in the brood pouch in the back part of the animal.

The sex life of the water flea is worthy of note—if only for its absence!—for, males being a rarity, (in some species males have never been identified) the females produce eggs which subsequently develop without being fertilised. The young hatch out while still in the mother's body. Entire generations of exclusively female water fleas may develop in this fashion.

From time to time, however, males emerge and these play a very important role in the survival of the species; they normally develop with the onset of harsh conditions (excessive heat, dryness, lack of food or with the approach of winter) and their function is to fertilize a special sort of egg which is produced by the female at such times and which is capable of withstanding these conditions.

As this egg develops in the female her brood pouch thickens to form a strong protective covering called the "ephippium" which eventually, when she moults, breaks away from her body and, safely enclosing the egg, falls to the mud at the bottom of the pool or stream where it lies dormant until more favourable conditions stimulate the final development and hatching of a new generation of water fleas—which will, of course, be entirely female!

Daphnia, is, as we all know, the most frequently referred to water flea as far as the aquarist is concerned though, of the numerous identified genera and even families of the Cladocera, the Daphnidae has no more than twenty five indigenous representatives (and not all of these are, strictly speaking, *Daphnia*, as there are too, several species of another genus, *Simocephalus*).

The largest species is *Daphnia magna*, the female of which grows to a length of ½cm. However, this species, though widely distributed, is proportionally quite rare and the commonest species if *Daphnia pulex* which may be found in many variations.

Daphnia, frequently pink or green in colour, appear to be dark brown when the ephippia are present containing the "resting" eggs.

In nature *Daphnia* normally inhabit shallow pools often with a dense growth of weed or may be found in small rain puddles in an area populated by cattle. In any case, the aquarist should bear in mind that *Daphnia* do not thrive in crystal clear and pure water and care should be taken (whether you buy or collect your own *Daphnia*) to exclude any unwanted aliens which may be present in a bag of water fleas. I am thinking particularly of leeches and insect larvae.

A culture of *Daphnia* may be established at home—but not *in* the home; a remote corner of the garden, if you have one, would be a much better place, for even the most thoroughly organised culture will smell a little, at least in the initial stages.

As a container, an old sink could hardly be bettered and one of these sunk into the earth, would provide a neat artificial "pond" for the crustaceans. An old water butt or barrel would do equally well or you might ask your tropical fish dealer for one of the large polystyrene containers in which consignments of fish are frequently sent as these are light, waterproof, surprisingly weatherproof (I've had one standing in my garden for about five years) and, hopefully, free.

Some vegetable refuse should be placed in water in the container or some cow dung if you can stand it as this will encourage the development of the bacteria and infusorians on which water fleas feed. But remember: be sparing when adding matter which is intended to rot for, if too much be added at one go, bacterial pollution will kill all larger organisms. Once matured, the culture medium may be supplemented with occasional additions of lettuce or cabbage leaves or with a little brewer's yeast.

This done, it remains only to add the water fleas which may be bought from most aquarist's supply shops. It will be necessary to wait a few months before using the water fleas from your culture; by this time the population should have increased sufficiently. The life span ranges considerably from species to species, the shortest being a few weeks and the longest around six months.

In addition to those described above, there are many tiny creatures which live alongside water fleas and will probably be considered, at first sight, to be merely young *Daphnia*.

I am referring to the tiny, bean-shaped crustacea called Ostracods. Rarely more than 4·0mm long and frequently as small as 1·5mm or 2·0mm, they are, in form, externally simple, lacking the limb-like antennae of the Daphnidae. They swim smoothly, in contrast to the other's jerky motion and may crawl about upon the stems of plants or over the bottom of a pond or fish tank.

The colour of these animals varies from brown or yellow to blue and this is thought to be, in some way, a result of environmental differences, depending, possibly, on whether they inhabit a bright, weedy pond or a dirty, stagnant puddle.

One more type of "water flea" familiar to the aquarist is the *Cyclops*. Just one of many similar Copepods, the *Cyclops* is so named for its single, central eye which may be either black of red.

The general body colour of the animal may be orange, green or blue and the body is segmented and possesses numerous limbs.

Cyclops are sometimes the intermediate hosts for parasitic worms which are carried in the body of the crustacean until it is eaten by a fish at which point the worm will infect the fish. It is therefore important that the aquarist ascertain the source of his water flea supply for the chances of such an infection being present will certainly be much greater if the supply be collected from some impure source in the wild.

An anatomical feature which one immediately associates with *Cyclops* is its double egg sac which, even with the naked eye, is easily distinguishable. Like *Daphnia*, *Cyclops* lays two different types of egg and the resting egg is reponsible for the dispersal of the species for, when present in the mud into which land animals and birds step, the eggs will be carried from place to place on the legs of the animals.

Whereas *Daphnia* are invariably more numerous in the summer months, this being the season in which they lay their normal as opposed to their resting eggs, certain species of Copepod are more common in the winter and these types only lay resting eggs with the arrival of warmer weather.

Some species, including *Cyclops*, form a cyst around their bodies during unfavourable conditions and go into hibernation.

MARINE QUERIES

by Graham F. Cox

I have at the moment an empty 4 ft. tank, which I intended to use as a Cichlid community aquarium. Although at present I have never kept marine fish, I would like to keep these fish, and was wondering whether to use this tank for this purpose.

Due to the costs involved, I would prefer to start with marines in a 2 ft. tank, but I have heard that small tanks present too many difficulties. I would greatly appreciate your advice on which tank to use.

I have most of the equipment for the 4 ft. tank, including under-gravel filters. However, I have heard that these are inefficient as they tend to let the dirt build up on the sand. Would you recommend that I use an external filter instead?

The hood for this tank is metal, but there are glass covers inside—would this be all right for the fish?

I have not yet bought a pump for this aquarium, but my budget is limited—would a Rena 301 be adequate enough to fulfil the demands of marine fish?

I understand (or at least think I do) the basic principles of water chemistry, and have heard that a nitrite test kit should be bought. Is this strictly ture, and what about pH tests? Do I also need a test kit for this, or adjusters to correct the pH of the water?

Also, I would appreciate your advice on what brand of marine water mixes to buy, and in what quantities; and what should I buy in the way of coral etc., to furnish the tank?

Finally, what fish do you recommend I should start with, in either the 2 ft. or 4 ft. tank, and what invertebrates can I keep? Can you also recommend a good cheap book for beginners that I can study?

Answer

IDEAL TANK SIZE. As I have stated many times previously in these pages, the ideal tank size for the culture of tropical reef-life is one having a capacity of approximately one million gallons, i.e. a coral reef.

However, thanks to dedicated research and development during the last 10-15 years so much has our understanding of the biochemical and physical process occurring within a closed-circuit marine biosystem improved that it is now technically possible to keep a clown triggerfish (*B. niger—"conspicillum"*) in a two pound jam-jar! It would not be very nice for the clown trigger and the back-up water management equipment would cost several hundred pounds—but it is certainly possible and (for a suitable fee) I can think of at least three people in the UK who could create such a public demonstration. R.S.P.C.A. permitting.

However, since in the Great Britain of the late 'seventies, there are very few citizens remaining who could reasonably afford to locate a one million gallon marine aquarium in their semi-detached lounge, this eternally vexing question of "what is the ideal size for a marine aquarium?" must always be answered by a compromise.

That is to say that the aspiring sea aquarium keeper winds up by choosing a tank whose capacity is somewhere between the upper and lower limits of one million gallons and that of a jam-jar. This usually boils down to something in the range of 20 gallons (e.g. 36 in. × 12 in. × 15 in. or 30 in. × 15 in. × 15 in) up to 100 gallons (e.g. 5 ft. × 18 in. × 2 ft.) according to wallet and lounge-size.

The whole vexed question hinges around the awful (using the word in its classical sense) chemical complexity of seawater compared to the chemistry of say river, lake or pondwater. The more I study the chemistry of seawater the more I realise how little we still understand of the dynamically-balanced, inter-relating processes proceeding within this superficially simple and common-place liquid. One feels a little like the great philosopher-scientist who once

said that the more he studied the universe the more unanswered questions he created. To make this point for me here, please may I ask you to obtain from the library the excellent book on "seawater for beginners" entitled "The Chemistry and Fertility of Seawater" by H. W. Harvey (CAMBRIDGE UNIVERSITY PRESS). This standard reference work should be obligatory reading for all so-called advanced marine aquarists.

However, despite the awe-inspiring chemical sophistication of seawater, one thing which I learnt very early in 1960 was that, all other things being equal, a small captive body of seawater deteriorates in its life-support capacity very much more rapidly than a large captive body of seawater. In consequence the beginner's advice which I would offer once again in these columns (older readers please forgive) is to make a start with the biggest tank you can lay hands on—in your case the four footer. After a few months/years of steady experience, aquisition and sound professional advice from a successful marine dealer, (plus the invaluable assistance contained within the pages of the BMAA bulletin—YOU *MUST* JOIN THE BMAA, as soon as possible) you will find that you can even maintain a collection of delicate tropical marine-life in your 2 ft. tank—or even in a 2 pound jam-jar!

UNDER-GRAVEL FILTERS are without a doubt the most biologically effective means of filtration known to the infant science of aquariology. I note with amusement that even the German experts who were putting it around 15 years ago that I was a suitable case for treatment because I advocated high turnover U/G filters for marine aquaria have now "discovered" H.T/O R. U/G filter and are switching to it on a whole scale.

However, as with any other form of filtration, the U/G filter must be correctly designed, installed and maintained if it is to give of its best, and although the service required by a U/G filter is less than that needed by any other kind of filter, all too often we hear horror stories from people who simply gave their filter no service *at all*—often for years on end—until disaster struck.

To ensure that you are never struck by disaster may I offer you the following simple advice:—

(a) *Depth:* Within reason, the deeper your filter-bed the better, and I always advise a *minimum* depth of 3 in. This is made up of 2 in. of crushed cockle-shell and 1 in. of Filipino oolitic coral-sand. Similarly, if possible, a 6 in. deep bed would be even better and would be made up of 4 in. of shell and 2 in. of oolite.

(b) *Overfeeding:* The manager of my Company's retail department, John Whitten, reckons that 99·9% of all beginners who come unstuck do so through the direct or indirect results of overfeeding. The golden rules here are to feed in very miserly fashion and *NEVER* allow even one morsel of uneaten food to fall through the water and land on the filterbed.

(c) *WASH:* every single time that your nitrate and pH test kits show you that a partial water change is due, *firstly* agitate the oolite layer of the filterbed with fingers or a plastic rod, and *then*, whilst all the accrued sea-humus is floating in suspension, *then* start your siphon and remove the 33⅓% of old tired water and 33⅓% of the filter-bed's back log of sea-humus with it. This way you will always have a sparkling clean filter-bed and will never suffer a Spring/Autumn copepod fluke epidemic. This simple operation takes only 2 minutes (and there is no need to remove *ANY* of the aquarium's occupants whilst doing it!) and yet so few of even the more experienced aquarists remember to do it when water-change time comes around and so periodically wipe out all their stock with a fluke infestation.

N.B.—If you look at the three headings above, you will see that I have continued to make them form a simple mnemonic—*D.O.W.*—but that's a different story.

Air Pumps—ideally you would need at least one extra pump, i.e. in addition to your RENA 301, as follows:—

(a) a little Japanese twin—say a Gussie, Kiho or Orion, used so that each of its outlets powers one of the two large diameter (¾ in. to 1 in. dia.) airlifts.

(b) the Rena 301 with its greater pressure facility powering through a tee-piece a wooden "SEAMIST" diffuser *and* an *internal* box-filter containing an ultra high-activity marine grade charcoal such as "SEACOAL" or "EHFIMARIN". PLEASE REMEMBER TO SOAK THESE SPECIAL CHARCOALS IN BOILING WATER FOR 15 MINUTES BEFORE USE TO DE-GAS THEM.

Test Kits—with even the cheapest coral-fishes now costing over £1·00 each, may I suggest that you need the World's most sensitive nitrite, nitrate and pH test kits. I have advised you of the manufacturer's name under separate cover.

Sea Salts—exactly the same comments as apply to Test Kits above.

Stocking a Beginner's aquarium—too big a subject to cover here. Take professional advice from a competent local dealer.

Literature—read the enclosed beginner's leaflet and then read (in the stated order below) the following:—

"TROPICAL MARINE AQUARIA"—Cox, HAMLYNS-1970 (and revised for the sixth edition in 1977).

"MARINE AQUARIUM GUIDE"—Frank de Graaf, PET LIBRARY, 1974.

BOOK REVIEW

British Journal of Herpetology, Vol. 5, No. 7. British Herpetological Society.

THIS belated, 27-page issue contains original, if short, papers on mainly foreign reptiles, from the limited use of male genitalia of snakes in their classification, to a check list of 30 Turkish reptiles and five amphibians, plus further observations from Jugoslavia to Mount Kenya, and on Indian snakes and lizards. A detailed history of spawning dates of frog and common toad in Britain mainly confirms what some 600 of us worked out in years of painstaking pre-war field-work in the phenological survey of the Royal Meteorological Society: that spawning dates are mainly earlier in the west, including western Scotland, and that frogs are earlier than toads. We have also covered this subject in *Aquarist* (and in *Water Life*, 31 January, 1939). In some years, like 1930, frogspawn showed a 12 days' break between S.W. England and the next earliest spawning in south Ireland. The journal's lack of Welsh and Scottish records would surely be met by the R.M.S. reports.

An American specialist corrects the identification which now shows that a supposed *Elaphe* X *Natrix* snake hybrid at Chester Zoo in 1969 was a confusion of cross-breeding by two forms of *Elaphe obsoleta*. India now has a gharial research unit collecting wild eggs from Orissa of this endangered species, probably the largest of crocodiles. It has reared 44 in sanctuary areas. Madras snake park is also breeding it. A recent B.H.S. newsletter states that the total world population, including Nepal, "probably does not exceed 100." Two new gharial-sanctuaries in India include the River Cirwa in Uttar Pradesh with about 20, and Satkosia Gorge on the Mahanadi river, which I have mentioned before.

Scientific research into reptiles and amphibians seems to be in a healthy state in Britain, with many younger experts like Keith Corbett coming along. One review here comprises one short sentence, followed by a blank page and a half! ERIC HARDY.

The Encyclopedia of Aquarium Fish by David J. Coffey. Published by Pelham Books Ltd. Price £6·75.

This is an attractive book of reference with alphabetical listing of subjects and a comprehensive coverage of all aspects of fish keeping so that families, genera and species of marine, tropical and coldwater fish are included along with heating, lighting, diseases, parasites, unwelcome visitors and plants. As well as 160 good colour photographs of fish at the beginning of the book, black and white photographs, drawings and diagrams brighten and illustrate the text.

Where fish species are concerned information is basic, giving brief descriptions, geographic origin, size and breeding habits. Some descriptions may be considered opinionated and others controversial. Under *Carassius auratus*, for example, we find that "The Lionhead looks like a cross between a diseased Oranda and a Fantail, and that is probably what it is." The author recommends the aquarist not to be put off keeping the "more normal goldfish by the existence of the above freaks." "Koi carp" is found under *Carassius* hybrids and these fish are said to originate from one or more species of *Carassius*.

The K & R Guide to Tropical And Marine Aquaria, Published by K & R Books Ltd. Price £7·95.

With text by Francesco Bianchini, Silvio Bruno, Franz Krapp and Alessandro C. Rossi, this very solid and comprehensive book of reference is superbly and exclusively illustrated by Guiseppi Mazza with more than 300 colour photographs of a quality not encountered among the general run of aquarium-slanted literature.

Each species of fish, plant, amphibian, mollusc, polyp, crustacean etc. is illustrated and afforded a half page of tightly condensed information giving, family, distribution, description, environment, feeding habits and biology. A neat arrangement of symbols supplies individual pH, lighting and temperature requirements while a useful table supplies details of treatments and medicines for a variety of fish ailments. There is also a glossary which should be of inestimable value to the enthusiast wishing to know more of his hobby's language.

Measuring 7½ in. × 4½ in. with 318 pages, this is a quality book of convenient size and will be appreciated and enjoyed by the non-advanced aquarist.

The Observers' Book of Seashells by Nora McMillan. The Observer's Book of Fly Fishing by Peter Wheat, each published by Frederick Warne at £1 10.

Seashells may impinge on the consciousness of many of us only during the annual holiday when we pick up an attractive shell on the beach and wonder what sort of creature dwelt therein and what it was called. This little book, slipped into the pocket or hand luggage, will supply all the answers to those questions posed by an interested beachcombing holiday-maker and probably whet his appetite for a deeper involvement with marine life. Adequately

illustrated with line drawings in the text, there are also sixteen colour plates from photographs by John Clegg and, as is true of all titles in the Observer series, ease of identification is assured.

"Angling," says the jacket blurb of **Fly Fishing,** "is Britain's largest participant sport." Surprising, may be, but true. However, with all of its following, there remains a tremendous aura of mystique surrounding the business of tempting a fish with an artificial fly. Greenwell Glory, Iron Blue to say nothing of Tup's indispensable are names to conjure with for any uninitiated bystander taking a pint at a bar frequented by fly fishermen and overhearing them describing their ploys when sporting with the trout. Well, this little book does much to dispel the myths and mysteries of this escalating sport and describes in detail, with excellent line drawings, black and white and colour photographs, such intracacies as presenting the fly, casting the fly, fly tying, treatment of the catch and coarse fish on fly. A chapter entitled Final Matters supplies some very useful and essential information embracing permission to fish, catch limits, fly fishing at sea, and returning the catch etc., and there is also a list of day-ticket trout water in England and Wales.

WHAT IS YOUR OPINION?

continued from page 222

luxuriant algae, darkness, and caves to hang upside-down in.

"To cure wood for my aquariums I select a suitable piece for the tank in question—thin, broad pieces for gouramies and similar fishes to hide behind, and the more common twisted tree roots and stumps for most other fish—and scrub it thoroughly, removing all bark and soft parts. Then I boil it. It requires a good deal of boiling, and every so often I turn the wood over to ensure overall coverage. I use a preserving pan to do the boiling in. Anything big enough will do but whatever you use will be stained badly by the wood juice, which often smells pretty foul as well. By boiling you sterilize the wood and also, if it is the right sort of wood, waterlog it, which prevents you from having to weight it down. If I can't waterlog it I try to wedge a large stone into some part of it to make it stay under. You will be quite lucky if you can wedge a big enough stone into the wood and still make it look nice. Eventually, though, I install the wood in the aquarium. Under fluorescent lighting it looks best; and as I have said before, it improves as algae get a better hold on it.

"There are, however, a few drawbacks. Never use glue to fix stones to wood or the water will, after a time, get between the wood and the glue and your log will shoot skywards and smash your lighting to splinters—which drop on your fish and gravel. This renders the gravel useless as you can't get the glass out again. I have also found that, without filtration of some sort, the water tends to go off; but I use under-gravel filters in all my tanks and the water stays very clear and clean—even with the wood. But, all in all, I find wood makes a great improvement on the appearance of any freshwater aquarium. I would be pleased to hear from anybody who has criticisms or suggestions or who has experimented further with wood. For instance, perhaps an old tree stump would be a good place to grow plants underwater; or a log with a hole drilled down the centre and an air line attached would make an attractive and efficient air stone. Perhaps, on the other hand, it might look revolting. At any rate, it would be interesting to find out." (What kinds of trees provide wood that is suitable for use in an aquarium; and what kinds of wood are unsuitable?)

