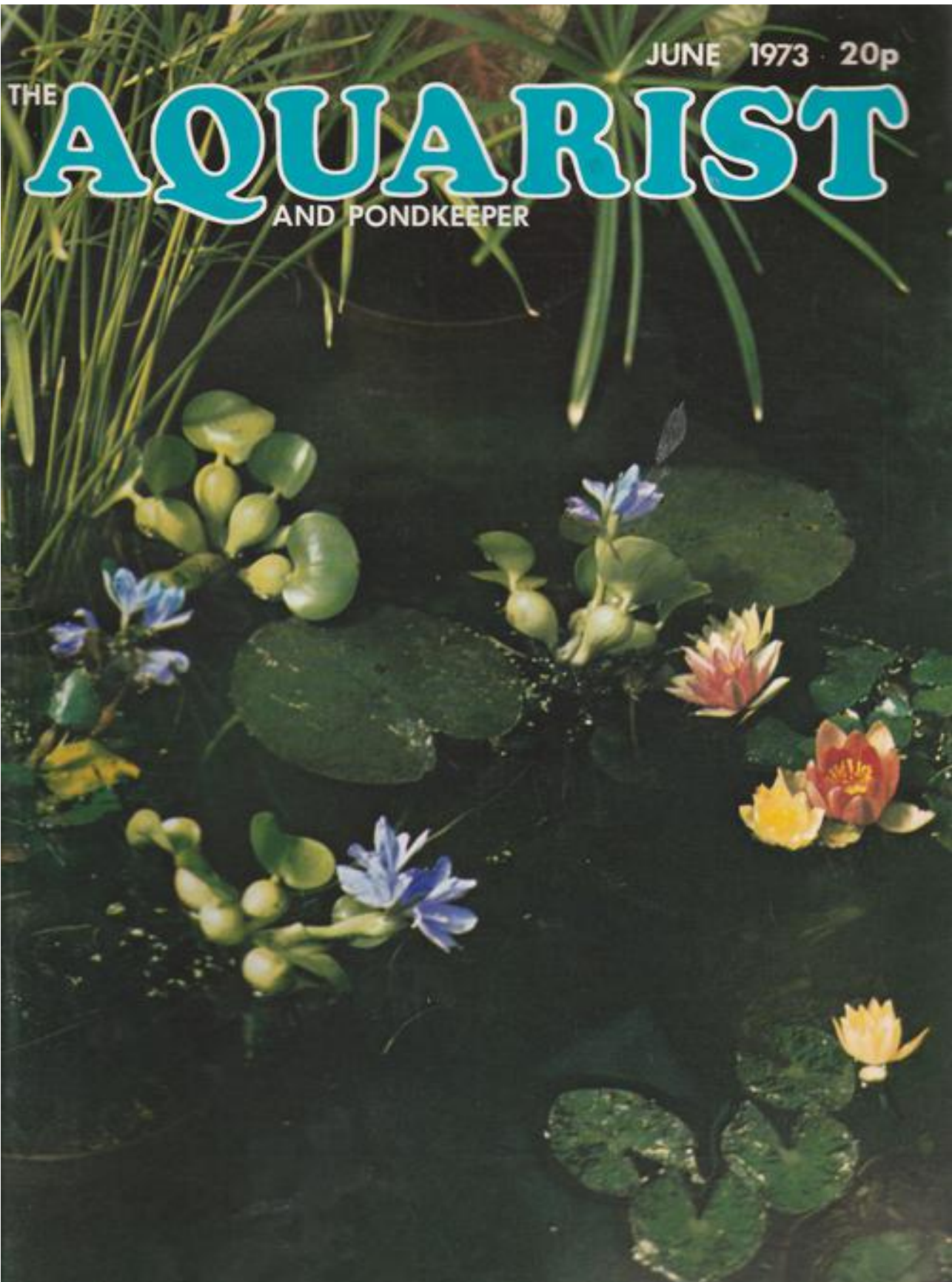


JUNE 1973 20p

THE **AQUARIST**
AND PONDKEEPER





THE AQUARIST

AND PONDKEEPER

Published Monthly 20p

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Our Cover

Part of the attractive water
garden displayed by Broad
Green Aquarium at Alexandra
Palace, July, 1972.

The Editor accepts no responsibility for views expressed by contributors.

WHAT IS YOUR OPINION?

by B. Whiteside



I'VE JUST RETURNED from Switzerland, where thirty-nine pupils, several colleagues and I spent a very enjoyable week's holiday. During our stay we made a number of excursions to various places of interest, including a trip to the famous Basel zoo; an account of my visit to the zoo's aquarium should appear in next month's magazine. I was pleased to find your usual bale of letters awaiting me on my return.

Before starting off with the first letter, I would like to find out if anyone has yet bred *Monodactylus argenteus* (Photograph 1). If so, I would be pleased to have full details of the conditions, etc., under which your fish bred.

In the April edition, I included some comments from Mr. G. Jay, of Mapperley. Mr. Jay had been having some trouble with fishes kept in a plastic aquarium, and wondered if his problems could have been associated with the plastic from which his tank was made. His query has brought an interesting reply from Mr. A. Forrester, of North West Plastics Ltd., Mosley Common Road, Worsley, Manchester, M28 4AJ; this firm manufactures Hyware products. Mr. Forrester writes: "As the major manufacturers of plastics aquaria in this country we would like to assure your readers that plastics aquaria are completely inert and cannot be blamed for any mortality in fish. It is completely wrong to suggest that the high impact polystyrene which is used in these aquaria can 'release dangerous oils which kill the fishes' to quote the article. We will accept the fact that plastic will scratch more easily than glass, and for this reason instructions are given with each aquarium that abrasives must not be used when cleaning. If our cleaning recommendations are carried out in accordance with the leaflet enclosed with each tank, the aquarium will remain clear. It is, of course, very easy to pick up small pieces of gravel when cleaning and this is where care must be taken. As you are no doubt aware, many thousands of plastic aquaria are sold each year and, in the main, are accepted fully by fish-keepers." (Mr. Forrester's lucid reply should remove any doubts which Mr. Jay had about keeping fishes in plastic aquaria.)

My comments about having bred a species of killifish (April edition), resulted in my receiving a very interesting letter, several Newsletters, two books, and several leaflets, from Mr. Brian Leighton of the

British Killifish Association. Mr. Leighton's address is 138 Ramsgate Road, Broadstairs, Kent, and his enthusiasm for killifish is such that it would encourage any aquarist to start keeping these most interesting fish! Mr. Leighton tells us that he had been keeping fishes for many years, and in 1966 he obtained a species of fish which he was unable to identify. He wrote to Mr. Jack Hems, enclosing a sketch and description of the unknown fish; Mr. Hems told him that the fish appeared to be a killie, and advised him to contact the then Technical Editor of the B.K.A., the late Mr. Ted Seymour. Mr. Seymour immediately identified the fish, and supplied all the details required to breed it. (The fish proved to be *E. chaperi*, which at that time was being called *E. dageti*; at the same time *E. dageti* was being called *E. chaperi*—a confusing situation!) Mr. Leighton and Mr. Seymour became firm friends until the latter's death in 1969, and from 1966 onwards Mr. Leighton was a member of the B.K.A. He says that killifish are definitely a specialist's fish, and are rarely found in dealers' tanks. When they are, he says, they are extremely expensive and often sterile through being kept under poor, or totally wrong, conditions. Mr. Leighton suggests that readers interested in killifish should join the British Killifish Association; the subscription is £2.50 per year. There is a monthly Newsletter, a monthly Information Pamphlet on a selected killie species, and also an egg, fish and plant list in which B.K.A. members advertise what they either want, or have for sale. Prices are far below what dealers charge, and Mr. Leighton says that B.K.A. members are very friendly, and that he has made many very good friends up and down the country. Persons wishing to join the B.K.A. should write to the B.K.A. Secretary: Mr. K. Jenkinson, 12 Whitedalehead Road, Whitburn, West Lothian, Scotland, EH47 8LJ; or to the Registrar: Mr. W. Devison, 2 Shaw Road, Tipton, Staffs., DY4 7QA. The B.K.A. "year" is from September to September and the subscription for 1st April to 31st August is halved—viz. £1.25.

Mr. Leighton has a fish room containing some 35 tanks of assorted sizes, and he has yet to find an air pump of reasonable price that will supply air to all his tanks, via an air stone, let alone a filter. He wonders if I could suggest a pump—costing about £20.00—which would supply, say, 40 air stones to a

depth of 6in. (Of the pumps which I have tested, I would say that the Wisa 300, which I reviewed in the April edition, would be my suggestion for the job—although its price has now gone up to about £23.65 with the introduction of V.A.T.)

Mr. T. J. Sinclair, of 18 Glover Street, Crewe, Cheshire, is also a member of the B.K.A., and he has been breeding killifish for about two years now, with a fair amount of success. He has found many of the fish to be fairly easy to spawn, and has had no difficulty in raising the young as they are very large, and can be fed on brine shrimp (newly-hatched) immediately after birth. The method he usually uses is to fill a 15in. x 8in. x 8in. tank with tap water, and to bring the pH to 6.8 by the addition of peat. When the desired pH has been reached, Mr. Sinclair usually adds some peat fibre, and a spawning mop which is

he considers are very useful for amateurs who come across minor problems. (I hope that the next letter may help to compensate Philip for any recent omissions.)

Preston Montford Field Centre, Montford Bridge, Shrewsbury, Salop, is the address from which Mr. P. S. Croft writes, and he replies to Mr. D. Mann's query in the April edition. Mr. Croft says that instead of using a polystyrene frame to cover the sharp edges of glass in an all-glass tank, Mr. Mann should rub down the sharp edges of the glass with a carborundum stone before cementing them together. This in no way interferes with the adhesive, and solves the problem without the need to resort to "the use of an ugly frame". Mr. Croft has just completed his first 2ft. tank using this technique, and is pleased with the result; however, he would be wary about its use



Photo: B. Whiteside

floated on the tank's water surface. The spawning pair of fish are then added, and they are removed after about 14 days; he then awaits the hatching of the young. If anyone requires any further information regarding the breeding or supply of killies, Mr. Sinclair suggests that they write to him and he will try to answer as best he can.

Philip Clough lives at "Hilcote", 12 Hunton Bridge Hill, Hunton Bridge, Kings Langley, Herts., and he writes to say that, unfortunately for him, recent editions of "The Aquarist and Pondkeeper" have seemed to neglect the "pond life" side of the hobby. "The magazine tends to be much more about marines and tropicals than it used to be," says Philip. "This is a shame, I think, because I am sure that many readers, including myself, take a greater interest in pond life," he continues. He goes on to praise the

with 4ft. or larger tanks. On the subject of pond life forms that would be of interest to school children, Mr. Croft suggests three species. The first is the water spider (*Argyroneta aquatica*) which, if put in a fairly well planted tank, will weave webs which it uses to hold air. The spider's trips between these "diving bells" are most interesting to watch. Mr. Croft's second suggestion is the water scorpion (*Nepa cinerea*)—which has a striking resemblance to a scorpion. The animal lives just below the surface, with its "sting" (a respiratory tube) taking in air. It can be seen to grasp nearby creatures in its claw-like front legs. The third creature is a large dragon-fly nymph. Any of the larger species is interesting to keep, Mr. Croft says. These creatures move by means of jet propulsion when startled, and feed using a modified lower lip, known as a "mask". This is a

small insects.

Mr. J. P. Naismith's home is at Kilgobbin, Sandymount, Co. Dublin, and, if I recall correctly, this is the first letter for this feature from a reader in Eire. Mr. Naismith has been tempted to write to this feature many times, but the photograph of the young firemouth in the April edition finally prompted him to write to tell us of his experiences with this species. Four years ago, when Mr. Naismith started keeping fishes, his wife bought him a copy of the Hervey and Hems book, "Freshwater Tropical Aquarium Fishes". When he saw the coloured plate on page 346 he decided that the firemouth was the fish for him! At that time there were very few shops in Dublin which kept anything out of the ordinary, so he used to go to Belfast to stock his tank. He says that there are now

lost interest in the species until he saw a 5in. male, in a shop, during February; he bought the fish for £1.00. This new male burnt itself on a heater, jumped out of the tank, and was found dead upon the floor. At this stage Mr. Naismith was down in the dumps, until a friend told him about "red" *Cichlasoma meeki* which he saw across town. A pair were quickly bought, and they were a beautiful bright red colour, 2in. long, and full of life. Mr. Naismith would like to hear from readers who could explain the "mystery" of the pale firemouths. He has been really bitten by the fish "bug", has converted a tool shed in the garden into a fish house, has been appointed Hon. Sec. of The Irish Tropical Fish Society, and is making his own all-glass tanks with much success. His latest tank is 36in. × 15in. × 15in., but he wonders if

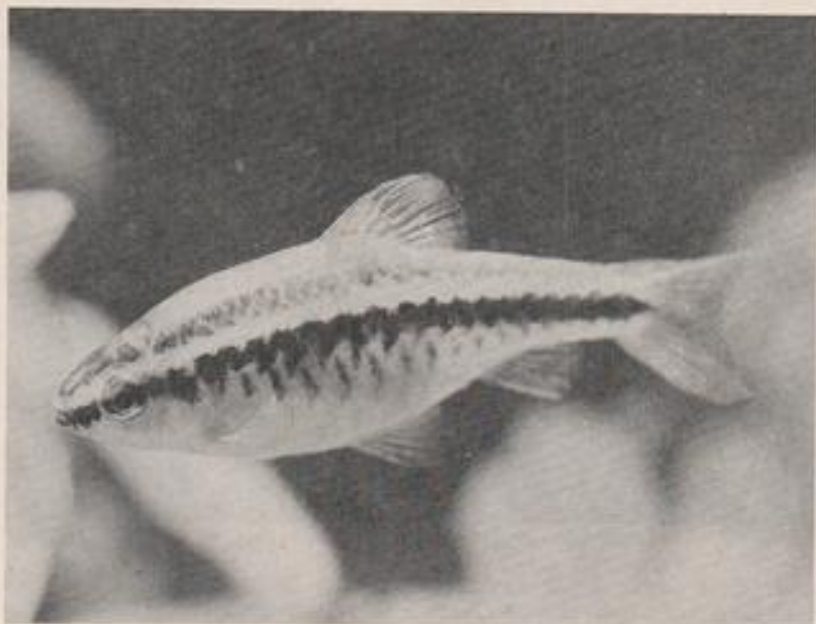


Photo:

B. Whiteside

seven or eight Dublin shops which sell a good variety of fishes. When Mr. Naismith finally bought some firemouths, he was unable to bring up their colour to anything more than flesh colours, or orange pink; thus he was a little disappointed. Some time later he lost his large male through "Cichlid or discus disease"—i.e. a large hole developed between the fish's eyes. He understands that a cure is now available for this condition, and wonders what it is. (Try "HEXA-ex", a "remedy for the 'holes in Cichlid' disease"; available from dealers, or from Hillside Aquatics, price £1.08, plus 10% V.A.T.). The female of the large pair then died, leaving Mr. Naismith with two pale, half-grown youngsters. He

readers could let him know the thickness of glass which would be necessary to make a 48in. all-glass tank— $\frac{1}{2}$ in. or $\frac{3}{4}$ in.? Mr. Naismith makes a suggestion for this feature: he would like a corner devoted to "hints and suggestions", on a regular basis. (Would you, the reader, find this idea to be of interest? If so, could you supply enough tips and suggestions to enable such a "corner" to be operated each month? Let me have your opinion—and tips, please.) Mr. Naismith suggests that Mr. Mann could use a carborundum stone, or fine emery sheet, to take the sharp edges off glass. He also gives several other tips to start the ball rolling: (a) A cheap kitchen vegetable chopper is great for worms; (b) Trout farm fry food



Photo:

L.E.P.

Water Spider on *Lagarosiphon major*

doras aeneus—particularly the albino type—and Mrs. McFarlane and her husband have kept one female albino, and two males, in a 36in. × 18in. × 12in. tank, together with male guppies. The cats spawned early one morning, around dawn, and the spawning continued until noon. The guppies did not upset the parents at all. The female catfish deposited her eggs in three separate places, about 300 eggs in all. The parents and the guppies were then removed. At this stage the tank was full of water—pH 7.2—and a little "fungus cure" was added to the tank. For four days nothing happened, but on the fifth day the eggs started to hatch. At this stage some "porridge paste" (?) was put on the bottom of the tank for the young cats. Mrs. McFarlane says that some people state that the baby cats bury themselves for 2 weeks, but hers didn't. A lot of the eggs hatched successfully. After a few days the porridge fungused over, but this did not seem to bother the babies at all. After one week they had all the porridge eaten, and more was added. About 150 babies were swimming happily in the tank at this juncture. Freeze-dried *Daphnia* was fed to the youngsters, night and morning, and Tetramin tablets—8 per day—were also supplied. Now, some weeks later, the young cats (kittens?) are ½ in. long, are really healthy, and are a joy to see swimming about the tanks (two tanks being used). Mrs. McFarlane

has kindly invited me to visit her and her husband to see the *Corydoras*—and this I would certainly like to do, when I can find the time. (She certainly makes the breeding of albino *C. aeneus* sound very easy—but I doubt if it is. What have been the experiences of other readers in this field?)

My tortoise has refused to hibernate during the past winter, although it does not seem to have affected him too much. The Misses Christine and Carolyn Ball (aged 16 and 12 respectively), whose home is at 41 Efflinch Lane, Barton-under-Needwood, near Burton-on-Trent, Staffs., placed their tortoise in an appropriate environment for hibernation on 12th November, 1972. On being looked at 3 weeks later, the tortoise were found to be still in an active state. On checking them again on 10th January, 1973, they were found to be asleep, but stirred when the boxes were opened. The animals were stored in cardboard boxes, with hay bedding, and placed in a frost-proof loft with a temperature of approximately 40–43°F. The girls wonder if readers could say if their steps were appropriate to encourage the tortoise to hibernate.

Mr. C. Greenman lives at 29 The Heights, Northolt, Middlesex, and writes about his experiences with his tortoise. His tortoise, which he thought was a male, laid five eggs towards the end of the summer last year. The eggs were placed in a box of sand, and kept in an airing cupboard. Mr. Greenman understands that the maximum hatching period of the eggs should have been 20 weeks. When he wrote to me, about 18 weeks had passed and there were no signs of the eggs hatching; however, neither were there any signs of the eggs deteriorating. Mr. Greenman says that the eggs may not have been fertile, of course, and he hopes to get a good male this year and prepare a permanent home for the pair of tortoise. (I'd be pleased to hear from any readers who have had tortoise lay eggs—particularly if the eggs produced baby tortoise. Full details would be useful to others considering trying to breed these interesting, if relatively slow, creatures.)

Despite having exactly 40 letters still unused, I must bring this month's feature to a close. Thank you all for writing. As I usually receive fewer letters during the summer months, I hope to be able to fit in some more of my present batch in the next couple of months. Because I have so many letters left, and because a fair number of questions have been posed in the body of the text, I am only posing a couple of questions this month. (a) What success have you had in breeding the cherry barb? (Photograph 2). (b) Which is your largest aquarium plant, and under what conditions has it grown well for you? (c) How do you keep your garden pond free of algae during the summer? Send your letters to me c/o "The Aquarist", and print your name and address clearly.



OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE

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

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

TROPICAL QUERIES

by Jack Hems

I wonder if you can give me some information about a catfish called the tiger or shovelmouth?

The tiger or shovelmouth catfish is known to science as *Pseudoplatysoma fasciatum*. It is native to northern South America and, in the natural state, is said to attain a length of about 3ft. It is a member of the family *Pimelodidae* and is an incredibly voracious fish. Thus it is not recommended for a community tank. If live foods such as guppies, earthworms, maggots, and the like, are not forthcoming, then meat and strips of uncooked white fish must be given. *P. fasciatum* is a handsomely marked fish: black spots and streaky markings on a greyish to silvery white ground. As will be readily realised, it makes a spectacular inmate for a large tank furnished with rockwork and thickets of *Vallisneria* or tall-growing *Sagittaria*.

I have a water plant sold to me as ivy-leaf cryptocoryne. Yet I cannot trace this species in any book. Can you tell me something about it?

The plant sold by some dealers as ivy-leaf cryptocoryne is not a cryptocoryne at all, but is probably a species of *Syngonium*, a genus of plants inhabiting boggy ground in the tropics. In some aquariums, the so-called ivy leaf cryptocoryne flourishes exceedingly well and attains a large size. But in other tanks, it soon dwindles away. A good light and a gritty planting medium containing loam or clay appears to suit its requirements.

Do you know of any book dealing at length with archer fish?

I strongly recommend Günther Sterba's *Freshwater Fishes of the World*. Professor Sterba devotes several pages of his famous book to the anatomy and care of archer fishes in captivity.

