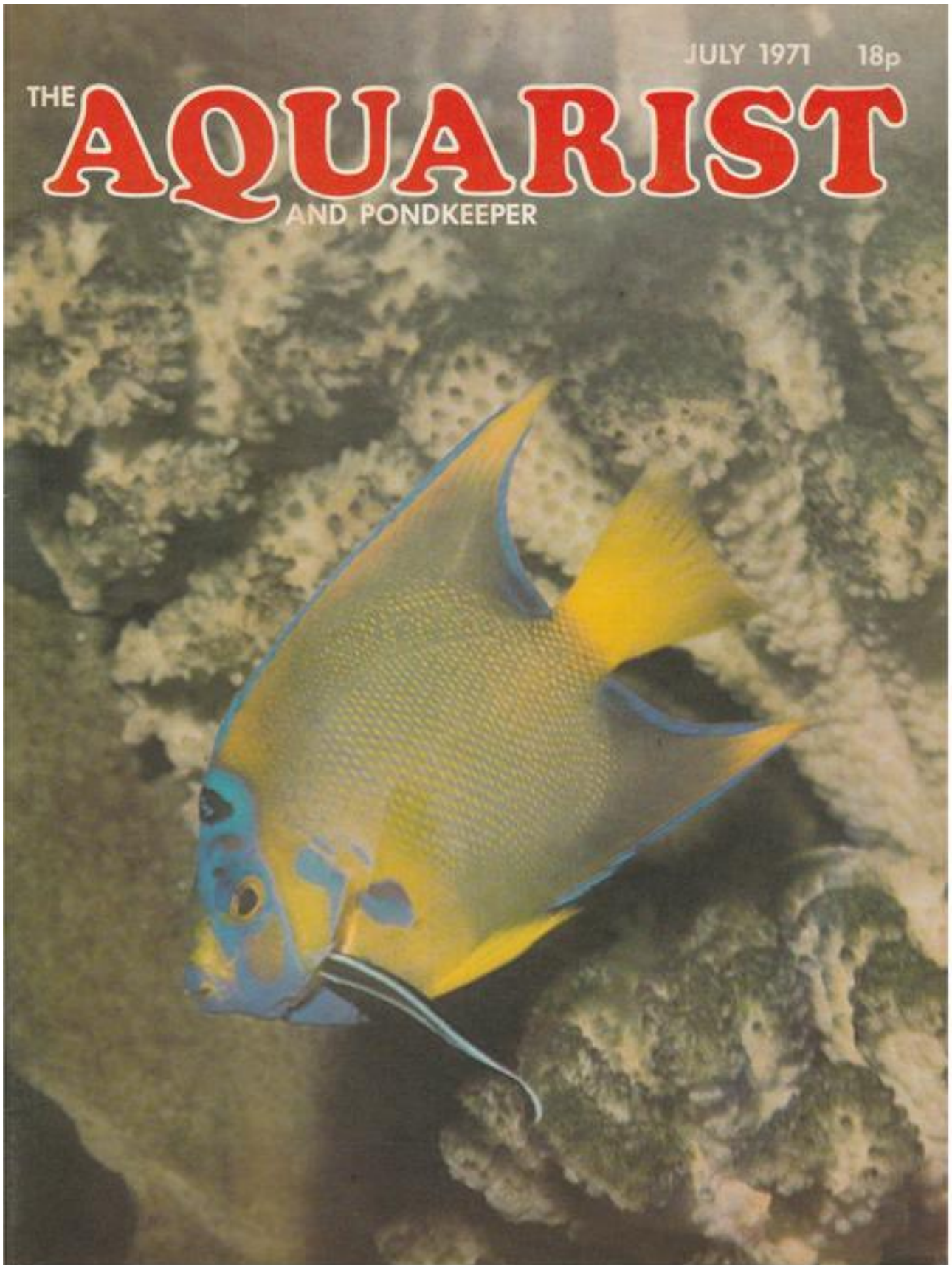


JULY 1971 18p

THE **AQUARIST**
AND PONDKEEPER





THE AQUARIST

AND PONDKEEPER

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Our Cover

Angelichthys ciliaris attended
by cleaner wrasse, *Labroides*
dimidiatus

Photo:
Courtesy SeAquariums Ltd.

The Editor accepts no responsibility for views expressed by contributors.

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WHAT IS YOUR OPINION?

by B. Whiteside



WELL I'M back once again from my school holiday in Switzerland with, fortunately, all my forty-four pupils intact. I make this statement with a sigh of relief as another English school, staying in a nearby hotel, lost one of its pupils. The lad went too far towards the edge of a sheer drop and tumbled to his death. This news shocked my colleagues and me but, despite this sad occurrence, our party had an enjoyable time. You will find an account of my aquatic huntings in Switzerland in *The Aquarist*. On my return I was pleased—almost shocked—by the number of letters which you, the readers, had sent for this column.

Mr. P. R. Hornby is 19 years old and lives at 89 Chequers Avenue, Lancaster, Lancs., and he is studying full time at college. His number of tanks is inversely proportional to the size of his father's electricity bill and ranges from three to seven. He always reads this column. He has tried using most filters but does not use charcoal as he thinks that frequent water changes do the same job. He uses fibre and gravel in both external and internal filters. After three months with an undergravel filter in one tank, the plants had become very poor compared with those in other tanks. In a larger tank he is now trying a combination of a small internal and an undergravel filter away from the plant roots. He has modified an Airstream Slimline filter which, although it does not give an increase in the flow, gives a better current and separation between input and output. Regarding foods: Mr. Hornby used to use Tetramin but the price persuaded him to change to tins of Phillips flake. His fish do not seem to mind the change but they are not too keen on the red flakes. He also uses FD *daphnia*, fresh earthworms, live *daphnia*, and used to use live *tubifex* but, despite three *Corydoras* in the tank, the worms would bury themselves in the gravel. Mr. Hornby has also a fast method for keeping and growing *daphnia*: a plastic dustbin collects rainwater from the garage roof; an overflow, covered in gauze, leads from near the rim of the dustbin to the drain; the set-up seems quite effective if small amounts of Biol are added to feed the *daphnia*. He asks if anyone has grown brine shrimp to about $\frac{1}{2}$ in. in length. He finds that they grow best in water at about 60°-65°F, changed every two days, using sea-water.

Mr. Hornby changes about one-third of his aquarium water every fortnight and has had no split fins despite using soft tap-water to refill. He has had a lot of trouble with light bulbs having had about a dozen shattered by a large *Corydoras aeneus* darting to the surface, leaving the water and hitting the light bulb. Other bulbs have just "gone." He tried punching holes in the aluminium hood to allow heat and water vapour to escape, but to no avail. At present he is trying an experiment by not moving any of the hoods when the bulbs are lit or when they are warm. He also wipes the moisture from the bulbs each morning before switching them on. So far, after a month, this seems to have worked as he has lost no further bulbs. During the last power-cut he floated small plastic tanks inside larger tanks and covered these with layers of blankets. Other small tanks were placed in front of a gas fire and the temperature checked at intervals. He lost no fish and in three hours his large tanks only dropped 2°F. In reply to Mr. Hubble's recent question he states that he has a $1\frac{1}{2}$ in. *Corydoras paleatus* which continually brushes against and "displays" to a $2\frac{1}{2}$ in. *Corydoras aeneus*. He controls algae with floating plants, some young black mollies and two *aymosieri*—which he has found to be most commonly known as "housekeepers." He has no trouble in growing Amazon sword plants and gets the occasional "runner." He has found that for a general disinfectant and white spot cure, methylene blue, with the temperature raised to 85°F, is hard to beat. For the past 4-5 months he has kept a red-eared N. American terrapin together with black mollies and young Egyptian mouthbreeders in a 24 in. x 15 in. x 15 in. tank, filled three-quarters full, with an island in the centre, supported by thin slat rocks to form an arch. The terrapin eats chopped-up bacon from the island, preventing contamination of the water by rotting bacon. It is not fast enough to catch any fish, and young black mollies even suck its shell to remove algae. He asks if anyone knows how to breed these reptiles. (Do readers have any information, please?). Mr. Hornby ends by saying "Thanks" for producing an excellent magazine. I'll pass the message on to Mr. Perkins.

Mr. P. Weightman writes from his home at 14 Santon Way, Seascale, Cumberland, and he adds to the

discussion on the death of a *G. aymonieri* due to its dashing itself against the inside of the aquarium. He has kept this species for some time and it is clear that it is highly nervous and sensitive to external stimuli and he is sure that it prefers dim lighting conditions. His present fish lives in a large conch shell which it uses as a home, and only comes out when it is quiet and when the lighting is subdued. His approach to the tank causes the fish to disappear in a flash, back into its shell. He thinks that a large 6 in. fish, trying to escape from strong light or other disturbance, will move with considerable force and speed and could easily bang into the glass. His fish has never collided with anything but he wonders if Mr. Mason's fish had anywhere in which to hide. (I must say that it took me some considerable time to photograph my *G.*

gravel during the night after it has finished its squashed peas which go into the tank just before the lights are turned off. Mr. Draper used to put in a small ball of *tubifex* but, at this time the eyes of the loach clouded over almost white. Now that the fish is back on peas and Tetramin green flakes, his eyes have resumed their normal colour and he appears to be more docile and hasn't been dashing around. Little of the fish is seen during the day as a hiding hole was fixed up for him at the back of the tank. First was a piece of plastic pipe which he used but later he dug out the gravel from under the pipe and now uses that instead. The piece of piping is held in place by a heater holder and Mr. Draper suspects that it was made uncomfortable by snails. He would like some advice on getting rid of unsightly algae in an 18 in. x 12 in. x 12 in. tank. It



Lyretail swords and guppies photographed on FP4, using electronic flash and 5mm. extension tubes. Photo: B. Whiteside

aymonieri due to its sudden and swift movements.)

Mr. F. J. Draper, who lives at 6 Fern Towers, Hareston Hill, Caterham, also writes about the sucking loach which, on occasions, has dashed across and around the tank at high speed, bumping the glass, which he put down to frustration. The fish was bought as a baby when Mr. Draper was a beginner in 1966, and he did not realise that the fish would grow so big—about 4½ in., and he suspects that a 24 in. tank is really too small. He also wondered if *tubifex* might be the cause of the trouble. One night, after "lights out," the fish jumped out of the tank and fell between the tank and the cabinet it is in. The fish was heard flapping about and, with some difficulty, was rescued, although the fish looked finished—however it had recovered by the next morning. It does a good job cleaning up the

grows over the gravel and the plants and has persisted despite frequent cleaning and resealing the corners of the tank with sealant. One 15 watt bulb, for about 12 hours per day, is the lighting, and the room in which it is sited receives very little sun. He uses undergravel filters (plates) with two uplifts in a small tank and perforated pipes with one uplift modified with an airstone chamber in a large tank. The top of the uplift pipe in the large tank is above the water surface and the spilling over keeps the surface clear. Mr. Draper believes that the secret of success with U.G. filters is to have at least 2 in. of gravel above them—more if possible.

I have two letters in front of me from Mr. Stanley Fox, 126 West Farm Avenue, Longbenton, Newcastle-upon-Tyne 12. The first concerns the proposed postal

club for aquarists interested in plants. Mr. Fox says that several aquarists have written to him thinking that he was the originator of the idea. The credit should go to Mr. R. Forder, 2 Field Heath Avenue, Hillingdon, Middlesex, and the proposal first appeared in the February, 1970 issue of *The Aquarist*. Mr. Fox is writing to Mr. Forder as the idea of the club seems to be gaining more interest—however a great deal more support is needed to make it a viable proposition. In due course Mr. Forder or Mr. Fox will be supplying further information.

Mr. Fox's other letter deals entirely with the plant *Vallisneria spiralis* about which we have had a lot of letters recently. He says that *V. spiralis* is not the best plant to include in a mixed plant collection in a tropical tank. The plant is a gross feeder and if placed in a tank with other gross feeders it will often become stunted or die off. When numbers of the plant are grown in a tank, their excessive food intake can have an adverse effect on other plants. Eventually, when the plant increases in numbers, it will, unless thinned out, begin to die off; the reason is lack of sufficient food. *V. spiralis* requires good lighting conditions more than other plants in the same genus. Clear water conditions should also be provided. As pH is a variant, and cannot be maintained at a given value, it is pointless to give a pH value. Slightly alkaline water conditions seem to suit it best. All leaves that have become damaged or brown in appearance should be removed—twist and pinch off, do not cut. The crown of the plant should not be covered with gravel, only the roots. Coarse gravel is best for the plant as it allows food materials to reach the roots. If fine gravel is used it is best to stir the gravel gently between the plants, weekly, to allow food to reach the root system. Excess mulm should not be allowed to build up round the crown of the plant for long periods or the leaves will become blanched in appearance at this point—chlorotic effect—and will eventually break off when this happens. Snail damage will have a similar effect. The temperature range should be from 68°-75°F. Plants of *V. spiralis* should not be kept floating for any length of time as internal damage will occur; they should be planted in the compost as soon as possible. Damaged plants can be saved by pinching off the damaged section a little way into the healthy tissues and planting the plants in shallowish water at from 76°-80°F. Light should be for at least ten hours daily or more. When the plants recover they can be planted under normal conditions. If care is taken with *V. spiralis*, substratum composts are not really required. Soil, clay or humus may be used but are best kept for monoculture, i.e. one species of plant in one tank with, preferably, no fish. Most of this information does not apply to other species of *Vallisneria*. (Although I may not agree with everything that Mr. Fox has to say, this must be one of the most comprehensive accounts of how *V. spiralis* could be grown. It certainly confirms

my view that this plant is not for the beginner at tropical fishkeeping. I no longer even try to grow it as there are so many other plants which grow so much more easily in the tropical aquarium.)

I've had some encouraging news from Mr. P. Mason, of 143 Tonge Road, Murston, Sittingbourne, Kent. You may remember that in a recent issue I told of his having written to me about a large firm which did not give him any satisfaction when he contacted them regarding two pieces of apparatus with which he was not satisfied. I wrote to the firm concerned some time ago. Mr. Mason writes to inform me that the sales manager of the firm contacted him and supplied materials with which to correct his unsatisfactory apparatus. Regarding unusual fish foods: Mr. Mason says that he has used Farley's Baby Foods which have been left over by his baby. He has mixed various types such as meat, egg, vegetable, etc., to a heavy paste, and it is always rapidly eaten. He feels that it would make an ideal fry food in powder form. The cost is 6p per packet. He has also used raw chicken liver from giblets. He had a couple of large *Tilapia* which were very fond of "Go Cat" biscuits, which have a high protein content and float for some time, unlike "Felix," which sank rapidly and broke up.

I received a couple of very interesting coloured slides from Mr. T. Massey, of 22 Cypress Gardens, Yewtree Estate, Walsall. Both shots, of angel fish, were very sharp and I would congratulate Mr. Massey on his technique, knowing how difficult close-up aquarium photography is. I would make a couple of points about coloured slides for reproduction—although I'm not really qualified as I have only recently made attempts at close-up aquarium photography; in fact I've only had one coloured slide accepted for reproduction (by a German magazine) and it was reproduced in black and white. Perhaps the two main points are that, with 35mm. slides, the fish need to just about fill the full frame and to be sharply in focus. The other point is that the printing of colour in magazines is quite costly and it is usually the editorial policy of most magazines that subjects should be colourful. One must admit that an angel fish would look just as well in black and white as in colour. (My own slide, of a single plant, had the same disadvantage.) Mr. Massey's slides were taken on Agfa CT18, with electronic flash, using a close-up lens focusing down to 9 in. It is even better if one can focus down to only a few inches as this enables one to fill the frame with even a small tetra.

Mr. M. B. Rowland writes about my own photographic attempts. "I thought your photographs were rather good and they have given added interest. I myself have not done any aquarium photography mainly because I lack the equipment. I look forward to seeing more of your photographs in future issues." He goes on to say that, at the moment, he is very keen on starting up with marines but, because pocket money

is limited, he has to buy equipment bit by bit. Mr. Rowland poses a number of questions on marine fish-keeping. I will include these at the end.

Mr. W. M. J. Matthews writes from Langridge Road, Paignton, Torbay, Devon. His wife and he have kept fish for a number of years. They live in a flat which produces problems as, when the kettle is boiled, the windows stream with water. He has 13 discus in a 5 ft. x 18 in. x 15 in. tank. The tank is enclosed in a cabinet and is heated by a 4 ft. tube of 240 watts, controlled by two external thermostats, which keeps the temperature at 82°F. Another tube, 5 ft. in length, lights the tank, and is on from 11 a.m. to 11 p.m., operated by a time clock. Filtration is by an Eheim using peat, charcoal, S.U.R. resin, etc. Part of the water is changed every 3-4 weeks. An air stone aerates the tank. Three to four hours without heat, in the power cuts, had no ill effects. Plants consist of swords, various Aponogetons, Cryptocorynes, tropical lilies and floating Indian fern for cover. The only failure was a lace plant. He never had success before with plants until he used the under-tank heating and thinks that his present success is due to the warm sand.

B.M.A.A. 14, 69A Newton Road, Torquay, Devon, is the home of Mr. L. Doubleday who is a marine enthusiast, and to "throw" the colours of some of his marine fish he fitted a 3 ft. Gro-Lux above one of his marine tanks. Being tight for room, and not wanting to remove the existing tungsten bulbs, he had to fit the Gro-Lux tube $\frac{1}{4}$ in. above the surface of the water. The colours of the fish were certainly accentuated and Mr. Doubleday was very pleased with the results. Twenty-four hours later a large, 6 in. scat was going beserk and trying to hide behind a piece of coral half its size, also two *Amphiprion percula* and a *Labroides dimidiatus* (cleaner wrasse) were trying the same tactics. The scat had large, red patches on its flanks and head, and it was also blind. He took the fish out of the tank and placed them in a hospital tank with acraflavin. The patches turned to sores. The clowns and the wrasse succumbed but the scat recovered after several days. He asks if the Gro-Lux was too near the water or if the fish suffered ultra-violet burns. He thinks that the lesson to be learned is not to have the Gro-Lux too near the water surface. He also asks if salt water differs from fresh water in absorbing ultra-violet rays, working on the assumption that sunbathing on the beach is faster in producing burns than sunbathing in the back garden. Mr. Doubleday was pleased to read about my favourable comments on his article in "Toras Topics," about showing marine fishes. He has been offered a position on the Standards and Judges' Committee of the British Marine Aquarists' Association. Another Torbay member, Mr. J. Haynes, has also been asked to join the committee. Mr. Haynes was one of the

original members of the Standards Committee of the F.B.A.S. Congratulations to both gentlemen!

"I notice that your readers are regularly asking for information regarding the breeding of *Pelmatochromis kribensis*," writes Mr. P. A. Lewis, of 18 Champion Road, Kingswood, Bristol, BS15 4SU. Mr. Lewis has been breeding cichlids for some time and has had a great deal of success with the breeding of both *Pterophyllum scalare* and *Pelmatochromis kribensis*. We would certainly like to hear from him about his successful techniques. He also points out that some dealers are selling *P. kribensis* as *P. klugei*, describing them as a new species of cichlids. He says that they are not a new species and that the correct name, rarely used, is *P. taeniatus*—ref. R. J. Goldstein, "Cichlids," page 62.

Mr. D. Taylor comes from 9 Bedford Road, Crouch End, London, N.8, and has, for some years now, been growing *Vallisneria spiralis* from foundation stock taken from a spring-fed mountain pond in the Welsh mountains. The pond was artificially formed. Originally rooted in fine sand, the plants have since been planted in earth, fine gravel, coarse gravel and pebble composts. It seems that these different composts do not vary greatly in their ability to anchor the plant. However, differences show that the plant grows worst in soil and best in fine gravel. Generally, the warmer the water, the better the plant grows—with 75°F. being the optimum. It throws out more runners in a sand compost than in either gravel or soil. It will tolerate a wide pH range but seems to dislike markedly acidic water. It responds to light dressings of nitrogenous fertilizer. Lastly, a great intensity of light is not needed as it will, for example, thrive in an open pond under cover of duckweed.

In answer to Mr. Hubble's question, Mr. G. W. Allen, of 13 Sefton Road, New Brighton, Wallasey, Cheshire, says that his green, male sailfin molly has taken a "liking" to one of his tin foil barb. The barb shows no interest in the molly, which has fathered a brood of mollies. Mr. Allen finds this column of great interest and always reads it first. His plants would never grow when he had undergravel filters, but when he changed to external filters the plant-growth improved.

I'm afraid that things have got a little out of hand this month as regards letters from readers. I'd no idea when I started the column that its popularity would grow so much. As I want to say a few words myself, I'm afraid that I'll have to hold a number of communications over until next month's issue. I have three issues of the Ealing & District Aquarist Society's Newsletter, two copies of "Toras Topics", a copy of Dunfermline & District Aquarist Society's Newsletter, a copy of Dudley & District Aquarist Society's Newsletter, and letters from Mr. A. Donovan, Mr. J. Mosley, Mr. J. R. Blythyn, Mr. J. Ludford,

Master R. Ell, Mr. I. D. Taylor and Mr. R. F. Wilson. I'm afraid, chaps, that I'll have to hold your letters over. I hope to use them next month. Sorry about this but I do have to leave some room for other contributors. I'm going to reserve this month's questions for marine topics as well.