For a future issue please send me your opinions, c/o *The Aquarist & Pondkeeper*, on any of the following: (a) new heaters, thermostats and combined units conforming with current Safety Regulations (I've found some of them rather large, compared to the older models, and rather difficult to conceal—particularly in smaller aquaria; do not mention brand names, if possible); (b) the current costs of keeping fishes and plants in decorative aquaria and whether or not you have had to cut down on the number of tanks/fishes you have kept in the past; (c) any public aquarium you visited during the summer holidays; (d) the attractions of koi; (e) is the coldwater side of the hobby increasing in popularity?; (f) the keeping of salamanders, lizards, slow-worms and frogs; (g) the type and duration of lighting you find best for particular plant species; (h) the necessity for feeding fishes on live foods; (i) your successes and failures with marines; (j) breeding any species of tetra; and (k) the effects of natural sunlight on plants and fishes kept in aquaria or ponds. If you have recovered from your summer holiday I hope you will take a few minutes off to drop me a few lines (shorter letters have a better chance of being published as they allow more people's opinions to be included in any given issue). Readers are reminded that letters containing queries that require a personal answer should be addressed to either Mr. A. Boarder or Mr. J. Hems as appropriate, and a s.a.e. enclosed. Please *do not* include items for different writers in the same letter as we all live in different parts of the U.K. Letters for different writers may be enclosed in the same envelope addressed to the magazine; the staff at Brentford will then forward letters to the appropriate persons.

PRODUCT REVIEW

Hagen 3 Stage Aquarium Power Filter. £17·70 plus £2·21 VAT. Distributed by Peterama Limited, The Bilton Estate, Waterhouse Lane, Chelmsford, Essex.

This marine or freshwater cleansing unit has an inflow/outflow of upwards of 80 gallons an hour. The filter reservoir itself is approximately 7 in. long by 6½ in. tall by 2½ in. across. It is divided into four compartments by three perforated plates supported in an upright position inside narrow guides or rails. The compartment furthermost from the almost noiseless electric motor, that transmits its motive power *through* the clear reservoir casing to the powerful impeller pump, holds a porous bag constructed of synthetic fabric. The compartment adjoining it is filled with an elongated block of foam. Next along the line is a plastic net bag packed tight with charcoal. Both filter bag and foam block are no trouble to lift out of the filter container and freshen up under a running tap. The charcoal insert, once it has lost its effectiveness in rendering toxic matter harmless, can be replaced with a new one in a jiffy. A sort of closed aqueduct, with a 1-in. diameter siphon tube projecting downwards at each end, bridges the narrow space between the top of the porous bag inside the filter casing and the aquarium. The siphon pipe that overhangs the aquarium fits snugly into a 7-in. extension pipe that terminates in a removable strainer. The top centre of the aqueduct is provided with a spout to take a bellows. The return flow pipe is of ⅝-in. diameter and stays really firm when attached to the tubular outlet of the pump housing.

Regarding the operation of this filter, a few squeezes of the bellows fills the aqueduct and sets the water flowing. Immediately this takes place, it is time to remove the bellows and close the spout with a plug. The next thing is to switch on the electric motor. The on/off switch is in the form of a rounded knob near the top of the black plastic casing. A few moments is enough to set this filter in motion. The water in the aquarium is sucked into the strainer and thence up the 7-in. pipe and across the aqueduct and deposited in the porous bag. There all clearly visible dirt is trapped. The pre-filtered water is then passed through the foam block and the purifying charcoal and into the pumping compartment. From there it is pumped back again into the aquarium. In short, then, the Hagen 3 Stage Aquarium Power Pump is an admirable and efficient piece of apparatus that does its job expeditiously and well. Replacements parts are available from the distributor. I found it disappointing that the lipped moulding which clamps this filter to the top edge of the aquarium a mere ⅞ in. wide (inside measurement). This means that the Hagen's use is limited to the owners of all-glass aquariums or aquariums with very narrow metal frames.

JACK HEMS.

WE are indebted to New Technology Limited, of Tonbridge, Kent, for sending us a range of their aids to successful marine fishkeeping. These are among the most advanced that have come to our notice for some time. Of those picked for special mention is a kit for testing the level of copper in the aquarium (of the utmost importance if a copper-based medication is used for the treatment of disease) and kits of superior formulation and quality for measuring, say, alkali reserve (dwindling alkali spells disaster in the marine tank), level of nitrite and pH value of the water. We have no hesitation in recommending this latter kit to those of our readers who require a high degree of accuracy with minimum time-consuming preparation. The maker states that the colour matching scale—the outcome of much patient and careful research—is so precise that the chances of an imperfect visual reading are virtually non-existent.

Used in conjunction with the Marine pH Testing Kit and the Alkali Reserve Kit the New Technology buffering solution or Marine Buff should be used as routine, for adverse reactions are to be expected if the alkalinity of the water falls below a certain level. (Perhaps it would be as well to observe, for the enlightenment of the beginner in marine aquarium keeping, that an ordinary pH test kit, as used for the freshwater aquarium, is of no value in salt water).

Among other products of New Technology Limited certain to prove a real and valuable asset to all marine fishkeepers are Marine Bacteracide, a specific against bacterial infections (although this drug may be administered externally in a bare tank it has been specially formulated for oral dosage: ten drops to a level teaspoonful of dried food given daily until the trouble clears up); Marine Vibrio Vaccine, another drug given by mouth to immunize fishes against a particularly virulent disease (Vibrio) characterised, in general, by bloody abscesses and an inflammatory condition of the mouth and gills; Marine Paracide is recommended as an appropriate drug for the treatment of coral fish disease or Oodinium and diseases brought about by various protozoans. Here, however, a word of warning is not out of place. Marine Paracide is lethal to invertebrates. It follows, therefore, that all invertebrates must be removed from a tank before treatment begins. After cessation of treatment New Technology inform hobbyists that at least six months should be allowed to pass before invertebrates are re-introduced into the aquarium.

In the newly-set up marine tank the maturation of water circulating through an under-gravel filter, and the filter bed itself, is an object of the first consideration and to bring it about the Marine Mature Kit is deserving of the novice's close attention.

THE TRUE FROGS
(GENUS: RANA)

Written & Illustrated by Chris Mattison

FROGS belonging to the genus *Rana* are amongst the most successful of all amphibians, having spread to every continent except Antarctica, and having adapted to a wide variety of habitats. Altogether, there are several hundred species of *Rana*, but as a rule they all look like our popular idea of how a frog should look. In other words they have pointed noses, large, bright eyes, webbed hind feet, and long, powerful back legs. The species differ in small details of markings, morphology (the relative proportions of limbs etc.), and size. They all go through the standard spawn, tadpole, froglet, stages before maturing into adults, although the time taken for this sequence of events to be completed varies with the species. Some, such as the North American Bullfrog, *Rana catesbiana*, can take up to two years to metamorphose, whilst others, especially tropical species, often breed within a year of hatching from spawn.

Several species will be familiar to students of biology, as dissection subjects, the Common frog, *Rana temporaria*, being most commonly used in this country, whilst in America, the Leopard frog serves the same purpose, and in France it is the Edible frog, *Rana esculenta*, which frequently finds itself on the dissecting bench, as well as on the meal table. All of these species are often available on dealers lists, and are usually inexpensive.

The Common frog, sporting its distinctive 'mask' is now becoming less common than in previous times, due to pollution, the destruction and draining of former haunts, and collecting at the time when it is most vulnerable—in the spring when large numbers congregate to breed in ponds, and shallow lakes. The collecting of females which have not had time to lay their eggs is particularily detrimental to the species.

The Leopard frog, *Rana pipiens*, is a daintier species, and a particularly agile one. It comes in a great variety of regional forms, reflecting its huge distribution from Alaska, through Canada and the United States and into Mexico. The markings of a typical specimen consist of regular black blotches, often square in shape, on a background of brown, yellow, or more commonly, green.

The Edible frog, *Rana esculenta*, is a particularly vociferous species, and can be heard on almost any night throughout the summer, in the places where it occurs, such as irrigation ditches, and along the edges of lakes and slow moving rivers throughout central Europe. Captive specimens can often be persuaded to croak merely by sitting them on the hand and gently stroking their head. Of course, only the males croak, the prime purpose of the call being to attract a mate. This species is larger than the previous two, and is often attractively marked, with a bright green vertebral stripe bisecting its olive back. The legs are usually brown, with darker cross bands.

North American Bullfrog

Common Frog

Edible Frog

The giant of the clan is the North American Bullfrog, which will make a meal of a duckling, or young rat, and whose tadpoles reach the proportions of a golf ball. The Bullfrog is named for its call, which is likened to that of a bull bellowing, but captive specimens can rarely be persuaded to perform.

The above notes refer to only a small percentage of the species which may from time to time be available from dealers etc., but the following notes on maintainance apply to frogs in general with only slight variations to cater for the habits of other species which may come along. As a rule, frogs are less aquatic than is generally believed, most species spending their time foraging for food in the undergrowth surrounding the ponds where they breed, and occasionally hibernate. On the other hand, few species stray far from water, and all require a damp environment to prevent dessication. Therefore a convenient set-up will contain an area of land as well as a pool of water. This can take the form of an aquarium divided into equal areas of land and water, or a dish sunk into a substrate of peat, soil, damp leaves etc. Many species are naturally retiring in nature, and feel most secure when given facilities for hiding, such as a piece of bark. If the water area is large enough, aquatic plants, especially the floating varieties, fulfill the same function if the frog is immersed. The size of the container will depend not only on the size and number of occupants, but also on their agility. Thus, some relatively large frogs require proportionately less space than certain small, agile species.

Needless to say the container should have a lid, or cover of some description, not only to prevent the frogs from escaping, but also to contain the food, which in many cases will consist of flies, grasshoppers, crickets etc. The food should be of a size and quantity in keeping with the species concerned—the larger species being offered young mice, locusts etc., and smaller types fed on flies, small crickets etc.

Temperature will depend on the species, and where it comes from, but the problems of heating a semi-aquatic set-up are somewhat complicated, and most collectors prefer to keep their frogs at room temperature, and select species which will thrive without additional heating.

Breeding is possible if attention is paid to the amount of light received by the cage, the stimulus for mating being the increasing daylight in the spring. It is also possible that in some species at least, a period of hibernation is necessary. Pairing takes place in the water, the male gripping the female under the armpits, a position known as amplexus. As the masses of eggs are released by the female, the male fertilises them externally, and shortly after, the jelly capsules which enclose them swell into the familiar frog spawn. When the larvae, or tadpoles hatch after a period ranging from four to ten days they initially attach themselves to the jelly mass or to plants. A few days later they begin to graze on algae and other microscopic plant material which, if not present in the tank, should be substituted by flaked fish food, nettle powder etc. If supplied with an abundance of food, the tadpoles will eventually metamorphose into tiny replicas of their parents. The froglets should be fed on small moving insects such as aphids or fruit flies, but feeding large numbers is often impractical, and it will be necessary to pass some on to other collectors.

Many laboratories are now breeding frogs in large numbers, sometimes to several generations, and so perpetuating interesting lines, such as albino and melanistic mutations. If private collectors were to do likewise, the drain on natural populations, at least for some species, would be reduced, whilst the resulting offspring would be well adapted to captive conditions and thus hardier, and more satisfactory captives.

Leopard Frog

From a Naturalist's Notebook

by Eric Hardy

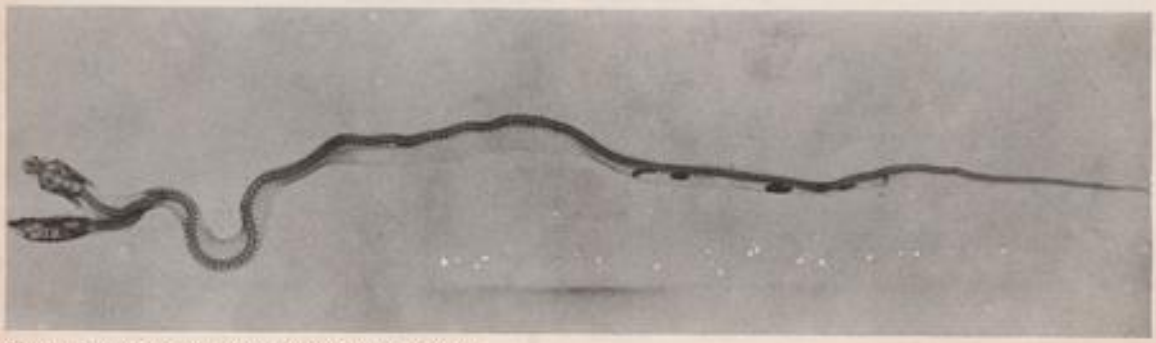
FIVE EXAMPLES of two-headed snakes have been traced in British records. None is the smooth snake, and most of the others the grass-snake. Natrix seems more prone to this abnormality. My own experience was a specimen I still possess of *Natrix tessellata*, the diced or chequered water-snake of the eastern Mediterranean. This specimen came from the Jordan valley and examination showed that it was still a yearling and had presumably never fed. How many two-headed snakes do feed? This seems to be the case with other examples of dicephalism, living only for a few months.

When my specimen was critically examined it was assumed to be about one year old, as it measured 10 ins. and is adult at about 1 yard. It had two perfectly developed heads with necks, eyes and mouths as an X-ray showed. Named from the mosaic-like pattern of its scales this snake inhabits lakes, ponds and rivers from Israel to Jordan. I noticed it swims well by lateral twists of its body, spreading out its ribs and flattening its body into a rowing plate with a thin ridge or keel down its back. Its lung acts as a hydrostatic apparatus, filling with air when the snake rises to the surface and after expiration, it sinks again. It feeds on frogs, tadpoles and small fish.

Accidents at birth produce these double-headed freaks, where two developing embryos fail to become individualised. Several false claims of two-headed snakes appeared in sporting journals where Indian sand and earth boas with a somewhat head-like tail pattern used in defence-mimicry in retreat, were mistaken. Where two-headed snakes were observed feeding "one of its heads seemed to keep watch while the other ate." Dante's *Hell*, Canto XXV, goes even further and imagines an impossible serpent with six feet, and other fantasies came from carvings on the ancient temples of Babylon.

In Caernarvonshire (Gwynedd) this past summer, I noted the interesting variety of alpine water-plants in Snowdonia. Besides the A5, Llyn Ogwen is of course noted for shore-weed, awlwort, light green water-lobelia, and darker emerald green quillwort in deeper water on the bed. High above it, above Ogwen Cottage on the way to the Glyders, Llyn Bochlawyd also has quillwort and shoreweed in its deeper parts; but most of its plants are sedges and rushes. Llyn Idwal, in the cwm below the Devil's Kitchen, is a haunt of water-horsetail, true bullrush-sedge at the Kitchen end, hornwort and stonewort. Llyn Irddyn, near Diphwys, has carnivorous bladderwort as well as water lobelia and quillwort. In Merioneth, Llyn Cwmorthian, above the quarries of Blaenau Ffestiniog, has lots of yellow water lilies as well as shoreweed and floating water-plantain. In Anglesey, eight-stamened waterwort *Elatine* grows in the south-east of Llyn Coron, and six-stamened in Llyn Maelog, near Rhosneigr. The latter like Shropshire meres and Norfolk broads, is subject to periodic algal blooms.

In July this year I heard natterjack toads still calling in wet pools on Formby dunes, for a few spawn so late as August. It is stated sometimes in books that the natterjack is not indigenous to Wales, where it has



X-ray photograph of two-headed *Natrix tessellata*

only been introduced. Until modern times it was indigenous to the brackish estuary of the Clwyd, as it was to the nearby Dee marshes. I do not know the earliest mention of it in Wales, but I noticed in a very qualified collection of natural history experiences, *Old Price's Remains*, published by John Price, M.A., a very experienced naturalist, at Chester in 1864, he related on page 9 that he failed to present his second garden natterjack from Llandullas when it escaped from his back pocket in 1824.

Some recent discussion in the Herpetological Society over the status of edible frogs in East Anglia shows that two or three colonies exist presumably all the variety *lessonae*. Many descended from French and Belgian introductions back to 1837 at Stoke Bedon and Rockland All Saints in the River Wissey valley near Attleborough where they still exist, and the fens at Foulden, and at Foulmere in Cambridgeshire which was later drained. The conclusion is still that they are not native to East Anglia, or Britain.

The colony at Woburn Park is now reduced to very few. They were also introduced into Middlesex and Kent, north of Sevenoaks. Thoroughly aquatic, feeding by night and day, they assumed beautiful green colours in the sunshine. Their breeding begins in May and the first young leave the water in mid-August; but many tadpoles remain in the water in mid-winter though these rarely survive to spring. It is doubtful if they will breed in the north. Europe's largest frog, the closely-related marsh-frog from eastern Europe, often imported into English labs. for experimental work earlier this century, was introduced to Stone in Oxney, Kent. It became established on Romney Marshes before the war where it lacks the light vertebral stripe of its native haunts. It is said to be voracious enough to eat small mammals and young nestlings as well as typical frog diet. Some naturalists consider it is only a variety of the edible frog. It has inflated vocal sacs when calling in spring, laying smaller eggs than common frogs when spawning in May, but once the young leave the water in July, they increase rapidly in size.

Immune from almost all predators, the 41-sabre-toothed blennies from Indo-Pacific waters, distinguished by large, recurving canine teeth or frangs in their lower jaws, are so far removed from the gentle blennies well known to rock-pool collectors in this country, that they have recently been reclassified. Feeding on larger fish as well as small crustaceans, the ferociously biting, often brilliantly coloured *Meiacanthus* genus are unique among fishes in having their sabre-teeth grooved to carry a poison from a gland in the dentary bone. They hunt open water in the daytime, hovering in one spot, then jerking away to another. Some inhabit the Red Sea. Others mimic fish like the cleaner wrasse, enabling a closer approach to capture them. Smaller ones lead a quieter life, cryptically camouflaged to hide where they can feed upon diatoms and copepods. The largest, the long *Xiphasia* species burrow tail-first in sand or mud. Philadelphia's Academy of Natural Sciences devoted a monograph to the rearrangement of their classification, due to their unusual behaviour.

There's a short reference to these interesting blennies in Maurice and Robert Burton's recent 316 page, illustrated encyclopaedic *Inside the Animal World* (Macmillan £6·95), a very sensible and up-to-date book on animal habits, including reptiles and fishes. This isn't a rehash of old information like many popular encyclopaedias on animals. It forms a useful addition to the bookshelf of the intelligent aquarist who wishes to be well-informed in his thinking of behaviour. Does the horned lizard (misleadingly called a horned toad), squirt blood from its eye-sockets to ward off predators? Can snakes leap, as natives claim abroad, and if so, why do they never leap the low surrounding walls of outdoor vivaria? These are listed among the unsolved habits of animals awaiting satisfactory explanation.

It's cheaper than the recent 6th volume at £16 in Academic Press's monumental series on *The Biology of the Reptilia*, edited by Carl Gans of Michigan University. Even that was less than last year's 3rd volume of *The Physiology of the Amphibia* at £35.70, edited by Brian Lofts of Hong Kong University and ranging from colour-change to moulting; or £18 for Katherine Fite's recent *The Amphibian Visual System* which dealt, among other things, with the orientation of frogs and toads to the banks of ponds.