I have been told that the addition of a small amount of salt to my tropical aquarium will benefit the fish. What would be a safe quantity of salt to add to a 40 gallons tank? Furthermore, would ordinary table salt be suitable?

Certain fishes such as mollies, puffers and Malayan angelfish flourish best in slightly salty water, and I recommend a teaspoonful of salt to every gallon of water in the tank. Steer clear of prepared table salt. Use unadulterated sodium chloride. In short, pure salt obtainable at a chemist's shop, first class grocers, or health food store.

Anchor worms are living on my fish. What can I do to get rid of these pests?

Remove the fish from the water and touch each blood-sucking crustacean with the point of a small brush or wisp of cotton wool dipped in turpentine or paraffin oil. This treatment will cause the crustaceans to loosen their grip and they may then be lifted off their victim in the jaws of a forceps.

Would it be possible to collect tubifex worms from the local river and streams?

In the shallows of tidal waters and in some streams running across farmland where animal wastes empty from drains it is not uncommon to find tubifex worms in the mud. Rusty red areas indicate the presence of the worms. Be this as it may, the job of digging them out of the mud and cleaning them is neither pleasant nor easy. I suggest you buy your tubifex from a local dealer.

How should I go about ridding my aquarium of brown algae?

Firstly, scrape the sides and siphon away the shaved-off brown growth. Next, increase the strength of the illumination given and introduce a lot more

strong-growing water plants such as *Elodea densa* or *Hygrophila polysperma*. Extra light and a forest of healthy green plants should remedy your trouble.

My 4ft. tank is illuminated by two 25 watt lamps and one 20 watt warm white fluorescent lamp. Yet my plants refuse to grow. Do you think that the introduction of a chemical fertilizer would help?

It would help if you installed a 40 watt warm white or Gro-Lux type lamp in place of the existing lighting system. In short, the light you are supplying is inadequate for the size of your tank.

I have bought a fish called a salvin. Please can you give me some information about this species?

Cichlasoma salvini, popularly known as Salvin's cichlid, comes from Mexico and is hardy, attains a length of about 6in. and requires a diet of live food, meat or strips of uncooked white fish. It is too spiteful to share quarters with regular community species.

At what age can I sex my guppies?

This is difficult to say, but keep a close watch on the fry and as soon as you notice a youngster showing the stick-like anal fin (denoting the male sex) isolate it from the rest. In other words, separate the fry according to the shape of their anal fins. Most male guppies show a stick-like anal fin at a very early age.

How do I set about breeding *Kryptopterus bicirrhis*?

As far as we are aware, this species has not bred in the aquarium. Also, external sex distinctions, if any, are not known.

What sort of conditions suit the Congo tetra (*Phenacogrammus interruptus*) best?

From all accounts, this species does best in soft water giving rather a low pH (acid) reaction. The interior of the tank should be shielded from a bright toplight by a strong growth of plants. A temperature in the middle to upper seventies (°F) is about right.

I am interested in keeping the electric catfish (*Malapterurus electricus*). Could you advise me what sort of food this fish requires, a suitable size of tank and temperature requirements?

M. electricus is a hearty eater and requires small fish (alive or dead), strips of raw red meat, earthworms, and the like, if it is to flourish. It must be kept alone in a 3 to 4ft. tank. A temperature of 75°F (24°C) to 80°F (27°C) suits it well.

I have a large aquarium accommodating *Aequidens maronii*, *Cichlasoma festivum*, *Pelmatochromis kribensis* and *Nannochromis nudiiceps*. They get on well together. Do you think that I could add some *Pelmatochromis thomasi* without destroying the present friendly atmosphere?

P. thomasi is not completely trustworthy, but generally speaking it mixes well with other species provided they are not much smaller than itself and the aquarium it is introduced into affords plenty of swimming space.

GOLDWATER QUERIES

We intend to make a garden pond with a liner and would like to know where such a thing can be obtained, also how does one go on for drainage should one need to clean out the pond?

Several of the traders who advertise in the 'Aquarist' have liners for sale and I will include the address of one where I purchased one. As for drainage, it is not possible to include a drainage soakaway when making the pond, as any puncture in the liner could be a source of trouble for ever more. The usual way of emptying a pond is to use a small powered electric pump or to do it the hard way with a bucket.

I have a tank 16in. × 9in. × 10in. and have two shubunkins at present. I would like to know what they eat, how big do they grow and any other information you can give? Do you think I can have any more fish in the tank?

by Arthur Boarder

Shubunkins eat any of the foods as given to ordinary goldfish and can grow to about ten inches or more long, although with your conditions it is not likely that they will do so for a long time, and in fact never in a tank the size of yours. You should read up all about fishkeeping from one of the many books on the subject and the articles in the "Aquarist" each month.

About four years ago I bought a couple of six inch Hi-Goi. They have grown steadily in a 3ft. tank. I am now in a position to have a pond, about 15ft. × 12ft. Would they survive the move from the indoor tank and when should I do this?

You have done well to grow on the Hi-goi in your tank. They will appreciate any change in environment and will no doubt thrive well in the pond. Wait until warm weather in May and then float them in a container on the pond for a time before letting

them swim freely. They should then be all right, but do not try to feed them for a day or two until they have settled down.

I have a plastic pond 5ft. x 3ft. x 18in. deep. It has a 9in. shelf on three sides and I have planted it with a lot of Hornwort and a water lily. I would like to stock with four tench and four rudd. Will they breed and also inter-breed?

Your pond is too small for the purpose you wish and with a water lily I doubt if there will be much swimming space for the fishes after a year or so. You have not much chance of breeding with the fish you suggest and they will not inter-breed. I advise you to make a start with a few goldfish and if you can breed them you can get yourself a proper pond and then have a go with the British coarse fishes.

For some time I have been plagued with fish lice, (*Argulus*). I have caught the fish and cleaned off all lice but after a time they reappear. What can I do to rid the pond of the pest?

Fish lice are a nasty pest to get in the pond, as I well know, having introduced some to my pond many years ago with a gift tench. I cleared my fish by giving them an immersion in a solution of a quarter teaspoon of Dettol to a gallon of water. As soon as I dipped the fish into it, the lice left the fish at once; they swam round in a descending spiral and died quickly. One must not leave the fish in the solution for more than a few seconds. This treatment may have to be repeated as the lice leave the fish to lay their eggs occasionally. The eggs are deposited on rocks or the sides of the pond and take about a month to hatch. Therefore it is not a simple task to get rid of them. These pests like to stick to a fish, often at the junction of a fin with the body, where incidentally they are difficult to see when checking a fish. They are capable of swimming, which they do like a plaice, a fish which they rather resemble in shape. You cannot put anything in the water to kill them as anything strong enough to do so would also kill the fish.

I am hoping to make a shelf in my pond where I hope the fish will spawn. With what material shall I make it and how deep should it be?

A shelf can be constructed with a piece of slate or a slab of concrete. You should try to make the shelf sloping from about ten inches deep to water level at the side of the pond. Some bunches of water plants can be anchored so that they lie near the surface. Most fishes will always spawn in very shallow water if it is available.

I have had my garden pond for 30 years and would like to smarten it up. I am thinking of

emptying it and painting the sides with a paint. Do you think this will harm the fishes if I leave it to dry well and wash it out before returning them?

You can use a bitumastic paint for your purpose but I think it will be a waste of time. Before long the concrete will get covered with *Algae* and become green again and so all your efforts and expense will have been wasted.

The following is an extract from a letter sent to this office by the Chief Superintendent of The Bedfordshire and Luton Constabulary.

Recently in Bedford a quantity of aquarium supplies and equipment was stolen from a shop by means of burglary. I am informed by the owner of the shop that some of this equipment is of a specialist nature and would only be of any use to a person who keeps tropical fish.

Various trade magazines throughout the country assist the police by publishing details of articles stolen which may come to the notice of their members and persons who subscribe to their magazines. I was wondering if in this case you would be willing to assist the police with regard to this matter by a short extract in your magazine stating that the items which were stolen may be offered for sale at low prices to collectors or fanciers and in some cases to shopkeepers who stock this type of equipment. If any of this equipment should be offered to them would they kindly inform the Police at Bedford, telephone number Bedford 68221 or alternatively their nearest Police Station.

List of Stolen Equipment	Quantity
Heaters (Rena make)	60
Thermostats (Rena make)	50
Thermometers	5
Thermostats and heaters combined	15
Grolux fluorescent tubes, 15 and 30 watt which gives a light towards the red end of the colour spectrum	40
Control gear for fluorescent tubes	20
External filters (Eheim make)	8
Internal filters	20
External flat filters	6
Under gravel filters	60
Ultra-violet fluorescent tubes and control gear	2
Ozonizers	2
Dow corning for sealing tanks	30 tubes
Scapes (imitation sea plant)	17
Boxes of Phillips Fish Food	15 boxes
Quantity of coral and sea fans	
Boxes of pond pumps	3
Air pumps (Rena make)	20

OUR READERS WRITE

Koi: How Big to Breed?

Having read all Mr. Arthur Boarder's offerings for many years and learning much about cold-water fish-keeping along the way, I must now protest about the various pronouncements he has recently made about Koi.

Several B.K.K.S. members who are experienced in keeping and breeding Koi wonder upon what basis Mr. Boarder can issue such misleading statements and if indeed he has ever kept or bred Koi himself?

His latest reply to a reader saying that Koi of 6 in. overall could be bred was greeted with incredulous disbelief.

Having several well-fed 6-8 in. Koi myself in a large well aerated pond I propose showing them Mr. Boarder's statement during the next few weeks, but as I doubt whether they can ever read at 6 in., much less breed, I do not expect them to be very impressed.

The B.K.K.S. has recorded many instances of successful Koi spawnings in Britain sent in by amateur Koi-keepers when the minimum length of the fish was 10 in., but sizes of over 15 ins. were more common.

These were all natural spawnings in ponds and not induced under artificial conditions, and produced highly attractive youngsters.

Practical experience is unbeatable as I am sure Mr. Boarder will agree and the B.K.K.S. has already established factual data upon this subject.

MRS. H. M. ALLEN, Secretary,
1 Anthony Close,
Peterborough, PE1 3XU.

Mr. Boarder replies:

My, my, what a carry on, I suppose that I should now crawl into a hole in the ground. However there is no need for members of the Koi society to get their wearing apparel in a tangle. The British Koi Keepers Society has not yet been in existence long enough to have learned all there is to know about breeding Koi. Members of the Society who have written to me are obviously beginners in the art of fish breeding and have only been trying with imported fish from Japan. Now we all know how clever the Japanese are, as they can sex day-old chicks. What can they have done in sorting and treating the Koi which they send out? From the make-up of these fish it is apparent that a few different

kinds of fish have been used and it is possible that among them are some which may be hybrids and have genes which are incompatible.

I predict that when a few experienced fancy goldfish breeders get hold of some *British bred* Koi they will be able to breed from such youngsters in three or four years and when they are not nearly as large as those imported specimens which are being used today. Let me quote an example from my own experience. For many years I tried to get a trio of green tench (*Tinca tinca*) to breed in my pond. It was not until 1947 that they did so, and they were large fish, about a pound in weight each. A team of six youngsters which won me my club's breeding cup, bred themselves when they were just two years old. If anyone had told me, previously, that tench could breed at this age and small size I would not have believed it. It also took me thirty years of continual breeding of fantails to learn that they would breed at eight months of age.

I have not bred Koi as I have neither the space nor the time. My ponds are not large enough to house either orfe or Koi, and as for time, I have been breeding fantails for thirty-six years and have not yet learned all there is to know about them, and as I was born in June, 1895, I am not fool enough to try to start a strain of Koi which could breed younger.

I suggest that the Society carry on with their experiments and in ten years or so they may be able to change opinions.

A. BOARDER.

Doubly Excessive Charges

In recent weeks, I have received several items through the post on which I have had to pay excess postage as they were insufficiently stamped.

I wondered if through your columns, you could remind Club Secretaries to check that their correspondence is correctly stamped, especially Show Schedules, as sometimes it can be inconvenient.

R. J. SMITH, Secretary,
Northampton & District
Aquarist Society
22 Bishops Drive,
Kingsthorpe,
Northampton.

Lace Plant

Being up until now at least strictly a marine aquarist I was quite interested in the article by John Stapleton on plant life in the Aquarium. I have never had the opportunity to grow or at least try to grow plants, but can remember one time seeing a friend's very beautiful Lace Plant, and I would like to try to grow one of these, could you or your readers send along any information on how to go about this. Thank you kindly. Please send to D. A. Quinn, 73 Withrow Ave. Toronto 6, Ontario, Canada.

"Learn from Expert and Novice alike"

With reference to the article by K. Booth, DISCUS: Further Notes to Assist the Beginner in the April issue of the *Aquarist* I fail to see how this information can be of any use to a hobbyist trying his hand for the first time with what he rightly calls "the king of them all, Discus".

By his own admission he has been keeping fish for 10 years and I would have thought he had enough experience to know not to buy fish which were thin, nearly black and obviously near the end of their life. Since it is known that the Discus is a soft water fish one should certainly never presume that the dealer or wholesaler keeps them in soft water; presumably they have other worries than provide the right water condition for all and every fish they have in their tanks. There are, of course, dealers who keep special fish in an environment more to their needs and for this reason alone any would-be Discuskeeper is well advised to find out in what water condition his chosen Discus are kept and possibly reserve them while trying to create the same condition. Although the fish are capable to withstand a change of a few degrees of hardness of the water either way as well as a slight difference in the pH too drastic a change will result in certain death. Since there are still many unknown factors regarding maintenance of the Discus at least let us make known the established facts. I have bought Discus even smaller than 1 inch and for even less than 70p. and like to assure everyone that size and price are no indication of quality. The same would no doubt have happened if these fish had been 2 or 3 inches. One just does not buy thin and nearly black Discus for any amount of money and expect them to live. Even if they would have had the will to live they were denied the chance by the fundamental drastic measures taken.

To use a U/G filter with plastic plants is asking for trouble since the build-up of the nitrite will reach a very dangerous level very quickly. Thin and therefore weak Discus should also never be subjected to heat treatment because they could certainly not cope with this additional strain.

The white marks on the fins are indeed a fungus and are mainly caused by bad water conditions, either through the U/G filter not having been properly run in or by bad feeding since this fungus is the result of a very high bacteria count in the water. This can easily happen in a sparsely or unplanted tank and for this reason Messrs Eheim produce their EHFIRMARIN SU-R 1. Although Discus like and benefit from a water change 25 per cent at one time should be the utmost limit.

If only newly acquired fish are given a quarantine bath and medication for internal as well as external parasites—the 2 main disorders they seem to suffer from—then it must be one's own fault if they should fall ill later on.

June, 1973

Finally, I would like to say that although I have the highest esteem for Mr. Cooke I doubt whether he would want any Discus keeper to follow his example blindly but rather let us learn from expert and novice alike to take some of the points raised and apply them to suit our own condition and thereby further our knowledge of the difficulties of keeping this fish. Only then will the Discus become the real king of the tropical fish world.

E. SCHULZE,
70 WOOD VALE,
LONDON N10 3DN.

Watch that Plant!

A strange paralysing feeling made me take my arm out of my aquarium: just a touch of "Pins and Needles", I thought, but it did not go for several minutes. I forgot all about it until I was painfully reminded two weeks later when thinning out my wistaria (*Synonima triflorum*) I quickly withdrew my hand and surveyed my catfish, rasboras, serpaie tetra, golden barbs and spiny eel with suspicion. Had my spiny eel hidden spines which I had brushed up against? I finally concluded that this was so until, taking cuttings from a vigorous wistaria, I was "stung" again, much worse this time.

So I was being "stung" by a plant; wistaria. How? In the interests of science and fellow aquarists I endeavoured to find out.

Was I being stung by the round leaves, the jagged wistaria have these distinct types of leaf or, the stem? This I could not find out but I did discover that one is only "stung" by casual contact and that the strength of the "sting" is in proportion to the size of the plant. It does not sting out of water and does not appear to affect the fish.

The "sting", or paralysis, to put it more correctly, affects the muscles extremely unpleasantly (It would give those with heart trouble a nasty turn) and seems to have a cumulative effect if touched frequently. The accumulation of poison (?) causes cracking of the joints and a mild cramp liable to come on at any time.

I have heard and know of several other aquarists affected in the same way by wistaria so if you have to touch it, grasp it firmly in the hand and if it bites you get those arms swinging!

R. W. MCARTHUR,
46 Fitzjohn Avenue,
Barnet,
Herts. EN5 2HW.

Low-Tension Suspension

I recently had trouble with one of my tanks and the fault was hard to track down, I thought other readers, might benefit from my experience.

In my 3 ft. tank I have a community including Cichlids. A pair of medium-sized Oscars 6 ins., a pair

of Blue acaras 3 ins., 3 Burton's Nigerian Mouth-brooders (*Haplochromis burtoni*) now regrettably down to one female after the trouble—one black shark (*Morulus chrysophekadion*) 7 ins., two peppered cats (*Corydoras paleatus*) 1½ ins. and one small firemouth cichlid 1½ ins. They are fed flake twice a day and lamb's heart once (as much as they will eat straight away). The water suddenly went cloudy and the cause was undoubtedly the Oscar's faeces in suspension causing bacterial growth. On looking under the tank after first turning up the undergravel filter, I noticed all the space under the filter was blocked with muck; so I emptied the tank, cleaned the gravel and installed a filter mat under the 3 inches of gravel. The water cleared, but three days later I was back to square one. I then cut down feeding—no effect. I added "Protocure" which caused a slight improvement but no lasting effect (presumably due to the killing of the bacteria. At this stage I very nearly sold the Oscars. Then one day, having bitten one of my nails, I felt a slight electric shock on the cut area. After changing the thermostat the tank cleared in a day and has remained so. The Oscars faeces must have broken up, and the particles become charged, with the leakage of electricity, thus repelling each other and not being sucked through the filter; this then gave rise to bacterial growth.

Moral—bite your nails and check the electrics—although no signs of moisture entry could be seen.

PAUL S. CROFT,
Preston Montford Field Centre,
Montford Bridge,
Shrewsbury, SY4 1DX.

Severnside Aquarists Association

As the newly appointed P.R.O. for the above Association, I would like, through your magazine, to bring to the notice of all Aquarists, and especially those in the South West, that the Severnside Aquarists Association has been formed to link up all the Societies in the South West and that support for the Association is now growing steadily.

The aim of this Association is to standardise all aspects regarding the display of fish, to a high level, at Shows throughout its area. Also to afford Aquarists and Societies alike, within this area, the experience and knowledge of all the "local experts."

The Association hopes to publish lists of Speakers and programme aids, etc., available within its area. A Show Committee has been formed to look into the possibility of holding an Annual Show in Bristol, which it is hoped, will become one of the top Shows in the Country.

The Judging Standards Committee have bought out their own list of Judges and Standards and have been busily training new Judges at local closed and table shows for some time now. The success of this training

programme was proved, when the Association Judges had their first test as a Judging Authority last Saturday, the Yate & District A.S.'s Open Show.

I shall be pleased to furnish any Society with full details of the Association upon request.

C. E. STICKLAND,
(Public Relations Officer),
20 Burgage Close,
Chipping Sodbury,
Bristol, BS17 6DZ.

V.A.T. Catch-as-Catch-Can

I would be grateful if, through "Our Readers Write" you would allow me to reach your readers in an attempt to bring to light a possible "cashing in" on V.A.T. applied to Aquarium products.

I have reason to believe that a company advertising products at discount prices have been less than fair in their dealings with the introduction of V.A.T. and I would like to hear from readers who have made orders from such a company before April 1 only to have them delayed until after V.A.T. was introduced.

A supplier could make a considerable amount of money at our expense by such practice and I am anxious to establish the extent to which this has occurred.

Would anyone who has experienced this; please write to me showing the name of the company involved, the goods ordered and the cost of the goods.

I will be only too pleased to pursue this on readers' behalf.

G. F. RILEY,
623 Hagley Road West, Quinton,
Birmingham, B32 1BY.

Aquarium Memories

In the March issue I noted that Eric Hardy wrote that an old friend of mine is dead. I refer to Fred Jefferies. I knew Fred when I first left school in Wallasey and went to sea. I brought back from the Persian Gulf some Mud Skippers and some rather colourful Toads. I took them to Fred who, incidentally, had a few tanks in his Photographic Studio (I saw them when I was taken down to have my obligatory photograph taken in my new uniform) from this meeting I became interested in all things pertaining to fish and fish-keeping.

Well do I remember the aquarium he organised in the conservatory; how pleasant were the tanks with their little covers holding a mixed collection of terrestrial plants and in the main house a very fine specimen of *Monstera delicosa* climbing up the back wall. As Mr. Hardy says, it was all a bit amateurish and it's failure was a bad blow to Fred.