I've been at the photography again. One point which I would like to mention is the fact that the quality of prints which one gets from one's negatives depends a great deal upon the firm which prints them. I'm afraid that prints which I have had done locally have been much inferior to those which I have had done, through the post, by a London firm. It's well worth having a couple of prints made from the same negative by different firms so that one can see which firm will supply the best quality prints. Mr. Perkins tells me that glossy prints reproduce best.

Photograph on page 105 shows another mistake which one can make. You may notice that I had forgotten to clean the front outside glass of the aquarium before I took the photograph—hence the reason for the water marks, left by dried-up spots of water.

Now to the marine questions, posed by Mr. M. B. Rowland. Please send me your opinions. (1) Have you started with tropical marines in a tank of under 20 gallons? If so, what sort of success have you had? (2) What sort of filtration do you use, and why? (3) Did you start with hardy fish, or delicate ones, and what sort of success have you had? (4) Have you tried keeping seahorses? If so, how, and on what, have they been fed? Have you managed to breed them? (5) What sort of tropical marine invertebrates have you kept and how have they been fed?

FACT, FALLACY AND ENVIRONMENT

by F. W. Coles

ONE SATURDAY I was (as usual) in one of the local aquarists shops and listened to the customer before me buying fish: "I'll have two of those—do they fight?"

This reminded me of the mistakes newcomers always make when first beginning. In this case furnishing a community tank with incompatible species. (I've lost £4-worth of fish this week!) Well, of course, we all do it—like the chap who made an all-wood tank, except for the window, to a friend's specification, and set it up in the spare bedroom for breeding Platys. His wife rather objected when she was almost swept out of the front door, when ascending the stairs, by approximately forty gallons of water descending rapidly. The watermark on the stair carpet is quite pretty, though.

And then, of course, there are the mistakes which aren't really mistakes, as well. You could call them environmental effects. Like the controversy which used to exist regarding changing aquarium water. Some people have aquaria for years and only top them up—others change a percentage each week. Of course, both are right, but if you do either in the wrong area it is curtains for the fish. The reason? Well—if you live in an area where the water is hard and alkaline, you will be well advised to top up only, as the urine from the stock merely helps to reduce the pH which is all to the fishes' benefit, but in an area of soft and acid water the pH would reduce to too low a level for health, so water changing is ideal in these conditions.

Another mistake is to be dogmatic about under-gravel filters. I personally used to have the firm conviction that one couldn't grow plants properly using them—until I visited a friend whose tanks all

contained these filters and which were all chock full of plants. The answer to this was again simple—my tanks had one inch of gravel at the front and three inches at the back, whilst his tanks had three inches at the front and five or six inches at the back. The depth of gravel was the deciding factor and the reason I used the shallower depth was that my tanks were shallower than his—being only twelve inches deep.

Another deep-rooted fallacy which we all follow at first is the balanced aquarium theory that you must have a tank containing gravel, plants and fish in the correct proportions to be successful, particularly if you want them to breed. These are, of course, attractive and practicable also if you only have two or three, but as soon as you set up a fish house you have to think again unless you want to live in it. Practically all commercial breeders, and a large proportion of advanced amateurs, use bare tanks (with blackened bases if tiered) and spawning mops (or peat for the killies) and maintain them for years perfectly successfully with a minimum of labour, no gravel and never a plant in sight. Growing plants is a separate branch of the hobby.

Over a period of more than ten years, containing disappointments and periods of elation, but always a quiet satisfaction with the hobby, I have found that one cannot generalise, or even accept information at its face value, but rather must analyse it, and compare the conditions with one's own before taking any action. Indeed, in some cases, action could be disastrous.

Simplicity (no gadgets), and commonsense (look before you leap) are all that are required, and if you have an analytical mind, so much the better.

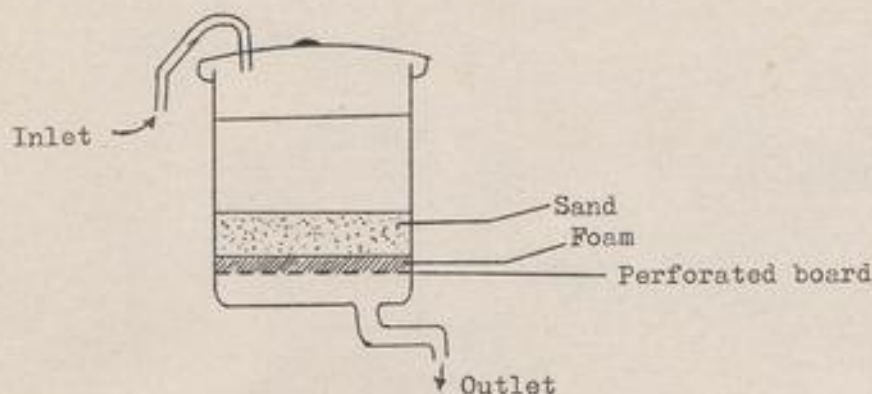
NO PROBLEM ABOUT SEA-WATER FOR LLANDUDNO'S AQUARIUM

by R. H. Birchall

AFTER a strike at a well-known glass factory which delayed opening for a season, Llandudno's new public aquarium was due to open as near to Easter as possible. Situated on the end of the long pier at Llandudno in North Wales there is very little difficulty in obtaining sea-water for the marine tanks. At high tide, water is pumped from the sea to a reservoir tank below the pier and from here it can be pumped into the tanks.

Vue and Blackpool Tower aquariums, but some of the salt-water fish and invertebrates will be caught locally and a tank is being placed on top of the pier so that local fishermen can toss their tiddlers into it.

The curator estimates the cost at being in the region of £12,000 which includes £2,000 needed to strengthen the pier in order to support the otherwise crippling weight of gravel and rocks and water. To the layman



The aquarium, which is being run by Belle Vue Zoo (a subsidiary of Fortes Holdings who also own the pier) houses seventeen fibreglass tanks, six of which contain six hundred gallons, ten hold forty and one showpiece tank holds one thousand; there will also be a simulated tidal pool. Each of the large tanks has a set of reservoirs below it holding the same capacity so that circulation is constant and water is either heated or refrigerated in these reservoirs. Filtration is carried out by dustbin filters. These are normal dustbins which have had a hole cut in the bottom for an outlet and the base covered with perforated board; (see diag.). On top of this has been placed foam rubber and then a layer of beach sand—quite a cheap filter when complete, if one considers the capacity.

Initially the inmates are being supplied by the Belle

visitor it would be hard to imagine where this amount of money could have been spent. However, a glance below the floorboards will supply the answer—the yards of wiring and plastic tubing, the heating and refrigeration, and the filtration and circulation system with its countless water pumps. The aquarium is being set up with the maxim in mind that if something is done properly at first it will save trouble later. With this in mind the building has been properly wired and plumbed to avoid the mess that would otherwise result, and the marine tanks have been set up on the "clinical" system with everything that is introduced into the tanks being made as clean as possible.

As it is often these public aquaria which help to add to the evergrowing number of aquarists I wish this latest aquarium the best of luck.

Coldwater Fishkeeping

by A. Boarder



ALL TYPES of goldfish kept in a garden pond should spawn by the end of May providing the weather has been fairly good. Some may do so in April but it may depend on the position of the pond. In the south of England it is probable that the fish will spawn a month earlier than in the north. When the fish do not spawn the pondkeeper is likely to be disappointed and may wish to have some idea as to why they have not done so. Providing the two sexes are present and the fish are healthy, there is no reason at all why the fish should not breed.

The sexing of the fish has been described so often that it seems unnecessary to do so again, but for the benefit of new readers I will give a brief instruction as to what to look for. When in breeding condition the male fish will usually show small raised spots on the gill plates and front of pectoral fins. These are not always

present and when these indications are not seen then it is more difficult to be certain of the sexes. Most female fish show a fatter belly than the male and when viewed from above the difference can be seen quite plainly. Usually the slimmer fish, if of the same variety, will be the male.

Although it may not be possible to state all the reasons for non-spawning, it is simple to give several conditions which are certainly against a spawning. In the first place it is very unlikely to get fish to spawn unless the water is in good condition. By this I mean a clear well-oxygenated water with no bad odour or dull colour. It can be said fairly conclusively that unless the water in the pond is well charged with oxygen the fish will show no inclination to spawn. Sometimes the fish may be reluctant to do so if the pond is in such a position that no sunlight ever reaches

the water. The ages of the fish does not appear to matter very much as I have bred from fantails of seventeen years of age and also from youngsters of eight months. A lot depends on the way the fish have been reared.

The number of males to the females does not seem to make much difference. Where a female fish is reluctant to spawn, the presence of two or three very active and vigorous males can encourage the female to spawn. In many cases it is the fat appearance of the female which encourages the male to chase and push the

female around. The raised tubercles of the male appear to bring the female into spawning when she is knocked by the male with his head or front fins.

I have known spawning to start in a pond of common goldfish when a fantail, with a fatter body than the goldfish, has been introduced into the pond, which does indicate that the state of the female filled with roe does encourage the male fish to chase. It has often been stated that one should feed specially to get the fish into breeding condition, but if they are healthy there is no reason why they should not do so, without



Hornwort makes an ideal spawning medium

any special feeding. If there is one food which I suggest is excellent for getting the fish into a healthy condition it is the garden worm. I find that it is better to break large worms into three or four pieces and small ones in half. Garden worms can live in water for at least three days and so if unbroken, can crawl into mulm or mud at the bottom of a pond and escape the fish. If broken they are unlikely to do so.

Sometimes if goldfish show no signs of spawning they may be encouraged to do so by removing a few of the fish for a time to another pond or container and then when they are returned to the breeding pond, spawning can soon take place. Another method is to flush the pond with a hose as this may re-oxygenate the water and liven up the fishes. I do not think that it is a good plan to completely empty the pond and refill with fresh tap water. Sometimes this may cause the fish to become affected by the amount of chlorine in the tap water. They may also be affected by embolism, when tiny bubbles appear on the fishes. If only a portion of the water is changed for fresh this is less likely to upset the fish and can encourage them to chase.

If a fountain or waterfall is available it is a good idea to keep the water on the move as this tends to help in re-oxygenating the water. The presence of some fine-leaved water plants will also help the fish to spawn and a shallow part of the pond is a very important feature of the breeding pond. Most fish prefer to spawn in very shallow water where it is possible that the sunshine can warm it up and so hasten hatching. Also the fish appear to realise that the eggs will be safer from other fishes if they are laid in such shallow water. I have watched Roach and Rudd spawning in a reservoir and they have swum into shallow water where half their backs have been out of the water. A position in which they would never swim during normal times.

If a shallow part of the breeding pond is not available then a good sized bunch of water plants should be anchored near the surface in the shallowest part possible. Any fine leaved water plant will do, such as Hornwort, *Ceratophyllum demersum*, or one of the Elodeas, either *Egeria densa* or *Lagarosiphon major*, to quote the modern names, will be very suitable. The eggs when laid are adhesive and will stick to anything with which they come in contact. If too many water plants are all over the breeding pond it may make it very difficult for the pondkeeper to collect the eggs when laid. A pond which is fairly free of plants but with spawning nests of plants in one spot, will be much better than a pond where there are plants all over the pond where eggs may be laid and lost. It must be realised that many eggs will be eaten by the spawners once the excitement of spawning is over, or there may be one or two fish which are not interested in the actual chase which follow the others around and eat the eggs as they are laid.

Where the fish are reluctant to spawn it is a good plan

to spray the pond during the late evening with fresh water and this may start the fish off the first thing the following morning. Goldfish usually spawn in the mornings and it is not very often that spawning goes on into the late afternoon. Sometimes on the evening before a spawning takes place the fish will be seen following one another around the pond. This is a good sign and will usually indicate that a spawning will take place the next day.

I think the temperature of the pond water is not very important. I have found that one of about 62°F is better than one nearer 80°F, but goldfish have spawned in my pond at temperatures from 55°F to 78°F, the average is 61°F.

PRODUCT REVIEWS

ELGACAN TYPE C.114, for aquaria, and associated equipment, manufactured by Elga Products Limited, Lane End, Buckinghamshire, England.

I received samples of these products, for review. The product consists of special resins used to remove dissolved mineral salts from water, leaving de-ionised water—that is, water which is virtually pure, conforming to Purified Water B.P. standards. Such very soft, pure water has many uses for the aquarist, as can be seen from Mr. D. K. Brown's interesting article in the March issue.

The Elgacan outfit which I received consisted of a plastic can with a screw cap at either end. The can contained the fine, pale yellowish resins, kept in place with a foam pad at each end. The outfit also contained two white, plastic can-connectors which, together with a length of $\frac{1}{2}$ in. clear P.V.C. tubing, and a rubber tap connector, completed the unit. The price of the cartridge of resins, as given by Mr. Brown in his article, is £1.20; the $\frac{1}{2}$ in. P.V.C. tubing is listed at 10p per foot, the can-connectors at 25p per pair (15p singly), and the tap-connector at 50p. I have, more recently, heard that the firm is "to produce a complete kit for the aquarist," and it is understood that, although the actual product will remain unaltered, the packaging is to be in some way altered. The kit will be distributed by Puraqua, P.O. Box 69, Iver, Bucks.

I fitted the cartridge with the cap-connectors, as instructed, and added an 18 in. length of tubing to the inlet end, with the tap-connector on the free end. I then fitted a 2ft. length of tubing to the outlet end of the can. I found it simple to attach the tap-connector to the tap but have found, from experience, that it is difficult to judge the rate of water flow after fitting the connector to the tap. The tap is best adjusted to a very slow trickle before the unit is connected. One should use the cold tap. I was able to place the cartridge unit on the draining board beside the sink, with a clean plastic bucket

beside it, and the outlet tube from the cartridge in the bucket. A slow stream of water soon began to enter the bucket, together with a quantity of bubbles—probably a mixture of carbon dioxide from the process, and free air from the resin container. As the bucket was slow to fill one had to remember that the process was in operation. The cartridge is set at a flow-rate which provides the best purified water. If the tap is turned on too hard, the tap-connector will be blown off the tap by the water pressure. When the bucket was full of deionised water, I tested several samples with a water hardness kit. (These can be bought quite cheaply from any dealer.) The result was very impressive: my kit, which works on a colour-change indicator, with the addition of an appropriate number of test tablets, each giving a certain number of degrees of hardness of water (DH°), produced an immediate colour-change of the indicator solution without the addition of any hardness measuring tablets—thus showing that the 'hardness' of my treated tap water was so low that my kit could not measure it. In other words, the water was very pure indeed, and very soft. It gave a slightly acidic reaction, possibly due to the CO₂ gas liberated in the process. I was very impressed with the quality of the water which the process produced. Although it is suggested that the water should then be well aerated for one hour before use, I was able to use quantities of it immediately to top up tanks which had suffered some loss by evaporation, without any ill effects whatsoever to the fish or plants. (If large amounts are to be added to tanks in which fish are present, one should follow the clear instructions supplied by the makers.)

I was specifically asked to comment on Mr. Brown's suggestions as to the use of the ion-exchange resins in inside, or outside, aquarium filters, the idea being to trap a layer of the resins between filter wool layers, and have the aquarium water pass through it. Some years ago I used another aquarium product which consisted of a mixture of resins for softening aquarium water. These resins were of the type which, when exhausted, could be 're-charged' by soaking them in a strong salt solution. The problem here was that, although the hardness of the water was lowered, the total dissolved mineral salt content was only changed, salt replacing some of the calcium and magnesium ions removed. This resin was sold loose, specifically to be used in the aquarium filter. I remember having great difficulty with the fine 'beads' of the resin which would, no matter what I did, find their way in quantity to the aquarium water. My final solution was to make a small, nylon bag, stitched with nylon thread, into which the resins could be placed, just fitting the surface area of the outside filter. This did contain the resins and kept them

out of the aquarium; however, like Mr. Brown, I would only recommend that this technique be tried, if at all, by the experienced aquarist. Considering how simple the Elgacan process is to operate, it is so much easier to either top up tanks with the purified water from the tap, or to mix it with hard water until one reaches water of the hardness which one requires for a specific fish or plant population. It is much easier and precludes the possibility of having sudden changes in the hardness of the water in which the fish are swimming, with possibly dangerous results. It also does away with the messy process of having to remove the resins from the filter after, say, 48 hours, as Mr. Brown suggests. As the tap water in my area is fairly soft to start with, the Elgacan should provide me with a large number of top-ups for my various tanks, before it needs a new cartridge.

For the aquarist who is interested in water chemistry, or in the breeding or keeping of fish—or plants—which do best in soft water, I would suggest that the Elgacan would be a most useful investment, especially if rainwater is hard to come by in your area. The cost, per gallon, of treated water, will depend upon the initial hardness of your local water supply but it should be much less than the high cost of buying distilled water from your local chemist and it is possible that the water produced by the Elgacan process will be more pure than that normally used as distilled water (having seen the sludge in the bottom of the 'distilled water' containers in a number of science labs. in schools in which I have been.)

B.W.

PHILLIPS AQUATABS, manufactured by Phillips Yeast Products Ltd., Park Royal, London, N.W.10, price 15p per tube of 24 tablets.

Another interesting and useful addition to the Phillips range of fish foods, Aquatabs consist of compressed tablets which can easily be pressed on to the glass side or front of the aquarium, or dropped on to the base of the tank. My fish soon found the tablets and, within a short time, they were gone—showing that the fish, even the small ones, were very fond of the food. The tablets are smaller than a ½p piece and contain the following substances: freeze dried roe, FD liver, FD shrimp, FD beef heart, FD lettuce and FD spinach, as well as cod liver oil, brewers yeast, milk powder, and vitamins A, B1, B2, niacin, pyridoxin, inositol and D2.

This tablet food is suitable for both tropical fish and goldfish and is especially useful when one is going on holiday as a specified number can easily be placed in a given aquarium, for one feeding, by even the most 'non-aquarists' amongst one's friends, preventing the overfeeding which can result on such occasions. This is another product which I would recommend, and it is British made. B.W.

A Gamble With Marines?

by J. H. M. Lawson

AFTER READING as many books as I could lay hands on, and the many hints, and suggestions I read in *The Aquarist*, I decided to try a marine aquarium. Let me say from the outset, money was the prevailing factor I had to keep in mind.

I had an old 36 in. x 15 in. x 12 in. angle iron tank which I thoroughly cleaned all the rust off. After washing it out, I dried it and then sealed it with silicone rubber sealer which is on the market (Dow Corning). I paid particular attention to the top edges which I sealed twice for safety. I then left it to dry.

Sand for the bottom was my next problem. This I obtained from a firm which mine it on the West Coast of Scotland. It is pure white and very fine silica sand. There are other medias you can use, but this was the easiest and cheapest I could obtain. The curator of our local museum was very kind in giving me some lumps of coral he did not need. I bought some other pieces which I thought would be decorative. These I placed in a plastic dustbin filled with water and added half a bottle of bleach. I then left it for a week.

The sand I boiled and washed in fresh water. Now came the filter; it is an under-gravel one which is based on a suggestion published in *The Aquarist** (date of magazine given at the end). If any difficulty in obtaining a copy, write to me and I will send instructions. When the filter was fitted, I also added one of the small outside filters with charcoal and nylon wool. Incidentally, I only pass water through this once every three weeks. I then washed the coral out thoroughly, leaving no trace or smell of bleach. *Pay particular attention to this.* I then placed the coral on a tray to dry. I next covered the filter with a layer of nylon wool and put in the sand, followed by the coral to make a pleasing aquascape. I used a combined heater/thermostat and three wooden air diffusers, all of which are hidden by the coral. I connected a Rena Super to the air lines. Everything was now ready for the water.

I bought one of the commercial brands of synthetic sea salt, which I mixed to the makers' instructions. *Never use metal containers for mixing.* I then poured concentrate (being careful not to disturb the sand) into the tank. I then brought the concentrate to the right density, 1.023, by adding fresh tap-water with the aid of a hydrometer which can be purchased from your dealer. After the water, I covered the tank with glass

as it helps to cut loss of water by evaporation. I then switched on and checked everything was working well. A word here about the filter: the turnover of water is amazing, about eighty gallons an hour. I should also mention lighting, I used Grow-Lux but found it encouraged brown *algae*, so I fitted two 45 watt household bulbs and now I have beautiful emerald green *algae* growing. I now use the Grow-Lux only for showing my tank to its full advantage.

After three weeks had passed the temperature stayed constantly at 75°. I checked the density and now it was time for the fish.

A friend of mine, who is a dealer and owner of a tropical fish shop in Perth, obtained some beautiful specimens for me. They were two yellow tailed Damselfish, one Wimplefish, one Butterfly, two Neon Wrasse, and a Powder-Blue Surgeon. He also keeps the same fish with the addition of a Koran Angel and a Blue Ringed Angel on the same system.