"More efficient sewage treatment" and "the very large numbers of motor boats" were stated by the Nature Conservancy to have caused the severe reduction of fish populations in Norfolk's Broads and the loss of many aquatic plants and invertebrates. "The most important of these," it believed, "is the eutrophication (over enrichment) of rivers and broads by nutrients derived from *treated* sewage effluent." A three years' research project has been initiated with East Anglia University. The solution must be more efficient sewage treatment, it added.

NOTE TO CONTRIBUTORS

Due to administrative changes, payments in respect of editorial contributions will be made in future at the end of the month of publication.

PRODUCT REVIEW

King British Under-Gravel Filters. King British Aquarium Accessories Co. Ltd., Hayfield Mills, Haycliffe Lane, Bradford BD5 9ET, West Yorkshire.

These well-designed under-gravel filters have much in their favour. First and foremost, the 1 in. diameter lift pipe fits tightly into a truncated cone that forms a centrally placed water collecting chamber. I must say at once that the tight-fitting pipe is a welcome change from the lift pipes of a well-known u.g. filter in my possession. They habitually work loose at the slightest jolt sustained when arranging plants or making some minor adjustment to the airline. Perhaps the only way to deal with a badly fitting lift pipe is to secure it firmly to the filter socket with a collar of silicone rubber aquarium sealant.

But to return to the King British Under-Gravel Filter. A moveable air stone is located in the base of the aforementioned cone. And what a blessing it is to find the air stone attached to some 50 in. of pliable air line. When the free end of the air line, neatly threaded through an aperture in a top corner of the filter plate, is connected to an air pump and the latter switched on, it is only a matter of days before biologically- and grit-cleansed water is pushed up from the underside of the filter plate via the lift pipe on an ascending chain of bubbles. The filter plate itself is a fraction short of ½ in. tall and is provided with rectangular depressions, pierced with narrow slits, to allow for settled and floating sediment to be sucked into the planting medium where it is dealt with by aerobic bacteria living in a healthy environment (non-clogging and well-aerated) that enables them to break down particles of organic wastes into non-toxic silt.

For the benefit of the beginner, let me say at once that to operate an under-gravel filter successfully and, at the same time, grow suitable submerged water plants, the filter plate should be covered with rather a coarse grit to a depth of not less than two inches. Three inches is better. About three times a year, it is a good plan to switch off the pump and then gently agitate the surface of the grit with a planting stick to stir up the topmost accumulation of mud or silt. Naturally enough the lower levels of the water will become very cloudy. Now is the time to siphon this stirred up silt away. Replace the water lost by cleaning with boiled mains water or a mixture of mains water and clean rain water collected in a well-washed plastic bowl. All added water, however, must be of the same temperature as the water in the aquarium.

King British Under-Gravel Filters, suitable for salt water or tap water tanks, come in four useful sizes. In short, for aquariums with a bottom area of 18 in. × 12 in, 24 in. × 12 in., 30 in. × 12 in., and 36 in. × 12 in. The filters can be tailored with the aid of a pair of scissors, to fit the odd-lengthed tank. The novice fishkeeper cannot fail to understand the instructions given and the illustrated lay-out of the assembled apparatus printed on the plastic sleeve in which these admirable filters are packaged.

JACK HEMS.

Phillips Pond Pellets: 225g 49p, 450g 89p. Manufactured and distributed by Phillips Yeast Products Ltd., Park Royal, London.

Now is the time for the pondkeeper to pay some attention to the dietary requirements of his fish. The first, and perhaps the most important, point to bear in mind is that the amount and the quality of the food consumed during the summer months should be sufficient to satisfy their daily needs and yet build them up for their winter fast. In short, they need to lay down a good reserve of fat; for it is this they draw on when living in a state of partial or complete quiescence. It is, I think, hardly necessary to say that the really nutritious live foods such as insect-larvae and crustaceans become increasingly scarce (in the average garden pond) as the season advances. Nevertheless, the appetite and activity of the fish remains undiminished until autumnal cold sets in. Hence to keep pond fish in excellent shape and condition all the year round a first class dried food should be given at least once daily to supplement whatever natural live food is available. Phillips Pond Pellets are new on the market and fish fed on them are ensured of a diet rich in all those constituents necessary to health as, for example, meat, herring and greenstuff meals, yeast products, wheat cereal, the important minerals and trace elements, together with vegetable and fish oils, amino-acids, and essential vitamins. The pellets are roughly the size of a haricot bean. They float for about a quarter of an hour before they soften up sufficiently to sink to the bottom. Big fish do not give them the chance to float: they gulp them down the moment they hit the water. Smaller fish mouth them avidly until they disintegrate into swallowable particles. Crushed and powdered and sifted through a fine mesh into any particle-size needed, these clearly appetizing pellets make a valuable and complete food for any small fry.

JACK HEMS.

GOBIES

by Huw Collingbourne

ONE of the smallest and commonest of our native marine fishes, *Gobius minutus*, is also one of the most hardy, undemanding and endearing of creatures and will adapt easily to aquarium life.

The aquarist may include gobies in temperate or tropical aquaria or even in brackish-water aquaria (in which case the specimens should be gathered from such water in the first place, for certain species penetrate far into our estuaries). Care should be taken when choosing specimens to ensure that the aquarium into which they are to be placed is one which attempts to recreate the conditions existing in the environment from which they were taken. The shock of introducing an estuary-inhabiting goby into a sea-water aquarium, or a goby taken from the warm water of a summer-heated rock pool into the chill water of a cold-water aquarium could prove to be fatal.

Of course, one could always take the time and trouble carefully to aclimatise specimens before introducing them to alien conditions but, wherever possible, a much better course of action is simply to ensure that in the place where specimens are sought, conditions similar to those of your aquarium are prevalent. In this way a coral-fish enthusiast should encounter few problems in persuading gobies taken from pools containing sun-heated water to settle down in a tropical aquarium.

It is interesting to note that although gobies are able to live and indeed to thrive in a variety of conditions, the average body length of estuary-inhabiting fishes does not exceed 2½ in.; whereas the length of those taken from coastal waters tends to be greater, averaging at 3½ in.

As an aquarium fish *G. minutus* has much to commend it. In addition to its practical ability to survive in adversity—even through many of the careless owner's blunders—it is a fish of good "aquarium temperament" and is not aggressive (The male does, I gather, become a bit beligerant when guarding its eggs—but if you can actually persuade a pair to spawn for you, who's complaining!).

At breeding time male fish will fight one another for the "favours" of a female. Having won her the male will guard her during egg laying after which the female departs to leave the male to protect the eggs and fan them with his fins, thus maintaining a water current to carry away detritus and bring over the eggs a constant supply of oxygen-rich water.

The eggs, which are quite large and are generally pear-shaped, are frequently attached to the under-surfaces of overhanging rocks or shells, so the male undertakes no mean task in caring for them. What is more, a single male may mate with a number of females in one season and so will be presented with this task several times in one year.

That the goby is remarkably well adapted for survival in a frequently hostile environment is demonstrated not only by the extent of parental care and by the ability of the adult fish to adapt to life in water of varying heat and salinity, but also by certain physical developments which enable it to flourish in that most unstable, not to say violent, of environments, the tidal shore.

The goby is an excellent example of specialised adaptation; its pelvic fins are remarkable for being joined together to form a sort of sucker. Squeezing this organ onto the smooth surfaces of rocks the fish is able to attach itself so firmly that even the tremendous force of the returning tide may not dislodge it.

Of course, creatures which inhabit the shore for ever run the risk of being stranded by the outgoing tide. Gobies are prepared for this eventuality too and if stranded at low tide are able to flip acrobatically across the wet weed, sand or stone until arriving, at last, in water.

Up till now I have restricted myself to discussion of one species of goby, *G. minutus*. This is the most common species and, in many ways, may be regarded as "typical" of the genus. Like most of the other nine native species, it is bottom-dwelling fish, frequently choosing refuge under stones or in the sand. Like the other varieties its head is short and blunt and its large eyes, which are sometimes so close together that they almost touch, are situated on top of its head.

If, however, one might single out one species which seems, more than the others, to deviate from the norm established by the other members of the genus, I should choose the spotted goby, *G. ruthensparri*, for this is the only one which does not live on the bottom. Instead, it swims in shoals amongst the weeds. This gregarious nature is shared with the other gobies but it is rarely so evident as in this species.

G. paganellus, the rock goby, is a species which is common only in the south and is untypical in that it is not gregarious. Yellow or dark brown in colour, the rock goby may grow to a length of five inches.

G. niger, the black goby, is a fish of similar size and is common in estuaries.

To obtain some gobies for your aquarium it will be necessary (assuming you wish to collect for a marine rather than a brackish-water aquarium) to select a suitable stretch of shore; low, craggy rocks in an unpolluted area would be promising and in ideal circumstances gobies may be found in such profusion that they may even hinder the amateur collector as they dash hither and thither into and around his nets.

But areas of unpolluted water are unfortunately rare these days and in less favoured spots gobies are unlikely to be present in such numbers. Nevertheless one should be able to find *some* gobies on almost any shore-line—even in quite highly contaminated water.

In my experience the best places to search are in the little channels running in the sand between rocks where water drains back into the sea. The edges of the main large rock groupings are normally good places to explore.

Look under stones—even those which seem to be flush with the surface of the sand—and watch out for tiny, gushing spurts of sand. In actual fact these are often illusory, and prove to be speckled gobies darting over the sand or shingle.

Having spotted one or more gobies, the next major problem is to catch them. Any aquarist will be familiar with the difficulties encountered in trying to catch a brightly coloured fish in the close confines of a fish tank. Now imagine the problems we face in trying to catch a well-camouflaged fish in a large, fast-flowing channel of water, or in a deep, weed-grown and craggy rock pool.

Perhaps a few hints may help. Assuming you have taken my advice and chosen to look in a water runlet, you should choose the narrowest point which you can find and place across it a large, fine-meshed hand net with its mouth facing "upstream" or away from the sea. Another, smaller net may be used to chase the gobies into it. This is the obvious and more sophisticated method.

Another, crude but highly successful method is to use the nets to chase the gobies to the very edges of the water until they are forced to retreat onto dry land where they may be quite easily scooped up and placed into a partially-filled jar of sea-water, ready for transportation home.

OUR READERS WRITE

Thunderstruck?

I am writing to inform other *Aquarist* readers, especially those who keep or are interested in Discus, about my misfortune the other night when a very bad storm killed my fish (7 Discus, a selection of Blues, Greens, Browns from 4 in. to 6 in., all in excellent health).

The reason I presume the thunder and lightning killed the Discus is because if they had contracted any disease or other illness they would not have died in such a short space of time, being in perfect condition before retiring that night, and would not have had such a colourful appearance after death, for example the green were still in full colour as if they were killed instantly.

They were a great loss to me as they were in such good health and I had had them for just under a year.

Yours faithfully,
B. J. DAVIS,
561 Southchurch Road,
Southend-on-Sea,
Essex.

Corydoras bondi

SIR,—I noticed your reader's inquiry about *Corydoras bondi* (April 1977), to which you replied that this fish is from Venezuela.

The first aquarium specimens of this species were collected by Louis Chung and me in 1956 or 1957 in the upper Kaituma River of northwestern Guyana (then British Guina). I believe that all aquarium specimens of this fish have come from Guyana rather than Venezuela.

It is interesting to note that the same net haul that brought up *C. bondi* also brought up another pretty new catfish that turned out to be *C. septentrionalis*, which apparently still has not found its way into the aquarium trade. When we collected these fishes, we of course thought they were new species, but Dr. Weitzman determined them to be species of which Dr. Goslin had collected one or two specimens each in Venezuela. Hence the information that they come from Venezuela. Goslin described both species from his one or two preserved specimens, but they had never been brought out alive until we collected them.

Cordially,
ALAN M. FLETCHER,
Head of Publications,
New York State College of Human Ecology,
400 Roberts Hall,
Ithaca, New York 14853.

IT is understood that Guyana has had a total embargo on fish exports for more than a year. If *C. bondi* are coming into the U.K. now, they are either being collected in Venezuela or Venezuelan collectors are illegally crossing over the border to collect them in northwestern Guyana. Slipping across the border in that part of Guyana is very easy; it's nearly unpopulated rainforest-jungle. Ed.

BOOK REVIEWS

Salt-Water Tropical Fish in Your Home *by Gail Campbell* (Sterling Pub. Coy. New York; Oak Tree Press, London, £3.50).

This reasonably priced, well-illustrated, very practical little book of 144 pages is ideal for anyone setting up an aquarium of colourful seafish. Briefly to the point in all its subjects, it gives good reasons for avoiding small tanks, stresses the importance of the right composition of sand and gravels, plus a filter, and maintaining a stable environment of salinity (with a hydrometer), temperature, pH or acidity/alkalinity, and nitrates. Chapters range from diseases and parasites to over 100 suitable species of popular coral-fish, angels, butterflies, surgeons, wrasses, scorpion-fish, gobies, red cardinals, grunts, scats, cats and sea-horses, also breeding fish, together with such "furnish-ings" as corals, sea-anemones, seastars, crabs and shrimps. These darting little fish require more aeration than freshwater tropicals, and the tank capacity is lower. They live better on live food like brine shrimps' eggs and *Tubifex* worms than on dry food, but newly-stocked specimens are at first very vulnerable to ammonia and nitrate poisoning, unless this is attended to carefully. There are 64 colour-plates as well as monochromes and a good index. The author is with the California Fish and Game Depart-ment, but she still has no easy way of keeping marine plants (seaweeds). One wonders if the Victorian writers on this skill exaggerated their success.

ERIC HARDY.

Guide to Aquatic Hyphomycetes *by C. T. Ingold* (Freshwater Biological Association, £1).

Every pond-hunter finds fungi on submerged twigs. Fishkeepers dread the disease-bringing kinds. Some of us were introduced to the vast variety of water-moulds by Dr. Ivimey Cook's writings 44 years ago in the *Microscope Record*, in the best of prewar popular microscopy. Most of the technical monographs for students of this branch of water life were however American or German; but over the past 30-odd years English literature on the subject increased considerably, particularly with Professor Ingold's contributions to the Mycological Society.

The present illustrated guide departs from its distinguished predecessors in being the F.W.B.A.'s first key to the identification of plants. Though limited to one of the largest orders of the asexual, mould-like *Fungi Imperfecti*, with their thread-like spore-bearing hyphae concentrated by air-bubbles in foam persisting below river rapids and waterfalls, especially after rain, it fills a gap in the microscopist's bookshelf. The great majority of these aquatic fungi show a branched structure under the microscope of 4 long arms, like a grotesque star, and so many as 10,000 spores may be in a litre of stream or river in spate. These microfungi favour chiefly blackened dead leaves rotting with little oxygen at the bottom of the water, not a very exciting subject until a useful key like this appeared as for guidance.

There are notes on collecting and examination, but owing to a good guide-list of the genera described, no index, or a key based on the conidium. The Guide was published in 1975.

ERIC HARDY.

News 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.

RESULTS from **Preseli Tropical Fish Society** are as follow: Livebearers: 1 and 2, P. A. Busby; 3, B. Locke; 4, Mrs. Coombe. Eggbearers: 1, Mrs. Coombe; 2, R. A. J. Thomas; 3, B. Harding; 4, F. Stammer. Characins: 1 and 3, J. Foster Powell; 2, R. A. J. Thomas; 4, P. A. Busby. Labyrinth: 1, D. Perkins; 2, R. Mayhew; 3, Mrs. Lewis; 4, P. A. Busby. The show was judged by G. Best who is a C.N.A.A.—F.B.A.S. judge.

The Club meetings are now held every three weeks.

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THE **Redcar A.S.** had an excellent entry for their open show held at the end of May. The Best Fish in the Show award went to Mr. and Mrs. Risbridger with a Corydoras. Details are as follow: Barbs (Large): 1, Mr. and Mrs. Lamb; 2, P. Coleman; 3 and 4, J. Page. Barbs (Small): 1, J. Page; 2, R. Lunn; 3 and 4, Mr. and Mrs. Risbridger. Hyphessobrycon: 1, D. Forbes; 2, Master Bradshaw; 3, R. Leighton; 4, J. Bowman. Nannostomus: 1, 2 and 3, Mr. and Mrs. Risbridger; 4, P. Wright. Characins (Other): 1, F. Myers; 2, S. Hay; 3, J. Aylesbury; 4, Master D. Lunn. Angels: 1, S. Hay; 2 and 4, Mr. Irwin; 3, W. Smith. Dwarf Cichlids: 1, J. Bowman; 2, Mr. Inglish; 3, Kane Family; 4, G. Dodds. Rift Valley: 1, S. Hay; 2, Mr. Roddam; 3, J. King; 4, H. Harker. Cichlids: 1, Mr. Garthwaite; 2, Mr. Readman; 3, Master Noble; 4, D. Russell. Betta Splendens: 1, Mr. and Mrs. Monaghan; 2 and 3, A. Stevens; 4, Mrs. S. Hill. Trichogaster: 1, S. Wright; 2, H. Lake; 3, Mr. and Mrs. Lamb; 4, Mr. and Mrs. Monaghan. Labyrinths (Others): 1, P. Wright; 2, B. Smith; 3, Mr. Mesde. E.L.T.C.: 1 Mr. and Mrs. Risbridger; 2 and 3, H. Lake; 4, Mr. and Mrs. McClurg. Tropical Cat: 1, H. Garthwaite; 2, Mr. and Mrs. Risbridger; 3, C. Hay; 4, Master A. Bell. Cory and Brochis: 1, Mr. and Mrs. Risbridger; 2, Mr. and Mrs. Hall; 3, P. Wright; 4, Mr. Turnbull. Rasboras: 1, Master D. Lunn; 2, Mr. and Mrs. Risbridger; 3, P. Wright; 4, Mr. and Mrs. Hall. Danio and W.C.M.M.: 1, B. Smith; 2, Master D. Lunn; 3, A. Stevens; 4, Miss Knibbs. Loach: 1 and 4, P. Wright; 2, Mr. and Mrs. Lamb; 3, J. Irwin. Labeo: 1 and 4, J. Page; 2, Mr. and Mrs. Wright; 3, J. Irwin. A.O.S. Trop. Egglayer: 1 and 2, Master D. Lunn; 3, Mr. Dixon-Cave; 4, Mr. and Mrs. Donighely. Pairs Egglayer: 1, S. Wright; 2, Master Bradshaw; 3, Mr. and Mrs. Knibbs; 4, Mr. and Mrs. Risbridger. Pairs Livebearer: 1, Mr. Learoyd; 2, S. Burgess; 3, Mr. and Mrs. Knibbs; 4, Master Bradshaw. Guppy (Male): 1, 2 and 3, R. Hill; 4, Mr. and Mrs. Johnson. Guppy (Female): 1, Mr. Horsefield; 2, G. Dodds; 3, Mr. Wilks; 4, L. Hunt. Xiphophorus Hellen: 1, Miss S. Cox; 2, C. R. Gledhill; 3, Master Jackson; 4, Mr. Soppit. Platies: 1, G. L. Clegg; 2, Mr. Learoyd; 3, Wright and Dixon; 4, Mr. and Mrs. Knibbs. Mollys: 1, Mr. and Mrs. Duffill; 2, S. Hay; 3, P. Fry; 4, A. Stevens. A.O.S. Livebearer: 1 and 2, Mr. English; 3, Mr. and Mrs. Johnson. Single Tail Goldfish: 1, Mr. and Mrs. Cook; 2, W. Smith; 3, Master Wright; 4, Mr. and Mrs. Burford. Twin Tail Goldfish: 1, Kane Family; 2, Mr. Taylor; 3, Mr. Rawlinson; 4, I. Nelson. A.O.S. Coldwater: 1, Mrs. Embleton; 2, B. Haig; 3 and 4, Master D. McClurg. Breeders, Egglayers: 1 and 2, Mr. Goodall; 3, J. Donnally; 4, Kane Family. Breeders, Guppy: 1, 2 and 3, R. Hill; 4, G. Dodds. Breeders, Livebearers: 1, G. Dodds; 2, A. Clegg; 3, J. W. Balderson; 4, P. Wright. Breeders, Coldwater: 1 and 2, Mr. and Mrs. A. McCarthney. 3, Mr. Rawlinson; 4, B. Banus.