It was I who designed and built the aquarium at New Brighton after the war was over and I had to give up the sea. Since then I have been responsible for

no less than six public aquariums; in fact, I have just recently built one for the Earl of Bradford at Weston Park in Shropshire. Colchester Zoo Aquarium, Tropicana at Rhyl and Llanerch Deer Park in St. Asaph are a few of the aquariums I've built—nice to think that my work hasn't gone unnoticed.

IFOR T. WILLIAMS,
'The Pheasantry',
Weston Park,
Shifnal.

P.S.—I started an Aquarium Society which we called the Merseyside Aquarium Society at the New Palace Aquarium in New Brighton; it flourished for a time then died the death. It was started up once more in Liverpool.

Goldfish Talk

Pearl Scale talks to Miranda Oranda (in strict confidence of course!).

Pearl Have you heard?

Miranda No, what?

Pearl Well you know Cecil Celestial?

Miranda Yes.

Pearl Well, his owner is not a member of our Society!

Miranda You don't say! Oh, how awful!

Pearl Yes, he told me that it's because his owner does not know who, or where, to get in touch with the "Goldfish Society of Great Britain."

Miranda A pity. All he needs to do is put pen to paper, and write with S.A.E. to:

**Mrs. R. M. Whittington,
Pisces Lodge,
Ringley Park Avenue,
Reigate, RH2 7DN.**

or phone Redhill 62113 for information on the G.S.G.B.

It's so easy to become one of the "Friendly Society."
1948 25 Years Young 1973
G.S.G.B. Goldfish Society of yesterday, today and tomorrow.

S. PAPISTA,
Jozsef Attila 2,
Temerin 21235,
Yugoslavia.

A LIVING CORAL REEF IN BRADFORD

BELIEVED to be one of only three in Britain, the reef was established a year ago and has now become a living community of 25 to 30 different species of coral polyps and formations living together and propagating themselves in exactly the way they are to be found in the Caribbean Seas and the seas of South East Asia.

Living on the reef are many forms of life; several species of coral and tube worms which have repropagated, anemones and aquatic plants. For the enthusiast the star attraction is two living thorny oysters. Even the dead shell is a prized collector's piece.

Cultivated in a large aquarium in the shop of Keith Barraclough, Aquarist, Ltd., of 568, Great Horton Road, Bradford, the reef teems with colour and life and is a fascinating, ever-altering picture as the minutes go by.

The reef was created and is cared for by Mr. Gordon Holmes, the Company's Technical Director and well known in aquarist circles as a judge.

Mr. Holmes says, "We have tried to create a natural living reef and have avoided introducing any artificiality. We started with a vacated coral base and placed living corals upon it because this is how coral grows in nature, to form the fantastic and beautiful shapes one enjoys in, for example, the excellent underwater programmes shown on television."

The reef is on view to anyone who wishes to call at the shop and has already attracted visitors from as far afield as Scotland, London, the Isle of Wight and Ceylon.



MARINE QUERIES

by Graham F. Cox

Having now gained some six month's experience in keeping coral fishes, I would now like to attempt the keeping of a community of fishes and invertebrates in the same 48 in. x 18 in. x 18 in. aquarium. My queries are:

- (1) How should I set up the tank?
- (2) Can you give me a list of compatible fishes and invertebrates?
- (3) Can you tell me if there is any supplementary food which one can feed to filter-feeding reef animals? I would imagine that a semi-natural system cannot supply enough plankton.
- (4) Please can you tell me where I can obtain coral-rock or similar rock?

(1) Your all-glass tank is ideally-suited to the purpose which you have in mind, and should be set up as follows:

A high turnover rate undergravel filter having two airlift of at least $\frac{3}{4}$ in. in diameter should be arranged in the base of the empty aquarium so that the total base area of the aquarium is filtered. Now crushed shell (coarse) is placed on top of the filter to a depth of 1 in.-2 in. For a tank your size some 40-50 lbs. wt. of coarse shell will be required. Next a $\frac{1}{2}$ in.-1 in. layer of white silica gravel (fine, $\frac{1}{8}$ - $\frac{1}{4}$ in.) is placed on top of the crushed shell. You will require approximately 20 lbs. wt. of silica gravel for this layer. Both the crushed shell and silica gravel will only need a tapwater washing if of reputable brand; otherwise I would advise you to sterilize these materials. The bleach solution for this purpose is prepared by adding half a cupful of bleach to a bucketful of tapwater. Two to three days' immersion in this solution followed by several washings in tapwater, will make the material safe to use.

Next a sheet of polythene is spread over the gravel and a clean plastic bucket is placed on the gravel in the centre of the tank. Pour two 20-gallon boxes of synthetic sea salt and a five-gallon pack into the bucket, and turn on a hose-pipe in such a way that, running into the bucket, the tapwater dissolves the salt. As the saltwater spills over the brim of the bucket it will spread out over the polythene sheet, and thus fill the tank without disturbing the gravel and shell. Turn off the hosepipe when the tank is two-thirds full, add the trace elements and remove the bucket and plastic sheet from the aquarium.

Now the heater/thermostat, and bleached corals and rockwork (see (4) below) can be placed in the

aquarium and should raise the water level more-or-less to the level of the filter's air-lift outlets. *At this stage no attempt should be made to arrange the corals and rockwork in any particular decor formation for reasons which will be apparent later.*

Switch on the air pump(s) operating the under-gravel filter's airlifts, turn on the electricity supply to the heater/thermostats, and allow the water to filter aerate and warm up for twenty-four hours. Now remove the corals and rockwork and add enough coral sand to give a minimum of 1 in. depth overall on top of the white silica gravel. With a tank your size you will require a *minimum* of 30 lbs. weight of coral sand.

The reason for not adding the coral sand, until last is that all synthetic seawater formulations require *at least* twenty-four hours in which to chemically mature, and until this period has elapsed, an unmaturing seawater is quite lethal to marine-life of all kinds.

Caution: *Some of the poorer formulations made with low quality chemicals and deficient in trace elements may require substantially longer than twenty-four hours in which to mature and careful attention should be paid to the manufacturer's instructions when such are provided.*

Now coral sand is, of course, collected from coral beaches in the tropics and, as such, frequently retains a substantial nitrifying potential in the form of oestivated Nitrosomonas spp. and Nitrobacter spp. bacteria. If therefore, the tyro were to add his coral sand to the filter bed from the outset, the chemically unmaturing seawater would effectively destroy the bacteria, "killing" the gravel, which will result in a higher than necessary nitrite-level when the aquarium's first animals are added.

The corals and rockworks are now distributed throughout the aquarium in a manner pleasing to the eye of the aquarist, but care should be exercised that this aquarium, *built to house invertebrates as well as fishes*, contains substantially more rockwork than corals. *This is because many species of invertebrate animals will not tolerate being stood on coral sand, and require a firm substrate such as only flattish rocks can provide.*

With regard to securing the bacteriological maturation of the filter bed to ensure that there is no detectable nitrite reading in the water at any time after that maturation has been achieved, it will now be necessary to adopt one of the following courses of action:

(a) Place a *small* (about the size of a garden pea) piece of prawn or mussel-meat (either of which has first been well sterilized by boiling) in the aquarium and

leave it to rot. Additionally a similar weight of spinach or garden pea may be added. After about 4-5 days a slight pink discoloration will be noticeable on the nitrite kit test phial. Over the course of the next week or so this will deepen first to strong pink and later even to red showing an increasing strength of ammonia and nitrite toxins in the water. Eventually after 3-6 weeks, all traces of ammonia and nitrites will dramatically disappear, revealing the fact that the filter bed is now bacteriologically mature. At this stage any invertebrates (except large *Octopus* spp.) and fishes selected from the list (in (2)) below may be added to the sea aquarium, producing a wonderfully realistic and natural marine biosystem. Alternatively, you may decide to mature your new aquarium with the nitrogenous matter contained in the excretion of invertebrates or fishes as follows:

(b) *Using fishes to mature the biosystem.* As with a fish-only aquarium, Damsel fishes may be used to mature the new set-up. These hardy and cheap coral fishes can the better withstand ammonia and nitrite poisoning than the admittedly more spectacular (but more delicate) Angel fishes, Sturgeons, Tangs and Wrasses, etc. For the rapid maturation of a system as large as yours I would recommend that you use at least four damsel fishes, and, as always, my advice to the beginner is to buy one each of four different species to avoid intra-specific aggression. Having introduced the four different damsel fishes, preferably at one and the same time, commence feeding very lightly indeed.

For the first four-five days (-the Ammonia Phase) no nitrite content will be detected in the seawater; then a progressively redder discoloration of the nitrite test kit's sample phial will occur showing that more and more ammonia is being oxidised to nitrites. Eventually, after a variable period of time as previously stated, the test phial will show a clear reading. The aquarist can now go ahead with the full stocking of those invertebrates and fishes which he has chosen.

Caution: During the ammonia and later nitrite-phase the marine aquarist using this method of tank maturation will find it necessary to use a certain medication (safe with invertebrates) in order to save the damsel fishes lives.

(c) *Using invertebrates to mature the biosystem.* The Damsel fishes are able, with medication, to survive the debilitating effects of ammonia and nitrite intoxication. However, there are several species of invertebrate animals which are able to survive moderate nitrite and ammonia toxicity, without any medication being either necessary or desirable. These are: Tube worms (- Featherduster Worms), *Cerianthus* (Fireworks) Anemone, *Radianthus* (Sandor Carpet-anemone), "Colonial" Anemones (several spp.), Hydroid polyps (brown varieties), Cowries, the "Brown" starfish (Philippino area). This list is far from complete, but the above are chosen here because all are commonly imported.

Warning: Many invertebrate spp. specifically omitted from the above list (e.g., *Goniopora* corals, *Tubipora* corals, *Tubeastra* corals, *Discosoma* spp. anemones, *Radianthus* (Rock Anemone) spp., etc., etc.) will surely be killed by a high ammonia and nitrite level.

The major disadvantage of this method of system maturation is that perhaps the best two animals in the list (as "maturers" that is) are the least desirable in the final fish-invertebrate community.

These are the *Cerianthus* Anemone, which has most potent nematocysts (stinging cells) easily able to kill even clownfishes (*Amphiprion* spp.) and other invertebrate animals, and the Cowrie (*Cypraea* spp.) which is a harmless enough scavenger but loves to eat show pieces of expensive marine algae.

(d) *Using invertebrates and damsel fish to mature the biosystem*—simply combine (b) and (c) above. However, you must remember to medicate the damsels regularly as required during the nitrite and ammonia phases.

(2) *Fish-Invertebrate Compatibility.*—Most sessile (i.e., predominantly stationary) invertebrates are perfectly compatible with each other and with fishes. The notable exception here is the *Cerianthus Anemone* (see above) which will not only capture and eat any fish foolish enough to wander near it (including most clown fishes) but will even kill or weaken other invertebrates touched by its stinging tentacles. It should also be mentioned here that, of course, any other anemone which manages to touch a fish (other than a clown fish) may well kill it.

Of the more mobile invertebrate creatures the following may be non-community in certain communities:

Octopus spp.—the smaller species e.g., *Blue-ringed Octopus* are harmless with all except the smallest or weakest fishes. However, the larger species from the Mediterranean, Pacific, etc., whilst preferring to eat crustacean flesh such as crabs, shrimps, prawns, etc., will not stop at taking the odd fish when hungry. Certain *Conus* spp. will spear and kill "sleeping" fishes.

Squid and Cuttlefish—see *Octopus* above.

Cowries—see comments re. Algae above.

Nudibranchs—these shell-less molluscs are mostly passive grazers and browsers, but one or two species are fond of eating anemones. The anemones nematocysts are not digested but pass out of the gut, and through the *Nudibranchs*—body tissues to be carried on the outer skin as "borrowed guns".

Some species of *Starfish* will pull apart the shells of certain bivalve molluscs, e.g., clams, scallops, etc., and devour the fleshy contents. Luckily this is a relatively rare phenomenon amongst tropical starfishes.

Sea-urchins—(only if very hungry) will eat large algae rather than starve to death.

Mantis shrimps and Hermit Crabs—occasionally develop the playful habit of snipping Featherduster

Worm's heads off. Both crustaceans will also catch and devour juvenile, wounded, sick or senile fishes if hungry—and they are for most of the time.

Having regard to those fishes suitable for the fish-invertebrate marine community, the only ones to avoid here are *all the Butterflyfishes* (Chaetodontidae) and particularly *Heniochus* spp. *Chelmon rostratus* and *Forcipiger* spp., all of which are characterised by a long, enquiring beak-like jaw structure and a fondness for using the latter structure to the detriment of almost all invertebrate animal life forms.

All the Moray Eels are fond of a bit of Octopus, Squid or Cuttlefish flesh now and then.

Batfishes (like the closely-related Chaetodonts) will eat live corals and hydroid polyps if very hungry.

Triggerfishes—will eat almost anything alive—particularly invertebrate creatures like crabs, shrimps, prawns, lobsters, starfish, sea-urchins and so on.

On re-reading the above lists, I appear to have given the impression that fishes and invertebrates are "mutually-self-cancelling" devices. However, I must assure you that this isn't so, of course. Any good marine dealer's community tanks will show you, by example, what to keep with what.

(3) *Supplementary Food for Filter-feeders*

Every creature, large and small, in the oceans of the world relies, ultimately, on plankton for food. I am including all microscopic and macroscopic floating life-forms from bacteria upwards under the heading *plankton*.

In the marvellously intricate oceanic food chain or pyramid, the *phytoplanktonic* organism uses sunlight, carbon dioxide, water and other nutrients from seawater to photo-synthesise basic foods. Later these primitive plants or phyto plankton are eaten by the (animal) *zooplanktonic* organisms which are eaten by larger organisms and so on.

Since the first link of this food chain is the phytoplankton, it is self-evident that if we look after and encourage the procreation of these organisms, then the larger animals which rely on their ability to filter plankton from the seawater (e.g., living corals, hydroids, sponges, clams, scallops, oysters, tube worms, etc., etc.), will all do well in the biosystem.

The needs of the phyto-plankton are simply:

(1) *Light*. (2) *Vitamins* (mostly B group and particularly the B₁₂ found only in the crystalline vitamin additive). (3) *Mineral Salts* (trace element booster of the correct formulation for your sea water). (4) *Plant Growth Substances* (= algal fertilizer solution).

Additionally, I find it a great "treat" for most filter feeders to squash a prawn head under water between my finger and thumb in their vicinity. This releases a small cloud of neural ("brain") tissue into the water, which the filter-feeders rapidly remove.

(4) *Coral-Rock*

This material is, of course, obtained from coral

reefs. However, apart from the so-called "live-rock" pieces, which are occasionally worth buying if heavily encrusted with sessile marine-life, the imported pieces of coral-line-rock are too expensive to purchase, owing to high air-freight costs.

Few people, however, seem to realise that our own *Westmorland Stone* is chemically-identical to coral rock having been formed in long-dead oceans, millions of years ago.

In most instances it is more beautifully figured and eroded than coral rock, certainly cheaper and is obtainable in greater variety. In addition, before it has been in a well-established fish-invertebrate community for more than a few months, you will find that it has become as well-covered with marine life as your friend's expensively acquired "real" coral rock.

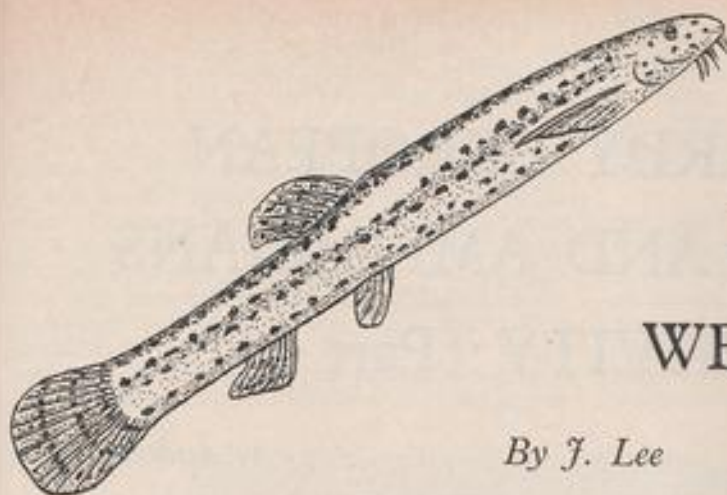
If, after a few weeks, you have carried out all the above successfully, you will now have a complete sea aquarium.

Such a sea aquarium represents the perfection in marine biosystem technology that so many of us have striven for so many years to achieve and is not a sight easily ignored or forgotten. It represents in effect a small portion of the coral reef section of a tropical sea-bed, wonderfully recreated by the mariculturist's skills and dedication within his own home. As such it constitutes as much a British national achievement in its own way as the beautiful home koi pools and rock gardens of the Japanese. This is the *complete sea aquarium*, and not the un-natural "fish-only" or "invertebrate-only" sea aquaria which have tended to represent the acme of our endeavours until relatively recently. Fortunately, as a nation, we are streets ahead of the rest of the world in both the marine products and the technology which have now made the marine *fish-invertebrate community* biosystem an easy reality. Many of us would like to see things stay this way, with this type of bio-aquatic display remaining forever associated with the genius of the British marine aquarist.

HOW CLEVER ARE YOU?

My first is in MAJORITY but not in FEW;
My second is in ANTIQUE but not in NEW;
My third is in SWEET-PEA and also in POD;
My fourth is in HADDOCK but not in COD;
My fifth is in THINKING but not in THOUGHT;
My sixth is in PURCHASED but not in BOUGHT;
My seventh is in AQUARIST but not in TANK;
My eighth is in SIDE but not in FLANK;
My ninth is in SIMILAR but not in SAME;
My tenth is in POPULARITY but not in FAME;
My eleventh is in PARSLEY and also in SAGE;
My twelfth is in YOUTH but not in AGE.
My whole is attractive and adds to the scene,
Whether dwarf, or striped, or just plain green.

Answer on page 108



THE JAPANESE WEATHER-FISH

By J. Lee

I AM very interested in catfishes and loaches, and after the recent article by B. Fry on Loaches, I was motivated to write concerning my personal favourite, *Misgurnis anguillicaudatus*, the Japanese Weather Loach.

For aquarium purposes the family Cobitidae has six genera. Alphabetically the fifth genus (*Misgurnis*) has, according to Sterba, two species. These are the now rare *Misgurnis fossilis*, and *M. anguillicaudatus*. The latter was discovered in North China in 1840. It lives in this area and Japan in both stagnant and flowing waters, and can withstand a temperature of as low as 35°F, or as high as 86°F. I should imagine that if it ever had to be evaluated, this would prove very difficult.

The fish looks and swims like an eel. The colour is grey with dark blotches on the side. It grows to around eight inches, but even at this size it is not aggressive. However, it often scares other fishes with its bulk, and it is large and unpredictable in its actions. This makes the fish useless even for a lightly planted aquarium, and I have no idea what it would do to a heavily planted one.

The name Weather Fish relates to the fact that it is extremely sensitive to barometer changes. When the pressure decreases it thrashes around wildly trying to get out of the water. A heavy lid and cover glass is therefore essential. *M. fossilis* was once kept as a living barometer because of this habit. Some say that it can give 24 hours warning of a storm.

Information on breeding is rather scanty. Apparently there are more males than females. Spawning takes place over a muddy bottom and hundreds of small eggs fall to the bottom. The parents then cover them with mud. Eggs hatch in a few weeks depending on the temperature. According to Sterba's description I have got a pair, but I do not know if they

will breed.

When I got my first Weather Loach it cost 50p, but it only lived about three months. I had it in a two-foot aquarium and it ate well, but it just disappeared. I then got another, my big male at the moment. He was about four inches when I got him and was put in a two-foot tank. In this tank he grew to about six inches and was then put in a 40in. tank. He has grown to over seven inches and now I have obtained a four or five inch female. They have been moved into a small aquarium with a Sleeper Goby. I would appreciate any information on breeding these loaches and I would also like to know if there is any specialised Catfish Society in Britain or if there is anybody engaged in, or interested in, forming such a society.

BOOK REVIEW

Diseases of Fishes (3rd. edition) by C. van Duijn Jnr., published by the Butterworth Group at £6.00.

THIS work will be more than familiar to most aquarists and especially to those who have conducted vain searches for a copy since the last edition went out of print. Of inestimable value to the serious pisciculturist, the first two editions were in constant demand and the new edition is assured of a good reception in spite of a price rise of more than a hundred per cent. Sixty or so pages have been added and although the chapters remain unchanged in subject matter and basic coverage, revision has resulted in the inclusion of up-to-date information concerning disease and recent advances in the sophisticated treatment of many of them. There is also additional information covering marine aquaria.

The metric system is used throughout but it will be a relief to many still unaccustomed to it to find that Imperial and U.S. measures are also included.

THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 13)

by Andrew Allen

27. The Aesculapian Snake (*Elaphe l. longissima*).

Description.—This is a large but slender snake, growing to lengths of about two metres. It has a small, long head. Dorsal coloration is brown, a light shade anteriorly merging nearly into black posteriorly. Close examination of dorsal scales may reveal that they are bordered in white. Ventral coloration is a uniform, unspotted yellowish-white.