That was over eighteen months ago. I now have sea anemones of different colours and hermit crabs in the tank, which I collected on the West Coast of Scotland and acclimatized *very slowly* in a small plastic tank. I have had no trouble or loss of fish, contrary to the woe-filled warnings I received of sure failure.

I never change the water, only top it up with fresh water, and check the density readings every three weeks. I do not bother with pH. I have taken two readings in a year, and they were the same each time (8.1).

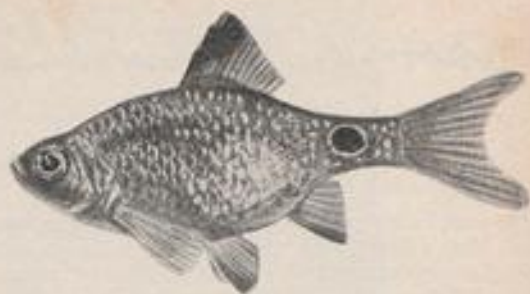
As for feeding, the fish seem to eat anything I give them, flake food, freeze-dried and bits of prawn or fish. A word of warning: **DO NOT OVERFEED**, it could foul your aquarium very quickly. The sea anemones I feed with prawn or shrimp with the aid of long plastic tweezers. There are many baby anemones now which I have to thin out every now and then, and the hermit crabs seem to find their own food. At this time I am experimenting with a star fish, and indications are that it is very happy with its environment.

Well, this is my own experience with marines; it is very rough and ready, and not at all technical as standards go for these beautiful aquariums. All I know is it works successfully for my friend and I. Anyone who wants further information, please write to me.

**The Aquarist*, January, 1969.

THE ROSY BARB

by Jack Hems



THE ROSY BARB—scientific name *Barbus conchonus*—is deservedly popular because it is colourful, peaceful, frequents all levels of the water, and has a life-expectancy of some four or five years. Furthermore, it has the qualities that count for much with aquarists—hardiness (it has a temperature tolerance of from about 65°F to 85°F), and a readiness to breed.

Ordinarily it attains a length of about 3 in. (6 in. in the rivers and streams of its native India) and is therefore more suited to a 24 in. by 12 in. by 12 in. or larger tank than one of smaller proportions. For breeding, however, an 18 in. by 12 in. by 12 in. tank is acceptable (to the fish) if not ideal. But more about breeding later.

For the benefit of the beginner, a few words about the physical appearance of the fish will not be out of place. In body shape it is typically carp-like. That is to say in outline rather like a compressed spindle. The male is greenish brown on the back, light olive on the sides and white tinged with pink, or red, on the belly. The scales have dark edges and reflect metallic gleams of silver, gold and coppery red. There is a greenish gold iridescence on the gill-covers. A black blotch or spot with a gold margin is present near the tail. The fins are yellow to orange red, except the pectorals which are clear. The dorsal, anal and ventral fins have black tips. The female is a more sombre-hued fish altogether: in general her sides are plain olive to olive green with a silvery sheen but, in common with the male, she does sport a dark spot on the posterior part of her body. Her fins are at best a translucent greenish yellow; they have little or no dark colour along the margins or tips. The species lacks barbels.

There is no mistaking a pair of *B. conchonus* in breeding condition; for, apart from the remarkable improvement in the coloration of the male (a fiery red through which the scales sparkle like diamond chip-pings) the female shows markedly distended sides. There is also increased activity on the part of both sexes.

As has been mentioned above, a tank no larger than 18 in. long may be used for breeding, but as the male is

a vigorous driver a larger tank allows for more freedom of movement and more space for the fry to develop properly after breaking free from the eggs. This they will do in about forty-eight hours.

Spawning usually takes place under the influence of a strong natural or artificial light. There are some preliminary chasings and body-pressings in the plants and then, if everything turns out all right, egg-scattering takes place.

The tank set aside for breeding should contain clear, matured water (ordinary tapwater drawn two or three days previously is quite suitable) and some bunched sprays or *myriophyllum*, hornwort, *fontinalis*, or *elodea* (to name some of the most readily available spawning plants) weighted to a floor-covering of scrupulously clean sharp sand. The fish should not be subjected to any change of temperature when they are introduced into the breeding tank (last thing at night is advised), but after the transfer has been carried out the thermostat should be reset to give a temperature a little above normal.

Spawning in and near the plants may go on for an hour or more but immediately it is over the parent fish must be separated from the eggs with all possible speed. If you fail to do this all the eggs will be sought out and eaten in next to no time.

As soon as the fry have absorbed their yolk-sacs, they leave the plants or the sides of the aquarium (where they have been clinging tail-down) and swim about in search of microscopic food. For about nine days then, such things as infusoria, flour-fine dried food and cupfuls of floating algae (green water) should be given several times a day. If dried food is given only the minutest sprinkling should be flicked onto the surface of the water. After nine days, the fry should be large enough to take micro worms, tiny *Daphnia*, brine shrimps, and pulverized flake food.

Well-fed and not too-crowded *B. conchonus* fry should average 1 in. in length in six weeks. The black spot near the tail shows up early in their lives, but sexing by comparing colours is not possible until three months or more have passed.

From a Naturalist's Notebook

by Eric Hardy

FIVE giant Galapagos tortoises have been shipped from New York's Bronx Park zoo to Honolulu Zoo to help efforts at captive breeding. Meanwhile, a new generation of rich spectator "birders" are being touted and toured to the Pacific equator. There, between cocktails and £1,000-a-ticket luxury living, they look where Darwin looked, on the natural wonders of the Galapagos, "birthplace of evolution." Are the giant tortoises likely to die out before the lavish living of their visitors runs out? There is a paradise for naturalists—and for tourism agents.

When Darwin landed from the *Beagle*, the whalers had already preceded him and butchered many of the giant tortoises. Darwin measured one to be 96 inches around its waist and 53 inches long. The other year, London Zoo made a new enclosure for its specimens. The tortoises gained early notoriety for living 150-200 years. But those that saw Darwin in his youth fell prey to human hunters. Their enormous carapaces and bulky bodies, over 400 lb weight, need such strength to move, that they can carry a man weighing 15 stones. They had no need to evolve speed, until it was too late. Long before Darwin saw them, Dampier described them in his visit in 1684.

However, so far back as 1931 in *Scientific American*, Dr. C. H. Townsend published a paper on this giant tortoise nearing extinction in the Galapagos. It was being propagated in colonies established along the warm southern borders of the U.S.A., after a collecting expedition by the U.S. Fisheries steamer *Albatross 2nd*. He doesn't appear to have solved the problem.

Gilbert White wasn't the only person to almost naturalize the domestic Greek tortoise in Britain. Given a succession of mild winters and escaped pets survive in suburban gardens. On the edge of Liverpool the other year one was wandering about local gardens for over two years and finding its own winter hibernation in rockeries. Incidentally, many Greek tortoises are carriers of *Salmonellae*; 26 different types have been detected, some highly pathogenic for man.

Unfortunately when the Lancashire Naturalists' Trust held their annual general meeting in Preston, there was no time for discussing the fate of sand-lizards on Ainsdale dunes. They were too busy quarrelling among themselves. Acrimonious differences in committee were brought into the open meeting, and the chairman since its inception in 1962, H. Hayhurst, the Manchester entomologist, resigned as

he considered he had been insulted. As the treasurer resigned earlier, new appointments are pending. I was one of a small group of naturalists who met informally in a committee-room in Manchester University early in 1962 and decided to go ahead launching the inaugural meetings for this and the Cheshire Trust.

Then came the rush of officer-seekers—none of them around when I began active office in local societies before the war. Unity in Cheshire conservation was lost the other year when the Cheshire Trust withdrew from the much older Wirral Green Belt Council, a consortium of some 38 local societies.

The latest on Ainsdale sand-lizards is that they are safe in hibernation, at least those which survived the bulldozers. When the Nature Conservancy at their Ainsdale reserve asked me recently to trace any publications on this reptile, I was surprised to find them unaware of Simms' paper on it in the Northwest, published well over a year ago in *The Naturalist*. To a list of bird-predators upon it (mistle-thrush, blackbird and robin) I can add kestrel and yellowhammer. More often than not the bird got its tail, which continued wriggling to hold its attention while the owner escaped.

Lizards by their behaviour reveal a colour discrimination, which suggests that the bright green of sand-lizards is for specific recognition, if also serving camouflage. In January, conservation bodies meeting at the Nature Conservancy in London's Belgrade Square discussed ways and means of helping sand-lizards survive here and elsewhere.

Once again the almost annual lament on the frog's alleged demise in Britain! This time it's Mr. Leutschner to whom my morning paper attributes the latest press hand-out, that because laughing frogs of Romney Marsh are declining and alien edible frogs "almost gone", "all Britain's frogs are under death sentence", because of filling-in ditches and ponds and the using of artificial fertilizers. "Ask farmers to stop filling in ponds," was the suggested remedy.

My telephone was soon ringing for comment. Whatever happens down London way, whether it's the postwar appearance of giant hogweed which was already a pre-war weed in our northern countryside, or the search for the next London airport, we get it stuffed down our northern throats as if it applied to us without question.

This position of frogs came up at one of last winter's regional societies committees of the Council for Nature.



Common Frogs: Rare or local?

Prof. Hewer, in the chair, and Mrs. Monica Green of the British Herpetological Society, drew attention to the rapid decline around London, due to the heavy demand for specimens for teaching biology. Prof. Hewer pointed out that when the frog was included in the common curriculum for young zoologists to dissect, it was because it was an easily obtained specimen, like the other choices—earthworm, rabbit and pigeon. He suggested an alternative choice to meet the problem.

Of course there are fewer ponds—there's less open country after housing estates, new towns and motorways have taken so much. But frogs don't spawn in every and any pond. Ignore the effects of DDT now no longer available. One can still find males assembled at breeding ponds in Cheshire and Lancashire, despite Vesey-Fitzgerald's 1968 book *The World of Reptiles* declaring the frog "now a very rare animal—if it still survives—in Lancashire." He was quoting from an indoor naturalist's earlier report. Since his book there have been from 180-800 counted spawning in the slacks and dykes of Freshfield dunes on our south Lancashire coast annually in March. In Cheshire I've had autumn tadpoles, hibernating young winter frogs, and adult spawn brought to my W.E.A. natural history class now in its 21st winter at Willaston, just to prove they aren't near extinction.

Another of school biology dissections, the slow-breeding dogfish, has also declined around our coasts, chiefly from sport anglers catching fish before they are mature. But it isn't in any danger of extinction yet,

and certainly not so scarce as the spur-dog has become.

It was last June's prolonged drought which did more harm to frogs and toads than all the fertilizers on the rich farms of the south. What is more important than fighting for the frog is to save Britain's best natterjack toad-pools on our dunes around Ainsdale and Southport from future development plans that have already taken the major breeding pool and don't include any planned reserve for them. But of course, natterjack toads don't make such a popular appeal as the nursery rhyme frog, all mouth and no manners. When a Southport naturalist marked the local natterjacks that had to be transplanted before a new holiday camp was built upon their colony the other year—marked to see how many returned and ruined the transplanting conservation—it earned only some ribald remarks based upon ignorance in Braden's TV show. We are far from the last croak of a British frog; but the rousing spring chorus of Lancashire's male natterjacks should be more concern to Mr. Leutscher and his friends. After all, it was at his request to me from the British Museum in 1952 that I sent him some of Ainsdale's singing males for his aquarium. After the builders, pet-shop and school-dealers are their next problem. The Press and many naturalists need a more accurate application of the differences between rare (everywhere) and scarce (locally), between a decline of stock and the brink of extinction, and to beware of generalizations based upon incomplete and inadequate coverage of the country, the so-called surveys confined to subscribers to a limited society.

SEVEN DAY TOUR of Germany for tropical fish enthusiasts.

Scheduled day tourist flights London/Cologne and return with connections from provincial airports.

Visits to: Tropicarium Hans R. Schmidt in Buchschlag; Sudharzer Tropicarium (Willi Jutte) in Bad Lauterberg; Berlin aquarium and sightseeing tour of West and East Berlin. Aquarium Walter Griem in Hamburg.

Travel within Germany by private coach. Accommodation will be on half board basis throughout tour, which has been reduced by one day, owing to the fact that the Tetramin establishment is closed to all visitors this year, during extensive alteration and rebuilding programme.

Inclusive cost per person, £59 ex London. Departure date will be 12th September and the tour will operate subject to a minimum of 25 persons. Supplements from provincial airports on request.

To make a firm reservation please forward a deposit of £3 per person as early as possible.

Club secretaries: If you wish to form a group from your own club, we can make arrangements to suit your own specified dates.

Particulars available from E. Raymond & Co. Ltd., 25 Prudential Buildings, 36 Dale Street, Liverpool L2 5SW.

BARNSTAPLE CIVIC GOLDFISH DIE AFTER POOL CHANGE

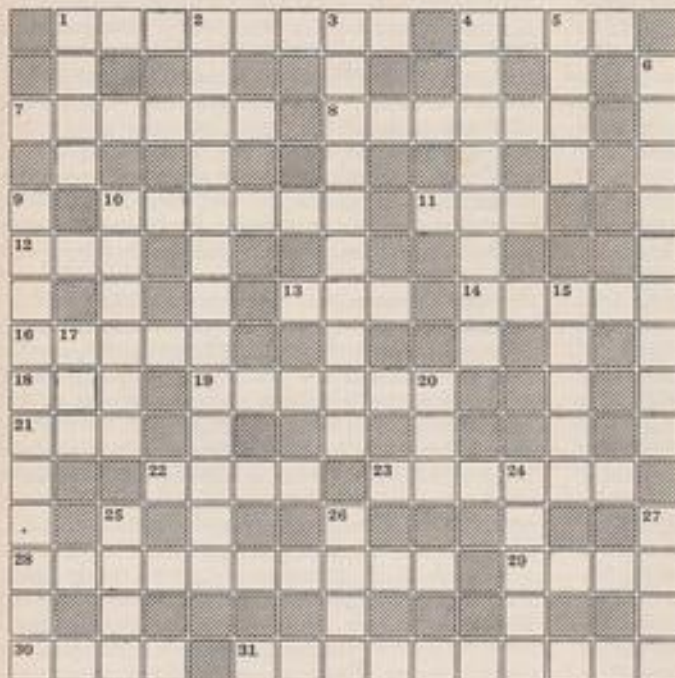
A STORY that began happily some years ago, with two American airmen winning a pair of goldfish at Barnstaple fair ended tragically last week when descendants of the fish were found dead on the site their ancestors had been won.

The original fish had been taken to a large water tank at the local airforce base, and there they multiplied, until a recent cleaning of the tank revealed forty fish.

Shortly before, the new Civic Centre had been completed on the site of the old fair, and the fish were received in great ceremony by the Mayor of Barnstaple and council officials. They were transferred from the tank into a brand new cement fish pond, but the lack of oxygen and plant life, combined with sudden change in water conditions caused disaster. Soon afterwards the majority of the fish were found dead—floating on the surface.

The AQUARIST Crossword

Compiled by M. W. CLARKE



Solution on page 129.

CLUES ACROSS

- Celebrity in the tank (8).
- Famous for Crocodiles (4).
- A fish for Lenny? (6).
- Ornamental Goldfish (6).
- Bacterial disease of the fins (6).
- It creates atmosphere (3).
- Breeders are full of it (5).
- Overgrown deer (3).
- They can be green, brown, red or blue-green (5).
- To move with an eddying motion (5).
- Chemically Sn (3).
- Corydoras—the bronze catfish (6).
- Pate of cooked skate (3).
- From the bog (4).
- A weightlifter? (6).
- Water Markman (6, 4).
- Race along a dotted line (4).
- Father figure (4).
- Danio malabaricus* (5, 5).

CLUES DOWN

- Dover's Fish? (4).
- Buttercup family (13).
- 28 across does this in order to feed (5, 5).
- Family to which *Betta kaku* belongs (8).
- Heavy metal from Deal (4).
- Fish named after William T. Innes (4, 5).
- Group of minute pond creatures useful as live food (11).
- Are catfish this by nature? (6).
- Cheddar has one (5).
- Quality necessary to every court jester (5).
- Plenty of fish live there (3).
- *macracanthus*, the clown loach (5).
- Result of a skirmish with a Piranha (4).
- A lean tower (4).
- Three from Rio? (4).

This Month

We look forward to the pleasure of meeting you at this outstanding event in London.

"The Aquarist & Pondkeeper"

FISHKEEPING EXHIBITION

Alexandra Palace, Wood Green, London N.22.

Open to the public

Friday 9th July
10am—9pm

Saturday 10th July
10am—9pm

Sunday 11th July
10am—6pm

HOW TO GET TO ALEXANDRA PALACE

BY TRAIN. From any of the Main line railway stations take the underground tube train to Finsbury Park from where buses W3 or W5 run to Alexandra Palace, or Piccadilly Underground line to Wood Green Station.

BY BUS. Routes to Finsbury Park, 4A, 19, 29, 39, 106, 127, 168A, 221, 236, 253, 259, 279 and Green Line Coaches 715, 715A, 718, from where buses W3 or W5 run to Alexandra Palace. Other routes to Wood Green are buses, W4, W6, 29, 123, 141, 221, 243, 288, 298A and Green Line Coach 715.

BY CAR. From North of London: Follow A1000 over the North Circular Road (A406), turn left into Fortis Green and Queen's Avenue. Turn left at the bottom of Muswell Hill into Alexandra Park. From South London: Take Stroud Green Road from Finsbury Park and follow road into Crouch Hill. Turn right at the bottom of Crouch Hill into Crouch End Broadway, then left into Park Road and Alexandra Park. From the West or East of London: Take the North Circular Road (A406) and follow directions as from the North of London.

Ample free car Parking in the Alexandra Palace Grounds.

A VISIT TO THE LONDON ZOO AQUARIUM

by *T. J. S. Straight*

RECENTLY the school aquarist society, of which I am a member, paid a visit to the Aquarium at London Zoo. None of the party had been to see the display before and we came away favourably impressed.

The first section was an exhibition of coldwater species. We saw the 44-lb Carp (I think her name was Clarissa) that has had so much publicity. I must admit she looked extremely old, and spent most of her time resting on the bottom of the aquarium. Other exhibits were Bowfins (*Arnia calva*), Sterlets, members of the Sturgeon family and two large Pike. There were plenty of native fish, such as Carp (the normal, Mirror and Crucian varieties), Tench, Bream, Roach, and Rudd swimming in large shoals. Every aquarium was clean and well arranged, but the lack of plants was noticeable.

The main attraction, however, was the tropical section, and we soon hurried on to this, passing an impressive marine set up, involving a shoal of *Monodactylus argenteus*, a number of Scats and about five large Batfish. With a clever arrangement of rockery (no coral) this aquarium was quite stunning. All the fish were large, well fed, and free from any disease or blemish.

The tropical freshwater aquaria proved to be no disappointment. If I remember correctly, the first tank housed a large group of *Tilapia mossambica*. These fish have always fascinated me, with their interesting breeding habits and the method of incubation. We actually saw one of the black and white males spawning with a drab-looking female. The gravel on the bottom had been shifted about to form spawning pits and resembled a section of the moon's surface. Further along, there were aquaria containing those prehistoric relics, the Lungfish, found in Australia, Africa and South America. The Australian Lungfish on display must have measured at least two and a half feet. Another aquarium had two Electric Eels along with fifty or so Guppies. Attached to the

front of the tank was a loud speaker that registered the electric impulses the eels sent out to guide them in their movements. The purpose of the Guppies was obvious although they were ignored by their companions. While we were watching. The Texas Cichlid display attracted much attention. There were at least 30 of them, mostly four to five inches in length. The males were distinguished from their female partners by the large lump of flesh on their heads, forming a "frontal gibbosity." Once again, there was a pair preparing to spawn in a pit they had dug. Their antics held our party in a trance for a number of minutes before continuing on the circuit. Almost as magnificent a display as the Monos, Scats and Batfish, was the gigantic pond containing the large Cichlids. By large I mean 10 inches to three feet in length. In this pond were a shoal of *Tilapia* species, mainly *Zillii*, *Mossambica* and *Melanorpleura*, a sad-looking Oscar, about three Albino Danios, Catfish, half-a-dozen *Osphronemus goramys*, and one huge Arrowana, possessing an enormous mouth. The side panel, through which we observed the fish, made the pond look much larger than it really was. Moving along, there were some small aquariums, holding the tropicals, one would expect to see in a small community tank. After the healthy bunch we had already surveyed, this group was rather pathetic. Many of the specimens had folded fins, and hardly moved, while others remained, gulping the air at the surface. This section was passed by and we came to some aquaria holding the curiosities of the piscine world, namely, Archer fish, Puffers, Mudskippers and one four-eyed fish. By keeping still long enough, the Mudskippers rewarded our patience by springing onto the terrain and prouncing about, engaged in catching locusts and fighting mock battles with their companions. This concluded the tour of the tropical hall, and we reached the final stage, the sea- and coldwater hall. Here, I observed Moray Eels, more Starlets, Pipefish, Blennies and various small tropical marine fish. The Moray Eels were particularly attractive in a tank to

themselves. They were in many different sizes and colours, all with their mouths open, displaying their dangerous sets of teeth. The last few aquariums, if I remember, contained a shoal of Rudd, a shoal of Sunfish, and the different varieties of Trout. We turned to leave passing some Vivarius withamphibious occupants, i.e., Toads, Frogs, Salamanders

and a few Akoltols. The very last aquarium contained a giant Salamander, dusky black in colour, about three feet long, with small beady eyes, and as ugly as sin. This creature was the farewell to a thoroughly satisfying display and a well spent afternoon. I can but recommend this, the best display of fish and amphibia I have seen in one place.