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RESULTS of **Sudbury A.S.** Open Show. Best in Show, G. Dickens (Sudbury) with N. Palmeri F.B.A.S. Champion, Class Female Guppy, D. North (Corringham). Class B: 1, C. and J. Richards (Sudbury); 2, P. and L. Hills (C.A.G.B.); 3, P. A. Moye (Sudbury); 4, Y. Longuet (Hendon). C: 1, G. Dickens (Sudbury); 2, C. Turner (Cardiff); 3, M. Nethersell (Riverside); 4, C. and D. Finnis (Strood). Ca: 1, C. Turner (Cardiff); 2, J. Mann (Sudbury); 3, G. Dickens (Sudbury); 4, L. J. Brazier (Sudbury). Cb: 1, T. Borvill (Basingstoke); 2, Mr. and Mrs. Dansey (Aylesbury); 3, C. Goddard (Sudbury); 4, C. and J. Richards (Sudbury). D: 1, 2 and 3, W. A. Knight (Gosport); 4, E. Micsod (Dunmow). Da: 1, 2 and 4, C. and D. Finnis (Strood); 3, G. Mazoro (Sudbury). Db: 1, 2 and 3, R. C. Smith (S.L.A.D.A.S.); 4, M. Strange (Basingstoke). E: 1, M. West (Kingston); 2, M. Nethersell (Riverside); 3 and 4, C. and D. Finnis (Strood). Ea: 1, A. P. Taylor (Sudbury); 2, D. North (Corringham); 3, T. Wooley (Saracens); 4, C. and J. Richards (Sudbury). F: 1, I. Lucky (Basingstoke); 2, B. Witteridge (Sudbuey); 3, R. S. Hart (Hounslow); 4, J. H. Pipe (Aylesbury). G: 1, S. Hunt (Dunmow); 2, M. Nethersell (Riverside); 3, M. West (Kingston); 4, T. Wooley (Saracens). H: 1 and 2, J. Caepenter (C.A.G.B.); 3, P. Moye (Sudbury); 4, M. Nethersell (Riverside). J: 1, J. M. Edwards (Thanet); 2, R. S. Hart (Hounslow); 3, P. and L. Hills (C.A.G.B.); 4, B. Witteridge (Sudbury). K: 1, E. and B. Lough (Kingston); 2, M. Nethersell (Riverside); 3, N. Austin (Harrow); 4, S. Bartlett (Sudbury). L: 1 and 4, D. Winder (E. Dulwich); 2, C. Turner (Cardiff); 3, J. Willy (Sudbury). M: 1, Mrs. Hampton (Hounslow); 2, P. Moye (Sudbury); 3, M. Nethersell (Riverside); 4, T. Ramshaw (Brighton). Nbm: 1, Mr. and Mrs. Dansey (Aylesbury); 2, C. and J. Richards (Sudbury); 3, T. Ramshaw (Brighton); 4, A. E. Noronha (Orpington). Not: 1, 2, 3 and 4, A. E. Noronha (Orpington). O: 1, D. North (Corringham); 2, M. Nethersell (Riverside); 3, D. North (Corringham); 4, T. Wooley (Saracens). P: 1, D. North (Corringham); 2 and 3, A. E. Noronha (Orpington); 4, C. and D. Finnis (Strood). Q: 1 and 2, R. C. Smith (S.L.A.D.A.S.); 3, A. E. Noronha (Orpington); 4, P. Edwards (Thanet). R: 1, 2, 3 and 4, C. and D. Finnis (Strood). S: 1 and 4, J. Smith (S.L.A.D.A.S.); 2, C. and D. Finnis (Strood); 3, J. Sullivan (Merthyr). T: 1, 2 and 3, A. E. Noronha (Orpington); 4, M. Strange (Basingstoke). Xbm: 1, R. White (C.A.G.B.); 2, R. Purbrick (Hendon); 3, R. S. Hart (Hounslow); 4, B. Barford (Saracens). Xot: 1, 2, 3 and 4, A. E. Noronha (Orpington).

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THE **Gosport and District A.S.** held their Open Show in April, and would like to thank the competitors for their support. The committee would like to apologise for the cold hall, this was due to an unforseeable heating system breakdown. The results were as follow: Best in Show D. Edlesten. Best Ladies Entry: Mrs. Bebb, and highest pointed visiting society was Basingstoke A.S. Aa: 1, G. Tuckwell; 2, Mrs. Jupe; 3, D. Haines. B: 1, D. Goss; 2, G. Barkham; 3, A. Weaire; 4, P. Lawrence. Ba: 1, R. Adams; 2, A. Jennings. C: 1, C. Howe; 2, Mrs. Bebb; 3, M. Dore; 4, R. Hollings. Ca: 1, M. King; 2, A. Chaplin; 3, J. Jackson; 4, M. Dore. D: 1, A. Mason; 2, K. Connolly; 3, R. Adams; 4, W. Knight. Da: 1, Mrs. Weaire; 2, K. Connolly; 3, D. J. Jackson; 4, D. Collins. Db: 1 and 4, M. Strange; 2, A. Weaire; 3, M. Pirie. Dc: 1, D. Edesten; 2, F. Willis; 3, K. Connolly; 4, W. Knight. E: 1, G. Arnold; 2, Mrs. Bebb; 3, A. Chaplin; 4, R. Adams. Ea: 1, D. Goss; 2, D. Mills; 3, G. Barkham; 4, W. Knight. Fc-f: 1, R. Adams; 2 and 4, J. Jackson; 3, W. Knight. F: 1 and 2, J. Jackson; 3, Mrs. Bebb; 4, J. Jupe. G: 1, G. Arnold; 2, D. Edelsten; 3, B. Knerri; 4, Mr. and Mrs. Stacey. H: 1, 2, 3 and 4, K. Taylor. J: 1, Mrs. Bebb; 2 and 3, A. Weaire; 4, T. Burvill. K: 1, D. Goss; 2, J. Crockford; 3, W. Knight; 4, L. Yates. L: 1, T. Burvill; 2 and 3, M. Dore; 4, A. Weaire. M: 1 and 3, M. Dore; 2, R. Adams; 4, J. Jennings. Ma: 1, Mrs. Connolly; 2, G. Arnold; 3, W. Knight. Nbm: 1, D. Goss; 2, D. and S. Jackson; 3, Mrs. Jupe; 4, Mrs. Jennings. Not: 1, W. West; 2, J. Crockford; 3, Mr. and Mrs. Shirley; 4, Miss Jennings. O: 1, L. Yates; 2, Mrs. Jennings; 3 and 4, Mrs. Mills. P: 1 and 2, Mrs. Bebb; 3, D. J. Jackson; 4, A. Chaplin. Q: 1, Mrs. Bebb; 2, D. J. Jackson; 3, R. Clark; 4, A. Fisher. R: 1 and 3, A. Fisher; 2, Mrs. Mills; 4, L. Yates. S: 1, Mr. and Mrs. Stacey; 2, Mrs. Bebb; 3, E. Middleditch; 4, D. Mundey. T: 1, M. Mansbridge; 2, C. Howe; 3, W. West; 4, M. Strange. U: 1, E. Binstead; 2, Mrs. Bebb; 3, J. Crockford; 4, Mrs. A. Arnold. V: 1, 2 and 4, J. Stanton; 3, E. Binstead. W: 1, G. Arnold; 2, J. Jupe; 3, E. Binstead; 4, T. Marshal. Xbm: 1 and 2, F. Willis; 3 and 4, K. Connolly. Xot: 1, M. Strange; 2, Mrs. Bebb; 3, Mr. and Mrs. Shirley; 4, J. Crockford. Z: 1, K. Connolly; 2 and 3, G. Arnold; 4, A. Chaplin.

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NEARLY forty members of the **Huddersfield T.F.S.** attended the meeting in June. After a lively discussion on the organisation of the Open Show to be held in October it was decided that a jumble sale would help to finance the show. D. Brook then gave a practical demonstration on the use of different filtration systems available to the aquarist and the ease of construction. The table show results for the evening were: Anabantids: 1, K. Sykes; 2, D. Hill; 3, K. Wombell. A.O.V. Novice: 1 and 2, B. Town; 3, K. Wombell. Breeders: 1, K. Sykes; 2, K. Wombell. Danios and Rasbora: 1, 2 and 3, M. McGlynn. Juniors: 1, 2 and 3, M. Town.

Anyone who is interested in joining H.T.F.S. should contact I. J. Bangham, tel: Holmfirth 4505.

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MEMBERS of the **Accrington and District A.S.** enjoyed an interesting and enjoyable talk in June about foods for fish and keeping cultures of whiteworm, grindleworm, etc., given by Mr. C. Whitsey.

The result of the recent open show were also discussed. At the end a table was judged. The results were: A.O.V. Tropical: 1, N. Ashton; 2, I. Haworth. Twintail coldwater: 1 and 3, C. Wallbank (Best Fish in Show); 2, B. Haworth. Single tail coldwater: 1, and 2, B. Haworth. Pairs: 1, D. Hargreaves (Best Exhibit); 2, I. Ashton.

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AT the first meeting in June of the **Waltham stow and District A.S.** a talk was included by

one of the members on his idea of a group of members breeding one variety of fish and sharing results and experiences. The second meeting was a visit from the East London A.S. The subject of the talk given that evening was the A.B.C. of Fish Food by two of the members. A Table Show was held and the winners were East London.

New members are always welcome. For further details contact G. Smith, 51 Belle Vue Road, Walthamstow, E.17 or phone 527 6303.

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THE third open show of the **Newcastle T.F.S.** was held in June. R. Atherton from Hartlepool won the trophy for the best fish in show with a Distichodus sexfaciatus.

The key to the societies who entered: N.T.F.S.—Newcastle T.F.S. B.H.M.A.S.—Billingham Half Moon A.S. B.C.A.—British Catfish Association. H—Hartlepool. K—Killingworth. M—Middlesbrough. M.P.A.S.—Mount Pleasant A.S. N.G.L.S.—Newcastle Guppy Livebearer Society. N—Novos. P—Priory. R—Redcar. Su—Sunderland. S—Stockton. S.H.M.A.S.—Stockton Half Moon A.S. Ind—Independent.

The results of the show were: Furnished Jars: 1, J. Johnston (S). Barbs (Large): 1, D. Lunn (R). Barbs (Small): 1, B. Robson (N.T.F.S.); 2, Mr. Spencer (B.C.A.). 3, P. Drewitt (N.T.F.S.). Characins (Large): 1, R. Atherton (H); 2, E. Smee (N.T.F.S.); 3, D. Lunn (R). Characins (Small): 1, R. Lunn (R); 2, E. Smee (N.T.F.S.); 3, T. Marshall (N.T.F.S.) Cichlids (Large): 1, J. English (N.T.F.S.). Chichlids (Small): 1, R. Atherton (H); 2, P. Wright (SU); 3, J. English (N.T.F.S.). Rift Valley Cichlids: 1, Mr. and Mrs. Wright (SU); 2, Mr. Wilson (N.T.F.S.); 3, P. Wright (SU). Angels: 1, G. Rawlingson (S). Fighters: 1 and 2, Mr. Stevens (M); 3, J. Middlemast (Ind.). A.O.V. Labyrinth: 1, P. Wright (SU); 2, B. Robson (N.T.F.S.); 3, K. Ring (M.P.A.S.). E.L.T.C.: 1 and 2, Mr. Nunn (S); 3, Mr. Stevens (M). Tropical Catfish: 1, Mr. Spencer (B.C.A.). 2, Mrs. Hunt (B.H.M.A.S.); 3, P. Wright (SU). Corydoras and Brochis: 1 and 3, Mr. and Mrs. Hall (N); 2, Mr. Spencer (B.C.A.). Loach: 1, K. Dobbie (P); 2 and 3, P. Wright (SU). Rasbora and Danio W.C.M.M.: 1, Mr. and Mrs. Hall (N); 2, B. Robson (N.T.F.S.); 3, Mr. Stevens (M). Sharks, Labeo and Flying Fox: 1, D. Lunn (R); 2, R. Hynars (N.T.F.S.); 3, Mr. and Mrs. Knibbs (S). A.O.V. Tropical Egglayer: 1, G. Rawlingson (S); 2, D. Lunn (R); 3, Mrs. Hunt (B.H.M.A.S.). Guppies (Male): 1, K. Dobbie (P); 2 and 3, P. Fry (Ind.). Guppies (Female): 1, Mrs. Hunt (B.H.M.A.S.); 2, Mr. and Mrs. Knibbs (S); 3, A. Thompson (N.T.F.S.). Mollies: 1, J. English (N.T.F.S.); 2, J. Rawlingson (S); 3, S. Johnston (S). Platies: 1, Mr. and Mrs. Monaghan (S.H.M.A.S.) 2 and 3, J. Rawlingson (S). Swordtails: 1, Mr. and Mrs. S. Knibbs (S); 2, P. Fry (Ind.); 3, Mr. Spencer (B.C.A.). A.O.V. Tropical Livebearer: 1, Mr. Clegg (N.T.F.S.); 2, R. Kirkup (M.P.A.S.); 3, J. English (N.T.F.S.). Plants: 1, J. Rawlingson (S). A.V. Coldwater: 1, 2 and 3, Mrs. Embleton (Ind.). Breeding Pairs (Livebearers): 1, Mr. Leroyd (N.T.F.S.); 2, Mr. T. Marshall (N.T.F.S.); 3, Mr. and Mrs. Johnston (S). Breeders Class (Livebearers): 1, Mr. Clegg (N.T.F.S.); 2, T. Marshall (N.T.F.S.); 3, Mrs. Hunt (B.H.M.A.S.). Breeding Pairs (Egglayer): 1, Mr. and Mrs. Knibbs (S); 2, S. and A. Jackson (N.T.F.S.); 3, Mr. and Mrs. Monaghan (S.H.M.A.S.). Breeders Class (Egglayers): 1, E. Motherwell (H); 2, Mr. Stevens (M); 3, B. Robson (N.T.F.S.). Junior Class: 1, C. Drewitt (N.T.F.S.); 2, D. Alder (N.T.F.S.); 3, T. Dixon (Ind.). A.O.V. Aquatic Life: 1 and 2, T. Marshall (N.T.F.S.); 3, D. Wilson (N.T.F.S.).

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THERE was an entry of nearly six hundred for the **Sandgrounders A.S.** annual open show and the following were the results. Guppies: 1, Mr. and Mrs. B. Baldwin (Sandgrounders); 2, T. Lye (Merseyside); 3, Mr. and Mrs. Wilkinson (Loyne). Swordtails: 1, C. Evason (Sandgrounders); 2, Mr. Hodgson (David Brown A.S.); 3, Mr. and Mrs Goddard (Macclesfield). Platies: 1, B. W. Carter (St. Helens); 2, Mrs. Hodge (Southport); 3, Mr. and Mrs. Durham (Longridge). Mollies: 1 and 2, Mr. and Mrs. Tinsley (Sandgrounders); 3, B. W. Carter (St. Helens). A.O.V. Livebearer: 1 and 2, Mr. and Mrs. Durham (Longridge); 3, Mr. and Mrs. McCarthney (St. Helens). Small Anabantids: 1, Mr. and Mrs. B. Baldwin (Sandgrounders); 2, Mr. and Mrs. Underwood (Southport); 3, R. Thompson (Merseyside). Large Anabantids: 1, Mrs. L. Brown (Southport); 2, K. Chambers (Southport); 3, Mr. and Mrs. Underwood (Southport). Siamese Fighters: 1, W. Chapman (Bridgewater); 2, Mr. and Mrs. Lawson (St. Helens); 3, D. Francis (Merseyside). Small Cichlids: 1 and 2, W. Bamber (Independent); 3, D. Francis (Merseyside). Large Cichlids: 1, T. and W. Brown (Warrington); 2, Mr. and Mrs. Underwood (Southport); 3, Mrs. K. Smith (Blackpool). Rift Valley Cichlids: 1, B. Wilson (Sandgrounders); 2, D. Mason (Bridgewater); 3, S. Wolstenholme (Heywood). Angels: 1, Mr. and Mrs. Harvey (Atlantis); 2, N. Stevenson (Osram); 3, Mr. and Mrs. Aspinall (Southport). Small Characins: 1, Miss S. Goddard (Macclesfield); 2, Mr. and Mrs. Goddard (Macclesfield); 3, Mr. and Mrs. Houghton (Southport). Medium Characins: 1, Mr. and Mrs. Underwood (Southport); 2, N. Stevenson (Osram); 3, Mr. and Mrs. Widd (Osram). Large Characins: 1 and 2, Mr. and Mrs. Houghton (Southport); 3, H. Bauer (Merseyside). Small Barbs: 1 and 2, N. Stevenson (Osram); 3, K. Thompson (Merseyside). Large Barbs: 1 and 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Houghton (Southport). Rasboras: 1, T. and W. Brown (Warrington); 2, K. Thompson (Merseyside); 3, Mr. and Mrs. Muckle (Southport). Minnows: 1, H. Bauer (Merseyside); 2, Mr. and Mrs. Underwood (Southport); 3, Miss S. Goddard (Macclesfield). Danios: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Master P. Durham (Longridge); 3, R. and S. Parr (Hyde). Corydoras and Brochis Catfish: 1, R. Underwood (Southport); 2, Mr. and Mrs. Houghton (Southport); 3, Mr. and Mrs. Harvey (Atlantis). A.O.V. Catfish: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. J. McCarthney (St. Helens); 3, Mr. and Mrs. Geogh (Wynnstay). Loaches: 1, Mr. and Mrs. Ham (Lytham); 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs. Baldwin (Sandgrounders). Sharks: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, C. Evason (Sandgrounders); 3, Mr. and Mrs. Underwood (Southport). Flying Foxes: 1, H. Bauer (Merseyside); 2, R. Hampson (Wythenshawe); 3, Masters R. and P. Hodge (Southport). Killifish: 1, K. Thompson (Merseyside); 2, Mr. and Mrs. Tasker (Sandgrounders); 3, D. Fitzpatrick (Sandgrounders). Any Variety Female Fish: 1, B. W. Carter (St. Helens); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. J. McCarthney (St. Helens). Pairs (Livebearers): 1, Mr. and Mrs. Durham (Longridge); 2, Masters R. and P. Hodge (Southport); 3, Mr. and Mrs. Lawson (St. Helens). Pairs (Egglayers): 1, M. Lister (Independent); 2, Mr. and Mrs. Houghton (Southport); 3, B. Wilson (Sandgrounders). Breeders Livebearers (1-10): 1, Mr. and Mrs. Goddard (Macclesfield); 2, T. and W. Brown (Warrington); 3, R. and S. Parr (Hyde). Breeders Livebearers (11-20): 1, K. Thompson (Merseyside). Breeders Egglayers (1-10): 1 and 3, Mr. and Mrs. Lawson (St. Helens); 2, D. Mason (Bridgewater). Breeders Egglayers (11-20): 1, D. Mason (Bridgewater); 2, Mr. and Mrs. Geogh (Wynnstay); 3, A. Davies (Dunlop). A.O.V. Tropical: 1 and 2, P. and H. Batchelor (Loyne); 3, M. Lister (Independent). Common Goldfish and Comets: 1 and 2, C. Whitsey (Accrington); 3, B. Newport (Runcorn). Shubunkins: 1, C. Whitsey (Accrington); 2, W. Downey (Sandgrounders); 3, B. Newport (Runcorn). Orandas: 1, Mr. and Mrs. Harvey (Atlantis); 2 and 3, C. Whitsey (Accrington). Fantails: 1 and 2, C. Whitsey (Accrington); 3, Mr. and Mrs. Lawson (St. Helens). A.O.V. Coldwater: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Harvey (Atlantis); 3, Mr. and Mrs. Aspinall (Southport). Juniors (Livebearers): 1, Master L. Groves (Sandgrounders); 2, Miss D. Baker (Southport); 3, Miss J. Baldwin (Sandgrounders). Juniors (Egglayers): 1, S. Geogh (Wynnstay); 2, Miss J. Baldwin (Sandgrounders); 3, W. L. Booker (Sandgrounders). Juniors (Coldwater): 1, Master S. Lawson (St. Helens); 2, Master D. Harvey (Atlantis); 3, Miss M. Cenerford (Atlantis). Ladies: 1, Mrs. P. A. Taylor (Atlantis); 2, Mrs. E. Stillwell (Sandgrounders); 3, Mrs. B. McCarthney (St. Helens). Marines: 1, K. Miller (Heywood); 2, S. Hooton (Sandgrounders). Furnished Mini Jars (No Fish): 1, 2 and 3, N. Stevenson (Osram). Best Fish in Show: B. Baldwin (Sandgrounders), Large Barb.