Distribution.—It has a very local and scattered range throughout much of Central and Southern Europe, possibly due to the activities of the Romans who connected this species with the god Aesculapius, and liberated specimens in their wake. Whatever the cause, it is now to be found in Germany (around Passau), France, Austria, Switzerland, North-East Spain, the Balkans, Iran, Asia Minor, Poland, Czechoslovakia and Hungary. It frequents open country and scattered woodland, particularly favouring rocks and ruins. It is an accomplished climber.

Breeding Habits.—The female lays up to ten eggs in holes in the ground or beneath debris and leaf litter.

Care in Captivity.—When originally captured this species bites readily, but not viciously. However, it soon settles down and becomes very placid and tame. Naturally this easy temperament inclines it to be a good inmate of the vivarium, and its general care is fairly straightforward.

However, it is essentially a South European species, and as such it is not particularly hardy. It does quite well in the indoor vivarium, which should be very spacious, perhaps with dimensions of about six foot by six foot by four foot, or larger. In the construction of such accommodation the minimum of cracks and joints should be left, as these can easily harbour ticks and other undesirable parasites. The vivarium should be placed in a sunny position (but

not so sunny as to cause overheating), and supplementary light and warmth should be provided by means of the appropriate number of electric light bulbs of low wattage. Some of these can be blacked out to supply heat, but not light, during the night. The environment should be kept dry and well ventilated, but the snakes must be allowed access from time to time to a large water bowl where they can drink and swim. The flooring, which is best made of heavy or medium grade gravel, should be strewn with rocks and stones, and there should be a large pile of stones to provide shelter and opportunities for exploration. A few pots of plants will improve the aesthetic appeal of this arrangement. An abundance of stout old branches should also grace the vivarium, for the Aesculapian snake requires a good amount of climbing room.

Because its hardiness is suspect this snake should not be risked in the outdoor reptilary, except perhaps in certain sheltered Southern localities of particularly mild climate. Even in these a certain element of gamble would be very much involved. Instead it should be housed in a greenhouse situated in an open sunny place. There should be a small pool, but otherwise the greenhouse must be kept dry and well ventilated, for a humid atmosphere will soon adversely affect the health of these animals. On the arid flooring should be placed large stones and boulders, or perhaps a section of dry stone walling, copiously endowed with cracks and crevices. A few tough shrubs and bushes grown between the rocks will improve the design and prove much to the taste of the inhabitants. To ensure successful hibernation a hibernating chamber should be sunk deep beneath the soil, and an abundance of tunnels and caves should be available for those snakes unwilling to utilize it. When the first cold spells arrive, and

the inhabitants duly retire, the inside of the greenhouse should be painstakingly lagged with newspaper or another effective insulating agent. No water should be added during this period so that sleeping conditions are as dry as possible.

Young Aesculapians require rather a different diet from old specimens. They start off by consuming small lizards, and when adult progress to mice. These are controlled by the coils of the body in a manner reminiscent of the Pythons. Newly obtained specimens will usually only take live mice, but with monumental patience can sometimes be persuaded to graduate to the dead variety. This partiality for small rodents means that the herpetologist must become adept at livestock breeding—and also manage not to view his doomed stock with

the Leopard snake, *E. situla*, the Ladder snake, *E. scularis*, and the Four Lined snake, *E. quatuorlineata*. All are to be found only in Southern Europe, and none can be classed as truly hardy. Indoors they require similar treatment to *E. l. longissima*, but they cannot be recommended as inmates of the outdoor vivarium.

28. The Dark Green or Angry Snake (*Coluber v. viridiflavus*).

Description.—This snake grows to between one and two metres, and has a head clearly separated from the slender body. Dorsally it is dark green, brown or black, lightly speckled with yellowish-green spots which form bands across the forequarters and longitudinal lines posteriorly. Ventral coloration is a dirty



Smooth Snake

affection. The Aesculapian snake makes a fair community animal, not too aggressive, and so is reasonable company for tortoises and the other large snakes. However, it should be kept well away from even the largest of lizards.

The amateur is perhaps best advised not to keep this species until he has had experience with Grass, Dice or Viperine snakes. But, once such experience has been gained, the Aesculapian snake will be found an excellent and rewarding inmate of the vivarium, one that is fundamentally well suited to captivity.

E. l. romana is a sub-species that comes from South and Central Italy.

There are several other European members of the genus *Elaphe*, including the Climbing snake *E. dione*,

yellow-grey, the belly shields being edged with black.

Distribution.—The Dark Green snake occurs in Northern Spain, Southern France, Switzerland, Italy (including Elba), Corsica and Sardinia. It favours dry areas of rubble and stone, especially old walls and vineyards.

Breeding Habits.—After mating, in which the male seizes the female behind the head, up to twenty elongated white-marbled eggs are laid in holes or under leaf litter.

Care in Captivity.—This is not a species to be recommended to those inexperienced in the treatment of snakes. It is bad tempered and rarely becomes tame, often feeds poorly, and will bite viciously though not dangerously.

Indoors it requires a very large vivarium, set up as for the Aesculapian snake, with an abundance of hiding places. Outdoors its hardiness is again doubtful, so it should be placed in a sizeable greenhouse furnished in the manner already described a few paragraphs back. Its diet is wide, but this is sparse help, for it tends to refuse food in captivity. Lizards of all sizes are perhaps the favourite fare, but snakes, frogs and small mammals will all be taken. Initially it may only take live food, and many individuals persist in this difficult habit. When young, large insects also feature on the menu. The fact that it preys upon lizards and snakes is not a quality that engages this species to the herpetologist. It means that it is practically impossible to accommodate as a community animal. It will take any lizards, smaller snakes of other species, and is a confirmed cannibal upon young specimens of its own species. It can be housed with tortoises, and fully adult Grass and Eesculapian snakes.

The Dark Green snake cannot be recommended to the amateur, on account of its uncertain temper, fickle character and difficult nature. However, it is a very active and attractive species, a challenge to those with the patience, space and money to be able to cope with its vagaries.

C. v. carbonarius is an important sub-species, which tends towards complete melanism. It is found in the Alps, Italy, Sicily, Malta and Istria.

There are several other members of the genus *Coluber* in Europe, of which we may note *Coluber jugularis caspius* (this is probably the largest snake in Europe, growing to lengths of well above three metres), *Coluber gononensis*, *Coluber najadum* or Dahl's snake, and the Horseshoe snake *Coluber hippocrepis*. None of these snakes can be classed as hardy, and all are extremely difficult in captivity. Most settle down slowly, tame but rarely, and are strongly inclined towards cannibalism.

Several other European snakes are definitely hardy, but cannot be fully recommended for a number of reasons.

The Smooth snake (*Coronella a. austriaca*) is very

rare indeed in this country, though it is more common on the Continent, in Central and Southern Europe from the Balkans to Scandinavia. It grows to about 80 cms. and is brown or grey in colour. It inhabits woods, moorlands, and heaths, up to about two thousand metres in mountainous country. Most specimens become fairly tame, but it is not a very conspicuous vivarium animal, spending much of its time in hiding buried beneath the soil. At present there is some risk that specimens on sale may have been captured in this country, so the diligent herpetologist should refrain from buying this species unless he can obtain an absolute guarantee of foreign origin.

C. a. fitzingeri is a smaller sub-species occurring in Italy (including Elba and Sicily), Switzerland and the Pyrenees.

Coronella girondica is named the Southern Smooth snake, coming from Portugal, Spain, Southern France, and Italian and Austrian Alps. It is slightly smaller than its close relative, and does well in a dry vivarium with a good depth of soil, if fed regularly upon lizards and slow-worms.

The Northern Viper or Adder (*Vipera b. berus*), the Asp viper (*V. a. aspis*), and the Sand Viper (*V. a. ammodytes*) are all sufficiently hardy to prosper in outdoor vivaria in this country. However, I give no details about their care (a) because I have little personal experience in this field, and (b) because of their extremely dangerous nature. Those who attempt to keep them should have wide experience of dealing with snakes in general, and venomous snakes in particular. It is essential also to possess detailed knowledge about snake bite, and its prevention and treatment. I sincerely hope that no readers of this journal will try to deal with even these familiar venomous snakes unless they have the necessary experience and expertise. Far better, as a first step, to carefully and judiciously observe these animals in the wild and learn about their lives and habits at first hand.

The following article will deal with the various European land tortoises available in this country.

THE WATER SPIDER

by David C. Wareham

There are well over 500 species of spider in Britain, living in a wide variety of habitats. In this large family there are many which live in damp situations or on the edges of ponds and rivers, and a few which live on the surface of ponds. There is, however, only one species

which is completely aquatic, spending the whole of its life beneath the surface. This interesting Arachnid, sometimes called the "water silver swimmer", is the water-spider, *Argyroneta aquatica*, and is common in ponds and slow-moving streams throughout most of

**THE AQUARIST
& PONDKEEPER
FISHKEEPING
EXHIBITION**

SHOW SCHEDULE

**Saturday 14th—Sunday 15th
July 1973**

Sponsored by The Aquarist & Pondkeeper
and organised with the co-operation of
the Federation of British Aquatic Societies.

Palm Court, Alexandra Palace, Wood Green, London, N.22

Open to the Public: Saturday, 14th July, 10 a.m.—9 p.m. Sunday, 15th July, 9 a.m.—5 p.m.

Schedule of Classes

Aa	Society Tropical Freshwater Furnished Aquaria 24"x15"x12"	D	A.O.S. Cichlid	Zb	A.V. Plant Cuttings (three cuttings of same species or variety will constitute an entry)
Ab	Society Coldwater Freshwater Furnished Aquaria 24"x15"x12"	Ea	Betta Splendens	Zc	A.V. Plant, Floating
Ad	Individual Tropical Freshwater Furnished Aquaria 24"x15"x12"	E	A.O.S. Labyrinths	NB	A.V. Barb Pairs
Ae	Individual Coldwater Freshwater Furnished Aquaria 24"x15"x12"	F	A.V. Egg-laying Toothcarps	NC	A.V. Characin Pairs
Af	Individual Marine Furnished Aquaria 24"x15"x12"	G	A.O.S. Tropical Catfish	NDEFM	A.V. Cichlid, Labyrinth, Egg-laying Toothcarp and A.O.S. Egg-layer Pairs
Ak	Individual Aquascape (exhibi- tors may supply their own tanks) 24"x15"x15"	H	A.V. Corydoras and Brochis	NGHL	A.V. Catfish and Loach Pairs
Ay	Junior Tropical or Coldwater Furnished Aquaria 18"x10"x10"	J	A.V. Rasbora	NJK	A.V. Rasbora, Danio and W.C.M.M. Pairs
B	A.V. Barb	K	A.V. Danio and W.C.M.M.	NOP	A.V. Guppy, Pairs
C	A.V. Characin	L	A.V. Loach	NQRS	A.V. Swordtail, Platy and Molly Pairs
Ca	Hyphessobrycon, Hemi- grammus and Cheirodon	M	A.O.S. Egg-layer	NT	A.O.S. Livebearer Pairs
Db	Apistogramma, Pelmato- chromis and Nannacara	O	A.V. Guppy, Male		
		P	A.V. Guppy, Female		
		Q	A.V. Swordtail		
		R	A.V. Platy		
		S	A.V. Molly		
		T	A.O.S. Livebearer		
		Za	A.V. Rooted Plant (one plant will constitute an entry)		

In addition to the competitive classes above there will be displays of fishes representing specialist society interests.

ENTRY FEES: Furnished Aquaria Classes Free
All other Classes 10p per entry

One free pass will be supplied to any exhibitor with four or more entries

CLOSING DATE: 7th July, or before if sufficient entries have been received for a particular class
FOR ENTRIES WILL BE STRICTLY ADHERED TO

BENCHING: from 12 noon, Thursday, 12th July to 12 noon, Friday, 13th July

JUDGING: 1 p.m., Friday, 13th July

PRESENTATION OF AWARDS: 4 p.m., Sunday, 15th July

BREAKDOWN: from 5 p.m., Sunday, 15th July

SHOW SECRETARY: Mr. D. Lambourne, 7 Wheeler Court, Plough Road, SW11 2AX. Tel: 01-223 2630

General Information

All lighting, heating and tanks will be provided by the organisers.

Ample aeration available at all times.

Aquarium gravel may only be used in the Furnished Aquaria, Aquascape and Plant classes (Aa-Ak) and (Za-Zc) and is to be supplied by the exhibitor.

Classes Za and Zb must be exhibited in black or terracotta pots.

Dividers will be permitted in all Pairs Classes (Prefix N), but must be of clear glass and be supplied by the exhibitor.

All classes will be judged to current F.B.A.S. Show Rules and Standards by Federation Approved Judges.

JUDGES: Classes O, P, NOP—B. Hawkins (F.G.A.).

All other classes—Messrs. A. Blake (F.B.A.S.), B. Baker (F.B.A.S.), E. R. Nicoll (F.B.A.S.),

C. Harding (F.B.A.S.), C. A. T. Brown (F.B.A.S.), F. Tomkins (F.B.A.S.), R. D. Esson (F.B.A.S.),

J. Stillwell (F.B.A.S.).

Awards to Sixth Place

The Aquarist and Pondkeeper Fishkeeping Award cards will be given to the First, Second, Third, Fourth, Fifth and Sixth in each class. The first three in each class will also receive a souvenir trophy.

The Aquarist Gold Pin and Special Trophy will be awarded for the Best Fish in Show.

Challenge trophies are being donated by leading members of the Trade and Hobby.

F.B.A.S. Championship Class Trophy for Best Plant. Classes (Za, Zb, Zc).

F.B.A.S. Assembly Cup for Best Barb. Class (B).

FBAS Open Show Rules

Relating to The Aquarist & Pondkeeper Fishkeeping Exhibition

All advertised classes and awards shall be in open competition. All sections of the Show shall be run in accordance with the F.B.A.S. Show Rules.

All exhibits shall be shown and judged to F.B.A.S. Show Rules.

Exhibits shall be the property of the exhibitor.

In all fish classes there will be nothing in the container other than the fish and water. Aeration may be used in an emergency.

Fish will not be fed on the Show Bench prior to judging.

An exhibit can only be entered in one class and will automatically qualify for any special class or award without further fee.

Advertised classes can be divided.

Advertised classes will not be amalgamated or awards withheld.

Exhibitors will not interfere with their entries after the show has commenced, without the permission of the show manager.

No exhibit will be removed before the end of the show unless written permission is obtained from the show manager.

Fish will be shown singly in their classes unless otherwise stated.

Show organisers have the right to refuse any entry from an intending exhibitor.

Whilst reasonable care will be taken of exhibits, the show organisers will not be held liable for loss or damage in whole or in part of any exhibit.

Only judges recognised by the F.B.A.S. will be employed.

During judging only stewards on duty and F.B.A.S. officials may enter the benching area and then will remain clear of the judges.

Class labels will be fixed to the front top left of the container and any award labels to the front top right.

Award labels will either be coloured or printed, 1st Red, 2nd Blue, 3rd Yellow, 4th Green.

Juniors are those under sixteen at the time of the show.

Submitting an entry implies acceptance of all the show rules.

With any complaint regarding an open show the person with the complaint should approach the show manager who will try to resolve the matter with all the parties concerned. If this does not satisfy the person complaining they can then write to the F.B.A.S. Judges and Standards Committee who will investigate and make a report to the Council who will give a verdict. A final appeal can be made to an F.B.A.S. General Assembly.

Only shows conforming to the F.B.A.S. rules will be sponsored and advertised.

Any exhibitor who fails to comply with the F.B.A.S. Show Rules will have his exhibit disqualified.

Providing a copy of the F.B.A.S. Open Show Rules are openly exhibited at the show it is sufficient to state on the schedule "The show will be run in accordance with F.B.A.S. rules."

Furnished Aquaria and Aquascape Rules

Only Furnished Aquaria and Aquascapes of the size stated on the show schedule will be used.

Furnished Aquaria and Aquascapes of differing sizes will not be classed together.

The minimum size of Furnished Aquaria will be: Club 24 x 12 x 12 in.; Individual 18 x 10 x 10 in.; Junior and miniature 10 x 8 x 6 in., plus or minus one half-inch.

The minimum size of Aquascapes will be: Club 24 x 15 x 12 in.; Individual 18 x 10 x 10 in., plus or minus one half-inch. The container may be constructed of any suitable material and may be open fronted to any degree. The back and sides may be either transparent, coloured or decorated in any way.

Fish, plants and/or rockwork will be supplied by the exhibitor. Gravel may be supplied by the show organisers. Choice of gravel rests with the exhibitor.

Choice of fish rests with the exhibitor.

Only plants which flourish under aquatic conditions will be used in Furnished Aquaria.

Where any model is used in an Aquascape this will automatically class it as a Novelty Aquascape.

The lighting of each class of Furnished Aquaria and Aquascape will be uniform. Coloured lighting is prohibited.

No appliance will be used in conjunction with a Furnished Aquaria, heaters and thermostats excepted. (Excluding marine aquaria which may use water conditioning appliance).

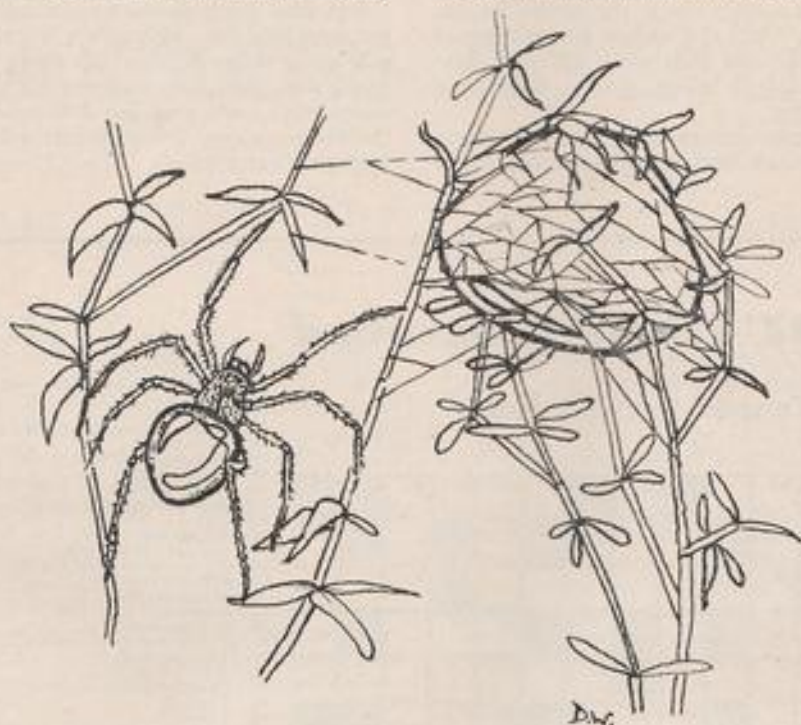
In marine classes the specific gravity of marine exhibits will be taken in the presence of the Show Organisers and will be displayed on the container class labels. Exhibits containing water of less than 1.016 Specific Gravity will be disqualified.

Furnished Aquaria sides and back may be covered with a monochrome material only.

the country.

In general structure and appearance, the water-spider is similar to its land-dwelling relatives. The body is divided into two parts, the cephalothorax (head and chest) and the abdomen, joined by a narrow waist. As in all Arthropods, and unlike the insects, there are four pairs of legs, attached to the cephalothorax, and a short pair of palpi or feelers, one either side of the fang-tipped jaws. The cephalothorax contains the brain, stomach and poison glands, whilst in the abdomen are the lungs, heart, digestive and reproductive organs,

When building its underwater residence the water-spider first constructs a flat matting of silk which it secures to the stems of water plants. When this has been completed, the spider swims to the surface and protrudes its abdomen above the water in order to collect air in the method already described, only this time it also uses its hind legs to obtain a larger bubble. This bubble is then taken down and released beneath the silken platform. By repeating the process the web is gradually buoyed up until it is completely filled with air, when it then takes on the look of an inverted, silver



and the silk glands.

The water spider is 13 millimeters in length and is one of the few species in which the male is larger than the female. Its colouring is a rather dull brown, and the whole of the body and legs are covered with fine, close hairs. Although it lives an aquatic existence, the water spider still needs to breathe air, for it does not possess gills. As it takes to the water, it immediately takes on a silver appearance. This is caused by numerous tiny air bubbles which remain trapped in these hairs, and the "coat" of oxygen so-formed is sufficient for the spider to breathe for some time whilst submerged. When the air runs out, the spider swims up to the surface to renew its supply. So that it can remain below for longer periods, however, the water spider constructs a bell-shaped shelter in which it can live for several weeks, or months, if necessary.

thimble. Once this air tent has been built, the oxygen supply does not need constant renewal, for as it is used up by the spider, more will diffuse in from the surrounding water. The spider can now live and breathe submerged for long periods without the necessity for going to the surface for air.