Cynolebias nigripinnis

by Peter Brown (aged 15 years)

THE KILLIFISH (*Cynolebias nigripinnis*), though having many desirable qualities for the tropical fish enthusiast, is seen too infrequently in our local aquatic shops. It is an annual species coming from bodies of water in Argentina that completely dry up, and then when the rainy season comes again the pools once more teem with fish which have hatched from eggs laid in the mud the previous season. The rotting bodies of their parents, together with the dried out plants, provide abundant supplies of *infusoria* for the newly hatched fry.

The male *Cynolebias nigripinnis* is truly a gorgeous sight being completely coal-black, dotted irregularly all over the body with bright blue spots. The fins also contain the same body colour. The female, as in nearly all Killifish, is comparatively dull, being light brown with some irregular faint markings over the body and fins. The male reaches a maximum size of two inches and the female is about one-and-a-half inches long. *Cynolebias* will eat various foods but preferably live ones in the form of *daphnia*, white worm, grindal worm, *tubifex*, and blood worms; dried food is taken grudgingly or not at all. Being an annual Killifish it does not have a very long life span and so some preparations must be made to breed it. This fish appreciates soft, slightly acid water (rain water filtered through boiled peat fills the bill) to be kept in good condition.

Breeding is accomplished as follows: A tank of about five gallons capacity is given a layer of peat (boiled to remove excess acidity) about four inches deep as the species *Cynolebias* like to dive deep into the substrate to deposit their eggs. The soft acid water is added to a depth of about five inches above the peat. The temperature of the whole thing should be maintained at between 70°F and 74°F. The breeding group consists of one pair or one male and two females to

prevent the females from being driven too hard. After the fish have been added they should be left alone for two weeks and given good feedings of live foods everyday. The other method of breeding is to separate the sexes and to feed them well and then to allow them to mix every other day until the females are depleted of eggs.

On seeing a ripe female the male may undulate his body very rapidly but he usually swims in front of her, fins outstretched until she becomes interested in him. Then they will bury themselves deeply in the substrate and deposit one egg at a time. After two weeks the fish are removed and the water is drained off and the peat containing the eggs is also allowed to drain and evaporate for twelve hours. The peat is then put into a plastic bag and sealed tightly. The plastic bag is then put in a warm place with a constant temperature for between four and seven months.

As soon as the embryonic growth can be detected in the egg, a hatching may be attempted by putting the contents of the plastic bag in a tank and then pouring cool rainwater on it. The temperature of this water is then raised to between 70°F and 74°F. The eggs soon hatch (in a matter of a few hours) and the young may be syphoned off into another tank after a few days of feeding on micro-worms. The remaining peat will still contain some dormant eggs and these can be hatched by immersing the peat at three-week intervals after storing for a period of three weeks as was previously stated.

The young fish are very quick to develop and can usually be fed on micro-worms when they are hatched, graduating to brine shrimps and screened *daphnia*. At about six weeks the fish can be sexed. This fish can be kept in the community tank with other species that are smaller than itself which like soft acid water. In all, a very interesting, bottom-spawning Killifish.



Lecturer Required

Would any lecturer available in the Gainsborough-Lincolnshire area please contact the secretary Mr. A. Chapman, 26 Arkwright St., Gainsborough, Lincs.

Clean White Worms

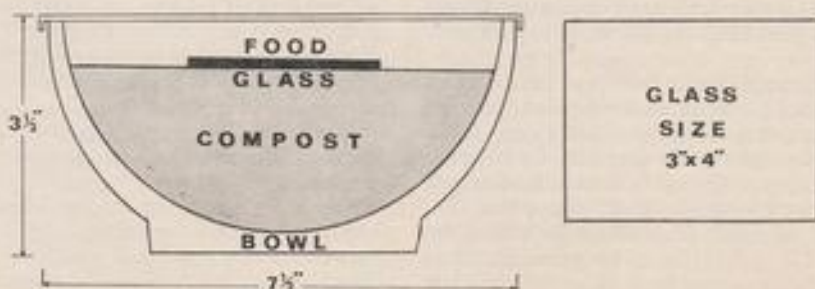
Having heard other aquarists complain of the trouble they have collecting and washing white worms before feeding to fish may I pass on, through your columns, a way of collecting clean white worms. I always breed my worms in an earthenware bowl, the type that is used for growing indoor bulbs. I also use the old bulb-growing fibre compost, adding fine garden soil. One third soil, two thirds bulb compost; this mixture is kept damp.

On top of this I place a small sheet of black glass, the glass or plastic used in a welder's mask is excellent for this purpose. On top of the glass I place a teaspoonful of powered milk mixed to a thin paste with a little water. Complax, Bemax, oats, etc. can be used. The bowl is then covered. I enclose a sectional sketch of set-up.

After three days I lift the cover and with tweezers lift from the glass clean well-fed worms, and there are dozens of them. I place them straight into the worm-feeder as no washing is necessary.

Hoping this idea will help other aquarists,
W. BLOUNT,
 Norton,
 Stoke-on-Trent.

P.S. Black glass is not essential, it merely shows the worms up better.



Societies Please Note

As Publications Secretary to the Federation of British Aquatic Societies, may I use the medium of your magazine to inform your readers of the literature that is available and which will be of assistance to the smooth running of their Societies. The literature also provides information to beginners in showing fish, plants, furnished aquaria etc.

I set out below the publications that I hold:—

1. "Cultivated Tropical Fish Show Standards" booklet, cost: 12½p each (post free) or £1 per dozen to F.B.A.S. Affiliated Societies.
2. "Show Fish Guides & Technical Information" booklet, cost 12½p each (post free) or £1 per dozen to F.B.A.S. Affiliated Societies.

N.B. To non F.B.A.S. affiliated Societies and Aquatic Traders, prices for the above can be obtained on application.

The following publications numbered 3 to 11 are foolscap sheets which are available free to F.B.A.S. Affiliated Societies—please enclose a large 9 in. x 7 in. stamped addressed envelope with your request.

3. F.B.A.S. Judges Pointing Sheets.
4. General Show Rules (parts 1 to 4).
5. The Aquascape Pointings and General Guidance.
6. The Furnished Aquaria Pointings and General Guidance.
7. The Plant Pointings and General Guidance.
8. The Pond Pointings and General Guidance.
9. The Rules Governing the Awarding of F.B.A.S. Stars.
10. The Open Show Trophy Rules.
11. The F.B.A.S. Show Class Lettering System.

The following two items are both new ventures and the prices shown are only applicable to Societies affiliated to the F.B.A.S., prices will be given to non-Affiliated Societies on request.

12. Self Adhesive 2 in. x 1 in. F.B.A.S. printed Award stickers which are coloured in accordance with Federation Show Rules for—First, Second, Third, Fourth and Special. These are priced at 25p per set consisting of 24 each of

First, Second, Third and Fourth and 4 Special labels. These Award labels will be supplied free of charge for your Open Show on receipt of a Show Schedule and a large 9 in. by 7 in. stamped addressed envelope.

13. Self Adhesive Exhibit Numbering Labels at the same size as the Award labels (2 in. x 1 in.) are priced at 25p per 100 label sets. Each Society will receive 100 Exhibit Numbering Labels free with their first order of these labels. When ordering please enclose a 9 in. x 7 in. stamped addressed envelope for prompt return.

For any further information you may require please do not hesitate to contact me.

MAURICE CARTER,
(F.B.A.S. Publications Secretary),
15 New Road,
Ascot, Berks., SL5 8QB
Tel.: Winkfield Row 4885.

Satisfied Customer

I shall be grateful if you will grant me a little space in the *Aquarist* so that I may relate the following.

These days one hears so much about the indifference, refusal to do anything, and sometimes downright rudeness, of manufacturers with regard to complaints by the public about faulty goods, whatever the price of the article, that I feel that I must publicise the excellent treatment that I received recently from Interpet Ltd., of Dorking.

A piece of equipment of their manufacture began to give me trouble and I was unable to rectify the fault. I must state here that it transpired that the trouble was due entirely to my own meddling with the article. However, I decided to telephone the Company to see if anyone could help me. I was immediately connected to a gentleman who did his best to set me on the right track to effect a cure to my problem. Unfortunately, further meddling did not put matters right so I then decided to pay a personal call to the factory at Dorking. I was graciously received by the same gentleman who was able, immediately, to show me precisely what had gone wrong—through my own doing! But, and this is the climax to my story: as I had broken a particular part of the article in question, I was given a completely new replacement and entirely without charge! I have refrained from naming the article, as I would not want Interpet Ltd. to be embarrassed by a host of complaints and demands for replacements, but I can say that the cost of it was several pounds.

The treatment that I received on this occasion was indeed a pleasure and many firms could learn a lesson or two from this example. After-sales service can make or break a firm and courtesy and helpfulness can rapidly build a business and, of course, financial reward.

I shall have no hesitation in recommending the firm of Interpet and its products to anyone.

ERIC C. GRIGSON,
High Hollow,
Summerhouse Road,
Godalming, Surrey.

Improving Colour

In readers' letters in the February issue of *The Aquarist*, Mr. R. S. Barnes asks my opinion on the advantages of placing goldfish in a green-water pond to improve colour. I quite agree with this idea and this has been known to coldwater exhibitors for many years. However the trouble comes when a fish is taken from such a pond and placed in a clear glass show tank. I remember that in about 1948, I took a green tench (*Tinca tinca*) from my pond to show at the Harrow Exhibition.

When caught it was a deep greenish-bronze but after a few hours in the clear tank it had lost all the lovely deep colouring and was an insipid greyish hue. If possible it would be an advantage to darken the back and ends of the show tank and also the front until the time of judging, when the front shading only, could be removed and the top light switched on.

I suspect that the change in colour is a form of protective colouring, as shown by a chameleon. This colour change can be seen when many species of fishes are placed in clear glass tanks after having been kept in darker ones.

A. BOARDER

Breeding Koi

You were kind enough to publish my last letter in the December issue of *The Aquarist and Pondkeeper* when I asked if anyone had bred Koi Carp in this country and how were they sexed? I have had some very interesting replies and thought I was making slow headway towards understanding how to breed them until Lionel Vanderplank's article in the March issue. It seems they are easy if you are a biologist in a Zoological Society. With 1,500 gallons of heavily purified water heated to X degrees and thermostatically controlled, get up at 6 a.m. and have unlimited daphnia; it also seems impossible to breed them outside in this country.

I cannot see why L. Vanderplank wishes to cross Koi with other fish. I understood that Koi had been line-bred to keep varieties pure and not crossed and mixed up just to see what could be produced. This to me is a step back and not helping the breed in any way.

Sexing is still a mystery as I understand that the males do not get white tubercles like goldfish. The best offer I got was a suggestion from a doctor about a sort of saliva test like athletes have.

I have one more contact to follow up when I can get South to visit him and he can sell me guaranteed Pairs or Females, so will try again.

J. F. GREGORY,
Jarrow.



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.

COLDWATER QUERIES

by Arthur Boarder

I have a female goldfish which is very extended in the belly and I think it cannot get rid of its eggs. How does one strip a goldfish of eggs please?

Just because a goldfish is full of eggs does not mean that it is ready to lay them or that it is in trouble. Such a fish can hold the eggs for a long time and only lay them when a male fish is present to nudge and encourage her. It is possible to strip goldfish, but usually only when they are near to or actually spawning. If attempts are made to strip a fish when it is not ready, then harm could be done to the internal organs. The method I have adopted for stripping is to catch a female and a male fish and have a bowl with some weeds in handy. The female fish is then held in one hand, belly uppermost. Keeping the

fish just in or over the water gently exert pressure from the head rear towards the vent. The thumb and finger of the other hand is used for this purpose and if no eggs are seen to be expelled then do not continue or give more pressure, as the fish is not ready to lay. Then repeat the process with the male fish over the eggs, the milky-like milt can be seen coming from the male. The tail of the fish can then be swished around in the water to spread out the milt so that many of the eggs are fertilised. Do not use a dry hand to hold the fish or mucus could be removed from them. Do not keep the fish out of the water for more than a minute or two. One must, of course hold the fish with its head towards one's wrist.



Photo: L.E.P.

Does a goldfish female carry its young or lay eggs and if the latter are they fertilised by the male when still in the female fish?

Goldfish are egg-layers and the eggs are not fertilised until they are laid. When, encouraged by a male fish, the female expels her eggs the male releases his milt among them and they are fertilised after they leave the female fish. This enables the fish-breeder to keep several varieties of goldfish together in a pond and then he can catch any particular pair for breeding from without fearing that the eggs may have been fertilised by any unwanted male, as could happen with live bearers.

When I set up my pond I bought a number of fishes, orfe, goldfish, shubunkins and tench. They were all put in a plastic bag and the weather was very warm whilst they were being carried home. On arrival one of the orfe was dead and several of the fish have since died. Why was this?

It is no problem to find why the orfe died. These fish are essentially a river fish and must have a well oxygenated water in which to live. When the water lacks oxygen, as it would when very warm, the orfe would be the first to be in distress. From the size of your pond I consider that you over-stocked it with fishes. It is far easier and, incidentally, much cheaper, to stock with a few fishes so that they remain healthy and have a chance to grow and breed. You may have used some soil for planting the water lilies which gave off impurities which upset the water. Then you may have started feeding too heavily before the fishes were properly settled in. It is a great mistake to feed any fish which are freshly put in a pond within at least two days of doing so.

In my pool I have wintered two moors and they appear to be all right but get bumped about by the orfe, should I keep them separately?

I think that you were rather fortunate to keep your moors in an outdoor pond, but I realise that it was not a severe winter in your district. In some winters we have experienced they would have probably died. These fish, although quite attractive, are not very suitable for the garden pond; their large finnage makes them susceptible to fin-rot and fungus disease.

I have recently purchased a large carp and have been told that it will eat water-lily buds. I am feeding it with lettuce leaves. Is there any food I can give it?

The carp will eat any food as given to goldfish, both animal and vegetable. They are not at all fussy about food and I do not think they would eat the water-lily buds if fed with other foods.

I have four edible frogs and find difficulty in feeding them. They are in a pond with ferns, etc., around and netted in. I feed them with

garden worms but these fall into the water. Can you help please?

Use a small tray for feeding purposes. This tray should have over-hanging edges so that worms and other creatures cannot crawl out. Also break the worms in half before feeding. The frogs will soon learn to go to the tray for their food and you can add to the worms, mealworms, white worms, various flies, etc. You can use a fly trap to catch insects, but your idea of encouraging insects to gather near the pond could cause trouble as something smelly would have to be used for the purpose.

Can you recommend a small book dealing with only coldwater fishkeeping, with general management, feeding, breeding and recognising ailments?

Get "Coldwater Fishkeeping", as advertised in the *Aquarist and Pondkeeper*.

Can you please tell me the type of glass to use for a tank 60 by 18 by 15 in?

You can use quarter plate glass for your tank. As the tank is a long one I suggest that the frame is strengthened with cross pieces or it may be inclined to whip and so in bending crack the glass. It would be possible to use glass not quite as thick for the ends of the tank. The base could be slate or wired glass, as it does not need to be clear, as a matter of fact it is better to be quite opaque.

I am doing a project on pond fishes. Could you send me all relevant information on the subject?

I do not feel inclined to write your essay for you. There are plenty of books on the subject in your public library and you are advised to study them and gain information in this way. You could buy the book, "Garden Ponds", published by Foyles at 30p, as this will give you all the information you need.

The goldfish in my tank remain at the bottom of the tank for most of the time. Why is this? I have not had them long.

It is probable that the fish are in a different type of water from that which they were in when you bought them. They will soon get used to the change and swim more normally. Anyway there is no need to worry, it is when the fish are continually at the surface of the water, mouthing for oxygen, that there is cause for concern.

I just cannot buy good veiltail goldfish. Why is there such a dearth and where can I get some please?

There is a shortage of good veiltail goldfish because it is very difficult to breed a number of very good fish. Just because you see a good one occasionally at a show it does not signify that they are bred as easily as Zebra fish. It is sometimes found that only one per hundred from a hatching will turn

out to be a first class fish. The breeder is not likely to part with such a fish. The best way to obtain good veiltails is to breed them. One might think that this is not possible unless one could get first class fish from which to breed. This is not so as any fairly good fish from a good strain is likely to produce a few good fish. Any breeder could supply you with such fish and if he has a well established strain it is almost certain that among the youngsters you breed from them, will be some fish much better than those you started with. Sort these out and you will soon be breeding fish as good as the person from whom you get your parents. It is a slow job but one which is very worth while. The fantails which won me many prizes soon after the last war

were bred by me from rather indifferent fish, but I had been breeding and sorting them for 10 years before I commenced showing. In these days it should not take nearly as long as this because there are plenty of suitable fish about for your purpose. I enclose a name of a dealer who can help you.

I am making a garden pond and would like to know what kind of scavengers to use please?

If goldfish are not fed too much they will act as scavengers quite as well as either tench or catfish. Food should never be given to fishes in a pond in excess of what they can clear up in a few minutes. Hungry fish are healthy ones, and they will never starve in a well-planted pond.

TROPICAL QUERIES

I have two half-grown discus living in a thickly planted 36 in. by 15 in. by 12 in. tank. What other fishes could I keep with them?

Small fishes such as neon tetras, guppies (the fry of which will provide a useful food for the discus) and harlequins can be placed with discus. But do keep careful watch that any fishes introduced into the discus tank do not rob the cichlids of their food.

I have a grey-coloured catfish, with a body outline not unlike that of a rather plump botia, and a forked caudal fin adorned with horizontal bands of black and white. The barbels on the mouth are long and whip-like. Could you possibly identify this catfish for me?

I would say that your catfish is *Dianema urostriata* from Brazil.

Is it true that salt will kill catfish?

Some catfish are sensitive to salt in the water, but the general run of species can stand slightly saline conditions. Do not overlook the fact that some species of catfish are found in the natural state in brackish water.

What is the life-span of a well-fed platy kept in a spacious aquarium filled with clean, well-aerated water?

Roughly the same as that of a properly cared for guppy, which is eighteen months to about two years.

Would it be safe to introduce a firemouth cichlid into my community aquarium?

Generally speaking the firemouth cichlid is a sedate fish not given to stalking or suddenly attacking other fishes for the fun of it or as food, but it is not a reliable species, especially if its companions are much smaller than itself. Be this as it may, a young specimen placed in a thickly planted tank, should not give any trouble. But a true pair, well-grown, would be a

by Jack Hems

danger to other fishes if, and when, they decided to start a family.

I should like to know the scientific name of a small anabantid that I purchased under the name of pygmy gourami. It has iridescent markings on the sides and pointed fins tipped with red. If you can tell me anything about its breeding habits, too, I'd be most obliged?

The scientific name of the pygmy gourami is *Ctenopoma pumilus*. It is not always a ready-breeder, but when it does breed (spawning takes place under a bubble nest the male blows at the surface), the fry are no great problem to raise.

Please supply me with some information about a small cyprinid called a garnet minnow.

Garnet minnow is the popular name for a fish easily confused with the well-known White Cloud Mountain minnow (*Tanichthys albonubes*). Until quite recently the garnet minnow was referred to the genus *Aphyocypris*. Now, however, it is called *Hemigrammocypris lini*. The change in nomenclature was made by the zoologists Weitzman and Chan. The species hails from south-eastern China.

What is your rating of the black neon (*Hypheosobrycon herbertaxelrodi*) as a community fish?

First rate. This species is active, does not molest other fishes, eats anything, and is hardy and long-lived into the bargain.

I bought a pair of spiny eels (*Mastacembelus maculatus*) last week but I cannot get them to eat. My other fishes in the same tank are fed on a well-known brand of flake food, scraped lean meat, and freeze-dried brine shrimp.

Just drop a cluster of live tubifex or whiteworms where the spiny eels are lurking and they will soon



Firemouth Cichlid

develop an appetite. Spiny eels will rarely eat anything but small worms or live *Daphnia*.

I was under the impression that *Gyrinocheilus aymonieri* was a sucking loach from China, but my dealer says the fish is neither a sucking loach nor a native of China. Is he correct?

Your dealer is quite correct. Only the ill-informed persist in calling *Gyrinocheilus aymonieri* a loach from China. The species is a member of the family *Gyrinocheilidae* and hails from Thailand.

Is there such a fish as a mouth-breeding betta?