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FOR the July meeting of the **Mid-Sussex A.S.** Mr. J. Burtles, deputising for Mr. C. A. T. Brown who could not attend, talked about showing fish and the different means of setting up aquatic displays. Mr. Burtles and Mr. B. Slade judged the table show and awarded the cards as follows:—Killifish: 1, Mrs. S. Frost; 2, E. and T. Tester. Botias: 1 and 2, E. and T. Tester; 3, A. Temple. A.O.V. Loaches: 1, 2 and 3, E. and T. Tester. Livebearers: 1 and 3, J. Smith; 2, E. and T. Tester. Coldwater: 1 and 2, L. Pinney; 3, G. Sparshott.

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OFFICERS elected at the **Dudley A.S.** are:—Chairman and treasurer, G. Brockhouse; secretary, Mrs. C. Darbey, 19 Six Ashes Road, Bobbington, Stourbridge, West Midlands; show secretary, R. Williams, 49 Tenbury House, Highfield Lane, Halesowen. Meetings are held on the first Wednesday of the month at the West End Public House, Wolverhampton Road, Dudley. All made welcome, table shows each meeting at 8 p.m. Further details from the secretary, tel: Bobbington 445.

Results of the table show for July judged by Mr. D. Hutchison were:—Class O and P: 1 and 4, Mr. and Mrs. Darbey; 2, R. Williams; 3, C. Brockhouse. Class Q and R: 1, Mr. and Mrs. Darbey; 2 and 4, C. Brockhouse; 3, G. Brockhouse. Class S: 1, 3 and 4, G. Brockhouse; 2, Mr. and Mrs. Darbey. Class T: 1, Mr. and Mrs. Darbey.

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RESULTS of the **Brighton & Southern A.S.** open show were as follow:— Class Aa: 1, R. Paine (Basingstoke); 2, R. Hard (Brighton & Southern); 3, S. Spicer (Southend). Class B: 1, Mrs. D. Cruickshank (Ealing); 2, B. Sayers (Brighton & Southern); 3, R. Hard (Brighton & Southern); 4, J. Edwards (Thanet). Class C: 1, M. Nethersell (Riverside); 2, C. and D. Finniss (Strood); 3, T. Irving (Southend); 4, R. Paine (Basingstoke). Class Ca: 1, M. King (Gosport); 2, A. Feast (Tonbridge); 3, Mrs. Edwards (Thanet); 4, R. Hard (Brighton & Southern). Class Cb: 1, T. Fraser (Basingstoke); 2 and 4, Mrs. V. Feast (Tonbridge); 3, T. Cruickshank. Class D: 1, M. Nethersell (Riverside); 2, T. Ramshaw (Brighton & Southern); 3, Mr. and Mrs. D. Jennings (Havant); 4, W. Chalcraft (Godalming). Class Db: 1, M. Strange (Basingstoke); 2, Mr. and Mrs. C. Brook (South East London); 3 and 4, R. C. Smith (South London). Class Dc: 1 and 2, W. A. Knight (Gosport); 3 and 4, Mr. and Mrs. Houghton (Brighton & Southern). Class E: 1, S. Parrish (Hemel Hempstead); 2, M. Nethersell (Riverside); 3 and 4, C. and D. Finniss (Strood). Class Ea: 1, C. and D. Finniss (Strood); 2, Mr. Bradnum (Tonbridge); 3, T. Ramshaw (Brighton); 4, G. Dyer (Southend). Class F: 1, R. S. Hard (Hounslow); 2, Mrs. R. M. Beattice (Godalming); 3 and 4, Mrs. C. Cheswright (South London). Class G: 1, May Nethersell (Riverside); 2, M. Sandford (Reigate & Redhill); 3, Mr. and Mrs. Houghton (Brighton); 4, M. Evens (Brighton). Class H: 1, T. A. Cruickshank (Ealing); 2, 3 and 4, May

Nethersell (Riverside). Class J—Championship Class: 1, J. Edwards (Thanet); 2 and 4, D. Durrant (Southend); 3, T. Ramshaw (Brighton). Class K: 1, R. Rice (Brighton); 2, M. Collins (Brighton); 3, R. Shipsham (Brighton); 4, C. Hooper (Brighton). Class L: 1 and 4, A. Feast (Tonbridge); 2, C. Hooper (Brighton); 3, C. and D. Finnis (Strood). Class M: 1, Mrs P. Hampton (Hounslow); 2, T. Ramshaw (Brighton); 3, R. Rice (Brighton); 4, May Nethersell (Riverside). Class Nbm: 1, T. Ramshaw (Brighton,; 2, C. Hooper (Brighton); 3, Mr. and Mrs. C. Brooke (South East London); 4, Mr. and Mrs. Houghton (Brighton). Class Not: 1, 3 and 4, A. E. Noronha (Orpington); 2, D. Chetwright (South London). Class O: 1, Mrs. P. Hampton (Hounslow); 2, A. D. Sharp (Conningham & District); 3, S. Spicer (Southend); 4, Mr. Bradnam (Tonbridge). Class P: 1, A. E. Noronha (Orpington); 2, 3 and 4, C. and D. Finniss (Strood). Class Q: 1, T. Wash (Brighton); 2, R. C. Smith (South London); 3, A. E. Noronha (Orpington); 4, T. Smith (Gosport). Class R: 1, B. Sayers (Brighton); 2 and 3, A. Constantine (Hounslow); 4, C. and D. Finniss (Strood). Class S: 1 and 3, J. Smith (Brighton); 2 and 4, C. and D. Finniss (Strood). Class T: 1, A. E. Noronha (Orpington); 2, P. Chesewright (South London); 3 and 4, M. Strange (Brighton). Class Xbm: 1, D. Steer (Brighton); 2, R. Miller (Havant). Class Xot: 1, 2, 3 and 4, A. E. Noronha (Orpington). Class Va-b: 1, D. Chesewright (South London); 2, H. S. Pratt (Hounslow); 3, W. F. J. Crockford (Petersfield); 4, E. Binstead (Portsmouth). Class Vc-d: 1 and 3, Miss J. Box (Brighton); 2, W. Crockford (Petersfield); 4, E. Binstead (Portsmouth). Class V: 1 and 3, Miss H. Gardner (Reigate & Redhill); 2, E. Binstead (Portsmouth); 4, Miss J. Box (Brighton). Class W: 1, S. Hedges (Bethnal); 2 and 3, E. Binstead (Portsmouth).

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AN excellent entry totalling 618 was received by the **Lytham A.S.** for the open show held in July. The results were as follow:—Guppies: 1, Mr. and Mrs. J. Calvert (Loyne); 2, R. O'Connell (Osram); 3, P. Bailey (Warrington). Mollies: 1, Mr. and Mrs. Tasker (Sandgrounders) (Section Winner); 2, Mr. and Mrs. Tinsley (Sandgrounders); 3, Mr. and Mrs. Selby (Wythenshaw). Swordtails: 1 D. Potter (Warrington); 2, P. A. Squirrell (Wythenshaw); 3, Mr. and Mrs. Ankers (North Staffs.). Platies: 1 and 3, B. W. Carta (St. Helens); 2, R. Houghton (Southport). A.O.V.: 1 and 3, Mr. and Mrs. Durham (Longridge); 2, K. Thompson (Merseyside). Characin (up to 2 in.): 1, Miss S. Goddard (Section winner); 2, K. Wright (Sandgrounders); 3, Mr. and Mrs. A. Lyons (Longridge). Characins (over 2 in.): 1, R. and A. Johnson (Hyde); 2 and 3, R. Houghton (Southport). Barbs (up to 3½ in.): 1, Mr. Wallbank (Loyne) (Section Winner); 2, K. Thompson (Merseyside); 3, N. Stevenson (Osram). Barbs (over 3½ in.): 1, R. Houghton (Southport; 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, P. and H. Batchelor (Loyne). Rasbora: 1, R. and A. Johnson (Hyde); 2, B. W. Carter (St. Helens); 3, W. Hayes (Loyne). Danios: 1, K. Chambers (Southport) (Section Winner); 2, E. and B. Calow (Coral Reef); 3, D. Potter (Warrington). Minnows: 1, R. Houghton (Southport); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Muckle (Southport). Angels: 1, Mr. and Mrs. Lyons (Longridge); 2, S. Harvey (Atlantis); 3, N. Stevenson (Osram). Dwarf Cichlids: 1, D. Francis (Merseyside); 2, D. Harvey (Atlantis); 3, G. Danby (Hyde). Large Cichlids: 1, Mr. and Mrs. Ankers (North Staffs.) (Section Winner and Best in Show, 64 pts.); 2, Mrs. K. Smith (Blackpool); 3, Mr. and Mrs. Aspinall (Southport). Rift Valley: 1, B. Wilson (Sandgrounders); 2 and 3, Mrs. E. Stillwell (Sandgrounders). Fighters: 1, R. Holden (Longridge); 2, P. Oldcorn (Blackburn); 3, Mr. and Mrs. Campbell (Macclesfield). A.O.V.: 1, K. Thompson (Merseyside) (Section Winner); 2, K. Chambers (Southport); 3, F. Micklewright (North Staffs.). A.O.V. Catfish: 1, K. Thompson (Merseyside); 2, Mr. and Mrs. McCarthney (St. Helens); 3, Mr. and Mrs. Muckle (Southport). A.V. Loach: 1, Mr. and Mrs. Ham (Lytham); 2, Mr. and Mrs. Ankers (North Staffs); 3, C. and K. Wilson (Warrington). A.V. Labeo or Shark: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, J. and K. Hinchey (Loyne); 3, Mr. and Mrs. Tinsley (Sandgrounders). Corydoras: 1, B. W. Carter (St. Helens); 2, Mr. and Mrs. Underwood (Southport); 3, Mr. and Mrs. Muckle (Southport). Flying Fox: 1, H. Bauan (Merseyside); 2, Mr. and Mrs. Ham (Lytham); 3, Mr. and Mrs. Hodge (Southport). A.V. Toothcarp: 1, J. Noon (Leigh) (Section winner); 2, Mr. and Mrs. Ankers (North Staffs.); 3, K. Thompson (Merseyside). A.O.V. Tropical: 1, P. and H. Batchelor (Loyne) (Section winner); 2, H. Bauan (Merseyside); 3, E. and B. Calow (Coral Reef). Egglayers Hard (11-15): 1, F. Reynolds. P.K.A. Egglayers Hard (16-20): 1, Mr. and Mrs. Tasker (Sandgrounders); 2, P. A. Squirrell (Wythenshaw). Egglayers Easy (1-5): 1, J. Noon (Leigh); 2, C. Evason (Sandgrounders); 3, R. Nichols (Lytham). Breeders (Tropical): 1, D. Francis (Merseyside) (Section Winner); 2, E. Jones (Leigh); 3, Mr. and Mrs. Tasker (Sandgrounders). Breeders Tropical, Livebearers: 1, K. Thompson (Merseyside); 2, Mr. and Mrs. Goddard (Macclesfield); 3, Mr. and Mrs. Greenall (Leigh). Egglayers (Pairs): 1, Mr. and Mrs. Goddard (Macclesfield) (Section Winner); 2, R. and S. Parr (Hyde); 3, B. W. Carter (St. Helens). Pairs, Livebearers: 1, Mr. Higham (Warrington); 2, Mr. and Mrs. Durham (Longridge); 3, K. Thompson (Merseyside). Common Goldfish & Comets: 1 and 3, C. H. Whitsey (Accrington); 2, C. Wallbank (Accrington). Shubunkins: 1, B. Downie (Sandgrounders); 2, C. Wallbank (Accrington); 3, S. Foote (Accrington). Veiltails, Fans & Moors: 1, F. W. Orme (Section Winner); 2, S. Foote (Accrington); 3, Mr. and Mrs. Harvey (Atlantis). A.O.V.: 1, R. Houghton (Southport); 2, Mr. and Mrs. Harvey (Atlantis); 3, B. Haworth (Accrington). Junior Egglayer: 1, L. Wilkinson (Lytham) (Section Winner); 2, K. Corbett (Merseyside); 3, P. and S. Taylor (Atlantis). Junior Livebearer: 1, L. Groves (Sandgrounders); 2, Miss H. Johnson (Hyde); 3, Miss J. Baldwin (Sandgrounders). Junior Coldwater: 1, D. Harvey (Atlantis); 2, Miss N. Comerford (Atlantis); 3, Miss Embleton (Stanley Co. Durham). Marines: 1, K. Miller (Heywood) (Section Winner). Furnished Mini-Jar: 1, 2 and 3, N. Stevenson (Osram) (Section Winner). Ladies A.V.: 1, Miss P. A. Taylor (Atlantis); 2 and 3, Mrs. E. Stillwell (Sandgrounders).

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IN June, the **Association of Goldfish Societies of the United Kingdom** met at Coventry. The chairman for this occasion was Mr. H. C. B. Thomas of Bristol A.S. It was with regret that the delegates learned that the Goldfish Society of Great Britain had resigned their membership in order to allow the Association to continue, without hindrance, in their efforts to produce a nationally acceptable set of guides for the varieties of fancy goldfish. The hope was expressed that in the future the A.G.S.U.K., would again be able to welcome the G.S.G.B., to its ranks. A strong intent was expressed, by those present, to continue in the objectives of the Association, to take a lead in uniting the hobby and liaise with other societies and associations at every opportunity.

By mutual agreement it was decided to amend the Constitution to allow a majority vote to decide issues, instead of requiring a hundred per-cent vote as previously—in practice this had posed some difficulties.

Other points to be approved were:—

1. Upon publication of A.G.S.U.K. national standards the yellow book of "International Standards" would be discontinued, it was agreed that standards should be something to aim for but not necessarily achieved.

2. The following varieties would be included in the new standards—Common Goldfish, Comet, Bristol Shubunkin, Fantail, Veiltail, Oranda, Moor, Pearlscale, Celestial, Lionhead, Bubble-eye and Pom-pon. Judges would use their discretion in assessing any of the new varieties which were not included in the standards.

The next meeting will be held at the Foleshill Community Centre, Coventry, on Sunday 16th October, when the standard for the Common Goldfish and Lionhead will be considered. Details of this forthcoming meeting, or information regarding the A.G.S.U.K., may be obtained from the secretary, Mr. V. Cole, 10 Hardwick Close, Brislington, Bristol.

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IT is good to see new faces at Society meetings and when those newcomers pick up awards in their first table show it must be taken as an encouraging sign. This is what happened at the July meeting of the **Longridge and District A.S.** when three newcomers shook some of the old hands by picking up a card each. It was also a good night for Mr. and Mrs. A. Lyons who entered four fish and took three firsts and a second. The speaker for the evening was Mr. J. Dymott of Leyland A.S. who gave such an interesting talk on Cichlids that he was asked back in October when Longridge host the "Big Six" Inter-Society Show League.

Table show results:—Corydoras and Brochis: 1 and 2, Mr. and Mrs. A. Lyons; 3, Mr. and Mrs. B. Durham. A.O.V. Catfish: 1, Mr. and Mrs. A. Lyons. Loaches and Botias: 1, Mr. and Mrs. A. Lyons; 2 and 3, Mr. and Mrs B. Durham. A.O.V. Egglayer: 1, Daryl Newsham; 2, Mr. and Mrs. R. Holden; 3, Craig Parkinson. A.V. Livebearer: 1 and 2, Mr. and Mrs. B. Durham; 3, D. Matthews. Best in Show: Mr. and Mrs. B. Durham.

Top places in the Society Show League are: 1, Mr. and Mrs. R. Holden (84); 2, Mr. and Mrs. B. Durham (68); 3, J. Marsh (28); 4, Mr. and Mrs. A. Lyons (19); 5, Nigel Bland (12).

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THE **Association of Midland Goldfish Keepers** is the only society, in the Midlands, catering solely for the interests of goldfish enthusiasts. Members are attracted from a wide area and many are prepared to travel considerable distances to attend the meetings. Ranging from the veriest novice to some who are very experienced goldfish breeders, the society is notable for the very friendly and relaxed atmosphere that prevails, the more experienced member always being willing and ready to assist and advise the less knowledgeable members. The past year has provided a varied and interesting programme of talks, slide shows, table shows of members fish and general informative discussions that have benefitted all members.

The Foleshill Community Centre, near Coventry, makes an ideal venue being only a short distance from the M6 motorway it has proved easily accessible to members from various parts of the Midlands, in fact, for this reason, it is also the meeting place of the Association of Goldfish Societies of the United Kingdom. Meetings are held once every two months, always on a Sunday afternoon—the next meeting will be on Sunday, 11th September the doors opening at 2.30 the meeting will commence at 2.45 p.m. promptly and there will be a table show of this years young fish. This form of meeting usually proves most popular and is always followed by questions being answered by the different breeders.

Any reader who would care to pay a visit would be most warmly welcomed—so why not make the effort and come along?

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THE July meeting of the **New Forest A.S.** took the form of a general discussion and this allowed members to put their views about various aspects of the Society, and this helped to bring out some good ideas for the future. There being no August meeting owing to the summer holidays, the September meeting will take place with Mr. J. Walker of Bournemouth A.S. talking about live foods which can be given to the fish to supplement patent foods. The chairman remarked that the Society needed more trophies, to encourage more

entries in the monthly table-shows, and five members offered to purchase trophies, and present them for this purpose.

During the interval, the junior members ran their raffle, and also there was an auction of fish and live fish foods, etc. Table show results:—Danios: 1 and 2, S. Harmon; 3 and 4, P. Whate'er. A.O.S. Tropical: 1, S. Harmon; 2, 3 and 4, J. Menhennett. Mollies: 1, R. Travers. A.O.S. Coldwater: 1, 2, and 3, L. Menhennett.