From its shelter, the water-spider occasionally ventures forth, walking up the stems of nearby plants or swimming through the water upside down, in its search for food. A wide variety of small aquatic creatures are eaten, and these can be either live or dead. They can be eaten on the spot or taken back to the air tent and devoured later.

In the spring, the male builds himself an air tent close to that of the female. By spinning a silken passage or tunnel from his tent to hers, the two chambers are joined together. The male then rips a hole in the

female's tent, and after a brief and simple courtship, mating takes place.

Fifty to a hundred eggs are laid in the summer, and enclosed by the female in a white sac which she secures to the inner wall of her tent. Here they remain until they hatch some weeks later. A short while after emerging from their eggs, the young spiders leave the "nest" and seek out places in which to make their own air tents.

If a pond is known to be inhabited by water-spiders, one can collect them simply by hooking them from the water in a net as they rise to the surface for air. The containers in which the spiders are transported do not have to be filled with water, although they should be kept moist by including some damp moss or other wet foliage.

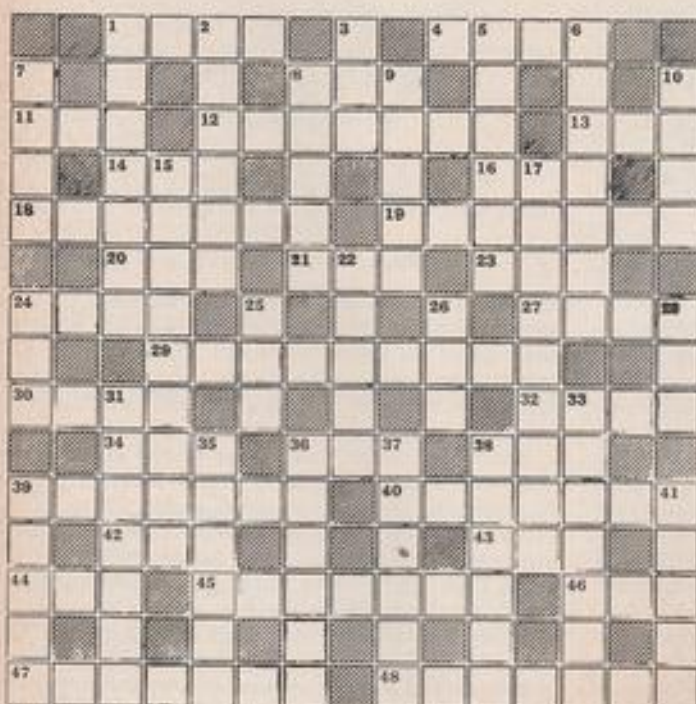
Water spiders make unusual and interesting subjects for keeping in aquaria but, unless one wishes to try

and breed them, they should be kept apart from each other, as cannibalism can and does occur. Whatever is used to house the spiders, whether it be a large tank or a jam jar, it should be fitted with a close-fitting lid. Water-spiders are good climbers, and experts at escaping through the smallest of openings. Food in the form of small insects, such as flies and aphids, can be provided from time to time, by placing them on top of the water. When the spider is ready for a meal, it will swim to the surface and grab one of the struggling insects, returning with it to the shelter of its air tent.

One final point should be remembered about the water-spider's bite. Although it is only small, it can still nip a finger without too much difficulty. The spider's venom is not dangerous to man, but it can nevertheless cause pain and discomfort at the site of the bite—nothing, however, that a little household antiseptic won't relieve.

The AQUARIST Crossword

Compiled by A. C. Read



Solution on page 108

CLUES ACROSS

1. Fishes Respiratory Organ (4).
4. Fruit-bearing Shoot (4).
8. Total Amount (3).
11. Fast running bird (*Dromasus*) (3).
12. Chest of drawers (7).
13. Salt water (3).
14. Rodent (*R. norvegicus*) (3).
16. Viper (3).
18. Sporting dog (7).
19. Breath in (7).
20. Rainproof (3).
21. Supernatural being (3).
23. Fish — Fish (3).
24. Momentous (4).
27. Position of Caudal (4).
29. Not recommended for Killies (4, 5) (9).
30. Wheaten flour (4).
32. Masculine (4).
34. Anger (3).
36. Put into service (3).
38. — fish (Family *Callichthyidae*) (3).
39. Joins the ranks (7).
40. Some fry are (7).
42. Quadruped (3).
43. Level (3).
44. Lower (3).
45. Used for quick despatch of fishes (7).
46. Fish trap (3).
47. Bird — (*Geophonus caeruleus*) (7).
48. Long female hair (7).

CLUES DOWN

1. Anabantid (7).
2. — Acid (used for leather tanning) (6).
3. — my nose (*Hemigranmus rhodotomus*) (3).
5. Polite expression (6).
6. Interval of rest (7).
7. Order *anguilliformes* (4).
8. Look pleasant (5).
9. Prominent part of design (5).
10. — plant (*Asparagus*) (4).
15. Common name Ditch Moss (9).
17. See 31 down (9).
22. Cultivated grasslands (5).
24. Historical period (3).
25. Mineral aggregate (3).
26. Pig enclosure (3).
28. Egg mass (3).
- 31 and 17. Little-known Cichlid (a plant eater) (7), (9).
33. Waits upon (7).
35. Short literary compositions (6).
36. Seizes (6).
37. Accompany (6).
38. — fish (*Cephalopod* of the genus *Sepia*) (6).
39. Bequest (5).
41. Fruit (*Phoenix dactylifera*) (5).

THE FIRST SCOTTISH AQUARIST FESTIVAL

by A. Boarder

THIS, the first festival to be held in Scotland, was a great success. It was held in the Civic Centre, Motherwell, which is recognised as being the finest centre in Great Britain and possibly in the world. The splendid hall made a fine venue for such a festival and the amenities were superb.

The exhibition was opened by the Provost of the Motherwell and Wishaw Town Council and was attended by a large number of visitors. The Provost also attended on the Sunday, 22nd April, to present the awards. The festival followed the style of the Manchester exhibition which has been held at Belle Vue for the past 22 years, with no classes for individual entries but just Society stands on which tanks were displayed.

I counted fifteen competing Societies and most of the stands were of a high quality. One or two were outstanding and among them was an exhibit from the Lanarkshire A.S. which was in the form of a large iced cake. On the top were two storks, one holding a baby, in the form of a fish, in a towel and another with a sign notifying the birthday of the first Scottish Festival. This one was awarded first prize and the second went to a large model of the Wallace Monument, perfectly constructed with tanks as windows, a grand effort. East Kilbride stand took the shape of a telephone box and that of Dunfermline A.S. was in the form of a car trailer caravan. Edinburgh and District Aquarist and Pondkeepers' Society had a Punch and Judy stand with a fair sized section in front filled with sand, together with the usual impedimenta such as a deck chair and buckets and spades. The latter was made good use of by some of

the young children visitors, who had a fine game with the sand, to say nothing of the small dog that thought the sand had been placed there for his convenience.

Cumnock and Ayrshire A.S. combined to make their stand in the shape of an art gallery with tanks in the place of pictures. Belle Vue had a very good Jack-in-the-Box for their exhibit and the Land of Burns A.S., had the front portion of a tramp steamer. On the whole the stands showed a very worthwhile effort by all the clubs competing and it looks as if, as the years go by, there should be some very interesting competitions among the exhibitors.

The tropical fish entries were quite good and a few of the coldwater ones were also of a high standard. The best fish in the show was a large cichlid, *Uaru amphiacanthoides*, in fine fettle. The best coldwater fish was a large common goldfish which, I believe, came from the Manchester area and one, I believe, I have seen before in that locality.

I liked the pair of Lionheads, very nice fish, but what an innovation to have a class for pairs of coldwater fishes. I do not know if it was intended to have a true pair or just two fish, as a judge might have a job to sex some of them.

A pair of Comets also caught my eye, and not a bad couple of fish either. Some of the other fancy goldfish were not of a very high standard and it was obvious that coldwater fishes are not the strong point of Scottish aquarists, although a golden orfe was a fine fish with no black markings, a fault often seen.

The traders made quite an imposing array round the sides of the hall and from their many interested customers it was obvious that a good trade was being

done in accessories and fishes. The entries for marines was disappointing and I only saw one cold-water marine tank which might have been very good had one been able to see through the water. However, a tropical marine tank on one of the dealer's stands made up for this deficiency, as it was a very attractive tank with some fine sea anemones and fishes.

Many visitors to the Aquarist stand were able to obtain plenty of information on fishkeeping, and it was good to meet so many old friends who had chatted with me at Belle Vue over the years and more than one who had also remembered me from Kelvin Hall exhibition which I attended, it must be about eighteen years ago. I found it unusual to find so many very friendly people with such good memories. The many stewards and officials who had worked so hard to make the show such a success must have been well pleased with their efforts, and anyone who has had anything to do with shows knows what work is en-

tailed. I feel sure that this exhibition will not be the last to be staged by the Federation of Scottish Aquarist Societies and I wish them every success in any further venture.

I cannot end this report without a mention of the furnished tanks. Some readers may remember that when I reported the Alexandra Palace Exhibition last year, I remarked on the furnished tanks and said that some of them were so filled with plants that they looked like an underwater jungle and that it was quite impossible to see any fishes. I also suggested that a team of fish, such as Tiger barbs, would have been in evidence all the time. At the Scottish Festival I was pleased to see that a winning tank was nicely planted, but not overdone, with a fine team of Tiger barbs always in the front of the tank and splendidly in action. Perhaps the aquarist had seen my remarks, if not I congratulate him on his initiative.



A view of the beautifully designed Exhibition Hall taken during the Scottish Aquarists Festival



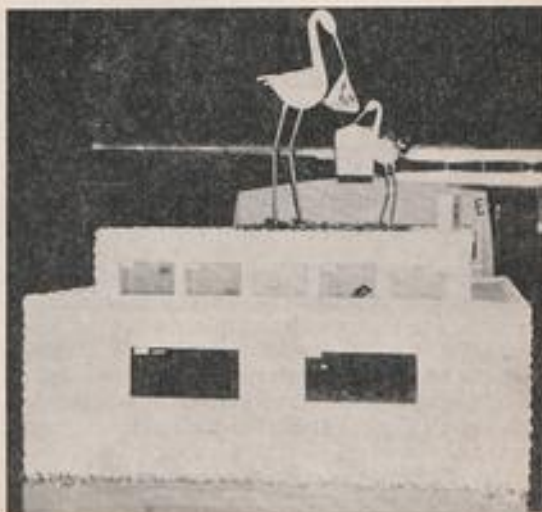
Left: Sharing a joke on the "Aquarist and Pondkeeper" stand. Mr. J. Johnson (president of the F.S.A.S.), Messrs. J. E. Young and A. Boarder ("Aquarist and Pondkeeper"), Mr. J. Goodwin (President of the Lanarkshire A.S. and Chairman of the Organising Committee).

Right: Part of the entrance hall where visitors are seen admiring the S.A.F. stand.



Left: The Provost of Motherwell, Mr. H. Sneddon, presenting the "Aquarist and Pondkeeper" Trophy to a representative of Lanarkshire A.S.

Right: "A Christening Cake"—the winning tableau designed and constructed by Lanarkshire A.S.



From a Naturalist's Notebook

by Eric Hardy

SAND-LIZARD and natterjack toad appear to be extinct in Wales, certainly North Wales where palmated newts are the common pond newts. People used to claim the sand-lizard on the Flintshire dunes, but I never saw a specimen or heard of an authentic example. No scientific work seems to have been done on these dunes before the tripper-trade ruined them. In 1970, Lockley's book "The Naturalist in Wales" stated that the sand-lizard was formerly found on these sandhills: it certainly inhabited the Cheshire dunes on the opposite side of the Dee estuary, it has long been extinct. Lockley, who worked in South Wales, added that the natterjack "is not indigenous in Wales," but it formerly inhabited the Clwyd estuary from Rhyl Voryd to Pensarn, especially before the war. It seems now to be extinct here. A small colony flourishes on the Cheshire side of the Dee estuary, in reedy West Kirby shore-marsh.

I was recently asked by the Nature Conservancy if any records of these still exist in North Wales. Possibly we have overlooked the odd natterjack or two in recent years, but I fear they are extinct. It is curious that the natterjack was even recorded in Shropshire at the end of last century, from Brosley and Werdock; but they were quoted records without any modern corroboration. Experimental introduction elsewhere in Salop did not succeed. Gangs of schoolboys found collecting them on Lancashire's Ainsdale dunes this spring seem to have learned the sites from nature-trails.

Recent agitation to protect the 3 Km. Loch of Strathbeg, in northeastern Aberdeenshire from the North Sea gas pipeline route, arose from its being Britain's largest dune-lake. An alkaline water with the saline influence of sea-spray, it has an abundance of gasteropod molluscs. Also the localised creeping spearwort, *Ranunculus reptans*, with only 5 British stations, gravelly northern lakesides, like Loch Leven. This has been trodden-out of its Ullswater haunt and common lesser spearwort is hybridising it to extinction elsewhere. It also grows near Carlisle. Hairy willowherb, strange news to British pond-hunters, is scarce in north Scotland and thus one of the loch's local rarities.

South Africa's 138 snakes (species and subspecies) recently inspired another new *Field Guide* for identification—by Dr. V. F. M. FitzSimons, former director of Transvaal Museum. Only 35 are dangerously poisonous, like the Egyptian cobra which ranges so far south the Gaboon adder from the tropical rain-forests with

fangs 3 cm long and the puff-adder. 60 are non-venomous, like the Python, Africa's biggest snake reaching a length of 6.7 metres, and 43 only mildly poisonous.

54 have spread down from the north and 70 are found only south of the Zambesi and Kunene rivers. Even the black and yellow banded sea-snake is sometimes stranded on South Africa's east and south coasts.

Can a freshwater lake be made to pay its way per acre of water, like the home farm on the estate? This was the idea mentioned to me by Viscount Garnock at Combermere Abbey where he lives on the Cheshire-Shropshire border, beside the largest private lake in any English country park. With advice from Liverpool University, he is hoping to commercially culture and fatten fish like eels and carp, as is done in Holland. The 150 acre glacial mere contains many pike, perch, bream, roach, and eels, with tench too, and the perch here grow as fast as anywhere in the country. The Cheshire meres used to be great sources of eels, caught in special eel-traps set with they began running seawards in August nights.

I was looking recently for long-leaved sundew on its old haunt on Wem Moss, a still boggy raised peatland in mid-Shropshire. Far from the town of Wem it is reached along the B5063 south from Welshampton, to Northwood, then turning up the Whixall Road a short way to Northwood House Farm (formerly Bottom House Farm), where a farm lane-footpath immediately beside it leads down to the moss. It differs from Whixall Moss on the opposite side of the canal in having no adders; but bog-myrtle, bog-asphodel and other old bog-plants are here.

Though often in wet sphagnum-bogs, long-leaved sundew also grows in drier haunts than great and round-leaved sundews. I found it abundant on Islay. It grows also on Dorset heaths, in the New Forest and on Shropshire's Whixall Moss but thrives most in western Scotland, western Ireland on Pembrokeshire's Dowrog and Trethos commons and Brynherian moor and the Lake District. Wem Moss, by the way, lies at the head-streams of the river Roden, an interesting water-course flowing south to Wem itself. The crayfish was suggested to inhabit one of its brooks near Wem, in the Victoria County History early this century; but I have never seen any evidence of this, nor for the other claim for it in Salop in brooklets in the Wyre Forest down on the Worcestershire border. Lesser bladderwort is another interesting aquatic of the north Shropshire mosslands, where marsh-andromeda is still fairly

common. The drainage of the old Welshampton Moss about 1940 exterminated one of its most interesting waterside plants, the rush-like *Scheuchzeria palustris*, which the botanists had already "hunted mercilessly out of Bomere Pool". It still grew in the very wet sphagnum on Ceckby Carr, 6 miles from Thirsk, in the 1930s, but its little spike of yellow-green flowers is now confined to the eastern (Perthshire) side of Rannoch Moor.

The brightly striped and spotted, nocturnal European salamander has never survived long from liberations in Britain, yet it can be bred in a planted aquarium with an island of compost, bordered by an inch of water over compost at each end. It usually takes only 2 days to give birth to about 25-48 tadpole-like, gilled larvae, by day or night, in 55°F., from about the end of March. 8-16 is a more usual number. The emergence of the tadpoles is stimulated by contact with the water, not usually on the dry land where they die if they emerge. According to the time spent out on land, the emergence of larvae may last so much as a week. Undeveloped eggs are sometimes issued. It is fed easily on small earthworms. Larvae can be induced to leave the cloaca if a female in laying ripeness is lifted from dry land and put into water, the tadpole swimming out on contact.

Specimens have been kept on captivity for some 28 years, for these are much longer-lived animals than frogs and newts. The giant Japanese salamander was kept for 52 years in Holland. The European salamander varies in colour from all yellow to all black, excepting for a few yellow spots. A smaller subspecies called *taeniatus* inhabits the Hartz mountains, and used to be linked with the black alpine salamander, averaging only two young.

A claim was made for a colony surviving and breeding several years, before the first world war near Heysham,

in north Lancashire; but the evidence lacked adequate verification. Yet it ranges so near as France and Germany.

Larval salamanders can be reared on Daphnia, Infusoria or gnat-larvae in separate shallow water, and after 10 weeks 'weaned' to small earthworms, small slugs, *Enchytraea* or white worms, and tiny insects. The Amphibia volume of Shaw's 1802 "General Zoology" explored the myth of its being poisonous, which apparently arose from small lizards dying after biting and swallowing its slimy skin-secretion, which is of a protective nature.

For over 40 years the Royal Meteorological Society organised the recording of the first wild frog-spawn by amateur naturalists, in which I took part for them, before the war. The average overall national date was March 16; but it ranged from so early as January on Dartmoor bogs and Exmoor even December in the extreme West Country, to early April in northern haunts where the later ground frosts sought the lower ground. Cold Marches delayed spawning in the less sheltered areas. The cold January of 1933 made it 13 days late on Dartmoor. In southern Ireland, it started when temperature reached 52°F. in February. March frosts killed much spawn in 1931, but frogs were mating on Midland canals early in April, with tadpoles 33 days later. Records of first frog spawn one year were as follows; S.W. England from 3 Jan. to 20 March; S. Ireland 30 Jan. to 7 April; S. Wales 5 Feb to 2 April; N. Ireland 7 Feb to 21 March; W. Midlands 13 Feb to 29 March; N. Wales 14 Feb to 11 March; S.E. England 15 Feb to 28 March; N.W. England 3 March to 9 April; N.E. 4 March to 10 April; East Anglia 5 March to 11 April; E. Midlands 11 March to 7 April; W. Scotland 12 to 27 March; E. Scotland 9 March to 12 April; N. Midlands 17 March to 3 April; N. Scotland 18 March to 12 April.

ADVANCE NOTICE

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are proud to announce



THE 22nd BRITISH AQUARISTS' FESTIVAL

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Cichlasoma severum

SEVEN POPULAR CICHLIDS

by Bill Simms

WHEN an aquarist moves past the stage of keeping a tropical community aquarium, and adds another tank to start breeding one particular species, it is not long before he becomes enthusiastic about cichlids. They are big, colourful and attractive, and their individual characters seem to fill the tank even when just two are present.

At first one or two are tried with other fish, and if the correct species are used there can then be a period of success. For instance: *Aequidens curviceps*, the Flag Cichlid, or Thayer's Cichlid, reaches about 3 inches when fully grown, and will breed when it is 2½ ins. long. In a community tank it is quite peaceful until the urge to breed arrives, but then it is wise to provide it with separate quarters. This fish does not dig up plants to the same degree as some other cichlids.

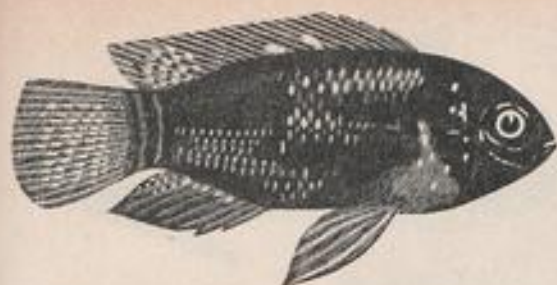
Being small, a pair of these pretty cichlids need only about 10 gallons to themselves, though, as always, a larger aquarium will keep them in better health and will give any youngsters a better chance of growing well. In an aquarium well furnished with rocks, and a few plants, the colours of this fish will sparkle with

blue metallic spots against the green-brown body and red suffused fins.

To breed these fish increase the normal temperature of about 76°F., to about 82°F., and see that the pH is neutral to slightly acid, with a tendency to softness. If you provide a plant-pot on its side as a spawning place, see that it is wedged in place tightly, for an object that rolls about will be avoided.