There are a few mouth-breeding bettas. One of them goes by the scientific name of *B. pictum* and is said to occur in mountain streams of Java and adjacent islands. It is a smaller fish than the well-known *B. splendens*.

Please give me some information on *Nemacheilus barbatulus*?

The common stone loach (*Nemacheilus barbatulus*) ranges from Britain through Europe to Siberia, China and Japan. It has a temperature tolerance of some thirty degrees (°F) but is not tolerant of poorly oxygenated water. It flourishes best in shallow water with some flat stones on the bottom to afford shelter. Small crustaceans, aquatic larvae, and the like, are its food. It averages about four inches in length and minds its own business.

The water in our area is rather hard. Please will you give me the names of some tropicals that do not mind hard water.

Australian rainbow fish, Madagascar rainbow fish, purple-striped gudgeon, Indian pygmy perch, White Cloud Mountain minnows and *Corydoras* catfish do well in hard water.

How can I tell if I have lime-free gravel in my aquarium?

Take out a spoonful and pour a minute quantity of sulphuric or hydrochloric acid onto it. If it fizzes or splutters it is not lime-free.

What sort of set up is required for *metynnis*?

Give metynnis clear water on the soft and acid side. Next, see that they have plenty of swimming space. Third, plastic plants or cured driftwood or calcium-free rockwork as shelter and decoration; for natural plants will be nibbled to shred and eaten as the metynnis increase in size. A temperature in the middle seventies (°F) is perfectly satisfactory.

What native water plants can be grown in the tropical aquarium?

The short answer to this is very few, though the fine-leaved willow moss, some of the mosses from peat-bog pools, charas, and fennel-leaved potamogeton can usually be acclimatised to warm water.

Have mollies been cross-mated with any other livebearers than guppies?

Before the Second World War, when interest in a dozen or more different species of livebearer was high,

the offspring of matings between mollies and limias were by no means uncommon at the larger fish shows.

Could I keep guppies and goldfish in the same aquarium?

You could but I do not advise it. Guppies are frightened by fishes much larger than themselves and, in a well-planted tank, will not venture into open water. Goldfish use up a lot of oxygen and, to stay alive, demand a large tank or artificial aeration. Goldfish will almost certainly need constant aeration if you keep them in warm water, and bear in mind that guppies are not coldwater fish. To sum up then, it is best to keep goldfish in a coldwater aquarium and guppies in a warm water aquarium.

What is a false barb?

The false barb is a barbus-like species which goes under the formal name of *Eirmorus octozona*. It is native to Thailand and is handsomely adorned with eight dark bars on a glassy green body. It grows to about 2½ in. and as it is said to be non-greenstuff-eating and non-aggressive, it should make a good community fish.



Metynnis species

British Freshwater Fish

THE EEL

by A. Boarder

THE EEL belongs to the family, Anguillidae, and is sometimes known as *Anguilla vulgaris*, and is common in most European waters. In Britain it is found in many rivers, canals, lakes and ponds. This fish is not likely to be mistaken as its snake-like appearance is quite different from any other British freshwater fish. The long narrow body is practically scaleless and is slimy. The head is pointed but becomes broader in the female fish when of a large size. The fish has a pair of pectoral fins but not pelvic fins. A large fin starts at about the same position as does the dorsal fin in many British fishes but this fin is continued right to the tail and around it to continue as a form of anal fin. Eels can grow to a large size and one of 8½ lb. has been caught in England.

The food of the eel consists of mostly animal matter such as dead fishes and even live ones which can be caught. Worms and various crustacea are eaten by smaller eels and any dead bird which it can find in the water is also taken. One of the favourite baits used by anglers used to be a dead sparrow squab. Eels have the capabilities of being able to move overland from one water to another. This moving is usually done during wet weather when the fish can move about through wet grass and not lose any moisture.

For many years a mystery surrounded the eel as to how and where it bred. There appeared no signs that they bred anywhere in Europe but thousands of young ones, called elvers, were to be seen swimming up the rivers from the sea every year. It has since been established that the eels, when adult, swim from their fresh waters into the sea and then congregate in or near the West Indies, in the Sargossa Sea. It is thought that they spawn in very deep water. When the fry hatch out they are transparent and shaped like a very narrow leaf. They are then known as *Leptocephalus*. Many thousands move in the Gulf Stream and feeding as they move, gradually reach the shores of Britain, taking three years to do so. By this time the shape of the fry has changed from the deep, flat type to the more cylindrical shape. As such they are known as elvers and swim up our rivers in thousands.

Once the adult eels have left their freshwater rearing waters they never return and it is assumed that once spawning is completed the fish die. Adult eels have been traced from inland waters down the rivers of Europe and some fish can travel up to 230 miles in

30 days. Although thousands of eels have been marked and traced to be moving towards the sea, no adult eels have ever been found moving up rivers. It appears that the sea is not deep enough near our coasts for the eels to breed as at a great depth the temperature of the water can be considerably higher than that in shallower water.

Young elvers can be caught and reared in an aquarium and will feed well and soon grow on a diet of garden worms. The tank must have a safe cover to prevent the fish from leaving the tank. The eels are known as yellow eels until they become adult and reach their breeding time when they change to a silver colour and it is the silver eels which move down to the sea, and during this period they do not appear to eat. Thousands of eels are trapped in eel traps which catch them on their seaward journey and few water mills of past years were without their eel traps. The flesh of this fish is very close and considered quite a delicacy by many people. One of the favourite foods of the Cockney was a plate of stewed eels, a dish which can still be found in some quarters.

Crossword Solution

S	T	A	R	F	I	S	H	N	I	L	E
O	A	H	A	E	E	N					
B	L	E	N	N	O	R	A	N	D	A	E
E	U	O	D	D	O						
C	F	I	N	R	O	T	A	I	R	N	
R	O	E	C	F	D	T					
U	L	U	E	L	K	A	L	G	A	E	
S	W	I	R	L	I	E	O	T			
T	I	N	A	E	N	E	U	S	R	R	
A	T	E	C	S	E	C	A				
C	P	E	A	T	B	A	R	B	E	L	
E	S	A	P	O	T						
A	R	C	H	E	R	F	I	S	H	T	E
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S	I	R	E	G	I	A	N	T	D	A	N

BREEDING *Mollienesia sphenops*

by Pamela M. Hansen

Mollienesia sphenops is a livebearing tooth carp and is found in fresh water coastal areas from Mexico down to Columbia. The male grows to about 8 cm. and the female to 12 cm. The most popular form of *sphenops* is perhaps the pure black variety as opposed to the speckled variety found in nature. *Sphenops* are quite easy to keep but only if certain conditions are observed. Their diet must contain green algae or other plant food and they prefer to have plenty of room and warmth. Lyre-tail *sphenops* is a new and beautiful development but the best specimens must be used for breeding, otherwise the line will deteriorate.

We concentrate on breeding black *sphenops* but even with black parent fish speckled throwbacks occur; and we once had a large speckled female which continually produced large broods of pure black young. We also get a few runts which swim in a peculiar way and whose growth is retarded, but in any case these usually die soon or are eaten by larger fish of another species. With maximum feeding *sphenops* take only two months to mature. In our experience the number of young ranges between 15 and 68 though in theory *sphenops* can have up to 80 young. The interval between broods is about a month.

When the female for the first time shows a particularly plump appearance we move her to a small (11 in. x 9 in. x 8 in.) thickly planted tank. We use about twenty *Sagittaria* plants per tank in addition to floating plants—*Elodea callitrichoides* and *Ceratophyllum submersum*. This latter is only partially suited to tropical tanks as in winter-time it needs to rest in colder water, but there is a wide variety of alternative plants from which to choose. Floating plants have the advantage that they grow rapidly from the moment they are placed in the tank. These plants help conceal the young from the mother and thus prevent them from being eaten. If one wants to be completely safe one can place the mother in a breeding-trap.

We find it a good idea to keep a supply of *daphnia* in the tank as this ensures that the mother is adequately fed and thus unlikely to attack her young. It is also important that there are no other baby fish in the tank as these can have the unfortunate habit, even when only a few days old themselves, of attacking the new-born babies and biting open their abdomens. We once lost all but six of a large brood of *sphenops*, the rest being attacked and killed by one-month-old platys. This can happen even if there is plenty of live food in the tank.

When the female gives birth she generally stands quietly in the same spot near the top of the tank and delivers her young in the course of a few hours. They are very helpless for the first few days. Immediately after birth they fall to the bottom (or sometimes lie at the top) where they will stay for an hour or two, and thereafter we can find them amongst the thick *Elodea* plants or lying on *Sagittaria* leaves. We generally remove the mother when she begins to swim around in a more lively fashion and seems to have her usual figure back. The date of birth is noted down and the female returned to the male until roughly 30 days after (at 78°F) the story is repeated. At a lower temperature there is a greater interval between confinements.

After a fortnight, by which time the young have almost doubled their size, we move them to a larger tank. A good result is achieved if one can move the fish to a larger tank every fortnight—space permitting!

One of our *sphenops* females had produced young regularly for about a year when suddenly she failed to produce any more. We were eventually lucky to perceive that, on the same date every month, she dropped instead, large glass-like eggs, which rapidly dissolved. We had never heard of this phenomenon before but assumed it meant that the fish had become too old to produce young.

A note about our tank conditions. The local water is quite hard, with a DH of 14° and a pH. of 7. The temperature in the tanks ranges between 75°F and 82°F according to the room temperature. In winter we rely entirely on our central heating to maintain the tanks at an adequate temperature and in summer no heat is needed. We live in Denmark, which has perhaps warmer summers than Britain.

Feeding

Adult fish one intends to use for breeding should be fed well beforehand, preferably with live food, e.g., *tubifex*, *daphnia*, cyclops, or mosquito larvae. Young *sphenops* can from birth be fed with cyclops and small *daphnia* and can then reach a size of 3 cm. in the course of eight weeks, by which time they can if desired be sold. As previously mentioned, they need green algae in their diet and so are a help in tanks where this is a problem. The fish also grow fast on small white fishballs which are really intended for human consumption. As Innes once said, "The best food for fish is fish." These balls which are available tinned can be frozen

down once the tin is opened, and kept for months. Micro-worms, which one can very cheaply breed, are another good stand-by for feeding in the first weeks. These must be given frequently in small quantities so as to prevent fouling of the water.

An important point to note is that inadequate

feeding in the first few weeks causes permanently retarded growth. If one has a deep freeze, cyclops and *daphnia* caught in summer-time can be frozen down for use in winter time. This also has the advantage that it kills off all those pests and carriers of disease which put so many people off using *daphnia*.

Willows Round a Garden Pond

by B. Fry

MOST PEOPLE think of willows (*Salix*) as large trees that grow in water meadows or along river banks and wave erect or pendulous branches some fifty feet or more in the air. But this idea is wide of the mark. Lots of willows do not exceed a few inches in height and a number of species as, for instance, the well-known pussy willow or palm (*S. caprea*) flourish amazingly in dry ground.

I have several different willows in my garden. They are decorative all the year round and are ideally suited to enhancing the background of a garden pond. For originality of form *S. matsudana tortuosa* is hard to beat. The branches grow in tight or loose spirals towards the sky. In leaf they are extraordinarily beautiful; after leaf-fall they look bizarre. Although this species, commonly called the corkscrew or twisted willow, grows reasonably fast and will, in time, attain a height of some twenty or thirty feet, it does not romp away too embarrassingly as will *S. caprea*. Again, like *S. caprea*, it can be kept under control by a good cutting back each spring.

For planting near a pond *S. wehrhahnii* is well worth the 75p that a specialist nurseryman will ask for it. About March or April the shrubby growth will become smothered with countless silver catkins. After the catkins have withered away, the branches put out rounded leaves of bright green. More robust in growth is *S. fargesii*. This superb shrubby willow has dark purplish brown stems and long lanceolate leaves of dark green. The early leaf-buds are sealing-wax red. A few branches of *S. fargesii* brought into the house at Christmas time will lend long-lasting charm to a room. Two more willows for winter decoration, in the garden or indoors, are *S. daphnoides*, the purple-stemmed osier, and *S. vitelliana aurea*, the golden osier. Normally these two willows grow into sizeable trees, but cut back each spring they produce a crop of brilliantly tinted stems. *S. vitelliana britzensis* cut back annually will also reward you with a good head of whippy red stems.

A willow for growing on a raised bank sloping down to a pond is *S. repens*. This willow produces creeping thickets of slender stems that seldom grow more than

three feet high. The stems are well-clothed with yellow catkins in the spring. There are several forms of this willow to be found in nurserymen's catalogues and one of the finest is *S. repens argentea*. The small leaves of this diminutive willow are covered with a nap of silvery hairs. *S. reticulata*, another dwarf, is at home on rockwork. It derives its name from the network of veins that add distinction to its rounded leaves. But perhaps the most charming of the smaller willows is *S. lanata*. It looks lovely near a pond. The rounded foliage is silvery woolly above and below, and the large catkins are bright gold. This willow seldom exceeds four to five feet in height.



THE BRITISH AQUARIST FESTIVAL

will be held this year at
Belle Vue Zoological Gardens
Manchester
on Saturday 9th October and
Sunday 10th October

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

MR. John Wheeler of Bradford-on-Avon judged the annual inter club show between Yeovil and D.A.S. and Taunton A.S., both F.B.A.S. affiliated societies. Yeovil regained the trophy by 58 points to Taunton's 49. Best Goldwater Fish: V. Collins (Yeovil). Best Tropical Fish: K. Forward (Yeovil). Best Fish in Show: V. Collins (Yeovil).

During the judging F. Lange of Yeovil gave a talk on his experiences of building a fish house and members from both societies picked many good ideas and tips. At a previous meeting V. Collins gave a talk and demonstration on the Propagation of Coldwater Plants whilst D. Baker gave a lecture on the Electrical Side of Fishkeeping.

At the annual presentation of trophies of the Stone A.S. the following were the awards: The Brindley Cup: A. Smith. Plaques for second and third: I. Brough, J. Lees. Champion of Champions: I. Tucker. Breeders Shield: G. Boulton. Novices Trophy: K. Evans. Livebearers Trophy: A. Smith. This was followed by a social evening.

MORE than 30 societies took part in the Nelson Aquarist Open Show at Nelson Civic Theatre. A total of 152 exhibitors entered 549 fish compared with 309 last year. Best in show was a Chucker Barb bred by its owner F. E. Gregory, of Oldham.

Results: Section A (Guppies): 1, Mrs. M. Cobb (Belle Vue); 2, Mr. Moylan (Blackeboro); 3, Mr. Ross (Ind.). (Swordtails): 1, N. R. Gibson (Hudd.); 2, K. Shaw (Blackeboro); 3, S. Cohen (Bury). (Mollies): 1, S. W. and V. Knowles (N. Staffs.); 2, Mr. and Mrs. Heap (Belle Vue); 3, S. Harrop (Oxram). (Platies): 1, K. Callow (Ind.); 2, S. Robinson (Sunny Brow); 3, Mr. Moylan (Blackeboro). (A.O.V. Live): 1, L. Kaye (Top Ten); 2, Mrs. Davis (Privateer); 3, E. Smith (Sheffield). Section B (Small Characins SW 1): 1, P. E. Gregory (Oldham); 2, H. P. R. McKenna (Nelson) (Nelson member most points award); 3, Mr. and Mrs. Breatley (Belle Vue). (Large Characins): 1, Mr. Sewell (Sherwood); 2, D. Kennedy (Bradford); 3, D. and R. Standen (Loyne). Section C (Angels): 1 and S.W. Mr. and Mrs. Grimshaw (Sunny Brow); 2, Mr. and Mrs. Breatley (Belle Vue); 3, H. and R. McKenna (Nelson). (Dwarf Cichlids): 1, H. and R. McKenna (Nelson); 2, Mr. and Mrs. M. Cooper (Bury); 3, Mr. and Mrs. Jessop (Hudd.). (Adv. Cichlids): 1, D. and R. Standen (Loyne); 2, J. Dawson (Oxram); 3, Mr. Shaw (Morecambe). Section D (Corydoras): 1, J. Mosley (Keighley); 2, R. Davis (Belle Vue); 3, Mr. Sewell (Sherwood). (Cattfish): 1, Mr. Aubrey (Bradford); 2, A. B. Wilke (Stretford); 3, Mr. and Mrs. Bewick (Middleton). (Loaches): 1, Mrs. Davis (Privateers); 2, Mr. Sewell (Sherwood); 3, J. King (Valley). (Sharks and Foxes): 1 and S.W. Mr. and Mrs. Ashton (Middleton); 2, B. Bottomley (Privateers); 3, H. and R. McKenna (Nelson). Section E (Rasbora): 1, D. Kennedy (Bradford); 2, D. Charlton (Liverpool); 3, T. Hallitt (Accrington). (Tooth Carps): 1 and S.W. J. Allen (Middleton); 2, K. Ashers (North Staffs.); 3, K. Harrop (Oxram). (Danios and Minnows): 1, Mrs. M. Cobb (Belle Vue); 2, Mr. Maylaw (Blackeboro); 3, Mr. and Mrs. Rinsley (Ashton-under-Lyne). Section F (Small Barbs): 1

and S.W. and Best in Show and 2, F. E. Gregory (Oldham); 3, P. Ledger (Top Ten). (Large Barbs): 1, R. Dickens (Nelson); 2, A. B. Wilke (Stretford); 3, A. Hurst (Hyde). Section G (Fighters): 1, Mrs. M. Cobb (Belle Vue); 2, J. Rhoades (Sunny Brow); 3, Mrs. Davis (Privateer). (Anabantids): 1 and S.W. and 3, Mr. Sewell (Sherwood); 2, A. B. Wylock (Tadcaster). Section H (A.O.V. Tropical): 1 and S.W. and 3, D. and R. Standen (Loyne); 2, M. Jones (Middleton). Section I (Pairs Live): 1, Mr. and Mrs. Grimshaw (Sunny Brow); 2, S. Pogson (Sunny Brow); 3, W. Smith (Middleton). (Pairs Egg): 1 and S.W. Mr. and Mrs. Ashton (Middleton); 2, Mr. Page (Ind.); 3, Miss A. Gregory (Nelson). Section J (Breeders Live): 1, N. R. Gibson (Hudd.); 2, Mr. Ross (Ind.); 3, Mr. Gardner (Aireboro). (Breeders Egg): 1 and S.W. Mr. and Mrs. Bewick (Middleton); 2, J. Burton (Hudd.); 3, S. Harrison (Hudd.). Section K (Fancy Goldfish): 1 and S.W. Mr. C. Whitney (Accrington); 2, A. Isherwood (Accrington); 3, S. Walsh (Accrington). (A.O.V. Goldwater): 1, D. Carlton (Liverpool); 2, Mrs. M. Cobb (Belle Vue); 3, C. Whitley (Accrington). Section L (Juniors Live): 1, Master A. Kaye (Top Ten); 2, Miss B. Kaye (Top Ten); 3, J. Quinlan (Valley). (Juniors Egg): 1 and S.W. Master A. Kaye (Top Ten); 2, Master P. Cobb (Belle Vue); 3, Miss A. Gregory (Nelson).

THERE were over four hundred entries at the Annual Open Show of the Workshop Aquarist and Zoological Society. The show was a success and the Society would like to thank all the participants. The four judges were: Mr. A. Abdy, Mr. J. Bowers, Mr. B. Inman and Mr. P. Moorhouse.