The secretary will be pleased to welcome new members at monthly meetings on the third Monday each month, in the Community Centre, Lymington, Hants.

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THE **Grantham and District A.S.** Open Show attracted 382 entries, and the Best Fish in Show was owned by Mr. and Mrs. Caldow (Scunthorpe Museum). Full details are:—Platties: 1, D. and W. Jordan (South Humberside); 2, Mr. and Mrs. Woolley (Bassetlaw); 3, Mr. and Mrs. Auckland (Grantham). Mollies: 1, S. Harrison (Grimsby and Cleethorpes); 2, Mrs. G. Frisby (Hull); 3, M. Price (Castleford). Swordtails: 1, Mr. and Mrs. Roberts (Doncaster); 2, Mr. and Mrs. Fletcher (Doncaster); 3, N. Blenkin (Bridlington). Guppies: 1, Mr. and Mrs. Daines (Doncaster); 2, S. Harrison (Grimsby and Cleethorpes); 3, Mr. and Mrs. J. Riley (Castlefeed). A.O.V. Livebearer: 1, S.M.I.N. (Nuneaton) (Section Winner); 2, Mr. and Mrs. J. Riley (Castleford); 3, T. Sands (Boston). Small Characins: 1, N. Blenkin (Bridlington) (Section Winner); 2, Mr. and Mrs. Millington (Sheffield); 3, Mr. and Mrs. Lake (South Humberside). Large Characins: 1, B. Jackson (Doncaster); 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. and Mrs. Caldow (Scunthorpe Museum). Small Barbs: 1, Mr. and Mrs. Blades (Bassetlaw) (Section Winner); 2, A. Cook (Retford); 3, Mr. and Mrs. Fletcher (Doncaster). Large Barbs: 1, Mr. and Mrs Roberts (Doncaster); 2, W. E. Neville (Grantham); 3, A. Cook (Retford). Dwarf Cichlids: 1, Mr. and Mrs. J. Riley (Castleford); 2, Mr. and Mrs Sellars (Independent); 3, Mr. and Mrs. Cop'ey (Doncaster). Large Cichlids: 1, Mr. and Mrs. Mangles (Retford); 2, R. Frost (Grantham); 3, J. Frost (Grantham). Angels: 1, Mr. and Mrs. P. Mangles (Retford) (Section Winner); 2, Mr. and Mrs. A. Binns (Scunthorpe Museum); 3, N. Blenkin (Bridlington). Rift Valley Cichlids: 1, Mr. and Mrs. Fletcher (Doncaster); 2, M. Price (Castleford); 3, Mr. and Mrs. Sellars (Independent). Corydoras: 1, Mr. and Mrs. Fletcher (Doncaster); 2 and 3, S.M.I.N. (Nuneaton). A.O.V. Catfish: 1, M. Price (Castleford); 2, Mr. and Mrs. Blades (Bassetlaw); 3, B. Sleight (Mexborough). Loaches: 1, 2 and 3, Mr. and Mrs. Binns (Scunthorpe Museum (Section Winner). Killifish: 1, B. Sleight (Mexborough); 2, Mr. and Mrs Fletcher (Doncaster); 3, K. Prendergast (Boston). Minnows and Danios: 1, A. Piggott (Grimsby and Cleethorpes); 2, Master S. White (Retford); 3, Mr. and Mrs. Lake (South Humberside). Rasboras: 1, R. Illiott (Corby) (Section Winner); 2, A. Piggott (Grimsby and Cleethorpes); 3, A. Cook (Retford). Sharks: 1, R. Illiott (Corby) (Section Winner); 2, Mr. and Mrs. Copley (Doncaster); 3, N. Blenkin (Bridlington). Foxes: 1, R. M. and M. A. Wacey (Grantham); 2, C. and C. Bailey (Grantham); 3, Mr. and Mrs. J. Riley (Castleford). Fighters: 1, Mr. and Mrs. Roberts (Doncaster) (Section Winner); 2, K. Prendergast (Boston); 3, Mr. and Mrs Scott (Bassetlaw). Small Anabantids: 1, Mr. and Mrs. Newson (South Humberside) (Section Winner); 2, Mr. and Mrs. Hill (Scunthorpe Museum); 3, A. and A. Grafton (Sheffield). Large Anabantids: 1, Mr. and Mrs. J. Riley (Castleford); 2, T. Tidswell (Grimsby and Cleethorpes); 3, Mr. and Mrs. Copley (Doncaster). Breeders Livebearers A and B: 1, Mr. and Mrs. Millington (Sheffield); 2 and 3, S.M.I.N. (Nuneaton). Breeders Livebearers C and D: 1, S. Harrison (Grimsby and Cleethorpes). Breeders Egglayers A and B: 1, B. Sleight (Mexborough); 2, Mr. and Mrs. Blades (Barsetlaw); 3, R. Illiott (Corby). Breeders Egglayers C and D: 1, Master S. White (Retford) (Section Winner); 2, A. Piggott (Grimsby and Cleethorpes); 3, Chadwick and Family (Castleford). Pairs (Livebearers): 1, Master J. Millington (Sheffield); 2, K. Prendergast (Boston); 3, S.M.I.N. (Nuneaton). Pairs (Egglayers): 1, N. Blenkin (Bridlington); 2, Mr. and Mrs. Lake (South Humberside); 3, R. Illiott (Corby). A.O.V. Tropical: 1, Mr. and Mrs Caldow (Scunthorpe Museum) (Best Fish); 2, Mr. Simpson (Queen of Midlands); 3, A. Frisby (Hull). Novice Livebearer: 1, Mr. Attersley (Sheaf Valley). Novice Egglayer: 1, Miss K. Chapman (Mexborough); 2, D. McCallister (Corby). Goldfish and Comets: 1, L. Walley (Rotherham) (Section Winner); 2, Mrs. N. Richardson (Loughborough); 3, K. Chapman (Mexborough). Shubunkins and Fancy Goldfish: 1, Mr. and Mrs. Blades (Bassetlaw); 2 and 3, G. K. Howe (Loughborough). A.O.V. Coldwater: 1, D. and W. Jordan (South Humberside); 2, S.M.I.N (Nuneaton); 3, Mr. and Mrs. Smith (Scunthorpe and District). Junior Livebearer: 1, Master J. Millington (Sheffield); 2, Miss Short (Nuneaton); 3, Master M. Lake (South Humberside). Junior Egglayer: 1, J. Sievewright (Corby) (Section Winner); 2, Master M. Lake (South Humberside); 3, S. Illiott (Corby).

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OPEN Show results of **Reigate and Redhill A.S.** were as follow: Best Fish in Show: A. Feast (Tonbridge). The Ladies Plate: May Nethersell (Riverside). The Society Shield: Brighton and Southern A.S. F.B.A.S. Championship Class No-t: A. E. Noronha (Orpington). Class Ag: 1 and 3, R. Hard (Brighton); 2, R. Paine (Basingstoke); 4, Mrs. G. M. Rushbrooke (Reading). Class B: 1, Mrs. D. Cruickshank (Ealing); 2, T. Ramshaw (Brighton); 3, B. Sayers (Brighton); 4, D. MacKay (Kingston). Class Ba: 1, M. West (Kingston); 2, A. I. Feast (Tonbridge); 3, Mrs. D. Cruickshank (Ealing); 4, G. Owen (Orpington). Class C: 1, K. Dryden (Croydon); 2, T. Fraser (Basingstoke); 3, P. Rushbrooke (Reading); 4, T. Ramshaw (Brighton). Class Ca: 1, A. E. Noronha (Orpington); 2, N. J. Miles (Kingsclere); 3, T. Skeet (Croydon); 4, Mrs. P. Edwards (Thanet). Class D: 1, T. Ramshaw (Brighton); 2, B. West (Kingston); 3, Mr. and Mrs. R. Houghton (Brighton); 4, B. Barford (Saracens). Class Db: 1 and 2, R. C. Smith (Southend); 3, Mr. and Mrs. Hooper (Brighton); 4, A. Johnson (Folkestone). Class Dc: 1, A. Johnson (Folkestone); 2, Mr. and Mrs. Houghton (Brighton); 3, A. E. Noronha (Orpington); 4, J. Edwards (Thanet). Class E: 1, S. Broome (Reading); 2, M. West (Kingston); 3, K. Dryden (Croydon); 4, Mrs. V. A. Feast (Tonbridge). Class Ea: 1 and 2, D. North (Southend); 3, T. Ramshaw (Brighton); 4, K. Witt (Reigate and Redhill). Class F: 1, C. Chewright (Southend); 2, Mrs. G. Sandford (Reigate and Redhill); 3 and 4, B. Barford (Saracens). Class G: 1, M. West (Kingston); 2, Mr. and Mrs. Houghton (Brighton); 3, Mrs. M. Nethersell (Riverside); 4, M. Evans (Brighton). Class H: 1 and 2, T. Cruickshank (Ealing); 3, B. Nichols (Mid-Kent); 4, R. Hard (Brighton). Class J: 1, J. Edwards (Thanet); 2, B. Sayers (Brighton); 3, T. Ramshaw (Brighton); 4, D. North (Southend). Class K: 1, Mrs. V. A. Feast (Tonbridge); 2, R. Broomfield (Reading); 3, D. North (Southend); 4, R. Rice (Brighton). Class L: 1 and 3, A. I. Feast (Tonbridge); 2, R. Broomfield (Reading); 4, N. J. Miles (Kingsclere). Class M: 1, Mrs. M. Nethersell (Riverside); 2, T. Ramshaw (Brighton); 3, B. Nichols (Mid-Kent); 4, V. Gibson (Caterham Nomads). Class Nb-m: 1, C. Chewright (Southend); 2, T. Ramshaw (Brighton); 3, Mr. and Mrs. Houghton (Brighton); 4, B. Sayers (Brighton). Class No-t: 1, 2 and 3, A. E. Noronha (Orpington); 4, D. Chewright (Southend). Class O: 1, A. E. Noronha (Orpington); 2, S. J. Spicer (Southend); 3, R. Hard (Brighton); 4, D. North (Southend). Class P: 1, B. Barford (Saracens); 2, C. Hooper (Brighton); 3, P. Hooper (Brighton); 4, D. North (Southend). Class Q: 1, R. C. Smith (Southend); 2, A. E. Noronha (Orpington); 3, T. Fraser (Basingstoke); 4, Mrs. D. Cruickshank (Ealing). Class R: 1 and 3, R. Gray (Havant); 2 and 4, Mr. and Mrs. R. Faulks (Southend). Class S: 1 and 3, J. Smith (Brighton); 2, T. Skeet (Croydon); 4, A. E. Noronha (Orpington). Class T: 1, T. Fraser (Basingstoke); 2, A. E. Noronha (Orpington); 3 and 4, K. Dryden (Croydon). Class U: 1, Miss H. Gardner (Reigate and Redhill); 2, S. J. Spicer (Southend); 3, D. Chewright (Southend); 4, Tanya and Tim Rushbrooke (Reading). Class V: 1 and 2, M. Traynor (Folkestone); 3, Miss H. Gardner (Reigate and Redhill). Class Xb-m: 1, A. I. Feast (Tonbridge); 2, B. Barford (Saracens); 3, K. Moss (Caterham Nomads); 4, A. Johnson (Folkestone). Class Xo-t: 1, 2, 3 and 4, A. E. Noronha (Orpington). Class Z: 1, P. Rushbrooke (Reading); 2, R. Paine (Basingstoke); 3 and 4, Mrs. J. Owen (Orpington).

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RESULTS for the second open show of **South Humberside A.S.** were:—Guppies: 1, Mr. and Mrs. J. Riley; 2, B. J. Bate; 3, Mrs. Bee. Platies: 1, W. and D. Jordan; 2, S. Harrison; 3, J. F. Hawdon. Swordtails: 1, Mr. and Mrs. Roberts; 2, T. Tidswell; 3, Mr. and Mrs. G. Martin. Mollies: 1, S. Harrison; 2, Mrs. F. Wilson; 3, M. Price. A.O.V. Livebearer: 1, B. Jackson; 2, A. Piggott; 3, T. Sands. Small Characins: 1, Mr. and Mrs. D. Coldo; 2, Mr. and Mrs. Millington; 3, Mr. and Mrs. Roberts. Large Characins: 1, A. Cook; 2, B. Jackson; 3, Mr. Thorpe. Dwarf Cichlids: 1, 2 and 3, Mrs Bee. R/V Cichlids: 1, M. Price; 2 and 3, Mr. and Mrs. Burman. Angels: 1, Mr. and Mrs. G. Martin; 2, A. Piggott; 3, Mr. and Mrs. Drurey. A.O.V. Cichlids: 1, Mr. and Mrs. Vernon; 2, Mr. and Mrs. R. Burman; 3, Mrs. Bee. Small Barbs: 1 and 2, Mr. and Mrs. Blades; 3, Master J. Millington. Large Barbs: 1, Mr. and Mrs. Roberts; 2, A. Cook; 3, Mr. and Mrs. Newstead. Corydoras: 1, A. Piggott; 2, Mr. and Mrs. J. Riley; 3, Mr. and Mrs. Price. A.O.V. Catfish: 1, Mr. and Mrs. Newstead; 2, T. Sanderson; 3, W. and D. Jordan. Killifish: 1, Mrs. Bee; 2, A. Clayton; 3, Mrs. Bee. Small Anabantids: 1, A. Clayton; 2, J. R. Hughes; 3, Mr. and Mrs. Campbell. Large Anabantids: 1, Mrs. Bee; 2, K. Lancashire; 3, Mr. and Mrs. Newstead. Fighters: 1, A. Cook; 2, R. Turner; 3, Mr. and Mrs. Newson. Loaches/Botias: 1 and 2, Mr. and Mrs. A. Binns; 3, Mr. and Mrs. J. Riley. Sharks/Foxes: 1, Mr. and Mrs. Campbell; 2, A. Piggott; 3, T. Sanderson. Rasboras: 1, Mr. and Mrs. Vernon; 2, Mr. and Mrs. Bradley; 3, A. Piggott. Danios/Minnows: 1, Mr. and Mrs. Lake; 2, A. Piggott; 3, Mr. and Mrs. Tyson. A.O.V. Tropical: 1, Mr. and Mrs. D. Caldow; 2 and 3, G. White. Pairs (Egglayers): 1, Mr. and Mrs. Blades; 2, Mr. and Mrs. Vernon; 3, B. Banks. Pairs (Livebearers): 1, Master J. Milligan; 2, K. Prendergast; 3, Mr. and Mrs. Newson. Breeders (Livebearers) (A-B): 1, Mr. and Mrs. Millington; 2, Mr. and Mrs. Richardson; 3, Mr. and Mrs. Hopkinson. Breeders (Livebearers) (C-D): 1, Mr. and Mrs. Hopkinson; 2 and 3, S. Harrison. Breeders (Egglayers): 1 and 2, B. Banks; 3, Mr. and Mrs. Blades (A-B). Breeders (Egglayers) (C-D): 1, B. Banks; 2, A. Piggott; 3, Mr. and Mrs. Chadwick. Marines: 1, Mr. and Mrs. D. Caldow. A.V. Egglayers (Jnr): 1, G. Sanderson; 2, Miss D. Banks; 3, Master J. Chadwick. A.V. Livebearer (Jnr): 1, Master I. Jackson; 2, Master J. Millington; 3, Master K. Cooper. Swordtails (Jnr): 1, Master C. Fiddel; 2, Miss J. and S. Hill; 3, Miss S. Sands. Egglayer (Sing./Fem.): 1, Mr. and Mrs. Richardson; 2, Miss T. Hopkinson; 3, A. Clayton. Livebearer (Sing./Fem.): 1, Mr. and Mrs. Tilling; 2, K. Prendergast; 3, Mr. and Mrs. Dains. Faintail/Goldfish: 1, Mr. and Mrs. Hopkinson; 2, Miss L. Wilson; 3, H. Carter. Goldfish & Comets: 1 and 2, K. Chapman; 3, Master S. Martin. A.O.V. Coldwater: 1, W. and D. Jordan; 2, Mr. and Mrs. Riley; 3, H. Carter.

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MEMBERS of the **Bristol A.S.** heard Mr. T. L. Dodge, the well known Midland goldfishkeeper speak at their July meeting. He said that the first thing that attracted his attention to any fish was its 'cleanliness.' Under this heading he included a smooth outline, with a rounded snout for goldfish and shubunkins, the absence of damaged scales or the trace of parasites, and a brightness that denoted the absence of too much mucus. This well attended meeting congratulated their President Mr. S. Lloyd, on being made a life member of the Society.

AT the annual general meeting of the **Llantwit Major A.S.** the committee were elected as follows: chairman, J. Thompson; vice-chairman, N. Haley; secretary, A. Hillman; treasurer, H. Chick; show secretary, J. Edwards; assistant show secretary and P.R.O., B. Martin; librarian, G. Lewis.

At the meeting a class of 'Anabantidae' were judged by C. J. Turner. Results were: 1 and 2, J. Thompson; 3 and 4, A. Martin. In the junior section: 1, T. Fry; 2, 3 and 4, D. Lewis and in the knock out: 1, 2, 3 and 4, G. Lewis. During the judging a talk was given by N. Haley on the setting up and maintaining a marine tank. The Society meetings are held at the Red Dragon Club, RAF St. Athan, on the second Monday of every month. All are welcome.

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IN July members and guests of the **King's Lynn A.S.** were given a very entertaining talk on Aquarium filtration by Mr. W. Card of Ipswich. Results of the bench show for Anabantids, judged by Mr. K. Cocker, were:— Siamese Fighters: 1 and 3, P. Eyles; 2, Mrs. Ouzman. Others: 1 and 4, P. Eyles; 2, Mrs. Whitmore; 3, Mrs. Canham.

The club secretary is now Mrs. S. George, 29 Peppers Green, King's Lynn, Norfolk. Tel: 671610. New members or visitors are always very welcome at meetings held at 8 p.m., on the second Thursday each month at the North Star P.H., King's Lynn.