The male takes possession of a rock (or the plant-pot) and carefully scrubs an area clean by sucking at it with its mouth. When he is satisfied the female is approached and persuaded towards the cleaned spot. This persuasion takes various forms but usually includes some fierce driving as well as some tempting.

If all goes well she eventually fastens row after row of eggs onto the cleaned area, and the male follows closely behind spreading its sperm over the eggs to fertilise them. For about four days both fish guard and fan the eggs with their fins in order to prevent fungi and other harmful objects from settling on the eggs. They supplement the water fanning by picking over the eggs with their mouths quite regularly.



Aquidens curviceps

The eggs hatch in about four days, and as soon as the babies are swimming freely they can be fed with infusorians and very fine dried food. As they grow a little, newly-hatched brine shrimp can be used, as well as some finely chopped *tubifex* worms. Great efforts should be made to see that the water is not fouled by uneaten food for this would encourage the build-up of harmful bacteria.

Similar breeding conditions apply to the Butterfly Cichlid, *Apistogramma ramirezi*, except that the water should be old, and slightly more acid. These small fish are only about 2 ins. long, and are among the most beautiful of the dwarf cichlids. There are metallic green spots on the occasionally barred blue and buff body, and a black band passes vertically through the eye. The fins vary in colour from orange-yellow above to reddish below, and the first couple of rays of the dorsal are very dark. Because this fish is so pretty many aquarists wish to breed it, but this is not always easy, for sometimes the parents are egg and fry eaters.

In such cases the procedure until the eggs are laid is the same, but then a method of artificial rearing is adopted. The stone or pot on which the eggs are laid is transferred to another container of the same water, which is hung under the outlet from the filter. The constant flow of cleaned water acts in the same way as the parent's fanning, but a few eggs do occasionally go

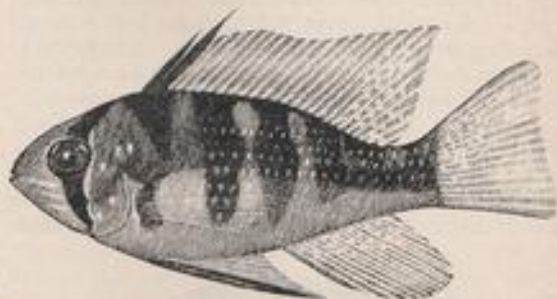


Nanacara anomala

white. These are at once removed with a pipette to avoid infecting others, and they fry should start hatching in about 3 days. Thereafter treatment is the same.

Another dwarf cichlid, *Apistogramma agassizi*, can be bred easily in a small aquarium under similar conditions, but with one small difference. Instead of removing the eggs, in this case the male fish is removed as soon as possible after egg-laying is complete. The female may become aggressive and ill-treat the male if this is not done. When on her own she tends the eggs carefully.

This is one of the prettiest of the dwarf cichlids, with some variation of colour in different localities. It comes from the Central Amazon territories where vastly different conditions prevail in places. In some varieties the central dark line is wider, and with a strongly blue colouring that is continued into the light tail band. The fins are edged with brilliant orange and this makes it a very striking fish.



Apistogramma ramirezi

Nannacara anomala, the Golden Dwarf Cichlid, is another small fish that can be bred easily. It should be treated in the same way as the previous fish—by removing the male after spawning—though sometimes the female will permit his presence and help. This fish is not so pretty as the others mentioned, for though the sides glisten with a gold to metallic green colour, and the male's dorsal is edged with red, the general effect is of a dark fish, with occasionally some bars of a lighter tone.

All these four small cichlids can be housed comfortably in a 10 gallon aquarium, but considerably more room will be required for the following fish. All three of them grow to 6 ins. or more, they are pugnacious when large, and any tank in which they are kept will soon have the bottom gravel turned over to quite a depth—thus uprooting any plants. A large aquarium should be provided for each pair, with gravel and well-anchored large rocks as the sole decoration.

The Jewel Cichlid, *Hemichromis bimaculatus*, comes from tropical Africa, and is the only one of these seven cichlids that is not from Central or South America. It is one of the prettiest large cichlids, and because of

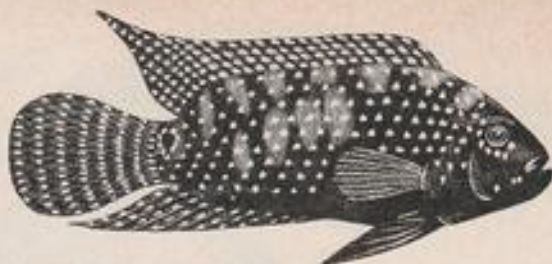


Apistogramma agassizi

the case with which it can be bred it has become deservedly popular. However, breeding this fish brings its problems, for the young are hard to dispose of—they are not usually peaceful with other fish, and so cannot be kept in a community tank.

With sides that are normally yellow-green, but that turn a brilliant red dotted with gleaming blue spots at breeding time, this is a colourful fish. The two dark spots on the body vary in intensity, but are normally present in each colour change. Whichever colour is predominant, the Jewel Cichlid is a striking fish.

Cichlasoma severian, the Banded Cichlid, sometimes called the Convict Fish in America because of its dark barring when young, has red spots along its sides on a dark blue-green body. The rear of its dorsal and anal



Cichlasoma biocellatum

female has fewer blue spots, and she is without the red edge to the male's dorsal fin. Like the other large cichlids described here, the young of this kind can be kept with other fishes at first, but must be watched carefully as they grow.

Breeding these three large cichlids is usually a simple matter. Provide a plant-pot on its side where possible, and after spawning watch to see if either parent should be removed. Usually this is not necessary, for the larger cichlids work well together in breeding and rearing their young.

There are many more cichlids to be obtained than the seven mentioned here, but any of these will introduce the beginner to the delights of keeping fish with character and individuality. Give them plenty of room with lots of live food, and you should enjoy their company for a long time.



Hemichromis bimaculatus

fins and the tail are orange-yellow dotted with red, while there are flashes of bright blue around the head and front of the fish.

This fish has a different overall shape to the others described and its young have sometimes been passed off as young Discus fish. The young are quite unlike their parents, and will at first live in a community tank. As they grow, however, their temper becomes uncertain, and eventually they must be separated from smaller fish.

Another *Cichlasoma*, the Jack Dempsey, *C. biocellatum*, is dark brown to black when mature, peppered with light blue spots along the body. The

Crossword Solution

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ANSWER TO HOW CLEVER ARE YOU?
JAPANESE RUSH

Coldwater Fishkeeping

KEEP THE FISH HEALTHY

by Arthur Boarder

IT MAY seem rather strange to suggest that one should keep one's fishes healthy but after all it is probable that most of the troubles met with by fishkeepers are directly caused by the aquarist either doing something he should not have done, or neglecting to do something else which was important for the welfare of the fishes. If we examine some of the causes of trouble either with the garden pond or the coldwater tank, it may be possible to single out a few points worth considering as far as avoiding some of the pit-falls.

In the first place it is important to know what to look for when purchasing a fresh fish as it is not of much use trying to keep a fish healthy if it was ill when bought. The old saying about a healthy goldfish is that if the dorsal fin is kept erect then the fish is in good condition. Whilst I do not agree with many of the old sayings, this is one with which I agree completely. It is very rare for a fish in ill health to keep the dorsal fin erect. There may be some difficulty in recognising the condition of a fish such as a lionhead, which has no dorsal fin. However, in such cases the general condition of the fish can be noted. Most healthy fishes will swim about in a normal manner, but the ones in bad condition may be mouthing at the surface of the water most of the time with their body at an angle of about forty-five degrees to the top of the water. Another bad sign is when a fish lies on its side on the bottom.

Usually if a fish is bright of eye and appears to swim in a normal manner it can be assumed that it is in good condition. Having obtained the fishes it is most important that the right conditions are present in the pond or tank when the fishes are introduced. I consider that it is most important to see that the water is in good condition and that the water plants are growing. The importance of healthy water plants cannot be over emphasised. Not only will the plants give off oxygen for the good of the fishes but they can also use up much of the waste matter from them. Assuming that all is well at this point, the next point to watch is the feeding. It is almost certain that anyone starting in the hobby just cannot

resist the temptation to start feeding the fishes as soon as they are in the pond or tank. Whilst this may not be as dangerous with the pond as with the tank, because there is more water present, it is however quite unnecessary to feed any new fishes for a few days.

Many people just do not realise that a fish can go for long periods without being artificially fed. I stress this point as it is almost impossible for any pond or tank, which has growing water plants in it, not to have some form of food for the fishes however small. When one realises that a fish cannot breathe without taking water into its mouth, and that this action takes place about twice every second, it can be seen that tiny particles of food, either vegetable or animal can be screened off in the mouth by the fish. Most water in tank or pond when placed under a microscope will show many tiny living creatures and this is known as *infusoria*, a rather similar collection of particles to those comprising the plankton of the sea, which is well known to nourish so many occupants of the oceans.

This capability of apparently going without food for long periods can be realised when one considers that a fish can have been left, by accident, in a large tank without any food for long periods and yet the fish can not only have kept alive but can have grown. I have in the past reported the finding of a fish in a large tank which I thought contained no fish at all, and as long as nine months could have elapsed since I thought I had cleared the tank of fishes. Yet the fish had kept alive and had grown as well as or even better than the fish of the same hatching which had been fed regularly.

The feeding of fishes too soon after introduction, especially in a tank, is one of the most frequent causes of failure in the early days of fishkeeping. Until they have got used to the fresh conditions, fishes are not always ready to take food. If some is given, especially dried foods, there is the danger that the water could become fouled by the decaying uneaten food. Most fishes can only eat when the water contains sufficient

oxygen and if it is not present the fishes go off their food. Then the aquarist gives more food which is left and conditions go from bad to worse. If only aquarists would refrain from feeding the fishes for a few days all could be well. When the fish appear to be in feeding condition a start can be made with a more or less regular system of feeding. A good sign as to when the fishes are ready to be fed is when they are seen to be browsing around the water plants sucking at them in a search for fine foods, such as soft *Algae*. This is when some food can be offered. A little only must be offered and if the fishes do not rise at once to take it, then no more should be given for that day.

It may surprise some aquarists to know how much food fishes can find in a properly planted tank or pond. As an instance of this it is only necessary to leave a tank of fishes for a couple of weeks without any artificial feeding. After this time the fish will be quite active and healthy and their copious droppings of a dark greenish-brown matter will signify that far from having starved, they have found plenty of food from the plants and perhaps the sides of the tank. If this can happen in the tank then it is obvious that fishes in a pond are able to find sufficient food to keep them going for a long time.

Once feeding is started one can soon find out if their fishes have any preferences for particular foods. It is a well known fact that goldfish can eat almost anything that human beings can eat and in addition many other things which do not come into our daily diet. I consider that garden worms are the most fancied diet of most fishes and I have never known any harm come to them from giving plenty of worms. The only danger is when one gives too large a worm to small fishes as this could cause choking, the worm forming a cork in the mouth of a fish and preventing it from getting oxygen. Although goldfish can be fed exclusively on one particular food for many months, it is perhaps a good plan to vary the diet occasionally. I have made several experiments with feeding goldfish and have found that a diet of white worms alone for six months does no harm to goldfish and the same can be said of using one brand of flake food. As regards the latter, I must stress that these flakes are so thin that it may not be right to give just a small pinch to the fishes which may look quite a lot but may not be very much in weight or nourishment.

Having got over the probable initial troubles the next fence to overcome is the one of foul water. When fishes are eating at their maximum they must repeatedly void the waste matter. This must remain in the tank or pond and unless it can be utilised by the growing water plants, it can soon pollute the water. After all, fishes are living animals and if one can take an example from the following it must be realised that it is imperative to change part of the water in a tank about once

a week. If a number of people were enclosed in one room with no ventilation or outlet at all, one can easily see what a state they could be in, even after two or three days. Then think in what state the water in a tank can be after the inhabitants have been feeding and voiding in it for a week or more. The change of water or part of it may not be important in the pond as there should be plenty of plant life there and the action of wind and rain can reoxygenate the water. In the tank it is a different matter and a partial change of water is absolutely essential especially when feeding is being carried out every day.

The weekly servicing of a tank is usually the time when some of the water can be changed. When siphoning out some of the mulm from the bottom it is certain that a quantity of water is removed. This must be thrown away and fresh used for refilling. The fresh water need not be of any difference in temperature but I have always found that if it is some degrees lower than that of the tank, the fishes will appreciate it as it will probably contain more oxygen than warmer water. It is usual to allow some of the mulm in the tank to remain for the benefit of the plants and, in fact, it would be difficult to get at some which is at the rear of the tank.

Having dealt with the method of feeding, the next cause of possible trouble is that of introducing fresh subjects without taking special care to make sure that nothing of a harmful nature gets into the tank or pond at the same time. It is so easy to get into trouble when putting either fresh fishes or plants into a tank or pond without seeing that, as far as possible, there is nothing harmful on them.

I expect that most aquarists of several years of experience will have come up against some trouble which has taught them a lasting lesson and I am in that category. Over the years I have done some silly things and not always by accident. I may at times have thought that a certain point was not worth worrying over, but have later found that one little slip has caused me much trouble and heartache for a long while afterwards. It may not be out of place here to quote just a few of the mistakes I have made in the past as a warning to others. I think my first slip was when I fed small fry on *Daphnia* which I had collected from a local pond. I thought that I had looked over the catch and removed anything large enough to see which I thought could be harmful, but I introduced a fine crop of flukes which gave me no end of trouble to eradicate. My second mistake was to accept a large green tench which had been caught by an angler friend. This brought in a crop of fish-lice which were rather difficult to get rid of, but which taught me a sharp lesson. The next mistake was to introduce in some tanks some *Lagarosiphon major* from a friend's pond and later found that one or two strands of a particularly persistent blanket

weed had been on the plant and this has caused me continual watching in order to get rid of it.

Another daft thing I did when I was keeping tropicals was to get a young lad living near by to come in to feed my fishes. On my return after a fortnight's holiday, he presented me with a row of jam jars filled with dead and stinking fishes. The tanks were a milky hue and stunk to high heaven. How a few of the babies had survived was a marvel to me. Anyway, this taught me never to let anyone feed my fishes whilst I was away from home, and even if my absence

was as long as three months, I would not have anyone feed my fishes either in tank or pond.

I hope that I have given enough examples as to what can go wrong to help budding aquarists to make a better start, as I am sure that if one goes about fish-keeping in the right spirit and with sufficient care, there should be far less trouble and the fishes could be kept in much better health. Remember that a healthy fish has a good protective covering of mucus and as long as this is in good order many of the diseases and pests can be repelled by the fish.

TOUGH DISCUS

by Joe Dornie

ON ONE OR TWO occasions during the 1972 showing season I exhibited one of my adult Discus fish. The first time I entered it was at Sheffield's D.A.S.'s open show, and the second time was at Scunthorpe two weeks later. A lot of my aquarist friends commented that they would not take the risk I was taking by subjecting one of a pair of breeding Discus to the upset of an open show. I have decided to write this article just to help to allay the suspicion that is widely held that the Discus fish is very delicate, always to be handled with great care and not be subjected to change once it has been settled. Nothing could be further from the truth providing, of course, one always adheres to the water chemistry which the fish is used to living in.

I was fortunate enough to win a "Best in Show" at both Sheffield and Scunthorpe which merited my Discus a place on the Champion of Champions stand at Belle Vue Aquarist Festival.

The fish was placed in a suitable plastic bag at 11 a.m. in the fish house, and was not taken out until 4.0 p.m. after it had travelled 72 miles by car over the "Snake Pass" (A.57) which is one of the worst main roads in England. We prepared our allotted tank with water we had taken with us, making sure that the temperature was keeping between 82 and 84 degrees F. We then left feeling satisfied that the fish was happy.

What follows is only written to prove the toughness of the Discus fish.

At 9.40 p.m. on Friday night we had a phone call from a friend who was putting the finishing touches to his trade stand, telling us that my Discus was showing signs of great distress. On investigating

with one of the stewards who was on duty, it was found that the water temperature in the tank was down to 72° F. This, as any aquarist knows, is well below what is suitable for Discus. However, the matter was attended to by the stewards after I had phoned Mr. Cooke, the show secretary of the F.M.A.S. and the temperature was lifted in the tank to something nearer what the Discus needs.

After the show was over on Sunday night, we collected the fish, brought it back to Workshop and placed it in the tank which was to be its home along with its mate, from which pair I had bred and reared four previous hatches of young. The fish that had been shown had been kept separate from its partner for four weeks to ensure that it was in good condition for the show; and this is the reason the pair got a bit rough with each other and had to be separated for a few hours. We put the male back into the breeding tank after about ten hours; this was on Tuesday night after the show. On Friday afternoon the pair spawned and now there are about 100 young fish swimming in the tank, making a total of about 450 young this pair of fish have produced and reared. To summarise the story and prove the toughness of Discus; one of the pair was at Belle Vue for 80 hours in a 24in. x 12in. x 12in. tank without food and in adverse conditions, 114 hours back in the breeding tank, knocked about a good bit by the partner and still spawned and brought off the young.

There are lots of other things that I have witnessed to prove the ability of the Discus fish to withstand setbacks, things that would probably prove fatal to fish that are thought to be the tough ones.

MURKY MONSTERS OF THE DEEP

by D. England

THE WORDS in the title, "murky monsters," are no purple patch. For the giant squids are murky from the "smoke screen" of inky-black fluid which they eject to hide them from their enemies; and a Cambridge (England) scientist, Dr. Ann Bidder, who has spent a life-time studying these creatures, told the last meeting of the British Association that stories of monster squids over 100 ft. long are not to be condemned as sailors' yarns.

She thinks, indeed, that giants up to 200 ft. long may well exist among deep-sea life. Dr. Bidder believes the report about one having tentacles as long as a 175 ft. ship. The story was told by a ship's officer who used to hang a lantern over the side at night to observe marine life.

"One night the light was suddenly obscured, and he realised an enormous eye was looking at him," she said. "He walked along to the fore-castle and saw the ends of tentacles. He went to the stern and there were the other ends of the tentacles. The ship was 175 ft. long. A squid with tentacles as long as that would have a body at least 25 ft. in length."

The account had been rejected as no more than the usual Sinbad the Sailor story, but Dr. Bidder said she accepted it not just because of the character of the man who told it and his reputation as a reliable observer, but because of other evidence.

In 1898 there had been washed up on the coast of Florida a "thing" like an enormous sack with the stumps of arms attached. It was washed away by a storm but beached again, this time without the arms. Four men with a windlass tried to move it but failed. Pieces of tissue from it were sent to the Smithsonian Institution Washington. Recently they have been studied again and shown to be connective tissue from a squid's body.

It is quite probable that many stories of sea serpents have arisen from the sighting by startled mariners of the tentacles of outsize squids swimming at the surface. A. E. Verrill, an American biologist, speaks of a 29-ton specimen from the North Atlantic. He

measured it and found it to be 55 ft. long and the longest tentacles were 35 ft. in length.

A squid has ten such "arms," two longer than the others, and writhing along the surface they would undoubtedly have a serpentine effect. A giant squid at the top of the water may not be a rare event. A tuna fisherman reported seeing one of them rise upward several feet above the surface near the Coronado Islands off San Diego (California).

A number of accounts exist of encounters with giant squids in the North Atlantic. In 1873 a Montreal newspaper published a report of the attack of one of these squids upon two fishermen who came alongside to investigate a floating object in the water which they thought was a large sail or wreck off Saint John, New Brunswick.

It ran: "On reaching it, one of the men struck it with his gaff, when immediately it showed signs of life, reared a parrot-like beak, which they declare was 'as big as a six-gallon keg,' with which it struck the bottom of the boat violently. It then shot out from about its head two huge livid arms and began to twine them round the boat. One of the men seized a small axe and severed both arms as they lay over the gunwale of the boat; whereupon the fish moved off and ejected an immense amount of inky fluid that darkened the water for two or three hundred yards."

Epic combats appear to take place between the giant squid and the sperm whale. Evidence of such titanic deep-sea battles have been found in the bodies of captured whales, which feed on squid. Marks of sucker discs as big as coffee cups, and large arms found in the cetaceans' stomachs indicate that these marine giants live in constant contention. A huge squid, with tentacles 27 ft. long, was once found inside a sperm whale.

It is thought that this species has attacked submarine cables, mistaking these for the tentacles of giant squids. Some years back a cable repair ship was sent to investigate the reason for an interruption

of service between Balboa (Panama Canal Zone) and Esmeraldas (Ecuador). The cable was hauled up off the coast of Colombia, and the body of a 45 ft. whale came up with it.

Part of the cable was twisted round the lower jaw and another 180 ft. were wrapped around the body and flukes. The cable had been lying in 3,240 ft. of water, a depth of over three-fifths of a mile. The unfortunate whale must have dived to hunt a giant squid but found a cable instead.