Results: Section 1A Swordtails: 1, M. Hopewell, Workshop; 2, Mr. and Mrs. Cohen, Castleford; 3, K. Shaw, Gainsborough. Section 1B Guppies: 1, T. Morrison, Workshop; 2, J. Derris, Dukeries; 3, Mr. and Mrs. Gates, Castleford. Section 1C Mollies: 1, J. Igoo, Sherwood, Class Winner; 2, K. Cowan, Gainsborough; 3, K. Ellis, Ind. Section 1D Platies: 1, M. Alltop, Alfreton; 2, R. Clarke, Sherwood; 3, Mr. and Mrs. Kilvington, Doncaster. Section 2A Small Barbs: 1, J. A. Whiteley, Aireborough; 2, Mr. and Mrs. Cohen, Castleford; 3, R. Senior, Sheffield. Section 2B Large Barbs: 1, Mr. and Mrs. Cohen, Castleford, Class Winner; 2, E. Smith, Inz., Sheffield; 3, M. Woodley, Dukeries. Section 3A Small Characins: 1, I. R. Hopton, Workshop; 2, C. W. Marsden, Castleford, Class Winner; 3, J. Derris, Dukeries. Section 3B Large Characins: 1, D. Kennedy, Bradford; 2, J. A. Duffin, Boston; 3, M. Hopewell, Workshop. Section 4A Egg-laying Toothcarps: 1 and 2, S. Noble, Boston, Class Winner; 3, R. Higginbottom and P. Toyne, Sheffield. Section 5A Danios: 1, R. S. Clowes, Castleford; 2, R. Clarke, Sherwood; 3, H. Smith, Sheffield. Section 5B Rasbora: 1, I. and R. Heptinstall, Castleford, Class Winner; 2, R. Toyne, Ind.; 3, E. Sturton, Sheffield. Section 6A Sharks and Foxes: 1, Mr. and Mrs. Cohen, Castleford, Class Winner; 2, J. A. Whiteley, Aireborough; 3, G. Malpass, Ind. Section 6B Minnows: 1, J. Derris, Dukeries; 2, E. Smith, Sheffield; 3, H. Blades, Workshop. Section 7A Dwarf Cichlids: 1 and 2, J. Derris, Dukeries; 3, H. Kuhn, Lincoln. Section 7B Large Cichlids:

1, R. Muggleton, Workshop; 2, D. Jones, Rotherham; 3, J. Derris, Dukeries. Section 7C Angels: 1, M. Woodley, Dukeries, Class Winner; 2, Mrs. M. Igoo, Sherwood; 3, E. Smith, Sheffield. Section 8A Catfish: 1 and 2, Mr. and Mrs. Gates, Castleford; 3, G. Moore, Doncaster. Section 8B Loach: 1, I. and R. Heptinstall, Castleford, Class Winner; 2, R. Senior, Sheffield; 3, A. Higginbottom, Sheffield. Section 9A Fighters: 1, 2 and 3, Mr. and Mrs. Cohen, Castleford, Class Winner. Section 9B A.O.V. Anabantids: 1, T. Sands, Boston; 2, I. and R. Heptinstall, Castleford; 3, J. A. Whiteley, Aireborough. Section 10A A.O.V. Tropical: 1, I. and R. Heptinstall, Castleford, Class Winner; 2, J. Rhoades, Sunny Brow; 3, E. and S. Clowes, Castleford. Section 11A Pairs (Livebearers): 1, D. Airton, Rotherham; 2 and 3, J. Igoo, Sherwood. Section 11B Pairs (Egg-layers): 1, Mr. and Mrs. Cohen, Castleford, Class Winner; 2, N. Carr, Doncaster; 3, M. Alltop, Alfreton. Section 12 Breeders (Livebearers): 1, A. Chapman, Gainsborough; 2, Mr. and Mrs. Cohen, Castleford; 3, G. H. Moore, Doncaster. Section 12B Breeders (Egg-layers): 1, Mr. and Mrs. Cohen, Castleford, Class Winner and Best Fish in Show; 2, J. Derris, Dukeries; 3, R. Clarke, Sherwood. Section 13A Juniors A.O.V. Tropical: 1 and 2, Miss J. Gibson, Workshop, Class Winner; 3, A. West, Sherwood. Section 14A Goldfish: 1, J. S. Hall, Aireborough; 2, J. W. White, Ind.; 3, Mr. and Mrs. F. Toyne, Sheffield. Section 14B Shubunkins and Fancy Goldfish: 1, B. W. Pearsborough, Ind.; 2 and 3, J. S. Hall, Aireborough. Section 14C A.O.V. Goldwater: 1 and 3, A. Higginbottom, Sheffield; 2, C. Huddell, Sherwood. Best Fish Trophy and Gold Pin: Mr. and Mrs. Cohen, Castleford.

THE third open show of the Dukeries A.S. again proved quite successful, attracting 321 entries from 22 societies, although there were two other open shows on the same date. The four judges officiating were: J. Skinner, P. Moorhouse, A. Abdy and G. Gibson.

Results: Section 1: Livebearers Swordtails: 1 and 2, D. and B. Cohen (Castleford); 3, R. Harlow (Derby Regent). Guppies: 1, R. Whiteless (Dukeries); 2 and 3, R. Holmes (Derby Regent). Mollies: 1 and section winner, R. Green (Doncaster); 2, M. Hisslop (Swillington); 3, M. Alltop (Alfreton). Platies: 1, D. & B. Cohen (Castleford); 2, M. Alltop (Alfreton); 3, D. Sewell (Sherwood). Section 2: Small Barbs: 1 and section winner, P. and A. Carey (York); 2 and 3, D. Stead (Swillington). Large Barbs: 1 and 2, M. Hubert (Derby); 3, D. and B. Cohen (Castleford). Section 3: Small Characins: 1, P. Reynolds (Dukeries); 2 and 3, M. Alltop (Alfreton). Large Characins: 1 and section winner, R. Holmes (Derby); 2, D. Sewell (Sherwood); 3, M. Jackson (Workshop A & Z). Section 4: Egg-laying Toothcarps: 1 and section winner, P. Spittlehouse (Workshop A & Z); 2, P. and A. Carey (York); 3, B. and R. Williams (Four Star). Section 5: Danios, Rasbora and Minnows: 1, 3 and section winner, D. and B. Cohen (Castleford); 2, M. Hopewell (Workshop). Section 6: Sharks and Foxes: 1 and section winner, G. Willey (Bradford); 2, J. Scarril (Selby); 3, G. N. Moore (Doncaster). Section 7: Small Cichlids: 1, M. Hubert (Derby); 2, B. T. Hall (Derby); 3, E. Happer (Sherwood). Large Cichlids: 1 and section winner, D. Sewell (Sherwood); 2, Mrs. M. Igoo (Sherwood); 3, J. Scarril (Selby). Section 8: Catfish: 1 and section winner, P. Shipley (Selby); 2, M. Buxton (Sheffield); 3, D. Ellis (Ind.). Section 9B: Loach: 1, G. Thickbrooks (Castleford); 2, A. West (Sherwood); 3, R. Harlow (Derby). Section 9: Fighters: 1, 2, 3, and section winner, D. and B. Cohen (Castleford). A.O.V. Anabantid: 1 and 3, M. Jackson (Workshop); 2, J. Scarril (Selby). Section 10: A.O.V.: 1, D. Kennedy (Bradford); 2, R. Harlow (Derby); 3, P. Reynolds (Dukeries). Section 11: Pairs (Livebearers): 1 and section winner, R. Hisslop (Swillington); 2, J. Igoo (Sherwood); 3, P. Reynolds (Dukeries). Pairs (Egg-layers): 1, M. Alltop (Alfreton); 2, M. Woodley (Dukeries); 3, D. and B. Cohen (Castleford). Section 12: Breeders (Livebearers): 1, D. and B. Cohen

(Castleford); 2 and 3, M. Allsup (Alfreton).
 Breeders (Egglayers): 1 and section winner, D. and B. Cohen (Castleford); 2, J. Lowde (Worksop); 3, G. N. Moore (Doncaster).
 Section 13: Juniors: 1, G. Thickbroom (Castleford); 2, R. Mason (Worksop); 3, (jointly won by A. Bull (Derby) and G. Whitson (Dukeries)).
 Section 14: Goldwater: 1, E. Fearnborough (Ind.); 2, Mr. and Mrs. Toyne (Sheffield); 3, John and Stella (Sheffield).
 Best Fish in Show was awarded to D. Kennedy for his magnificent Black Knife Fish which received 88 points.

THE May meeting of the G.K.N. Pond and Aquarium Society took the form of a conducted tour of Dudley Zoo's Aquarium, under the able guidance of Mr. Davis. Special items in the interest packed tour were the latter's *Tilapia Mossambicus*, the famous enormous black shark, and three beautiful clown loach. After perusing the tanks the host took the visitors "behind the scenes" to see his young stock. Sincere thanks are due to Dudley Zoo Aquarium and Mr. Davis in particular for a visit so well recommended.

THE recent Inter-Club Show between the Bristol Aero A.S. and Yate and District A.S., was another successful and entertaining evening. Three classes of fish were shown—Rasbora, Danios and Minnows in one class, Labyrinth, and a Goldwater class. Yate led by 16 to 14 with points for placings but Bristol Aero gained the most points, due mainly to an excellent showing in the latter class.

At the May meeting an interesting and informative talk on Large Cichlids was given by Mr. W. Gerwell (of the Cardiff Club), who also judged the table show of Barbs. It is interesting to note that of the nineteen fish exhibited, more than a half were Barbos *Conchocoma*, showing the popularity of the Hoy Barb with aquarists.

THE Derby Regent A.S. Open Show attracted the largest crowd yet seen at this annual event. Over 2,000 people attended the show, and entries for exhibition were 50 per cent up on last year, totalling 460.

Results—Guppies: 1, Roy Hobbes, D.R.A.S.; 2, B. Whiteless, Dukeries; 3, D. Jackson, Dukeries; Mollies: 1, V. Knowles, North Staffs.; 2, Mr. and Mrs. Deakin, Nuneaton; 3, A. Moorey, Stone. Swordtails: 1, Mr. Wells, Doncaster; 2, Paul Reynolds, Swillington; 3, A. Morrey, Stone. Platies: 1, Mrs. Jones, Ind.; 2, P. Anderson, Leicester Fishkeeper; 3, Mr. Robertson, Derby. Small Barbs: 1, D. Jackson, Dukeries; 2, John and Stella, Sheffield; 3, D. Stoad, Swillington. Large Barbs: 1, S. Hill, Alfreton; 2, D. Gibson, Derby; 3, Mr. Hubert, Derby. Small Characins: 1, G. Goodrich, Grantham; 2, F. Martin, Alfreton; 3, B. C. Roberts, Ind. Large Characins: 1, D. Sewell, Sherwood; 2, Paul Reynolds, Swillington; 3, G. Roseld, Stone. Fighters: 1, J. Derrin, Dukeries; 2, Mr. and Mrs. R. T. Bull, Derby; 3, Mr. and Mrs. Deakin, Nuneaton. A.O.V. Anatomids: 1, Mrs. Jones, Ind.; 2, Mr. Clarke, North Staffs.; 3, R. Harlow, Derby. Large Cichlids: 1, Mr. Hubert, Derby; 2, E. Hooper, Sherwood; 3, V. Knowles, North Staffs. Angels: 1 and 2, D. Sewell, Sherwood; 3, R. McKenna, Nelson. Sharks and Foxes: 1 and 2, R. Harlow, Derby; 3, C. Cooper, Derby. Loaches and Botias: 1, R. Harlow, Derby; 2, D. Sewell, Sherwood; 3, D. Smith, Hucknall and Bulwell. Corydoras: 1 and 3, D. Sewell, Sherwood; 2, Mr. Wells, Doncaster. A.O.V. Catfish: 1, C. Parnall, Cresswell; 2, Mr. Jordan, Leicester Fishkeepers; 3, J. G. Hunt, South Derbys. Killies: 1, B. Hughes, Stone and B.K.A.; 2, E. Hooper, Sherwood; 3, D. Bennett, Dukeries. Minnows and Danios: 1, Master N. Cook, Doncaster; 2, K. Thomas Lucas A.P.S.; 3, D. Sewell, Sherwood. Rasbora: 1 and 2, B. C. Roberts, Ind.; 3, S. Hill, Alfreton. Dwarf Cichlids: 1, A. Thomas, Bedworth; 2, B. C. Roberts, Ind.; 3, D. Jackson, Dukeries. Livebearer (Pairs): 1, R. Harlow, Derby; 2, R. Hyslop, Swillington; 3, J. Derrin, Dukeries. Egglayers (Pairs): 1, J. Derrin, Dukeries; 2, W. Day, North Staffs.; 3, Mr. Wells, Doncaster. Livebearer (Breeder): 1,

Mrs. Jones, Ind.; 2, A. Morrey, Stone; 3, R. Mayer, North Staffs. Egglayer (Breeder): 1, Mr. Wells, Doncaster; 2, Mr. Taylor, Loughborough; 3, J. Derrin, Dukeries. A.O.V. Tropical: 1, R. Harlow, Derby; 2, Mrs. Wood, Atherstone; 3, Mr. Robertson, Derby. A.O.V. Female: 1, Master M. Hyslop, Swillington; 2, Master N. Cook, Doncaster; 3, B. Hughes, Stone and B.K.A. Livebearer (Juniors): 1, Master M. Hyslop, Swillington; 2, Master G. Whiteless, Dukeries; 3, Master Gascayne, Derby. Egglayers (Juniors): 1, K. Brunt, North Staffs.; 2, A. Bull, Derby; 3, John Kendrick, Derby. Goldfish and Comets: 1 and 3, M. Shilton, Atherstone; C. Hill, Nottingham. Shubunkins and Fancy Goldfish: 1, John and Stella, Sheffield; 2, M. Shilton, Atherstone; 3, Mr. and Mrs. Deakin, Nuneaton. A.O.V. Goldwater: 1, C. Hill, Nottingham; 2, C. Shilton, Atherstone. Decorative Aquaria: Mrs. Kendrick, Derby. Best Fish of the Show: Eric Shaw Trophy, won by Mr. Sewell, Sherwood Society. Best Large Fish: Esme Wilkinson Trophy won by Mr. Sewell, Sherwood Society. Best Small Fish: Won by Mr. A. Thomas, Bedworth Society. Best A.O.V.: Derby Regent Trophy won by Reg Harlow, Derby Regent. Decorative Aquaria: Terry J. Trophy won by Mrs. Kendrick, Derby Regent.

THE annual open show of the Trowbridge and District A.S. in May was well supported and there were more than 500 entries. Results: Furnished Jar: 1, R. Bishop; 2 and 3, Mrs. D. King; 4, S. Daniels, A.O.V. Barbs: 1, T. Hayward; 2, C. Russell; 3, Mrs. W. Egger; 4, R. Nash, Small Barbs; 1, D. Warmont; 2, S. Green; 3, R. Larcombe; 4, G. Churchill, A.O.V. Characins: 1, C. Phipps; 2, M. Patrick; 3, F. Williams; 4, R. Cooke, H. & H. and Cheridons: 1 and 2, M. Patrick; 3, B. Dolling; 4, D. Cotterill, A.O.V. Cichlids: 1 and 2, M. Strange; 3, D. Noble; 4, Mrs. M. Lane, Angels: 1, J. Bull; 2, C. Bull; 3, M. Patrick; 4, I. Edwards, Agostogramma and Nannacara: 1, G. Furber; 2, B. Snell; 3, F. Williams; 4, P. Lewis, A.O.V. Labyrinth: 1 and 4, M. Cocker; 2, M. Strange; 3, R. Harvey, Siamese Fighters: 1, S. Daniels; 2 and 3, Mrs. D. King; 4, D. Hodge, Killies: 1, G. Churchill; 2, R. Bennett; 3, Mrs. D. King; 4, D. Noble, Catfish: 1, S. Daniels; 2, R. Larcombe; 3, B. Snell; 4, S. Green, Corydoras and Brochis: 1, S. Daniels; 2 and 4, F. Williams; 3, T. Blanchard, Rasbora: 1, R. Bishop, Samuels; 3, A. Pomford; 4, G. Furber, Bona Loaches Bids: 1, 3 and 4, G. Furber; 2, I. Vickery, A.O.V. Tropical: 1, D. Hodge; 2, R. Bishop; 3, R. Larcombe; 4, B. Snell, Pairs: 1, F. Williams; 2, N. Binding; 3, M. Griffiths; 4, Miss B. Hervein, Male Guppy: 1, 2 and 4; 1, Wheeler; 3, D. Bateman, Female Guppy: 1, J. Wheeler; 2, D. Bateman; 3, I. Edwards; 4, D. Wigg, Swordtails: 1, A. Pomford; 2, Mrs. M. Lang; 3 and 4, R. Harvey, Platies: 1, Mrs. W. Short; 2, Mrs. S. Scodamore; 3, S. Hervein; 4, T. Hayward, Mollies: 1, D. Sullivan; 2, B. Dolling; 3, S. Hervein; 4, T. Hayward, Shubunkins, 1, 2, 3 and 4, D. Langdon, Common Goldfish: 1, M. Butcher; 2, V. King; 3, M. Samuels; 4, L. Loughlin, A.O.V. Goldwater: 1 and 3, T. Fitzgerald; 2, C. Pearce; 4, M. Bishop, Fancy Goldfish: 1, S. Daniels; 2 and 3, C. Cuss; 4, R. Clark, Livebearers (Breeder): 1, J. Wheeler; 2, B. Spiers; 3, G. Furber; 4, M. Samuels, Egglayers (Breeder): 1, E. Newman; 2, C. Russell; 3, D. Warmont; 4, Mrs. D. King. Best Fish in Show, Betta Modesta: G. Furber.

At the first meeting in May Bracknell A.S. were due to have a match against Riverside A.S. who unfortunately were unable to attend. Instead a fairly large amount of Club business was discussed and instead of the usual Table Show of two classes, they were three. The first Specialist (Pairs) was won by J. Hovsey, second, M. Carter, third L. Little. The second class was for Egglayers and M. Carter took the first three placings. The third class was for Livebearers and L. Little took these first three places. This Table Show was judged by

F.B.A.S. B Class Judge, Adrian Blake, of Basingstoke A.S.

At the second meeting in May, Show Secretary Les Jordan gave a talk on his experiences recently in the United States. The results of the evenings Table Show for Characins were: 1 and 2, M. Carter; 3, L. Little, A.O.S.; 1, M. Carter; 2, D. Learmont; 3, R. Smith. The table show as judged by T. Duffy, of Bracknell A.S.

THE Spalding and District Aquarist Club is now well established with 32 members and have more enquiries to join at the next meeting. A tank has been installed at the local hospital for aged people and the permanent headquarters where the meeting night is (the second Thursday of the month), are "The White Lion Hotel," High Street, Spalding, Lincs. Correspondence can either be addressed there or to W. R. Clarkson, 85 Halmersgate, Spalding, Lincs.

The loan is requested from societies of 35mm films or slides dealing with anything in connection with fish, plants, etc., to show at one of the meetings. Anything loaned of course would be looked after with the greatest of care.

CONTINUING their recent run of victories over rival Societies Ealing and District A.S. emerged as victors of the second leg of their three matches against Riverside and Runnymede Societies. To entertain the three Societies at this match, Hendon A.S. provided a slide show on Cichlids and Biting are indebted to K. Purbrick, B. Mould and D. Anderson for stepping into the breach at very short notice. A recommended team with excellent slides entertainingly presented.

The result of the match (judged by Adrian Blake, F.B.A.S.) showed Ealing increasing their total to 59 points, Riverside 25 points and Runnymede 16 points.

At an earlier meeting during May, a general discussion was held on fishkeeping in general primarily for beginners to the hobby but nevertheless many tips quoted were eagerly seized upon by the "experts" too!

Forthcoming attractions at the Club (meeting on the first and third Tuesday of each month at Northfields Community Centre, Northcroft Road, W.13) include a talk by P. Bud (Mid Herts) on Characins; a Club "activity" evening and a talk by Frank Tomkins, the Chairman of the F.B.A.S. Judges and Standards Committee. New members are always welcome, further information from the Secretary, C. Rainbow, 25 Lynton Road, Chesham, Bucks.

THE Seventh Annual Open Table Show of the Bath A.S. held recently was a great success with a total of 689 entries giving a total of 852 fish on show. The results are as follows: Guppies: 1, T. Bateman; 2 and 3, J. Wheeler, Mollies: 1, D. Sullivan; 2, D. Hodge; 3, A. Pomford. Platies: 1, S. Scodamore; 2, W. Short; 3, R. Harvey. Swordtails: 1, R. Harvey; 2, R. Wans; 3, A. Pomford. Barbs: 1, D. Warmont; 2, G. Furber; 3, D. Warmont. A.O.V. Barbs: 1, A. Hillard; 2, Mrs. Bager; 3, R. Wigg, H. and H.; 1, R. Larcombe; 2, B. Dolling; 3, R. A. Bennett. A.O.V. Characins: 1, R. J. Hoare; 2, D. Mayer; 3, S. Green. Fighters: 1, T. King; 2, S. Daniels; 3, D. Hodge. Labyrinth: 1, A. Blyth; 2, R. Harry; 3, M. J. Samuels. Coridoras Catfish: 1, M. Williams; 2, G. Carter; 3, T. King. A.O.V. Catfish: 1, A. E. Rendell; 2, J. H. Piper; 3, P. Feely. Loaches, Botias and Bids: 1, R. Newton; 2, R. J. Hoare; 3, J. Vickery. Large Cichlids: 1, M. Strange; 2, M. G. Emery; 3, R. Newton. Dwarf Cichlids: 1, G. Furber; 2, M. Strange; 3, R. J.

PREVENTS

ALGAE
 Hillside Aquatics London N12

(South Leeds). Best in Show: P. Carey (York). Society gaining most points: Castleford.