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THE fourth annual show of the **Scunthorpe & District A.S.** held in July was a great success and the results were as follow:—Guppies: 1, S. Harrison (Grimsby & Cleethorpes); 2, Mr. and Mrs. Riley (Castleford); 3, Mr. Hawdon (Grimsby & Cleethorpes). Platies: 1, D. and W. Jordan (S. Humberside); 2, Mr. and Mrs. Newstead (Scunthorpe & District); 3, Mr. Hawdon (Castleford). Mollies: 1, M. Price (Castleford); 2, D. Jones (Dearne); 3, S. Harrison (Grimsby & Cleethorpes). Swordtails: 1, Mr. and Mrs. B. Fidell (Scunthorpe & District); 2, Mr. and Mrs. P. Smith (Scunthorpe & District); 3, G. Kilvington (Doncaster). A.O.V. (Livebearers): 1, Mr. Blundell (Doncaster); 2, B. Jackson (Doncaster); 3, Mr. and Mrs. Daines (Doncaster). Small Characins: 1 and 2, Mr. and Mrs. Richardson (Scarborough); 3, Mr. and Mrs. Lake (S. Humberside). Large Characins: 1, B. Jackson (Doncaster); 2, M. Price (Castleford); 3, B. Sleight (Mexborough). Dwarf Cichlids: 1, Mr. Carrick (Castleford); 2, Mrs. Bee (Grimsby & Cleethorpes); 3, B. Jackson (Doncaster). Rift Valley Cichlids: 1, Mr. Wainwright (Worksop); 2, M. Price (Castleford); 3, Mr. and Mrs. R. Burman (Scunthorpe & District). Angels: 1, Mr. and Mrs. Hill (Barnsley); 2, H. Thorpe (Doncaster); 3, A. Piggott (Grimsby & Cleethorpes). A.O.V. Cichlids: 1, Mr. and Mrs. R. Burman (Scunthorpe & District); 2, Mr. and Mrs. Hopkinson (Darfield); 3, R. SmithYork). Small Barbs: 1, Mr. Carrick (Castleford); 2 and 3, M. Price (Castleford). Large Barbs: 1, Mr. and Mrs. Roberts (Doncaster); 2, K. Lancashire (Doncaster); 3, Mr. and Mrs. Chadwick (Castleford). Corydoras: 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mr. Carrick (Castleford); 3, Mr. and Mrs. Riley (Castleford). Catfish: 1, T. Sanderson (Thorne); 2, M. Turner (Thorne); 3, Mr. Summerscale (Northallerton). A.O.V. Catfish: 1, D. and W. Jeedan (S. Humberside); 2, Mr. Carrick (Castleford); 3, Mr. and Mrs. R. Burman (Scunthorpe & District). Killifish: 1, Mr. and Mrs. Fletcher (Doncaster); 2, B. Sleight (Mexborough); 3, Mr. and Mrs. Tindall (York). Small Anabantids: 1, Mr. and Mrs. Newsom (S. Humberside); 2 and 3, Mrs. Bee (Grimsby & Cleethorpes). Fighters: 1, Mr. and Mrs. Newsom (S. Humberside); 2, Mr. and Mrs. Tindall (York); 3, Mrs. Bee (Grimsby & Cleethorpes). A.O.V. Anabantids: 1, Mrs. Bee (Grimsby & Cleethorpes); 2, Mr. and Mrs. Copley (Doncaster); 3, Mr. and Mrs. K. Berry (Scunthorpe & District). Loaches: 1, Mr. and Mrs. K. Berry (Scunthorpe & District). Loaches: 1, Mr. and Mrs. J. Riley (Castleford); 2, T. Sanderson (Thorne); 3, D. Harris (Mexborough). Sharks & Foxes: 1, Mr. and Mrs. Campbell (Scunthorpe & District); 2, T. Sanderson (Thorne); 3, B. Sleight (Mexborough). Rasboras: 1, Mr. and Mrs. Lake (S. Humberside); 2, A. Cook (Retford); 3, A. Piggott (Grimsby & Cleethorpes). Danios & Minnows: 1, Mr. Carrick (Castleford); 2, Mr. and Mrs. Lake (S. Humberside); 3, Mr. and Mrs. Honnor (Doncaster). A.O.V. Tropical: 1, Mrs. J. Caldow (Scunthorpe Museum—Best Fish in Show); 2, G. White (Scunthorpe & District); 3, A. Frisby (Hull). Coldwater: 1, D. and W. Jordan (S. Humberside); 2, Mr. and Mrs. Tindall (York); 3, D. Jones (Dearne). Pairs Livebearers: 1, Mr. Blundell (Doncaster); 2, Mr. and Mrs. Riley (Castleford); 3, G. Kilvington (Doncaster). Pairs (Egglayers): 1, D. Harris (Mexborough); 2, B. Banks (Thorne); 3, Mr. and Mrs. Lake (S. Humberside). Breeders (Livebearers, A & B): 1, Mr. and Mrs. Richardson (Scarborough); 2, Mr. and Mrs. Tilling (Immingham); 3, Mr. and Mrs. Campbell (Scunthorpe & District). Breeders (Livebearers, C & D): 1, Mr. and Mrs. Hopkinson (Darfield); 2, B. Sleight (Mexborough); 3, S. Harrison (Grimsby & Cleethorpes). Breeders (Egglayers, A & B): 1, B. Sleight (Mexborough); 2, B. Banks (Thorne); 3, Mr. and Mrs. Chadwick (Castleford). Breeders (Egglayers, C & D): 1, B. Banks (Thorne); 2, Mr. Wainwright (Worksop); 3, Mr. Carrick (Castleford). Novice (Livebearers): 1, P. Camfield (Castleford); 2, Mrs. J. Bate (Grimsby & Cleethorpes); 3, Mr. and Mrs. G. Martin (Scunthorpe & District). Novice (Egglayers): 1, N. Goodale (Scunthorpe & District); 2, G. Sanderson (Thorne); 3, P. Camfield (Castleford) Female Livebearer: 1, Mr. and Mrs. Daines (Doncaster); 2, Mr. Blundell (Doncaster); 3, Mr. and Mrs. Tilling (Immingham Female Egglayer: 1, Mr. and Mrs. Copley (Doncaster); 2, A. Frisby (Hull); 3, Mr. and Mrs. Lake (S. Humberside).

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THE **Bracknell A.S.** revival continues to grow with new members joining every meeting. In June the speaker on Marines failed to turn up so an informal night was held so as to allow members to talk over fishy problems and inform the club committee the items which they would like to see at forthcoming meetings. A visit to aquatic shops in North London is being arranged for a Sunday in September. Following on from the meeting in June, at the first meeting in July, Bracknell acted as hosts to members of the Three Counties for the Quiz League. Once again Bracknell were successful in holding on to their lead with 70½ points being followed by Reading A.S. with 59. A table show for Barbs was held and won by P. Sharp. A Gibson acted as guest table show judge for the evening which was a great success.

If more information is required about the society please ring Winkfield Row 4596.

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OPEN show results of **Dunlop Aquarium Keepers Society** were as follow: Guppies: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, R. O'Connell (Osram); 3, T. Faux (M.A.S.). Platties: 1, I. McCartney (St Helens); 2, B. W. Carter (St. Helens); 3, K. Thompson (M.A.S.). Swordtails: 1, D. Potter (Warrington); 2, B. W. Carter (St. Helens); 3, Mr. and Mrs. Houghton (Southport). Mollies: 1 and 2, Mr. and Mrs. Tinsley (Sandgrounders); 3, A. Davies (D.A.K.S.). A.O.V. Livebearer: 1, Mr. and Mrs. Campbell (Macclesfield); 2, Mr. and Mrs. J. Artney (St. Helens); 3, D. Shaw (D.A.K.S.). Small Anabantids: 1, Mr. and Mrs. Campbell (Macclesfield); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Muckle (Southport). Large Anabantids: 1, Mrs. L. Brown (Southport); 2, Mr. and Mrs. J. Artney (St. Helens); 3, D. C. Walker (Runcorn). Fighters: 1, R. S. Parr (Hyde); 2, Poulton Bros. (Atlantis); 3, B. Faux (M.A.S.). Small Cichlids: 1, N. Stevenson (Osram); 2, H. Bauer (M.A.S.); 3, R. S. Parr (Hyde). Large Cichlids: 1, Mr. and Mrs. Aspinall (Southport); 2, M. Gunn (Runcorn); 3, W. J. Brown (Vale Royal). Argils: 1, Mr. and Mrs. Muckle (Southport); 2 and 3, N. Stephenson (Osram); Rift Valley: 1 and 2, Mrs. E. Stillwell (Sandgrounders); 3, Mr. and Mrs. Gough (Wynnstay). Small Barbs: 1, N. Stevenson (Osram); 2, Mr. and Mrs. D. Lloyd (Wynnstay); 3, G. and C. Berry (B.A.W.S.). Large Barbs: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Houghton (Southport); 3, A. Davies (D.A.K.S.). Small Characins: 1, Mr. and Mrs. B. Walsh (Blackburn); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Miss S. Goddard (M.A.C.C.). Large Characins: 1, Mr. and Mrs. Underwood (Southport); 2, Mr. and Mrs. Houghton (Southport); 3, H. Bauer (M.A.S.). Tooth Carps: 1 and 2, J. Noon (Leigh); 3, K. Thompson (M.A.S.). Minnows: 1, D. Francis (M.A.S.); 2, H. Bauer (M.A.S.); 3, Mr. and Mrs. Muckle (Southport). Danios: 1, J. T. Calvert (Loyne); 2, B. W. Carter (St. Helens); 3, D. Potter (Warrington). Rasboras: 1, B. W. Carter (St. Helens); 2, Mr. and Mrs. Muckle (Southport); 3, W. Hayes (Loyne). Coeydoras and Brochis: 1 and 2, B. W. Carter (St. Helens); 3, J. C. Salisbury (Wynnstay). A.O.V. Catfish: 1, Mr. and Mrs. Gough (Wynnstay); 2, Mr. and Mrs. B. Walsh (Blackburn); 3, K. Dugdale (Blackburn). Loaches: 1, R. Underwood (Southport); 2, Mr. Wolstenholme (Heywood); 3, Mr. and Mrs. Muckle (Southport). Sharks: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Underwood (Southport); 3, J. McCormack (Hoylake). Flying Foxes: 1, H. Bauer (M.A.S.) 2, Mr. and Mrs. Dawson (Heywood); 3, T. McInley (D.A.K.S.). Breeders Egglayers (11-20): 1, Mr. and Mrs. Tasker (Sandgrounders). Breeders Egglayers (1-10): 1, A. Davies (D.A.K.S.); 2, E. Jones (Leigh); 3, Mr. and Mrs. Lawson (St. Helens). Breeders Livebearers: 1 and 3, K. Thompson (M.A.S.); 2, Mr. and Mrs. A. Goddard (Macclesfield). True Pairs Egglayers: 1, Mr. and Mrs. Goddard (Macclesfield); 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs. Houghton (Southport). True Pairs Livebearers: 1 and 3, Mr. and Mrs. Muckle (Southport); 2, Mrs. E. Stillwell (Sandgrounders). A.O.V. Any Variety: 1, P. and H. Bachelor (Loyne); 2, D. Shaw (D.A.K.S.); 3, Mr. and Mrs. B. Walsh (Blackburn). Juniors Egglayers: 1 and 3, A. Hopwood (Blackburn); 2, K. Corbett (M.A.S.). Juniors Livebearers: 1, L. Groves (Sandgrounders); 2, M. Rimmer (Sandgrounders); 3, T. Brown (Warrington). Common Goldfish: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, B. Newport (Runcorn). Fancy Goldfish: 1, Poulton Bros. (Atlantis); 2, Mr. and Mrs. Lawson (St. Helens); 3, Mr. and Mrs Harvey (Atlantis). A.O.V.: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Harvey (Atlantis); 3, Mr. and Mrs. Aspinall (Southport). Marine: 1, 2 and 3, P. Caulfield (Skelmersdale). Ladies: 1, Mrs. S. Hopwood (Blackburn); 2, Mrs. P. A. Taylor (Atlantis); 3, Mrs. Baldwin (Sandgrounders). Mini-Jars: 1, 2 and 3, N. Stevenson (Osram). Best Fish in Show: Mr. and Mrs. Gough, A.O.V. Catfish. Individual Gaining Most Points: N. Stevenson (Osram).

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THERE were 365 entries at the **Loughborough and District A.S.** open show. Results:— Male Betta Splendens: 1, M. and B. Coe; 2 and 3, T.S.F.N.; 4, Mr. and Mrs. Underwood. A.O.V. Anabantids: 1, P. A. Moye; 2, I. Fuller; 3, D. Hutchison; 4, Mr. and Mrs. R. Weston. Small Characins: 1 and 2, S. Elliott; 3, T. A. Cruickshank; 4, Mr. and Mrs. Darbey. A.O.V. Characins: 1, T. Parry; 2, A. C. Ford; 3, A. Onslow; 4, I. Fuller. Small Cichlids: 1, M. and B. Coe; 2, D. Hutchison; 3 and 4, R. Langford. Angel Fish: 1, A. and M. Crew; 2 and 4, T.S.F.N.; 3, R. Elliott. Rift Valley Cichlids: 1, I. Fuller; 2, J. and P. Panching; 3, B. Chittenden; 4, D. Hutchison. A.O.V. Cichlids: 1, M. Laws; 2, A. and M. Crew; 3, J. White; 4, P. Jenkins. Small Barbs: 1 and 4, C. J. Sykes; 2, D. Cruickshank; 3, D. Hutchison. A.O.V. Barbs: 1 and 3, D. Cruickshank; 2, A. and M. Crew; 4, B. Chittenden. Corydoras and Brochis: 1 and 3, P. A. Moye; 2, S.M.I.N.; 4, C. J. Sykes. A.O.V. Catfish: 1, P. A. Moye; 2, I. Fuller; 3, E. Rudd; 4, T. Parry. A.V. Swordtails: 1, C. D. Cruickshank; 2, Mr. and Mrs. Underwood; 3, N. Boot; 4, R. Prendergast. A.V. Platy: 1, Mr. and Mrs. Darbey; 2, D. Hutchison; 3, J. Young; 4, C. J. Sykes. A.V. Molly: 1, D. Hutchison; 2, D. Lambert; 3, A. Rippon; 4, N. Boot. A.V. Guppy: 1 and 2, Mr. and Mrs. Darbey; 3 and 4, E. Rudd. A.O.V. Livebearer: 1 and 4, S.M.I.N.; 2, M. Thomas; 3, T. Sands. A.V. Loach: 1, J. Booth; 2, S. Elliott; 3, P. Moye; 4, S.M.I.N. Livebearer (Pairs): 1, K.

Prendergast; 2, S.M.I.N.; 3, J. and P. Patching; 4, D. Cruickshank. Eggla yer (Pairs): 1, T. Fuller; 2, D. Cruickshank; 3, R. Elliott; 4, T. A. Cruickshank. A.V. Rasboras: 1, T.S.F.N.; 2, L. W. Godwin; 3, C. J. Sykes; 4, R. Elliott. A.V. Danio, Brachydanio and W.C.M.M.: 1 and 2, R. Elliott; 3 and 4, K. Beaver. A.V. Toothcarps: 1 and 4, F. Hirst; 2, A. and M. Crew; 3, T.S.F.N. Breeders (Egglayer Broods): 1, F. Hirst; 2 and 4, T. Fuller; 3, D. Hutchinson. Breeders (Livebearer Broods): 1 and 2, S.M.I.N.; 3, T. Fuller; 4, R. Elliott. A.O.V. Tropical: 1, T. Parry; 2, A. and M. Crew; 3 and 4, T.F.S.N. Single-Tail Goldfish: 1 and 2, N. R. Giles; 3, Mrs. N. Richardson; 4, A. and M. Crew. Twin-Tail Goldfish: 1 and 4, B. Envis; 3 and 3, G. K. Howe. A.O.V. Coldwater, Pond or River Fish: 1, S.M.I.N.; 2 and 3, K. Beaver; 4, T.S.F.N. Best Fish in Show was a Bitterling owned by S.M.I.N.

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COMMITTEE members elected for **Paisley & District A.S.** for 1977-78 are as follow: president, H. Cameron; secretary, J. D. Wilson, 45 Cochran Street, Paisley PA1 1J2; treasurer, T. Currie; show manager, R. Moore; shop manager, Mrs. J. Wilson; tank manager, J. Thompson; delegates to F.S.A.S., T. Heaton.

The society meets on the first Monday of the month in Paisley Museum; the next meeting being 5th September. Anyone interested should contact the secretary at the above address.

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TABLE SHOW results in June of **Brighton & Southern A.S.** were:—Breeders (Egglayers): 1, 2 and 3, Mr. and Mrs. R. Houghton. Breeders (Livebearers): 1 and 2, Mr. and Mrs. T. Ramshaw; 3 and 4, Mr. and Mrs. R. Bridle. Danio: 1 and 2, Mr. and Mrs. B. Rice; 3, M. Collins; 4, Mr. and Mrs. T. Ramshaw. Rasboras (Spotted or Pigmy Rasboras): 1 and 4, Mr. and Mrs. T. Ramshaw; 2 and 3, Mr. and Mrs. B. Sayers. Overspill from the Harlequin Race: 1 and 3, Mr. and Mrs. T. Ramshaw; 2, Mr. and Mrs. B. Sayers.

The society would also like to thank all those who attended the open show.

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ENTRIES for the **South Shields A.S.** totalled 399 and the following were the results:—Class Ba: 1, D. Russell (Stanley); 2, J. Johnson (Stockton); 3, C. Mitchell (South Shields); 4, C. Robinson (Stanley). Class B: 1, R. J. Laydon (Sunderland); 2, Mr. and Mrs. Knibbs (Stockton); 3, Les Hunt (Half Moon); 4, A. Spencer (South Shields). Class Ca: 1, D. Wright (Sunderland); 2, M. Daley (Stockton); 3, G. Rawlingson (Stockton); 4, Mrs. Horsefield (Killingsworth). Class Cb: 1, P. Wright (Sunderland); 2 and 3, R. and J. Laydon (Sunderland); 4, J. Middlemast (Independant). Class C: 1, M. and L. Ruffell (South Shields); 2, Mr. Patterson (Wallsend); 3, T. Dixon Cave (South Shields); 4, S. Hay (Hartlepool). Class Da: 1 and 3, M. and L. Ruffell (South Shields); 2, Mr. Nunn (Stockton); 4, R. and D. Jackson (South Shields). Class Db: 1, J. Middlemast (Independant); 2, Mr. Paterson (Wallsend); 3, B. Howgate (Stanley); 4, M. Daley (Stockton). Class Dc: 1, S. Wolstenholme (Haywood); 2, S. Hay (Hartlepool); 3, C. Bnright (South Shields); 4, D. Wright (Sunderland). Class D: 1, S. Hay (Hartlepool); 2, M. and L. Ruffell (South Shields); 3, S. Oswald (Killingworth); 4, D. Russell (Stanley). Class Ba: 1, Mr. and Mrs. Monaghan (Half Moon); 2, Mr. and Mrs. Knibbs (Stockton); 3, J. Middlemast (Independant); 4, Mr. and Mrs. Hill (Newcastle G.L.S.). Class E: 1, P. Wright (Sunderland); 2, J. Middlemast (Independant); 3, R. and D. Jackson (South Shields); 4, M. and L. Ruffell (South Shields). Class F: 1 and 2, A. Howgate (Stanley); 3, Mr. Nunn (Stockton); 4, Mr. and Mrs. Mc Lurg (Stockton). Class Fc: 1, Mr. Nunn (Stockton); 2 and 3, A. Howgate (Stanley); 4, E. Harrison (Independant). Class G-Ga: 1, Mr. Burns (Wallsend); 2, A. Spencer (South Shields); 3, Summerscales (Northallerton); 4, S. Hay Jnr. (Hartlepool). Class H: 1, D. Knibbs (Stockton Jnrs); 2, Mr. Atkinson (Stockton); 3, T. Dixon Cave (South Shields); 4, D. Tumbull (Mount Pleasant). Class J: 1 and 3, M. and L. Ruffell (South Shields); 2, C. Robinson (Stanley); 4, M. and G. King (South Shields). Class K: 1, S. Brown (South Shields); 2, Mrs. Horsefield (Killingworth); 3, R. Davies (South Shields); 4, T. Weedie (Blyth). Class L: 1, L. Hunt (Half Moon); 2, P. Wright (Sunderland); 3, M. and L. Ruffell (South Shields); 4, R. and J. Laydon (Sunderland). Class Ma: 1, Mr. and Mrs. G. Wright (South Shields); 2, I. Gray (South Shields); 3, P. Fry (Independant); 4, T. Dixon Cave (South Shields). Class M: 1, T. Dixon Cave (South Shields); 2, Mr. and Mrs. G. Liddle (South Shields); 3, M. and L. Ruffell (South Shields); 4, Mr. and Mrs. Knibbs (Stockton). Class Nbm: 1, A. Campbell (Mount Pleasant); 2, R. and D. Jackson (South Shields); 3, J. Middlemast (Independant); 4, Mr. and Mrs. Knibbs (Stockton). Class Noc: 1, G. Leoroyd (Novos); 2, G. Allsop (Independant); 3, P. Fry (Independant); 4, Mr. and Mrs. Johnson (Stockton). Class Oa to Oh: 1, 3 and 4, Mr. and Mrs. Hill (Newcastle G.L.S.); 2, A. Watkins (South Shields). Class Oi to Or: 1 and 3, P. Fry (Independant); 2, Mr. Alder (Hartlepool); 4, J. King (Redcar). Class P: 1, L. Hunt (Half Moon); 2, Mr. and Mrs. Knibbs (Stockton); 3, D. Turnbull (Mount Pleasant); 4, G. Dodds (Stanley). Class Q: 1, Mr. Gledhill (Redcar); 2, G. Dodds (Stanley); 3, C. Minchell (South Shields); 4, Mr. Soppitt (Houghton). Class R: 1, K. Dobbie (Priory); 2, Mr. and Mrs. Knibbs (Stockton); 3, Mr. and Mrs. Monaghan (Half Moon); 4, A. Clegg (Novos). Class S: 1, S. Hay (Hartlepool); 2, M. and L. Ruffell (South Shields); 3, Miss D. Knibbs (Stockton Jnrs.); 4, S. Johnston (Stockton). Class T: 1, M. Strange (Basingstoke); 2, A. Clegg (Novos); 3, M. Strange (Basingstoke); 4, R. Kirkup (Mount Pleasant). Class U: 1, M. Lister (Independant); 2, G. Rawlingson (Stockton); 3, K. Wright (South Shields). Class V: 1 and 2, T. Dixon Cave (South Shields); 3, I. Blythe (South Shields); 4, R. Kirkup (Mount Pleasant). Class W: 1, R. Kirkup (Mount Pleasant); 2 and 3, A. Armstrong (South Shields); 4, Mrs. Embleton (Independant). Class Xop: 1 and 4, Mr. and Mrs. Hill (Newcastle G.L.S.); 2, Mr. Nunn (Stockton); 3, G. Dodds (Stanley). Class Xbm: 1, M. Hollman (Priory); 2, Mr. and Mrs. Perkins (Ashington); 3, R. Scott (South Shields); 4, Goodall and Rodden (Redcar). Class Xgt: 1, Wright and Dixon (Stanley); 2, J. Robertson (Northumbria); 3, M. Strange (Basingstoke); 4, L. Hunt (Half Moon).