Although in life a squid may appear repulsive, in death it is one of the oldest of foods. Greek writers, especially the dramatist Aristophanes, refer to it with gusto. He makes one of his characters, the

Sausage-seller, pray that the demagogue Cleon, faced with a pan full of sizzling squids, will gulp them down in a hurry and choke. Mediterranean peoples are still partial to them. Squids sizzle in the open booths of the humbler parts of Athens, and many tourists eat them unsuspectingly in mixed fry in Italian hotels.

The Japanese regard the squid as a great delicacy, and eat the small ones raw with much satisfaction. The Chinese make good use of them, drying them for food or piling them up in large vats to wait for the ink to run from the ink sacs. From which characteristic the squid is known variously as the "Clerk of the seas," the "Pen and Ink Fish" and the "Inkpot."

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from AQUARISTS' SOCIETIES

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

THERE were over one thousand entries at the **Sherwood A.S. Open Show**. Best Fish in Show Trophy was won by Mrs. Standen of Lays A.S., and the Yorkshire Television (Calendar) Challenge Trophy for the Society with most points went to Aireborough A.S. Results: Junior (Egglayers): 1, Master A. Miffin (North Staffs.) (Section Winner); 2, S. Clarke (Barnsley); 3, T. Mayle (Chelmsley Wood); 4, Miss M. Thickbroom (Welbeck). Junior (Livebearers): 1, J. Sheldon (Robbery Select); 2, S. and A. Jones (Welbeck); 3, Anita Moye (Bletchley); 4, Master Holmes (Castleford). Guppies: 1, C. Beckenham (Oldham); 2, Mr. and Mrs. Marshall (Oldham); 3, B. Foster (Don Valley); 4, Mr. Greenwood (Bishops Cleeve). Platies: 1, Mr. Applin (Independent); 2, Mr. and Mrs. Newbould (Welbeck); 3, P. Spittlehouse (Workop); 4, P. A. Moye (Bletchley). Swordtails: 1, G. Andrews (Hull); 2, P. Gmzer (Uxbridge); 3, J. L. Smith (Unattached); 4, Mr. and Mrs. Jones (Welbeck). Mollies: 1, J. Salisbury (Bedworth) (Section Winner); 2, C. Pratt (Bedworth); 3 and 4, J. S. Hall (Aireborough). A.O.V. (Livebearer): 1, J. A. Whiteley (Aireborough); 2, Mr. Leadbetter (Fleetwood); 3, Mr. and Mrs. E. Smith (Sheffield); 4, J. S. Hall (Aireborough). Small Characins: 1, Mrs. H. Blades (Cresswell); 2, Mr. and Mrs. Williams (North Staffs.); 3, Mr. and Mrs. Cooper (Workop); 4, Mr. and Mrs. Jowle (Derby Regent). Large Characins: 1, P. J. Whelan (Blackburn) (Section Winner); 2, M. Roberts (Unattached); 3, J. S. Whiteley (Aireborough); 4, E. Williams (Chelmsley). Dwarf Cichlids: 1, Miss J. Gullane (Buxton); 2, P. A. Moye (Bletchley); 3, A. Moss (Huddersfield); 4, S. Hooton (Sandgrounders). Large Cichlids: 1, H. Ormsher (Sandgrounders) (Section Winner); 2, Mr. Kinsey (Independent); 3, Mr. and Mrs. Williams (North Staffs.); 4, G. Thickbroom (Welbeck). Angels: 1, Mr. and Mrs. Kirk and Sons (Grimsby); 2, H. Kuhn (Lincoln); 3, Mr. Seveden (Grimsby); 4, Mr. Saphon (Grimsby). Small Barbs: 1, Mr. and Mrs. Jowle (Derby Regent); 2, Mr. and Mrs. Kilvington (Doncaster); 3, A. P. Vaisiere (Merseyside); 4, Mr. and Mrs. Dennis (Dukeries). Large Barbs: 1, Mr. and Mrs. Cohen (Castleford) (Section Winner); 2, C. Beckenham (Oldham); 3 and 4, Mr. and Mrs. Stanton (Sheffield). Minnows and Danios: 1, A. Moss (Huddersfield) (Section Winner); 2, E. Williams (Chelmsley); 3, M. Laycock (Sheffield); 4, G. and S. Northampton (Unattached). Rasboras: 1, Mr. and Mrs. Daines (Doncaster); 2, M. Roberts (Unattached); 3, A. Miffin (North Staffs.); 4, R. Black (Fleetwood). Sharks: 1, T. Smith (Sheffield); 2, J. S. Hall (Aireborough); 3, A. Webster (Unattached); 4, R. Bowers (Independent). Foams: 1, G. Thickbroom (Welbeck) (Section Winner); 2, R. Bowers (Independent); 3, Mr. and Mrs. Stanton (Sheffield); 4, J. S. Hall (Aireborough). Male Fighters: 1, Clarke Bros. (North Staffs.); 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. Applin (Independent); 4, G. Gillesby (Welbeck). Female Fighters: 1, W. Armstrong (Unattached); 2, A. H. Heap (Keighley); 3, Mr. and Mrs. E. Smith (Sheffield); 4, J. S. Hall (Aireborough). Small Anabantid: 1, Mr. and Mrs. Cohen (Castleford) (Section Winner); 2, Mr. and Mrs. Norton (Grimsby); 3, Miss J. Gullane (Buxton); 4, Mr. and Mrs. Hatfield (Gainsborough). Large Anabantid: 1, Mr. and Mrs. Williams (North Staffs.); 2, J. S. Hall (Aireborough); 3, K.

Lawson (Unattached); 4, Mrs. H. Blades (Cresswell). Breeders (Egglayers): 1, J. Fox (Haden) (Section Winner); 2, J. Lee (Unattached); 3, G. Noble (Chelmsley); 4, E. Williams (Chelmsley). Breeders (Livebearers): 1, Mr. and Mrs. Toyne (Sheffield); 2, P. Ginger (Uxbridge); 3, Mr. and Mrs. Shipman (Grantham); 4, J. A. Whiteley (Aireborough). Pairs (Egglayers): 1, A. Moss (Huddersfield) (Section Winner); 2, Mr. and Mrs. Drazie (Dukeries); 3 and 4, G. Thickbroom (Welbeck). Pairs (Livebearers): 1, H. Ormsher (Sandgrounders) (Section Winner); 2, Mr. and Mrs. Toyne (Sheffield); 3, Mr. Pakes (Sheffield); 4, Mr. Leadbetter (Fleetwood). Corydoras Catfish: 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. Bressley (Belle Vue); 3, Mr. and Mrs. Clarke (Barnsley); 4, K. Brent (North Staffs.). A.O.V. Catfish: 1, J. T. Mayle (Chelmsley Wood); 2, Mr. and Mrs. Kilvington (Doncaster); 3, D. Geogan (Blackburn); 4, Mr. and Mrs. Copley (Doncaster). Loaches and Botias: 1, Mr. and Mrs. Toyne (Sheffield) (Section Winner); 2, A. Gregory (Haden); 3, G. H. Robert (Lucas); 4, C. Beckenham (Oldham). Aphyosemonids: 1, E. Milne (Doncaster); 2, Mrs. P. Laycock (Sheffield); 3, Mr. and Mrs. Kirk and Sons (Grimsby); 4, J. Lee (Unattached). Rivulids: 1, Mrs. S. Blizard (Sheffield); 2 and 3, E. Milne (Doncaster); 4, Mr. and Mrs. Harris (Gainsborough). A.O.V. Killifish: 1 and 4, Mr. Carr (Doncaster) (Section Winner); 2, J. T. Mayle (Chelmsley); 3, J. Lee (Unattached). A.O.V. Tropical: 1, D. Geogan (Blackburn); 2, G. W. Marsden (Workop); 3, G. Thickbroom (Welbeck); 4, G. Gillespie (Welbeck). Ladies Class: 1, Mrs. Standen, Best Fish in Show (Loyne) (Section Winner); 2, Mrs. Williams (North Staffs.); 3, Mrs. H. Blades (Cresswell); 4, Mrs. Linstead (Four Star). A.V. Female Fish: 1, Mr. and Mrs. Gabe (Chesterfield); 2, J. A. Whiteley (Aireborough); 3, Mr. and Mrs. Jowle (Derby Regent); 4, Mr. Leadbetter (Fleetwood). Marine: 1, Mr. Leadbetter (Fleetwood); 2, Mr. and Mrs. J. Green (Cresswell); 3, G. Swanick (Hucknell & Bullwell); 4, Mr. Sutcliffe (Hucknell & Bullwell). Novice Class: 1, M. Darrington (Alfreton) (Section Winner); 2, K. Hayward (Sheffield); 3 and 4, D. Sumner (Sandgrounders). Plants: 1, Mr. and Mrs. S. Bressley (Belle Vue) (Section Winner); 2, Mr. Kilvington (Doncaster); 3, Mr. and Mrs. Wells (Doncaster); 4, R. Shanks (Mount Pleasant). Goldfish and Comets: 1 and 4, Mr. and Mrs. J. Bressley (Belle Vue) (Section Winner); 2, L. Kerry (Chesterfield); 3, J. S. Hall (Aireborough). Moors: 1, C. H. Whisley (Accrington); 2, J. S. Hall (Aireborough); 3, B. J. Rodgers (Cresswell). Shubunkins: 1 and 2, J. S. Hall (Aireborough); 3, C. H. Whisley (Accrington). Fancy Goldfish: 1, 3 and 4, J. S. Hall (Aireborough); 2, C. H. Whisley (Accrington). Veiltails: 1, C. H. Whisley (Accrington); 2, 3 and 4, J. S. Hall (Aireborough). A.O.V. Coldwater: 1, J. Salisbury (Bedworth); 2, J. S. Hall (Aireborough); 3, Mr. Shilton (Aberston); 4, E. Harris (Nelson). Breeders (Coldwater): 1, 2 and 3, J. S. Hall (Aireborough). Junior Coldwater: 1, Master I. and S. Toyne (Sheffield); 2, J. Furniss (Welbeck); 3 and 4, Miss T. Bressley (Belle Vue).

AT the May meeting of the **Pontefract and District A.S.**, there was a lecture on the Hazards of Bactericidation in Aquariums, by J. Dickinson,

which was well received. This was followed by a Table Show. Successful trophy winners were: A.O.V. Livebearers: R. Charlton; A.O.V. Egglayers: D. Conley. Visitors and new members are welcome to meetings held on the first Wednesday of each month at the Willow Park Hotel, Pontefract.

AT the **Gloucester Fishkeeping and Social Club** monthly meeting, the two Table Shows were once again won by a lady member, who was first in both sections. In the show for Gouramis the results were: 1 and 4, Mrs. H. Adlam; 2, M. Burke; 3, T. Collier. In the Decorated Aquaria competition Mrs. Adlam was again the winner. The judge was Chris Partridge from Redditch who also gave a talk to the members. His subject was the breeding and raising of tropical fish to show standards and also the selection of fish for show. The treasurer, T. Collier, gave his half-yearly report, which showed that the financial position was very good. Mrs. W. Collier, the social secretary, reviewed the social activities and said that the club's Easter Bonnet Dance had been a great success.

RESULTS of the **Hyde A.S. annual show**: Guppies: 1 and 2, A. Darby (Hyde); 3, D. Laycock (Sheffield). Platies: 1, W. D. Haddock (Hyde); 2, L. Leadbetter (Fleetwood); 3, C. Goodman (Oldham). Swordtails: 1, Master A. Kaye (Top Ten); 2, C. Beckenham (Oldham); 3, L. Leadbetter (Fleetwood). Mollies: 1 and 3, C. Beckenham (Oldham); 2, R. Dyson (Fleetwood). A.O.V. Livebearers: 1, L. Leadbetter (Fleetwood); 2, A. Miffin (North Staffs.); 3, R. Knowles (Northwich). Small Barbs: 1, J. Gullane (Buxton); 2, R. Black (Fleetwood); 3, P. Bowden (Stretford). Large Barbs: 1, G. Bradshaw (Independent); 2, C. Beckenham (Oldham); 3, L. Leadbetter (Fleetwood). Small Characins: 1, M. and D. Laycock (Sheffield); 2, P. Bowden (Stretford); 3, R. Knowles (Northwich). Large Characins: 1, D. and R. Standen (East Lancs.); 2, K. Ankers (North Staffs.); 3, P. Richardson (Merseyside). Fighters: 1 and 2, M. and D. Laycock (Sheffield); 3, E. Seymour (Merseyside). Anabantid: 1, Miss A. Gregory (Nelson); 2, Miss J. Gullane (Buxton); 3, Mr. Whiteside (B.K.A.). Dwarf Cichlids: 1, Mr. Whiteside (B.K.A.); 2, L. and P. Graham (East Lancs.); 3, Mr. and Mrs. Thorne (Northwich). Large Cichlids: 1, G. Wilkinson (Hyde); 2, Hill Smith (Merseyside); 3, P. Gudgeon (Independent). Angels: 1, L. Leadbetter (Fleetwood); 2, Mr. and Mrs. Smith (Fleetwood); 3, Mr. Asen (Adinton). Corydoras Catfish: 1, D. and R. Standen (East Lancs.); 2, H. W. Carter (Merseyside); 3, Miss I. Gullane (Buxton). Loaches: 1, Mr. and Mrs. Norris (East Lancs.); 2 and 3, C. Beckenham (Oldham). A. O. V. Catfish: 1, A. Miffin (North Staffs.); 2, G. Holt (Valley); 3, Mr. and Mrs. J. Gabe (Chesterfield). Sharks and Foxes: 1 and 2, T. Smith (Sheffield); 3, Miss J. Gullane (Buxton). Rasboras, Danios and Minnows: 1, L. Leadbetter (Fleetwood); 2, Mr. Whiteside (B.K.A.); 3, R. L. Payne (Merseyside). Killie Fish: 1, Mr. Whiteside (B.K.A.); 2 and 3, Mr. and Mrs. J. Gabe (Chesterfield). Pairs (Egglayers): 1, Mr. and Mrs. Thorne (Northwich); 2, L. Leadbetter (Fleetwood); 3, Mrs. Cartwright (Independent). Pairs (Livebearers): 1, L. Leadbetter (Fleetwood); 2, G. Kaye (Top Ten); 3, S. E. Marshall (Buxton). Breeders (Egglayers): 1, Mr. Whiteside (B.K.A.); 2 and 3, R. Dyson (Fleetwood). Breeders (Livebearers): 1 and 2, R. Knowles (Northwich); 3, C. Beckenham (Oldham). Marine: 1, M. J. Graham (Keaf); 2, D. and R. Standen (East Lancs.); A.O.V.: 1, D. and R. Standen (East Lancs.); 2, A. Miffin (North Staffs.); 3, P. and H. Batchelor (Loyne). Miss Jaws: 1, Mr. and Mrs. Thorne (Northwich); 2, Mr. Wild (Accrington). Juniors: 1, Miss J. Gullane (Buxton); 2, Master A. Wild (Accrington); 3, M. Titterton (Hyde). Common Goldfish: 1, B. G. Holroyd (Morcombe Bay); 2, L. Lomes (Independent); 3, Mr. Foote (Accrington). Fancy Goldfish: 1 and 3, Mrs. E. Jenkins (Merseyside); 2, Mr. Foote (Accrington). A.O.V. Coldwater: 1, L. and P. Graham (East Lancs.); 2, Mr. and Mrs. Thorne (Northwich); 3, Mr. and Mrs. Haydon (Independent).

Best fish in show: Mr. and Mrs. Norris (East Lanes). Competitor with most points: L. Leadbetter (Fleetwood) with 18 points.

THE Medway A.S. show results were as follows: BA: 1, Mrs. R. Coyle (Independent); 2, Mr. and Mrs. Herbert (S.L.A.D.A.S.); 3, J. Marshall (Medway); 4, J. Bellingham (Tonbridge). B2: 1, T. Addams (Hastings St. Leonards); 2, Mrs. B. Scates (Erith); 3, J. Bellingham (Tonbridge); 4, C. Wood (North Kent). CA: 1, B. Bissoon (Basingstoke); 2, T. Taylor (Basingstoke); 3 and 4, Mrs. B. Scates (Erith). D: 1, Mrs. Bellingham (Tonbridge); 2 and 4, A. Kinsey (Independent); 3, Mr. and Mrs. Barthes (Mid-Sussex). Db: 1, B. Bissoon (Basingstoke); 2, C. Marsh (Medway); 3, P. Jarvis (Lewisham); 4, T. King (Erith). C: 1, D. Dare (Independent); 2, P. Coyle (Independent); 3, A. Kinsey (Independent); 4, C. P. Marsh (Medway). Ea: 1, J. Marshall (Medway); 2 and 4, D. C. M. Durrant (S.L.A.D.A.S.); 3, T. Taylor (Basingstoke). E2: 1, P. Coyle (Independent); 2 and 4, C. P. Marsh (Medway); 3, T. B. Addams (Hastings St. Leonards). F: 1, K. Appleyard (Thurrock); 2, D. Dare (Independent); 3, J. London (Thurrock); 4, K. Usher (Anson). G: 1, K. A. Beadle (Erith); 2, A. Kinsey (Independent); 3, J. London (Thurrock); 4, K. Appleyard (Thurrock). H: 1, J. Conolly (Bethnal Green); 2, T. Cruickshank (Ealing); 3, A. C. Tiffin (S.L.A.D.A.S.); 4, Mrs. B. Scates (Erith). J: 1, B. George (Mid-Kent); 2, P. Coyle (Independent); 3, T. King (Erith); 4, P. Gardiner (S.L.A.D.A.S.). K: 1, J. Conolly (Bethnal Green); 2, D. R. Purchard (Tonbridge); 3, Mrs. B. Scates (Erith); 4, D. C. M. Durrant (S.L.A.D.A.S.). L: 1, J. Parker (North Kent); 2, T. King (Erith); 3, T. Cruickshank (Ealing); 4, P. Gardner (S.L.A.D.A.S.). M: 1, Mrs. R. Coyle (Independent); 2, J. London (Thurrock); 3, D. R. Purchard (Tonbridge); 4, Mr. and Mrs. Herbert (S.L.A.D.A.S.). NB: 1, Master S. Addams (Bethnal Green); 2, J. Bellingham (Tonbridge); 3, P. Coyle (North Kent); 4, P. Wills (North Kent). NOT: 1, A. Heath (Lewisham); 2, J. London (Thurrock); 3, B. Bissoon (Basingstoke); 4, B. Robinson (Lewisham). O: 1, B. C. Fry (Erith); 2, B. Flood (Sittingbourne); 3, A. C. Tiffin (S.L.A.D.A.S.); 4, K. Usher (Anson). P: 1, 2 and 3, A. C. Tiffin (S.L.A.D.A.S.); 4, T. King (Erith). Q: 1, G. J. Coe (S.L.A.D.A.S.); 2, J. Conolly (Bethnal Green); 3, K. Saxby (North Kent); 4, P. O'Bryan (Thurrock). R: 1, P. O'Bryan (Thurrock); 2, K. Saxby (North Kent); 3, K. Addams (S.L.A.D.A.S.); 4, L. Laming (Medway). S: 1 and 2, Mr. and Mrs. Martin (North Kent); 3 and 4, A. C. Tiffin (S.L.A.D.A.S.). T: 1, A. Heath (Lewisham); 2, C. Elliot (Medway); 3, B. Bissoon (Basingstoke); 4, R. Mayne (Medway). XB-M: 1, Mr. and Mrs. Barthes (Mid-Sussex); 2, D. Addams (Bethnal Green); 3, Mrs. M. T. Wall (Thurrock); 4, C. J. Coe (S.L.A.D.A.S.). XO-T: 1 and 2, K. Usher (Anson); 3, K. Appleyard (Thurrock); 4, Mrs. A. M. Addams (Hastings St. Leonards); 2, P. O'Bryan (Thurrock); 2, D. C. M. Durrant (S.L.A.D.A.S.); 3, J. Marshall (Medway); 4, T. King (Erith). Best Fish in Show: Mrs. R. Coyle (Independent).

MEMBERS elected to office at the annual general meeting of **Hastings and St. Leonards A.S.** were: Chairman, G. Pryke; vice-chairman, G. Funnell; secretary, P. Martin, 20 Silverlands Road, St. Leonards; assistant secretary, Mrs. Q. Pollard; treasurer, T. Chalcraft; show secretary, E. Messer; publicity officer, Mrs. E. Reed; bulletin editor, B. Funnell; committee members, Mrs. M. Greig, J. Geig, T. Elliot, B. Freer. Mr. Pryke presented awards as follows: **Chinai Challenge Cup:** T. Adams; A.O.V.: F. Livings. **Member of the Year Cup:** H. Garey. **Home Aquarium:** H. Carey. **Christine Reed Trophy:** A. Reed. **Singapore Bowl:** J. Greig. In April the Society met Bexhill A.S. in an inter-club competition. Hastings were the winners, scoring 1,186 pts. against Bexhill 1,098 pts. The following are the details: **Loaches:** 1, Mrs. Sheen; 2 and 3, T. Adams. **Platies:** 1, T. Chalcraft; 2, Mrs. Sheen; 3, Mr. Platt. **Mollies:** 1, C. Joyce; 2, J. Dabompson; 3, D. Hunt. **Feculfish:** 1 and 2, T. Adams; 3, J. Dabompson.