RESULTS of the Bethnal Green A.S. Show were as follows: Aquarist Gold Pin and Bethnal Green A.S. award for best fish in show: S. G. Cowell. Chingford A.S. award for Angels: L. Roberts. Enfield A.S. award for Cichlids: R. Bowers (Cichlid Glass Marble Angels). Harlow A.S. award for Characins: Mr. J. Twine. Tottenham A.S. award for E. L. Toothcarps: R. Longstaff. Walthamstow A.S. award for Coldwater: H. Berger (Shubunkin). Club Furnished—Tropical: 1 and 4, Tottenham A.S.; 2, Walthamstow A.S.; 3, Chingford A.S. Club Furnished—Coldwater: 1, Walthamstow A.S. Individual Furnished Aquaria: 1, J. Connolly; 2, D. Goodbody; 3, Mrs. J. Twine; 4, A. Chandler. Barbs: 1, S. Cowell; 2, Mrs. Pollard; 3, Mrs. G. Howe; 4, A. Kinsey. Characins: 1, Mrs. J. Twine; 2, S. Cowell; 3, P. Coyle; 4, A. Kinsey. Hypnocheilids: Hemigrammus, or Cheirodon: 1 and 2, R. Bowers; 3, S. Cowell; 4, B. Martin. Cichlids: 1, R. Bowers; 2, A. Kinsey; 3, B. Martin; 4, D. Laughlan. Adiantogramma, Pelmatostichus or Nannacara: 1 and 2, R. Bowers; 3, A. Collings; 4, J. Grace. Labyrinth: 1, S. Cowell; 2, P. Coyle; 3 and 4, J. Howe. Fighters: 1 and 4, R. Bowers; 2 and 3, S. Cowell. E. L. Toothcarps: 1 and 3, R. Longstaff; 2 and 4, K. Nutt. Tropical Catfish: 1, G. Greenhalf; 2, A. Kinsey; 3, K. Wilkins; 4, R. Longstaff. Corydoras or Brochis: 1, B. Bullock; 2, G. Greenhalf; 3, H. Johnston; 4, D. Dare. Rasbora: 1 and 2, R. Mackay; 3 and 4, R. Taylor. Danio and W.C.M.M.: 1, R. Bowers; 2, G. Gibbs; 3, R. Smith; 4, A. Kinsey. Loach: 1, J. Mackay; 2, Mr. and Mrs. Lambourne; 3, J. Ellis; 4, A. Wood. Egg-layer: 1, P. Brindley; 2, J. Fordham; 3, J. Howe; 4, T. Butler. Tropical Pairs: 1, P. Brindley; 2, Mr. and Mrs. Baulson; 3, A. Collings; 4, H. Watts. Male Guppies: 1, Mrs. M. Quinell; 2 and 4, R. Bowers; 3, D. Thomas. Female Guppies: 1, L. Goff; 2, D. Reilly; 3, T. Butler; 4, Mrs. J. Twine. Swordtails: 1 and 2, A. Collings; 3, A. Wood; 4, B. Mason. Platies: 1, D. Reilly; 2, K. Quinell; 3, S. Cowell; 4, Mrs. G. Howe. Molli: 1, Mrs. Bowers; 2, J. Howe; 3, G. Howe; 4, W. Tetra. A.O.S. Livebearer: 1, J. Pollard; 2 and 3, G. Greenhalf; 4, J. Mackay. Tropical Breeders (Egg-layers): 1 and 2, A. Chandler; 3 and 4, K. Nutt. Tropical Breeders (Livebearers): 1, B. Read; 2, F. R. Pimm; 3, T. Twine; 4, R. Longstaff. Breeders (Coldwater): 1 and 2, Mrs. Longstaff. Common Goldfish: 1, M. Carter; 2, Mrs. Hodges; 3, R. Smith; 4, Miss B. Quinell. Shubunkins: 1 and 4, H. Berger; 2 and 3, D. Goodbody. Comets: 1, Mrs. G. Longstaff; 2, Mrs. Hodges; 3, M. Carter. Twinstails: 1 and 3, Mrs. Longstaff; 2, H. Johnston; 4, G. Fleming. A.O.S. Goldwater: 1 and 2, Mrs. Hodges; 3, J. Pollard; 4, M. Carter. Plants: 1, 3 and 4, K. Nutt; 2, D. Watt.

AT the fourth open show of **Nuneaton A.S.** 475 entries were benched and 600 people passed through the door. There was, however, a major scare during the afternoon when the show bench holding the cichlids, coldwater plants, catfish and A.O.V. tropical exhibits began to collapse. Luckily, the weight of the bench and exhibits—in the region of two tons—was held up, and an inquiry will be held, and the society would like to thank everyone concerned.

Results—Fighters: 1, B. and F. Hirst (Coventry); 2, M. Towell (Kingston); 3, Mr. Bull (Derby Regent); 4, G. Harwell (Earl Shilton). A.O.V. Anabantid: 1, J. Clayton (Kingston); 2, Mr. Clarke (North Staffs); 3, S. Bloxham (Nuneaton); 4, Mr. and Mrs. Balcombe (Bedworth). Characins (over 3 in. adult size): 1, Attwood and Williams (Rugby Select); 2, P. Anderson (Leicester); 3, Mr. and Mrs. Kemp (Nuneaton); 4, Mr. Crutchley (Nuneaton). Characins (under 3 in. adult size): 1, K. Thomas (Lucas); 2, R. Roberts (Solihull); 3, A. Thomas (Bedworth); 4, Mr. Cyster (S.A.S.S.). Angel fish: 1 and 2, Mr. Sewell (Sherwood); 3 and 4, Mr. Parry (Loughborough). Dwarf Cichlids: 1, Mr. and Mrs.

Kemp (Nuneaton); 2, Mr. Bull (Derby Regent); 3, Mr. Roberts (Solihull); 4, A. Thomas (Bedworth). A.O.V. Cichlid: 1, R. Tedds (Bedworth); 2, Mr. Hough (M.T.A.); 3, Mr. Sewell (Sherwood); 4, Mr. Sketchley (Bedworth). Barbs (over 3 in. adult size): 1, Mr. and Mrs. Bird (Leamington); 2, Whitfield and Massey (Rugby Select); 3, Mr. and Mrs. Haines (Nuneaton); 4, E. Wilkins (Coventry). Barbs (under 3 in. adult size): 1, B. Smith (Lucas); 2, Mr. Sewell (Sherwood); 3, S. Roberts (Solihull); 4, B. Roberts (Solihull). Corydoras Catfish: 1, G. Turner (Binks Bullocks); 2, Mr. Sewell (Sherwood); 3, Mr. and Mrs. Kemp (Nuneaton); 4, Mr. Ankers (North Staffs). A.O.V. Catfish and Loach: 1, J. Aucott (Nuneaton); 2, G. Roberts (Solihull); 3, Mr. Jones (Tamworth); 4, Attwood and Williams (Rugby Select). A.V. Guppy: 1, R. Holmes (Derby); 2, R. Tromans (W.K.F.B.); 3, Mr. and Mrs. Fagan (Clapham); 4, I. Paulides (Works). A.V. Platy: 1, Mr. and Mrs. Balcombe (Bedworth); 2, Mr. Parry (Loughborough); 3, Mr. Sewell (Sherwood); 4, Attwood and Williams (Rugby). A.V. Molly: 1, Mrs. Crutchley (Kingston); 2, S. Bird (Leamington); 3, Mr. and Mrs. Balcombe (Bedworth); 4, Mr. Cashmore (S.A.S.S.). A.V. Swordtail: 1, Mr. Crutchley (Kingston); 2, Mrs. Leigh (Nuneaton); 3, J. Jordan (Leicester); 4, Mrs. Crutchley (Kingston). A.O.V. Livebearer: 1, 2 and 3, Mrs. Crutchley (Kingston); 4, N. Furness (Rugby). Egg-layer Broods: 1, Mr. Sewell (Sherwood); 2, D. Robertson (Derby); 3, G. Turner (Binks Bullocks); 4, B. and F. Hirst (Coventry). Livebearer Broods: 1 and 2, D. Cannon (Nuneaton); 3, Mr. and Mrs. Simpson (Bedworth); 4, R. Tedds (Bedworth). Pairs Egg-layers: 1, 2 and 3, Mr. Hough (Derby); 4, Mr. Sheehy (Coventry). Pairs Livebearers: 1, P. Anderson (Leicester); 2, S. Hall (Nuneaton); 3, Mr. Parry (Loughborough); 4, Marlow (Derby). Danios, Rasboras, W.C.M.M.: 1, Mr. Ankers (North Staffs); 2, Mrs. Leigh (Nuneaton); 3, Mr. Parry (Loughborough); 4, Whitfield and Massey (Tamworth). Killie Fish: 1, Mr. Cashmore (S.A.S.S.); 2 and 4, B. and F. Hirst (Coventry); 3, H. Towell (Kingston). A.O.V. Tropical: 1, S. Bloxham (Nuneaton); 2, Mr. Jones (Tamworth); 3 and 4, R. Harlow (Earl Shilton). Goldfish: 1, P. Anderson (Leicester); 2, M. Shilton (Atherstone); 3 and 4, E. Wilkins (Coventry). Fancy Goldfish: 1, M. Driskin (Nuneaton); 2, Mrs. Leigh (Nuneaton); 3, A. Jeffs (Bedworth); 4, Carrivright (Leicester). A.O.V. Goldwater: 1 and 2, Mr. and Mrs. Haines; A.V. Aquatic Plant: 1 and 2, S. Bloxham (Nuneaton). Junior Livebearer: 1, P. Bird (Leamington); 2, S. Harwell (Earl Shilton); 3, R. Commander (Tamworth); 4, N. Furness (Rugby). Junior Egg-layer: 1 and 4, Master Sheehy (Coventry); 2 and 3, R. Commander (Tamworth). Furnished Aquaria: 1, Mr. Hardins (Leicester); 2, Mr. and Mrs. Aucott.

AT the May meeting of the **Coventry Pool and A.S.** members and guests first heard of detailed arrangements for the open show and then were entertained with a quiz game which tested their knowledge of certain common and rarer fish. Table Show Results: Egg-layers: B. and F. Hirst. Livebearer: T. Manning. Danios, Rasboras and W.C.M.M.: M. Lewis. Junior—Characins: P. Dewis. Best in Show was a team of six Rainbow Tetras in the Egg-layer class, owned by B. and F. Hirst.

THE results of the **Osram Open Table Show** were as follows: Anabantid: 1, Mr. and Mrs. Cobb, Belle Vue; 2, J. Peck, Lorne; 3, S. Rogers, Stretford. Fighters: 1, Master D. Brook, Huddersfield; 2, Mr. and Mrs. Cobb, Belle Vue; 3, P. Shingleton, Belle Vue. Small Barbs: 1, 2 and 3, F. Gregory, Oldham. Large Barbs: 1, N. R. Gibson, Huddersfield; 2, Mr. Rowbottom, Hyde; 3, Mr. Stafford, Oldham. Labcos and Sharks: 1, Mr. and Mrs. Ashton, Middleton; 2, S. Harrop, Osram; 3, J. A. Hellens, Houghton (Durham). Small Characins: 1, F. Gregory, Oldham; 2, M. Tongue, Oldham; 3, Mrs. J. Broadhead, Independent. Medium Characins: 1, M. Tongue, Oldham; 2, T. Hunt, Stretford; 3, Miss A. Gregory,

Nelson. Large Characins: 1, K. Parkes, Merseyside; 2, Mr. Muller, Merseyside; 3, A. B. Wilkey, Stretford. Dwarf Cichlids: 1, Mr. and Mrs. Jessop, Huddersfield; 2, M. Tongue, Oldham; 3, Mr. Holt, Independent. Angels: 1, Mr. and Mrs. Grimshaw, Sunnybrow; 2, H. Lees, Oldham; 3, T. Ainsworth, Osram. A.O.V. Cichlids: 1, Mr. and Mrs. Norris, Lorne; 2, P. Kerton, Belle Vue; 3, Mrs. M. Davies, Belle Vue. Tooth Carps: 1, M. Tongue, Oldham; 2, Mr. and Mrs. Lofthouse, Huddersfield; 3, F. Robinson, Sunnybrow. Rasboras: 1, Mr. Locke, Salford; 2, Mr. and Mrs. Ashton, Middleton; 3, H. Charlton, Merseyside. Danios: 1, Mr. and Mrs. Ross, Belle Vue; 2, Mr. and Mrs. Cobb, Belle Vue; 3, S. Harrop, Osram. Guppies: 1, Mr. Peck, Lorne; 2, Mr. and Mrs. Cobb, Belle Vue; 3, Mr. Greenwood, Heywood. Molli: 1 and 3, Mr. and Mrs. Grimshaw, Sunnybrow; 2, A. Bowling, Sunnybrow. Swordtails: 1 and 3, N. R. Gibson, Huddersfield; 2, Mr. and Mrs. Lofthouse, Huddersfield. Platies: 1, Mr. and Mrs. Cobb, Belle Vue; 2, Mr. Muller, Merseyside; 3, A. Bowling, Sunnybrow. A.O.V. Livebearers: 1, Mr. and Mrs. Kinsey, Ashton; 2, Mr. and Mrs. Bressley, Belle Vue. Loaches: 1, Mr. Thomallad, Merseyside; 2, G. Hodgkinson, Gorton and Openshaw; 3, P. Gregory, Oldham. Catfish: 1, R. Davies, Belle Vue; 2 and 3, Mr. and Mrs. Bewick, Middleton. Goldfish: 1, Mr. and Mrs. Cobb, Belle Vue; 2 and 3, Mr. Whalley, Accrington. Shubunkins: 1, Mr. and Mrs. Cobb, Belle Vue; 2 and 3, S. Walsh, Accrington. Waltham: 1, Mr. Whitley, Accrington; 2, H. Penhall, Osram; 3, S. Walsh, Accrington. Orandas and Lionheads: 1, H. Penhall, Osram; 2 and 3, C. Whitley, Accrington. A.O.V. Coldwater: 1 and 3, C. Whitley, Accrington; 2, S. Walsh, Accrington. Breeders (Egg-layers): 1, R. Higgins, Oldham; 2, Mr. and Mrs. Pearson, Sunnybrow; 3, Mr. Stear, Stretford. Breeders (Livebearers): 1, N. Gibson, Huddersfield; 2 and 3, P. Danielson, Huddersfield. Breeders (Guppies): 1, S. B. Dawson, Osram. A.O.V.: 1, Mr. and Mrs. Norris, Lorne; 2, T. Hunt, Stretford; 3, Mrs. Tongue, Oldham. Pairs (Egg-layers): 1, Mr. and Mrs. Ashton, Middleton; 2, Mr. and Mrs. Bewick, Middleton; 3, K. Parkes, Merseyside. Pairs (Livebearers): 1, N. R. Gibson, Huddersfield; Mr. and Mrs. Pearson, Sunnybrow; 3, Mr. and Mrs. Cobb, Belle Vue. Osram Juniors: 1 and 2, D. Dawson; 3, K. Wood. Fantails: 1, H. Penhall, Osram; 2 and 3, S. Walsh, Accrington. Highest Pointed Society: 1, Belle Vue 31 pts., 2, Oldham 27 pts., 3, Huddersfield 26 pts. Best Fish in Show: K. Parkes, Merseyside 83 pts.

THE **British Aquarist Study Society** held its first meeting of the year at the Zoological Societies Lecture Hall Regent's Park early in May. The first lecture on "Water conditions and the Aquarist" was given by J. Soames, B.Sc. The lecture covered not only the basic details of the subject but also water testing, and special preparations for keeping and breeding the more delicate fish. The second lecture was given by H. Pengilly on Cichlids and Labyrinth and was illustrated fully with slides taken by Mr. Pengilly. The next meeting will be the A.G.M. in early October.

A VERY interesting talk on breeding livebearers was given by Alec Firth at the **Keighley A.S.** May meeting. The results of the monthly table show were: F.O.M. Anabantid: 1, J. Mosley; 2 and 3, Mr. Heap. A.O.V.: 1 and 2, D. Taylor; 3, Mr. Heap. Novice A.O.V.: 1, Mr. Hart; 2, J. Mosley; 3, Master D. Mosley. Junior A.V.: 1, Master D. Mosley; 2, Master Cuming; 3, Master White.

THE SAFE CURE FOR FUNGUS IS halamid
Hillside Aquatics London N12

A SLIDE and tape show "Judging, by C. A. T. Brown" was the main item at the **Tonbridge and District A.S.** meeting. The tape was held from Hendon A.S. Table show results: F.R.A.S. classes K: 1 and 2, J. T. Mathison; 3, R. Taylor. S: 1, K. Shoebridge. T: 1, J. T. Mathison.

EIGHT societies took part in an Invitation Show organised by **Runnymede A.S.** The other seven societies were: Bracknell, Ealing, High Wycombe, Hounslow, Riverside, Roehampton and Uxbridge and between them they benched over 400 entries. The Best Fish in the show went to Mr. and Mrs. Lambourne of Roehampton A.S. for their Black Shark, whilst the award for the society gaining most points went to Bracknell A.S. Full list of class awards were as follows: A.S. Barb: 1 and 4, C. B. Pike, High Wycombe; 2, D. Brooks, Hounslow; 3, M. C. Walker, Hounslow. Characins: 1, Mr. and Mrs. Lambourne, Roehampton; 2, J. Bannion, Hounslow; 3 and 4, Mr. Carter, Bracknell. C.A.: 1, J. Richardson, Runnymede; 2, Mrs. O. Leslie, High Wycombe; 3, D. Brooks, Hounslow; 4, J. Duffy, Bracknell. Cichlids: 1, M. Wetherall, Riverside; 2, Mr. and Mrs. Hudson, Roehampton; 3, P. Newman, High Wycombe; 4, C. Waller, Hounslow. D.A.: 1, P. Newman, High Wycombe; 2, Mrs. W. Arkell, Bracknell; 3, C. Meier, Runnymede; 4, M. Alexander, Hounslow. E.: 1, M. Goss, Riverside; 2 and 4, Mr. and Mrs. Lambourne, Roehampton; 3, J. Hughes, Roehampton. F.: 1, 2 and 3, R. G. Armstrong, Bracknell; 4, L. Matthews, Hounslow. G.: 1, J. Batts, Ealing; 2 and 3, Mr. and Mrs. Lambourne, Roehampton. H.: 1, T. Duffy, Bracknell; 2, M. Wetherall, Riverside; 3 and 4, R. G. Cox, High Wycombe. J.: 1, M. Carter, Bracknell; 2, T. Swadling, Runnymede; 3, K. White, Runnymede; 4, W. Mason, Roehampton. K.: 1, M. Pratt, Hounslow; 2, L. G. Little, Bracknell; 3 and 4, M. Carter, Bracknell. L.: 1, Mr. and Mrs. Lambourne, Roehampton; 2, M. Carter, Bracknell; 3, D. Pratt, Roehampton; 4, (tie), R. Leslie, High Wycombe and M. Carter, Bracknell. M.: Mr. and Mrs. Lambourne, Roehampton; 2, J. Batts, Ealing; 3 and 4, P. Newman, High Wycombe. N.: 1 and 4, R. C. Armstrong, Bracknell; 2, K. Brooks, Hounslow; 3, M. Carter, Bracknell. O.: 1 and 2, M. Wetherall, Riverside; 3, R. G. Armstrong, Bracknell; 4, J. Terry, Runnymede. P.: 1, M. Wetherall, Riverside; 2 and 3, C. Meier, Runnymede; 4, J. Terry, Runnymede. Q.: 1, S. Mason, Roehampton; 2, D. Lyne, High Wycombe; 3, R. G. Cox, High Wycombe; 4, R. Newman, Uxbridge. R.: 1, D. Schram, High Wycombe; 2, Mrs. J. Garrard, Runnymede; 3, J. Batts, Ealing; 4, W. Mason, Roehampton. S.: 1, J. Batts, Ealing; 2, W. Mason, Roehampton; 3 and 4, A. Loveday, Hounslow. T.: 1, J. Batts, Ealing; 2, 3 and 4, J. Dixon, Bracknell. X.A.: 1, R. G. Cox, High Wycombe; 2, T. Duffy, Bracknell; 3, D. Brooks, Hounslow; 4, R. Leslie, High Wycombe. X.B.: 1, L. G. Little, Bracknell; 2, W. Mason, Roehampton; 3, Mrs. O. Leslie, High Wycombe; 4, J. Parker, Uxbridge. Z.: 1, J. Parker, Uxbridge; 2, B. Fennell, Uxbridge; 3 and 4, K. Forder, Uxbridge.

The Runnymede A.S. hold their meetings on the first and third Tuesday of each month at Ashford Community Centre, Chesnerfield Rd., Ashford, Middlesex. The Secretary is Mrs. J. Garrard, "Le Rivage," Long Lane, Stanwell, Middlesex.

THE officers of the **Creswell and District A.S.** are as follows: Chairman, R. Mill; hon. secretary, M. Deakin, 33 Sitwell Road, Worksop, Notts, phone 6347; treasurer, J. D. Fletcher.

THERE was a well attended May meeting of the **Carshalton A.S.**, together with the guest club Croydon A.S. The table show was won overall by Croydon with 1,214 points to 1,036 points. This was judged by H. Towell of the F.R.A.S. Results: Characins: 1 and 2, A. Smith (Croydon); 3, I. Derrick (Croydon); 4, T. Boar (Carshalton). Livebearers: 1, L. Wood (Croydon); 2, K. Dryden (Croydon); 3,

D. Day (Croydon); 4, C. Lamb (Carshalton). Corydoras: 1, J. Begbie (Carshalton); 2, D. Day (Croydon); 3, C. Lamb (Carshalton); 4, K. Dryden (Croydon). E.L. Pairs: 1, K. Dryden (Croydon); 2, C. Lamb (Carshalton); 3, D. Day (Croydon); 4, L. Wood (Croydon).