Best fish in show: S. Wolstenholme (Haywood A.S.) Class Dc. Best exhibitor: L. and M. Ruffell (South Shields). Best society pointed: South Shields. F.B.A.S. Championship Trophy: P. Wright (Sunderland) Class Cb. T.T.A.A. Trophy: Mr. and Mrs. C. Wright (South Shields) Class Ma.

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THE **Nailsea & D.A.S.** open show held in June attracted nearly 500 entries from 23 clubs. Results:—Guppies (male): 1, Mr. and Mrs. Underwood (Unit 59); 2, T. Woolley (Saracens); 3, D. and R. Clark (Bath); 4, F. Cripps (Newbury). Guppies (female): 1, D. and R. Clark (Bath); 2, M. Bywater (Nailsea); 3, T. Woolley (Saracens); 4, D. Chinn (Bristol). Platies: 1, W. Holland (Nailsea); 2, J. Thompson (Bristol); 3, L. Menhennet (New Forest); 4, T. V. Bruce (Aberdare). Mollies: 1, D. and R. Clark (Bath); 2, R. J. Canning (Newbury); 3, M. Freshney (Gloucester); 4, S. Boulton (Nailsea). Swordtails: 1, and 2, R. J. Canning (Newbury); 3, M. Strange (Basingstoke); 4, R. Holder (Cheltenham). A.O.S. Livebearer: 1 and 4, M. Strange (Basingstoke); 2, C. M. Howe (Newbury); 3, B. Billinger (Nailsea). Barbs (Barbodes): 1 and 2, J. Edwards (Llantwit Major); 3, Mr. and Mrs. Roan (Malvern); 4, Mr. and Mrs. Underwood (Unit 59). Barbs (Capoeta & Puntius): 1, R. Adams (Salisbury); 2, K. Hillier (Newbury); 3, P. Burton (Aberdare); 4, Mr. and Mrs. Underwood (Unit 59). Hemmigrammus & Hyphessobrycon: 1 and 4, P. Burton (Aberdare); 2 and 3, J. Edwards (Llantwit Major). A.O.S. Characin: 1, Mr. and Mrs. Underwood (Unit 59); 2 and 4, A. C. Tull (Salisbury); 3, C. M. Howe (Newbury). Siamese Fighters: 1, T. Woolley (Saracens); 2, C. Davies (Aberdare); 3, P. Burton (Aberdare); 4, Mr. and Mrs. Underwood (Unit 59). A.O.S. Anabantid: 1, T. Woolley (Saracens); 2, J. Williams (Nailsea); 3, M. Jenkins (Cheltenham); 4, C. E. Curtis (North Wilts.). Catfish (Corydoras & Brochis): 1, P. J. Luker (Newbury); 2, M. Freshney (Gloucester); 3, K. A. Hillier (Newbury); 4, R. J. Canning (Newbury). A.O.S. Catfish: 1, C. Lane; 2, P. Greenwood; 3, R. J. Canning (Newbury); 4, P. and V. Watts (Nailsea). Botias & True Loaches: 1, R. J. Canning (Newbury); 2, Mr. and Mrs. Underwood (Unit 59); 3 and 4, D. and R. Clark (Bath). Rasboras: 1 and 2, M. Freshney (Gloucester); 3, R. J. Canning (Newbury); 4, K. A. Hillier (Newbury). Danios & Minnows: 1, Mr. and Mrs. Underwood (Unit 59); 2, R. J. Canning (Newbury); 3, W. Horswell (Plymouth); 4, P. Greenwood. Labeos, Sharks, Epalzeorbynchus & Osteocheilus: 1 and 2, M. Freshney (Gloucester); 3, R. F. Adams (Salisbury); 4, Mr. and Mrs. Roan (Malvern). Dwarf Cichlids (Nannacara, Nanochromis & Apistogramma): 1, P. Fitchett (Nailsea); 2 and 4, J. Thompson (Bristol); 3, M. Strange (Basingstoke). Angels & Discus: 1, D. J. Luker (Newbury); 2, P. and V. Watts (Nailsea); 3, M. Hoar (Salisbury); 4, R. J. Canning (Newbury). Rift Valley Cichlids: 1, K. Johnson; 2, P. and V. Watts (Nailsea); 3, S. Pitcher (Salisbury); 4, R. J. Canning (Newbury). A.O.S. Cichlid: 1, Mrs. M. Brown (Devizes); 2, S. Thompson (Bristol); 3, R. F. Adams (Salisbury); 4, Mr. and Mrs. Roan (Malvern). Toothcarps: 1, M. Pearce; 2, G. A. Leonard; 3, P. Fitchett (Nailsea); 4, D. and R. Clark (Bath). A.V. Pairs (Livebearer): 1, C. M. Howe (Newbury); 2, S. Boulton (Nailsea); 3, D. Kenwood (Nailsea); 4, J. Govier (Bridgewater). A.V. Pairs (Egglayer): 1, M. Freshney (Gloucester); 2, T. Woolley (Saracens); 3, Mr. and Mrs. Underwood (Unit 59); 4, R. T. Smith. Breeders (Livebearers): 1 and 2, D. Kenwood (Nailsea); 3, M. Strange (Basingstoke); 4, M. Bywater (Nailsea). Breeders (Egglayers): 1 and 2, P. Fitchett (Nailsea); 3, M. Bishop (Cheltenham); 4, M. Freshney (Gloucester). A.V. Fish (Juniors): 1, R. Howe (Newbury); 2, T. and S. Greenwood; 3 and 4, T. and J. Roan (Malvern) Shubunkins: 1, 2, 3 and 4, J. Day (Bristol A.S.). Single Tailed Goldfish: 1, I. Underwood (Unit 59); 2, L. Menhennet (New Forest). Twin Tailed Goldfish: 1, 2 and 3, J. Day (Bristol A.S.); 4, L. Menhennet (New Forest). A.V. Pond or River Fish: 1, S. Hedges (Bethnel Green); 2 and 4, R. J. Canning (Newbury); 3, R. Morgan (Merthyr Tydfil). A.O.S. Tropical Freshwater Fish: 1, R. J. Canning (Newbury); 2, Mr. and Mrs. Underwood (Unit 59); 3, D. Kenwood (Nailsea); 4, M. Freshney (Gloucester). Best fish in show: Mrs. S. Hedges (Bethnal Green) Sun Fish. Highest pointed visiting club: Newbury & District A.S. Highest pointed individual (Sportscene Shield): R. J. Canning (Newbury A.S.). Highest pointed Nailsea Member (Royal Oak Cup): P. Fitchett.

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NEARLY 200 entries "on the day" swelled the total entry at the **Salisbury & District A.S.** open show to 458. Best in Show award was deservedly won by Mrs. Sybil Hedges' Pumpkinseed Sunfish. The F.B.A.S. Championship Trophy, awarded for Dwarf Cichlids, was won by Mr. T. Cruickshank, of Ealing A.S. and show secretary, Mr. David Edlesten, won the Mike Glossop Trophy for being the most successful "home" exhibitor. The Colin Lennox Memorial Trophy, awarded for the first time (Class M) in memory of the former club member and F.B.A.S. judge, was won by Mrs. A. Arnold.

Full results as follow:—Ba: 1 and 4, R. F. Adams; 2, B. Riste; 3, A. Jennings. B: 1 and 4, T. Dowell; 2, L. Yates; 3, D. Goss. Ca: 1, Mrs. V. Feast; 2, N. Miles; 3, T. Cruickshank; 4, T. Dowell. C: 1, N. Miles; 2, P. Ruthbrooke; 3, B. Riste; 4, P. Lawrence. Da: 1, J. Hoare; 2, A. Weaire; 3, P. Fitchett; 4, R. Canning. Db: 1, T. Cruickshank; 2, T. Fraser; 3 and 4, A. Weaire, Dc: 1, Edlesten; 2, F. Willis; 3, S. Pitcher; 4, F. Willis. D: 1, W. West; 2, B. Riste; 3, C. Curtis; 4, Mr. and Mrs. D. Jennings. Ea: 1, Mr. and Mrs. D. Mills; 2, D. Jackson; 3, P. Chinn; 4, T. Crow. E: 1, S. Broome; 2, Mr. and Mrs. D. Mills; 3, A. Weaire; 4,

P. Taylor. F: 1, J. Jackson; 2, Mr. and Mrs. R. Bebb; 3, D. Edlesten; 4, P. Fitchett. G: 1 and 2, D. Edlesten; 3, B. Riste; 4, G. Arnold. H: 1, P. Rushbrooke; 2, Mr. and Mrs. R. Bebb; 3, A. Feast; 4, B. Riste. J: 1, Mr. and Mrs. Bebb; 2, W. Crockford; 3 and 4, A. Weaire. K: 1 and 2, I. Dibble; 3, D. Goss; 4, M. Collins. L: 1, A. Feast; 2, S. Crabtree; 3, W. West; 4, R. F. Adams. M: 1, Mrs. A. Arnold; 2, R. Canning; 3, Mr. and Mrs. Bebb; 4, J. Jennings. Nb-m: 1, D. Jackson; 2, A. Jones; 3, Mr. and Mrs. D. Jennings; 4, R. Tubb. No-t: 1 and 2, I. Dibble; 3, W. West; 4, Mrs. D. Cruickshank. O: 1, Mr. and Mrs. Bebb; 2 and 4, W. Crockford; 3, L. Yates. P: 1, Mr. and Mrs. Bebb; 2, Mr. and Mrs. D. Miles; 3, A. Griffin; 4, I. Dibble. Q: 1, Miss J. Mills; 2, Mr. and Mrs. Bebb; 3, P. Taylor; 4, Miss A. Jennings. R: 1, P. Fitchett; 2, R. Canning; 3, I. Dibble; 4, R. Gray. S: 1, R. and J. Bridle; 2, Mr. and Mrs. Bebb; 3, R. Canning; 4, A. Griffin. T: 1 and 2, I. Dibble; 3, T. Fraser; 4, Mrs. M. Kerr. Uab: 1, G. J. Axe; 2 and 3, D. Jackson; 4, W. Crockford. Ucd: 1 and 2, K. Forward; 3, E. Binstead; 4, G. J. Axe. V: 1, F. W. Orme; 2, G. J. Axe; 3 and 4, F. W. Orme. W: 1, Mrs. S. Hedges; 2 and 4, R. Canning; 3, G. Arnold. Xb-m: 1, R. Miller; 2, W. West; 3, Mr. and Mrs. Bebb; 4, F. Willis. Xo-t: 1, 2 and 3: I. Dibble; 4, R. Canning. Y: 1, 2 and 3, M. Packham. Z: 1 and 2, J. Jeffrey; 3, Mrs. S. Hedges; 4, J. Jeffrey.

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JUDGES for the **Ichiban Ranchu Society** National Ranchu show, to be held at Seymour Hall, Westminster, London, on 1st October, will be members of M.A.P.S., G.S.G.B. and I.R.S. Judging will be to Ichiban Ranchu Society standard.

For further details please contact Mr. F. Hilton, 2 Holloway Crescent, Seaden Roding, Essex, or Mrs. E. Davidson, 14 Garnetts, Yaheley, telephone Bishops Stortford 870 395.

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NEW SOCIETIES

A NEW club has been formed under the heading of **Thornton Aquatic Society.** A show is held every third Tuesday night at 7.30 p.m., and is held at the "Lord Kitchener Hotel" in the backroom. New member welcome all the time. The secretary is A. Phillips, 18 Haven Drive, Hakin, Milford Haven, Dyfed.

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MISSING TROPHIES

THE **Mid Herts. A.S.** are anxious to trace some of their trophies which appear to be missing, from their last open show in September 1973. Any information of their whereabouts will be greatly appreciated. Please contact the secretary, Mr. S. Birch, 7 Station Terrace, Park Street, St. Albans, Herts. AL2 2PY. Phone Park St. 72425.

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SECRETARY CHANGES

King's Lynn A.S.: Mrs. S. George, 29 Peppers Green, King's Lynn. Tel: 671610.

British Killifish Association: Allan Brown, 173 Parr Lane, Unsworth, Bury, Lancs. BL9 8JN. Tel: 061-766 9835.

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NEW SHOW SECRETARY

Particulars of the new show secretary of **Hoylake A.S.** recently received are as follow: W. D. Laking, 82 Slingsby Drive, Upton, Wirral, Merseyside.

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British Killifish Association.—Allan Brown, 173 Parr Lane, Unsworth, Bury, Lancs. BL9 8JN. Tel: 061-766 9835.

Association Goldfish Societies U.K.—V. Cole, 10 Hardwick Close, Brislington, Bristol.

Association of Midland Goldfish Keepers.—F. W. Orme, 94 Newman Way, Rubery, Birmingham B45 9LZ.

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AQUARIST CALENDAR

3rd September: Plymouth A.S. are holding their Open Show at Trinity United Reform Church Hall, Torr Lane, Hartly, Plymouth. Show sheduies may be obtained from Show Secretary, J. Rundle, 50 Durham Avenue, St. Judes, Plymouth, Devon.

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

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

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

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

4th September: Bethnal Green A.S. Open Show, to be held at The Bethnal Green Institute, 229 Bethnal Green Road, E.2. F.B.A.S. Championship class 'K' (Danios & W.C.M.M.). Schedules and further details available from the Show Secretary, Mr. R. Dale, 14 Rutland Road, Wanstead E11 2DY. Tel: 01-989 9015.

4th September: Hoylake A.S. 10th Open Show at Y.M.C.A. Hall, Hoylake. Further information from J. Sanders, 18 Drake Road, Leasowe, Wirral. Tel: 051-630 1171.

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

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

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

11th September: Cleveland A.S. Open Show. F.B.A.S. Rules. James Finnigan Hall, Fabian Road, Eston, Cleveland. Plenty of parking space and large hall. Details: Mr. D. Larkman, 19 Ryhill Walk, Overfields, Middlesbrough, Cleveland TS7 9JL. (Phone: M'Bro. 312476).

11th September: Longridge and District A.S. first Open Show at Longridge Civic Hall, Willows Park Lane, Lonsridge, Preston, Lancs. (15 minutes from the M6). Schedules available from B. Durham, 12 Birchfield Drive, Longridge, Preston, Lancs. PR3 3HP.

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

18th September: Priory A.S. Open Show Schedules from W. J. Walton, 25 Rutherford Street, High Howdon, Wallsend, Tyne and Wear, NE28 0AW.

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

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

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

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

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

18th September: Midland Koi Association Second Open Show at Whitly Abbey School. Coventry benching 10-12.00 a.m. Entry forms and details from R. A. Hunter, 46 Olive Avenue, Wyken, Coventry.

20th September: Aireborough and District A.S. Autumn Mini Show at Greenacres Hall, New Road Side, Rawdon, Nr. Leeds. Schedules from G. E. Cuff, 31 Oakdale Drive, Bradford, W. Yorks. BD10 0JF. Tel: Bradford 632424.

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

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

25th September: The Wyre Forest A.S. is to hold its first Open Show at the Middleman Restaurant, Bridge Street, Stourport-on-Severn, Worcestershire. Further details and schedules can be obtained from the Show Secretary, C. Baskerville, 201 Collis Street, Stourbridge, West Midlands DY8 4EH.

25th September: First London Section B.K.K.S. Open Show will take place at Tolgate House, Ware, Herts. (near Van Hages Nursery and Garden Centre). Show schedules available from Tony Bullock, 60 Edison Avenue, Hornchurch, Essex. Tel: Hornchurch 72416.

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

2nd October: Eboracum A.S. Open Show at Nunthorpe Grammar School, Scarcrof Road, York. Benching 10 a.m.-2 p.m.

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

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

2nd October: Newbury and District A.S. Open Show to be held at the Corn Exchange, Newbury, Berkshire. Show Secretary, Mrs. Shirley Canning, 6 South End, Cold Ash, Newbury, Berkshire. Tel: Thatcham (0635) 64254.

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

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

9th October: Hartlepool A.S. Open Show: Longscar Hall, Seaton Carew, Hartlepool. Details from Show Secretary, A. Wear, 30 Wharton Tce. Hartlepool.

9th October: Morecambe Bay A.S. Open Show, to be held at the Lower Ashton Hall, Town Hall, Lancaster.

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

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

20th, 21st, 22nd October: Scottish Aquarium Society "Golden Jubilee Show" to be held at McLellan Galleries, Sauchiehall Street, Glasgow. Schedules available from W. Hamilton, 18 Dunne Street, Paisley, Renfrewshire.

22nd 23rd October: British Aquarists' Festival Belle Vue Zoological Gardens, Manchester. Further details shortly.

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

23rd October: Huddersfield T.F.S.

23rd October: Chelmsford A.S. Open Show at the Community Centre, Broomfield, Chelmsford. Details from Show Secretary, J. L. Munro, 1 Gernon Close, Broomfield, Chelmsford. Would winners of the cups from the October 1975 show please contact the above with a view to returning same as soon as possible.