OFFICERS elected at the annual general meeting of the **New Forest A.S.** to serve for 1971/72 were: Chairman, A. Williamson; vice-chairman, C. Knapp; secretary, R. Travers; treasurer, B. Higginson; show secretary, D. Harding; assistant show secretary, D. Lane; committee, S. Bray and M. Lee; librarian and publicity officer, D. Lane. The chairman expressed thanks to D. Tackwell, the retiring treasurer and the show secretary remarked on the high standard of fish shown at the club table shows and hoped this would continue. The Tropical Points Trophy was won by D. Lane, Breeders Trophy R. Massey, Tropical furnished aquarium, C. and A. Knapp, Coldwater Points Trophy, D. Lane. Champion Tropical, 1, M. Aust; 2, S. Bray; 3, M. Aust; 4, D. Lane.

A LARGE audience heard Harry Berger give a lecture on "Coldwater Fishkeeping at the Hford and District Aquarist and Pondkeepers' Society" May meeting. He briefly covered the history of the common goldfish right up to today's more perfected strains and also gave illustrations of correct body shape and colouring with some of his own fish. The results of the monthly table shows were as follows: April: A.V. Fancy Goldfish: 1, 2 and 3, Mrs. Rowe. A.V. Play: 1, 2, 3 and 4, Mrs. Rowe. A.V. Characin: 1 and 4, Mr. Perry; 2, Mr. Forrester; 3, Mr. Ruth. May: A.V. Single Tail Goldfish: 1, 2 and 4, H. Berger; 3, Mr. Ruth. A.V. Labrynth: 1 and 3, Mrs. Rowe; 2, Mr. Rendall; 4, Mr. Seaman. A.V. Swordtail: 1, 2 and 3, Mr. Seaman; 4, J. Hayman. The club is still keen to enrol new members and anyone interested should contact R. Ruth, 103 Heath Road, Chadwell Heath, Essex.

THE **Leamington and District A.S.** were given a very good demonstration at their May meeting on how to make an all-glass tank by Mr. Smith from Rugby. Table Show Results: Barbs: 1, P. Bird; 2, S. Cleary; 3 and 4, R. Gurthorpe. All winners. Ladies: 1, Genis: T. Dobson, B. Bird, N. Beard, S. Bird.

AT the annual competition of the **Yeovil and District A.S.** tropical pairs competition for the Stainer/Eotic trophy, Mrs. M. Ricketts became the first lady to win this award. Other places: second D. Phinn; third Mrs. C. Hunt; fourth M. Rendell. At the recent Annual Inset Club Show with the Weston-super-Mare A.S., Yeovil were well beaten by 83 points to 63 points. The results were as follows: Platies: 1, R. Heather (Y); 2, Mrs. Nicholas (W); 3, D. Barton (W); 4, Mrs. Baker (Y). Mollies: 1, Mrs. Nicholas (W); 2 and 4, M. Hulbert (Y); 3, J. Cluge (W). Barbs: 1, B. Evans (W); 2, D. Pimley (W); 3, F. Pilson (Y); 4, F. Lange (Y). Characins: 1, M. Locke (W); 2, Mrs. Pilson (Y); 3, Mrs. Baker (Y); 4, Mrs. Nicholas (W). Large Cichlids: 1, Mrs. Nicholas (W); 2, B. Evans (W); 3, C. Bushell (U); 4, Mrs. Baker (Y). Small and Medium Cichlids: 1, M. Locke (W); 2, C. Bushell (Y); 3, B. Evans (W); 4, F. Lange (Y). Labrynth: 1 and 2, Mrs. Bushell (Y); 3, J. Clarke (W); 4, R. Foulds (W). Catfish: 1, A. Nicholls (Y); 2, Mrs. Baker (Y); 3, D. Foulds (W); 4, F. Benton (W). A.O.V. Egglayer: 1, D. Pimley (W); 2, M. Locke (W); 3, Mrs. Baker (Y); 4, F. Lange (Y). Swordtails: 1 and 2, C. Bushell (Y); 3, Mrs. Nicholas (W). Made Fighters: 1 and 2, Mrs. Nicholas (W). A.R. Cox (Y). Egg-laying Tooth Caper: 1, R. Cox (Y); 2 and 3, Mrs. Nicholas (W). Breeders (Egglayer): 1, B. Evans (W); 2 and 3, F. Lange (Y); 4, Mrs. Nicholas (W). Breeders (Livebearer): 1, Mrs. Langdon (Y); 2 and 3, Mrs. Nicholas (W); 4, Mrs. Langdon (Y). Best Fish in Show: B. Evans (W) with a Kribensis.

MEMBERS of **Grimby and Clee A.S.** were entertained by slide and tape shows on Cichlids and a U.S.A. Open Show. Mr. R. Goodhall

gave a talk on water chemistry. April Table Show results: Breeders (Egglayers): 1 and 3, P. Jensen; 2, C. Easton. Guppies (Pairs): 1, C. Easton; 2 and 3, D. Hughes. Large Cichlids: 1 and 3, R. Kennings; 2, M. Robinson. Sharks: 1, C. Easton; 2, M. Robinson; 3, L. Dearden.

NEW joint show secretaries of the **Trowbridge and District A.P.S.** are Janie and Bill Burton, who will be pleased to hear from all other Societies wishing to exchange show information and forthcoming schedules. Address: 17 Poleburn Road, Trowbridge, Wiltshire. Telephone: Trowbridge 5704.

AT the annual general meeting of the **East Kilbride Aquarium Club** the following committee were selected: President, N. Grant; secretary, Iain Brown, 17 Bunbury Terrace, East Kilbride; treasurer, J. Livingston; min. secretary, R. Pattison; show manager, H. Taylor; show secretary, J. Finlay; federation delegate, A. Hynds; breeders delegates, 1, J. Ewing; 2, R. Merckel. Results of the table show were as follows: Loaches: 1, H. Taylor; 2, J. Ewing; 3, A. Lyons. Corydoras: 1, J. Finlay; 2, B. Merckel; 3, I. Brown. A.O.V. Catfish: 1, A. Hynds; 2, J. Finlay; 3, D. McConnell. Danios: 1, A. Stuart; 2, A. Lyons; 3, I. Brown.

THE May meeting of the **Manchester Section F.G.A.** was very well attended with visiting members from as far afield as Birmingham and Lancaster. The lecturer for the day was Jim Kelly, past chairman of the Fancy Guppy Association, whose wide range of topics was very well received by everyone present. Best Fish in the Show at the monthly table show was won by Malcolm Delingpoor, the association journal editor. Officers for the section are: Chairman, R. Young; secretary, F. Campbell; treasurer, A. Charlton; P.R.O., T. Halsett; show secretary, J. Henketh; asst. show secretary, D. Fairhurst. Meetings are held on the first Sunday of the month at the Drill Hall, Salford Road, Manchester (Cambridge Street entrance). Starting at 2.30 p.m. Everyone welcome. More information may be obtained from the secretary, 97 Cardigan Drive, Bury, Lancs.

THERE was a good attendance at the annual dance and prizegiving of the **Tonbridge and District A.S.** The awards were as follows: Coldwater Cup: Mrs. S. Soames. 1970 Committee Cup: L. Getley. Livebearer Breeders Trophy: L. Mathison. Egglayer Breeders Trophy: R. Simmonds. Club Open Show Championship: 1, J. Bellingham; 2, I. Mathison; 3, R. Baker. Club Championship: 1, R. Taylor; 2, I. Mathison; 3, T. Hines. At an inter-club show held shortly afterwards by Medway A.S., Tonbridge were runners-up by one point.

There were several changes at the Annual General Meeting. F. Milles stepped into the breach as Chairman, I. Mathison re-assumed the role of Secretary and R. Taylor moved into the Show Secretary's post. The committee was extended by two, and the members now are A. Bromwich, W. Rood, R. Simmonds and J. Soames.

NEW SOCIETY

The **Slough and District A.S.** has been formed recently and will be holding meetings at The Friends Meeting House, Ragrose Road, Slough, on the third Wednesday of every month. The secretary is Mrs. E. M. Knight, 52 Aldin Avenue, Slough, Bucks, SL1 1RR.

CHANGES OF VENUE

Leicester A.S. now meet at St. Paul's Church Rooms, corner of Kirby Road and Fosse Road, Leicester. Meeting night, the first Thursday in the month at 7.30 p.m.

The **Bath A.S.** now meets on the fourth Tuesday of the month at the Oldfield Old Boys' Rugby Club, Lower Bristol Road, Bath, at 7.45 p.m. Visitors are welcome at any of the meetings.

NEW SECRETARIES

Nottingham and District A.S.: P. E. Castle, 9 Winchester Terrace, Winchester Street, Sherwood, Nottingham.

Alreborough and District A.S.: Miss H. C. Wilson, 45 Gledhow Park Avenue, Leeds, LS7 4JL. Tel: Leeds 621515.

Leicester A.S.: Mrs. M. Williams, 85 Dochester Road, Leicester, LE3 0UJ. Tel: Leicester 857259.

Bath A.S.: the new secretaries of the Bath A.S. are Mr. and Mrs. E. A. Short, 22 Caledonian Road, Bath Twerton, Bath. Tel: Bath 26028 (STD 0225).

AQUARIST CALENDAR 1971

9th-11th July: Aquarist and Pondkeeper Fish-keeping Exhibitions, Alexandra Palace, Wood Green, London, N.22.

10th July: Port Talbot and District A.S. to be held at the Y.M.C.A. Port Talbot. Shields, cups and plaques in all classes. Show schedules from the Show Secretary, D. Couch, 18 Cefn Dda, Cwmafan, Port Talbot.

10th-11th July: Romford and Becontree A.S. Dagenham Town Show, Central Park, Dagenham, Essex. Schedules as soon as available. Show Secretary, D. G. Kent, 74 Lynwood Drive, Collier Row, Romford. Tel: 70 67804.

11th July: Grantham and District A.S. second Open Show at the Guildhall, St. Peter's Hill, Grantham. Schedules available mid-March from Show Secretary M. Pattison, 8 Witham Terrace, East Street, Grantham.

11th July: Tadcaster A.S. Annual Open Show. Collingham Memorial Hall, Collingham, Wetherby, Yorks. Schedules from H. Truswell, 43 The Fairway, Stutton Rd., Tadcaster.

17th July: Basingstoke A.S. Open Show, Carnival Hall, Basingstoke. Schedules from M. Strange, 10 Loddon Court, Neville Close, Basingstoke.

18th July: Runcorn A.S. First Open Show. Secretary, Mrs. V. Skell, 26 Gregson Road, Widnes, Lancs.

25th July: Sandgrounders A.S. First Open Show, St. Andrew's Hall, Part Street (off Eastbank Street), Southampton. Schedules and details from show secretary, E. Finch, 40 Hart Street, Southampton. A.M.D.A.S. show.

25th July: Second Teesside Open Show. Held in Stewart Park, Middlesbrough, Teesside. Schedules from secretary, K. Low, 2 Farmbank Road, Ormesby, Middlesbrough, Teesside.

30th-31st July: Exhibition and Open Show by Hull A.S. at East Park.

1st August: Blackpool and Fylde A.S. Twenty-first Open Show, Raikes Parade Annex (Old Grammar School), Church St., Blackpool. Souvenir programmes available from G. Howard, 56 Stamford Ave. Blackpool. Tel: 42676 from mid-June.

7th August: Walthamstow and District A.S. Open Show, Lloyd Park Pavilion, Forest Road, Walthamstow, London, E.17. Show secretary, B. T. Baulson, 132 Walter Savill Tower Walthamstow E17 8LL.

7th-14th August: Portsmouth and District A.S. Open Show, 47 classes. Show schedules from K. A. Johnson, 7A Hillside Road, Portsmouth, PO6 4LE.

8th August: Stroud and District Open Show, Mid-Gloucestershire Technical College, Stratford Rd., Stroud, Glos. For details, Show Secretary, M. S. Jones, 46 Hillcrest Rd., Cashes Green, Stroud, Glos.

14th August: Weston-super-Mare and District T.P.C. Second Open Show, St. John's Hall, Oxford Street, Weston-super-Mare. Show Secretary, J. Clark, St. Jude's, North Street, Cheddar, Somerset.

14th August: Harlow A.S. Open Show at Moot Hall, The Stow, Harlow. Schedules from P. Murdoch, 21 Brooklands Field, Harlow.

15th August: Falkirk and District A.S. Open Show at Falkirk Ice Rink, Falkirk. Schedules and further details from the secretary, W. Reid, 41 Barrhill Road, Rosebank, Kirkintilloch, Glasgow. Tel: Kirk 4545.

15th August: Heywood and District A.S. Open Show, to be held at St. John's Ambulance Hall, Bamford Road, Heywood.

15th August: North Staffs A.S. Third Open

Show at Meir Community Centre, M.A.A.S. Rules. Schedules available from Secretary, K. Bales, 78 Coursway Drive, Stoke-on-Trent, ST1 6DU.

15th August: Oldham and District A.S. Annual Open Show at Werneth Park, Oldham. Further information and show schedules from B. Birchwood, 30 Inverness Avenue, Blackley, Manchester, 9.

21st August: Riverside A.S. Open Show at St. Edfeldredas Church Hall, Fulham Palace Road, Fulham, S.W.6. Show schedules from show secretary, M. Goss, 3 Boulton's Court, Park Palace, Plantation Road, Amersham, Bucks.

22nd August: Bedworth A. and P.S., Nicholas Chamberlain School, Bulkington Lane, Bedworth. Schedules from K. Edkins, 72 Lister St., Aisleborough, Nuneaton.

28th August: Anson Aquatic Club Open Show, at St. Andrew's Church Hall, Willesden High Road, Willesden, London, N.W.10. Schedules from Dave Thomas, 13 Conall Gardens, Willesden, London, N.W.10.

29th August: Salford A.S. Open Show will be held at the Lancaster Hall, Swinton. Show secretary, Paul F. Kelly, 9 Sandycroft Close, Swinton, Lancs.

4th September: Bethnal Green A.S. Open Show, Bethnal Green Institute, 229 Bethnal Green Rd., London, E.2. Schedules from S. G. Cowell, 26 Dunton Rd., Leyton, London, E10 7AF.

4th September: Rhondda A.S. Third Annual Open Show to be held at the Rhondda Transport Club, Porth. Please contact the show secretary, M. Williams, 122 Top Trebanog, Trebanog, Porth, Rhondda.

4th September: Yate and District A.S. Annual Open Show. Details to be announced.

4th-5th September: Mid-Herts A.S. International Open Show. Schedules from C. S. A. Withers, 15 Charnwood Road, St. Albans, Herts. Tel: St. Albans 58346. Major trophies for all classes.

5th September: Coventry P. and A.S. M.A.L. Show, Foleshill Road Community Centre (A444), Coventry. Open classes; Characins and Cichlids.

5th September: Wellingborough and District A.S., Drill Hall, High St. Wellingborough. Schedules from Show Secretary, Mr. J. Phillips, 19 Barnwell Drive, Rushden, Northants.

5th September: Huddersfield Tropical Fish Society. Open Show at the Town Hall, Huddersfield.

5th September: Weymouth and District A.S. Open Show, Small Sydney Hall, Weymouth. Details from Mr. Hatton, 53, Brownlow Street, Weymouth.

5th September: Lucas Aquarium Pool Society First Open Show at J. Lucas Ltd., Gate No. 4, Spring Road, off Shaftmoor Lane, Hall Green, Birmingham. 28. Show Secretary, G. H. Roberts, 30 Charles Road, Solihull, Warks.

10th-11th September: Bristol A.S. Open Show, St. Michael's Parish Hall, Bishopston. Show Secretary, S. Lloyd, 4 Curlew Close, Frenchay Park, Bristol. Tel: 656532.

11th September: North Kent Open Show, Sweeney School, Swancombe, Kent. Details from A. Cox, 35 Bridge Road, Slade Green.

11th September: Penarth A.S. Second Open Show, St. Augustine's Church Hall, Albert Road, Penarth, S. Wales. Schedules available from A. Teoman, show secretary, 56 Highview Road, Penarth, S. Wales.

11th September: Harwich and District A.S. Annual Exhibition of Tropical Fishes to be held at the Queens Hotel, Dovercourt, from 10 a.m. to 6 p.m.

12th September: B.S.A.S. Eighth Annual Open Show at the Marmion Centre, Marmion Road, Hove. Full details from Roy Browning, 34 Rowan Close, Portlady, Sussex.

12th September: British Killifish Collingham Group. Third Annual Open Killifish Show at the Collingham Memorial Hall, Collingham, Nr. Wetherby. Classes—Killifish only.

12th September: Nottingham and District A.S. Annual Show to be held at a new venue at The Parish Hall, 27-28 Mansfield Road, Selston, nr. Alfreton. Turn off the M1. Change of address of the show secretary to N. B. Kenney, Sherwood Aquarica, 466 Mansfield Road, Sherwood, Nottingham.

12th September: Peterlee and District A.S. Annual Open Show at Edenhill Community Centre, Peterlee, Co. Durham. Show schedules available from W. Worrall, 47 Yoden Road, Peterlee, Co. Durham.

12th September: Barnley T.F.S. Open Show at the Mappellwell and Staincross Village Hall, Staincross, Barnley.

18th September: Havant and District A.S. First Open Show at the Deverall Hall, London Road, Furbrooke, Hants.

19th September: Cleveland A.S. Fourth Open Show. Held in British Legion Hall, West Gate, Gosborough, Yorkshire. Show secretary, Mr. Todd, 24 Pentland Ave., Kirkstatham Es, Redcar, Teesside.

19th September: Stone A.S. Open Show, Watton Community Centre, Stone, Staffs. Schedules can be obtained from N. W. Plant, 18a High Street, Stone, Staffs.

20th September: Four Star A.S. Third Open Show, Hemsworth. Further details later.

25th September: Bracknell A.S. Open Show, Priorswood Community Centre, Bracknell, Berks. Schedules available from Les Jordan, 62 Fernbank Place, Ascot, Berks. Tel. Winkfield Row 3400.

25th September: Hounslow and District A.S. Open Show at Youth Centre, Cecil Road, Hounslow (awaiting confirmation).

26th September: Hucknall and Bulwell A.S. Open Show, Bulwell Youth Club, Coventry Road, Bulwell, Nottingham. Schedules obtainable from E. Smith, 111 Longmead Drive, Daybrook, Nottingham.

26th September: Selby and District A.S. first open show, at The Museum Hall, Park Street, Selby. Further information may be obtained from Show Secretary, W. A. Bunnage, 22 Heath Croft, Pollock, York.

26th September: Teesbay A.S. Open Show, Town Hall, Teesbay, Devon. Show secretary, Mr. J. Bragg, 26 Jordan Street, Buckfastleigh, Devon.

26th September: West Cumberland A.S. First Open Show, Civic Hall, Whitehaven, Cumberland. Secretary J. Packer, 2 Southey Avenue, Ovegil, Epremont, Cumberland.

2nd October: 25th Annual Open Breeders Show, East London. Aquarist and P.A. Judges: C. A. T. Brown, B. Baker, F. Tomkins. Schedules available P. Vicker, 13 Irons Way, Romford, Essex.

3rd October: Baling A.S. Open Show at Northfields Community Centre, Northcroft Road, London, W.13.

5th October: North Kent A.S. Inter-Club Show at the Sweeney School, Swancombe, Kent. Details from A. Cox, 35 Bridge Road, Slade Green.

9th-10th October: British Aquarists' Festival, Zoological Gardens, Belle Vue, Manchester.

17th October: Sherwood A.S. Second Open Show. Show Secretary, D. Birkbeck, 173 Peter Smith Drive, New Olborton, Notts.

16th October: Kingston and District A.S. annual open show at Territorial Army Centre Farringdon House, Stonecote Hill, Morden, Sutton, Surrey. Schedules available from G. Greenhall, 39 Garth Close, Morden, Surrey.

23rd October: Catford Open Show. Schedules from show secretary, J. D. Wilson, 150 Paston Crescent, Lee, London, S.E.12. Tel: 01-857 4913.

24th October: Doncaster and District A.S. Second Open Show to be held at the T.A. Barracks, Sandford Rd., Babby.

31st October: Halifax A.S. Tenth Annual Open Show at Standeven House, Broomfield Avenue, Halifax. Show Secretary, J. Grundy, 19 Tower Gardens, Wakefield Grate, Halifax.

7th November: Mizenen Tropical Fish Societies Open Show will be held at the Mizenen Community Centre, Clough Lane, Mizenen, Halifax. All enquiries to S. Leedham, 74 Clough Lane, Mizenen, Halifax, Yorks.

14th November: Horsforth A.S. Third Open Show. Further details later.

21st November: Castleford and District A.S. Annual Open Show at Castleford Secondary Modern Boys' School, Castleford, Yorks. Details from Secretary, Mr. Eyre, 41 Latham Crescent, Purton, Featherstone, Yorks.