Fighters: 1, 2 and 3, T. Adams. **Danios:** 1, Mrs. Sheen; 2, T. Macormac; 3, Mrs. Sheen. The slide show presented by Barry Funnell, with a taped lecture by D. Armstrong (secretary, British Killifish Association) was on Killifish. D. Sloper was the judge, and the award for the Best Fish in the Show went to Mrs. Sheen (Bexhill).

IN April, the **Grantham and District A.S.** held an inter-club show with the **Crosswell A.S.** W. D. Gidding of the **Gainsborough Society** was the judge and the results were as follows: **Livebearers:** 1 and 3, Mr. and Mrs. Blades (Crosswell); 2, Mr. and Mrs. P. Bull (Crosswell). **Barbs:** 1, M. and M. Foster (Crosswell); 2, M. Pattison (Grantham); 3, Mr. and Mrs. Shipman (Grantham). **Cichlids:** 1, Mr. and Mrs. Shipman (Grantham); 2, Mr. and Mrs. Blades (Crosswell); 3, V. J. Rodgers (Crosswell). **Characins:** 1, M. Pattison (Grantham); 2, Mr. and Mrs. Blades (Crosswell); 3, B. J. Rodgers (Crosswell). **Cats, Loaches, Sharks and Poecis:** 1, Mrs. W. Walker (Crosswell); 2, Mr. and Mrs. Elliot (Crosswell); 3, Mr. and Mrs. Shipman (Grantham). **Anabantids:** 1, M. and M. Foster (Crosswell); 2, Mr. and Mrs. Warriner (Crosswell); 3, J. Jones (Grantham). **A.O.V.:** 1 and Best Fish in Show, Mr. and Mrs. P. Bull (Crosswell); 2, Mr. and Mrs. Shipman (Grantham); 3, M. Pattison (Grantham). **Grantham Club Championship positions:** After season Table Shows: 1, Mr. and Mrs. C. Shipman; 2, J. Jones; 3, M. Pattison; 4, Miss L. Shipman; 5, Mr. and Mrs. R. Streets; 6, P. Kiddy.

RESULTS of the Bi-annual table show of the **Mixedness Tropical Fish Society**, were: **Livebearers:** 1, Mrs. Hodgson; 2 and 3, S. Leedham. **Barbs:** 1, Mr. Poole. **Characins:** 1 and 2, Mr. Poole; 3, Mr. Elstob. **Cichlids:** 1, Steven Poole; 2 and 3, Mrs. Hodgson. **Anabantids:** 1, B. Turner; 2, R. Marsh. **Rasbora and Danios:** 1, Mr. Elstob; 2, Mr. Poole; 3, Mr. Leedham. **Catfish and Loaches:** 1, Mr. Turner; 2 and 3, Mr. Poole. **Toothcarps:** 1, Mr. Elstob. **Pairs:** 1, Mr. Turner; 2, Mr. Poole; 3, Mr. Davies. **Breeders:** 1, Mr. Leedham; 2, Mr. Poole. **A.O.V.:** 1, D. Blake; 2 and 3, Mr. Poole. **Junoes:** 1, E. Hodgson; 2 and 3, L. Poole. **Coldwater:** 1, 2 and 3, Miss L. Poole. Best in Show: B. Turner.

CHANGES of committee members of the **Caterham Normads A.S.** are as follows: Chairman, K. Moss. Secretary, V. Gibson, 71 Park Road, Caterham, Surrey. Show Secretary, P. Herold, 11 Shibley Avenue, Old Coulsdon, Surrey. Treasurer, K. Durand.

The society would welcome newcomers to the Club. Please phone Mr. Gibson at 01-684 1263, or write, and further details will be sent.

SPEAKER at the May meeting of the **Dunstable and District A.S.** was Alun Robinson from Northampton, who gave an interesting and informative lecture on setting up a decorative aquarium. His talk was illustrated with slides. The monthly table show classes were A.V. Eglayer, Platys and Barbs. The winners of the first class was P. Malone, and T. Phillip won the Platys and Barb classes, the latter also being the best fish in the show. The winner of the junior section was P. Phillip. Club meetings are held on the first Tuesday of every month at the Kings Arms, Houghton Regis, Beds. Further details may be obtained from the secretary, Mrs. P. A. Hayes, 56, Spencer Road, Luton. (Tel. Luton 595618).

The following officers were elected at the Annual General Meeting of the **Peterborough Fishkeepers' Association:** Chairman, J. K. Butler; secretary/treasurer, C. A. Beskes, 62, Wisbech Road, Thorney, Peterborough, PE6 0SD; show secretary, R. Walden; committee members, R. Butler; K. Fox; K. Faulkner; T. Parks.

The club would like to express their thanks for all the hard work done by R. Harker, the retired chairman, who has now moved to Southorpe.

The **Champion of Champions** award was won by R. Walden and the **Annual Challenge Shield**

(for most points during past year) was won by J. Butler. Visitors and new members are welcome to meetings held on the first Tuesday of each month at "The Old Scarlet", Central Avenue, Dogsthorpe, Peterborough.

SECOND open show results of the **Runnymede A.S.** were: **Society Points Trophy, Hounslow:** Aquarist Gold Pin and Best Fish in Show, J. Batts. A.V. Barbs: B. Bissoon (Basingstoke). A.V. Cichlids: J. Batts (Ealing). **Tropical Pairs:** Mrs. P. Lambourne (Rushampton). A.O.S. Cats: J. H. Jackson (Basingstoke). **Characins:** B. Bissoon (Basingstoke). **Rift Valley Cichlids:** U. E. Valley (Ealing). **Platies:** J. W. P. Hughes (Rushampton). **Individual Class Winners:** **Aquascope:** 1, J. Batts (Ealing); 2, J. M. Shepherd (Runnymede); 3, P. Cairns (Runnymede). **Barbs:** 1, 2 and 3, K. C. Smith (Runnymede); 4, Miss L. Garrad (Runnymede). **Barbs B2:** 1, B. Bissoon (Basingstoke); 2 and 3, R. Leslie (High Wycombe); 4, Mrs. D. Cruickshank (Ealing). **Characin Cat:** J. B. Bissoon (Basingstoke); 2, Mrs. D. Cruickshank (Ealing); 3 and 4, R. G. Cox (High Wycombe). **Characins Cb:** 1 and 2, R. M. Jackson (Hounslow); 3, D. M. Reilly; 4, Mrs. J. Garrad (Runnymede). **Characins C2:** 1, M. Straine (Basingstoke); 2, C. J. Mears (Kingston); 3, A. P. Taylor (Sudbury); 4, M. West (Kingston). **Angels:** 1, Mr. and Mrs. P. Stapley (Hastings & St. Leonards); 2, J. Batts (Ealing); 3, Mrs. S. Mason (Independent); 4, J. W. P. Hughes (Rushampton). **Cichlids Db:** 1, B. Bissoon (Basingstoke); 2, M. A. Alexander (Hounslow); 3, B. Pratt (Hounslow); 4, Mrs. C. A. Butler (Runnymede). **Rift Valley Cichlids:** 1, V. E. Valley (Ealing); 2, T. A. Butler (Runnymede); 3, W. R. A. Bradford; 4, A. A. Houghton (Gosport). **Cichlids D2:** 1, J. Batts (Ealing); 2, P. Herbert (Runnymede); 3, Mr. and Mrs. P. Stapley (Hastings & St. Leonards); 4, M. Straine (Basingstoke). **Fighters:** 1, C. J. Mears (Kingston); 2 and 3, T. Taylor (Basingstoke); 4, J. M. Shepherd (Runnymede). **Labyrinth:** 1, A. P. Taylor (Sudbury); 2, B. Pratt (Hounslow); 3, J. W. P. Hughes (Rushampton); 4, J. Murphy (Greenford). **Toothcarps:** 1, R. G. Cox (High Wycombe); 2, K. Usher (Sudbury); 3, Mrs. J. Garrad (Runnymede). **Toothcarps Ec:** 1, Mrs. J. Garrad (Runnymede); 2, J. H. Jackson (Basingstoke); 3, A. A. Houghton (Gosport); 4, M. A. Alexander (Hounslow). **Tropical Catfish:** 1, J. H. Jackson (Basingstoke); 2, C. J. Mears (Kingston); 3, N. Sawford (Rushampton); 4, Mr. and Mrs. P. Hudson (Rushampton). **Corydoras and Brochis:** 1, D. M. Reilly; 2, V. E. Valley (Ealing); 3, S. Freemantle (Gosport); 4, B. Pratt (Hounslow). **Rasbora:** 1, D. M. Reilly; 2, R. M. Jackson (Hounslow); 3, R. Newman (Uxbridge); 4, Miss H. Greavener (Runnymede). **Danio and W.C.M.M.:** 1, Mrs. S. Mason (Independent); 2, A. P. Taylor (Sudbury); 3, A. J. Smith (Hounslow); 4, R. Leslie (High Wycombe). **Loach:** 1, D. Stratford (Kingston); 2, D. Ricketts (Uxbridge); 3, R. Leslie (High Wycombe); 4, T. B. Adams (Hastings & St. Leonards). **A.O.V. Tropical Egg Layer:** 1, R. Goodson (Rushampton); 2, D. Lambourne (Rushampton); 3, T. Le Cuirat (Rushampton); 4, B. C. Fartham (Sudbury). **Egg Layer (Pairs):** 1, Mrs. P. Lambourne (Rushampton); 2, C. J. Mears (Kingston); 3, R. Leslie (High Wycombe); 4, J. M. Shepherd (Runnymede). **Livebearers (Pairs):** 1, R. Newman (Uxbridge); 2, B. Bissoon (Basingstoke); 3, T. A. Cruickshank (Ealing); 4, M. Straine (Basingstoke). **Male Guppy:** 1, R. Rodgers (Sudbury); 2, Mrs. K. Murphy (Greenford); 3, A. P. Taylor

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(Sudbury); 4, K. Usher (Sudbury). Female Guppy: 1, Mrs. S. Onslow (Basingstoke); 2 and 4, A. C. Tuffin (Southend); 3, T. Le Cuiror (Roehampton). Swordtails: 1, T. A. Cruickshank (Ealing); 2, Mrs. K. Murphy (Greenford); 3, R. S. Hart (Hounslow); 4, A. P. Taylor (Sudbury). Plants: 1, A. P. Constantine (Hounslow); 2, F. Hoppenbrouwer (Hounslow); 3, K. Sollitt (Bracknell); 4, S. Mason (Roehampton). Mollies: 1, D. Lyne (High Wycombe); 2, B. Robinson (Lewisham); 3, A. C. Tuffin (Southend); 4, A. P. Constantine (Hounslow). A.O.V. Tropical (Livebearer): 1, M. A. Alexander (Hounslow); 2, A. Heath (Lewisham); 3 and 4, R. Newman (Uxbridge). Breeders Tropical (Igglayers): 1, W. R. A. Bradford; 2, B. Pratt (Hounslow); 3, Mrs. P. Lambourne (Roehampton); 4, T. B. Adams (Hastings & St. Leonards). Breeders (Livebearers): 1, R. Newman (Uxbridge); 2, A. J. Smith (Hounslow); 3 and 4, K. Usher (Sudbury). Plants: 1, 2, 3 and 4, J. W. P. Hughes (Roehampton). Runnymede A.S. meet on the second and fourth Tuesdays every month at Ashford Community Association, Chesterfield Road, Ashford, Middx. Secretary: P. Cairns, 1, Muncaster Road, Ashford, Middx. Tel: Ashford 59230.

CHANGES of officers at the last meeting of **Smethwick and District A.S.** were as follows: President, L. Stokes; chairman, D. Johnston; treasurer, J. Harris; show secretary, P. Troth; assistant show secretary, A. Layton; secretary, I. Woodward, 7 Grange Road, Smethwick, Warley, Worcs. Meetings, second and fourth Wednesdays of the month, 8 p.m., Arden School, Arden Road, Smethwick, Warley, Worcs. New members welcome.

RESULTS of the third Open Show of **The Independent A.S.** were as follows: Ag: 1, K. S. Lewis (Roehampton); 2 and 3, Mrs. J. Salisbury (United). B: 1, Mrs. R. Coyle (Independent); 2, T. B. Adams (Hastings); 3, B. Bisson (Basingstoke). C: 1, D. Dare (Independent); 2, Mr. and Mrs. Hudson (Ealing); 3, Mrs. S. Fordham (United). Ca: 1, D. Dare (Independent); 2, P. Coyle (Independent); 3, R. Bowes (Independent). D: 1, J. Batts (Ealing); 2, Mr. Keeble; 3, K. Graves (Southend). Da: 1, Mrs. S. Mason (Independent); 2, J. Batts (Ealing); 3, P. Prinn (Chingford). Db: 1, R. F. Rumney (Mid-Herts); 2 and 3, L. Brazier (Sudbury). E: 1, Mr. Sawford (Roehampton); 2, Mrs. S. Hedges (Bethnal Green); 3, W. D. Wright (E. Dulwich). Ia: 1, Mr. Giles (Roehampton); 2 and 3, L. Brazier (Sudbury). F: 1, D. Dare (Independent); 2, Mrs. G. Watts (Hendon); 3, K. Usher (Sudbury). G: 1, Mrs. S. Fordham (United); 2, Mrs. P. Lambourne (Roehampton); 3, D. Lambourne (Roehampton). H: 1, W. D. Wright (E. Dulwich); 2, Mrs. S. Hedges (Bethnal Green); 3, V. E. Valley (Ealing). J: 1, P. Coyle (Independent); 2, Mrs. S. Mason (Independent); 3, R. Reilly. K: 1, K. S. Lewis (Roehampton); 2, A. R. Chandler (Walthamstow); 3, P. Moye (Bletchley). L: 1, A. Loubt (Mid-Herts); 2, K. S. Lewis (Roehampton); 3, P. Coyle (Independent). M: 1, Mrs. S. Hedges (Bethnal Green); 2, A. P. Taylor (Sudbury); 3, B. Reilly. N: 1, P. Lambourne (Roehampton); 2, L. Brazier (Sudbury); 3, A. Heath (Lewisham). O: 1, A. Worth (Mid-Herts); 2, A. P. Taylor (Sudbury); 3, Mrs. J. Salisbury (United). P: 1, P. Coyle (Independent); 2, H. Watts (Hendon); 3, K. S. Lewis (Roehampton). Q: 1, F. Prinn (Chingford); 2, D. Reilly; 3, K. Usher (Sudbury). R: 1, M. G. Smith (Walthamstow); 2, R. J. Wandell (E. Dulwich); 3, Mr. Wooley (United). S: 1, Mrs. R. Howe (Arson); 2, A. R. Chandler (Walthamstow); 3, Mrs. S. Mason (Independent). T:

1, A. Heath (Lewisham); 2, A. R. Chandler (Walthamstow); 3, D. Dare (Independent). U: 1 and 2, Mrs. S. Hedges (Bethnal Green); 3, P. Rich (Basingstoke). W: 1, Mrs. S. Hedges (Bethnal Green); 2, D. E. Goodbody (Walthamstow); 3, Miss T. Hedges (Bethnal Green). X-br: 1 and 3, T. B. Adams (Hastings); 2, Mr. Wolley (United). W-ot: 1, Mrs. J. Boulson (Walthamstow); 2, A. Heath (Lewisham); 3, H. Watts (Hendon).

THE Fancy Guppy Association 1973-74 Birmingham section points cup trophy, comprising twelve calendar monthly competitions. Table Shows 1 and 2 inclusive. First ten positions only: 1, Don and Babs Phillimore; 2, Ken Lee; 3, George Steadman; 4, Mrs. Steadman and H. Baldwin; 5, M. Deilingpole, Mr. and Mrs. Nicholson, J. Eikith and W. J. Ewart; 10, R. Fowles and Vinal. Best Male Pantail: D. Phillimore; Best Breeders Grade 1 Males: D. Phillimore; Best Female, Natural also Best in Show: Ken Lee. The Association meets on the fourth Sunday afternoon of each month at the Glebe Farm Community Centre, Stetchford, Birmingham.

THE results of the **Kidderminster and District A.S.** April Table Show were as follows: Livebearers: 1, P. Allen; 2, G. Lawrence; 3, L. Edwards. Characins: 1, G. Lawrence; 2, Miss W. Jones; 3, P. Allen. Danios: 1, G. Lawrence; 2, J. Baefford; 3, B. McKennie. Best Fish in Show: G. Lawrence.

THE **Wrexham Tropical Fish Society** have had a few interesting lectures recently. C. Prichard gave a lecture on the methods of fish judging and with the help of diagrams he went into details and answered queries from members. Members were then given judging sheets to judge four fish themselves. R. Mathers had an all correct result corresponding with Mr. Feltham's prior judgment. T. Pound gave a lecture on white worm and micro worm culture which gave members a new insight to the subject. The Table Show results were: Amantids: 1, Miss U. Jones; 2, R. Mathers; 3, T. Pound. Furnished Jars: 1, E. Jones; 2, Master S. Lewis; 3, R. Mathers. Fighters: 1, Master B. Roberts; 2, E. Jones; 3, R. Mathers. Meetings are held on the second and last Thursday each month at the Fellowship Hall, Bradley Road, Wrexham. Everyone is welcome.

IN a four-club contest between Mount Pleasant A.S., Priory A.S., Tyneside Aquarist and Biological Society and Newcastle Guppy and Livebearer Society, the winners were Mount Pleasant, 37 points; 2, Tyneside, 36 points; 3, Newcastle, 30 points; 4, Priory, 28 points. Tyneside are drawing with Mount Pleasant with one win each. Best Fish in Show was owned by G. Brown (Mount Pleasant). Details: Male Guppy: 1 and 2, Mr. and Mrs. Fenwick (Newcastle); 3, Mr. and Mrs. Cawton (Newcastle). Mollies: 1, Mr. Pomeroy (Tyneside). Swordtails: 1, Mr. Atkinson (Mount Pleasant); 2, Mr. Duncanson (Priory); 3, Mr. Gallon (Newcastle). Small Barb: 1, Mrs. Duncanson (Priory); 2, Mr. Robertson (Mount Pleasant); 3, Mr. Kerr (Newcastle). Small Characins: 1, Mr. Duncanson (Priory); 2 and 3, Mr. Davison (Mount Pleasant). Small Cichlids: 1, Mr. Halman (Priory); 2, Mr. Turnbull (Mount Pleasant); 3, Mr. Aitman (Tyneside). A.O.V. Labyrinth: 1, Mr. Danekin (Tyneside); 2, Mr. Peason (Mount Pleasant); 3, Mr. Aitman (Tyneside). Catfish and Loach: 1, Mr. Hallman (Priory); 2, Mr. Turnbull (Mount Pleasant); 3, Mr. Nixon (Mount Pleasant). Female Guppy: 1, Mr. Gallon (Newcastle); 2, Mr. Mohammed (Mount Pleasant). Large Harbs: 1, Mr. Robertson (Mount Pleasant); 2, Mr. Duncanson (Priory). Large Characins: 1, Mr. Black (Tyneside); 2, Mrs. Duncanson (Priory); 3, Mr. Davison (Mount Pleasant). Large Cichlids: 1, Mr. Shand (Tyneside); 2, Mr. Lowthian (Priory); 3, Mr. Aitman (Tyneside). Fighters: 1, Mr. McIntyre (Newcastle). Rasbora, Danio and Iggelaying Toothcarp: 1, Mr. Robertson (Mount Pleasant); 2, Mr. Duncanson (Priory); 3, Mr. Lowthian (Priory). Sharks and Flying Foxes: 1, G. Brown; 2, Mr. Atkins (Priory);

3, Mr. Pomeroy (Tyneside). A.O.V. Tropical: 1, Mr. Nixon (Mount Pleasant); 2, Mr. Hickman (Tyneside); 3, Mr. Kerr (Newcastle). Furnished Jars: 1, Mr. Robertson (Mount Pleasant); 2 and 3, Mr. Pomeroy (Tyneside). Breeding Pairs (Livebearer): 1, Mr. Davison (Mount Pleasant); 2, Mr. Lawson (Newcastle); 3, Mr. Gallon (Newcastle). Breeding Pairs (Igglayer): 1, Mr. Aitman (Tyneside); 2, Mr. Pomeroy (Tyneside); 3, Mr. Turnbull (Mount Pleasant). A.V. Coldwater: 1, 2 and 3, Mr. Pomeroy (Tyneside). Plants: 1, Mr. and Mrs. Renton (Newcastle). Breeders Class (Livebearer): 1, Mr. Pomeroy (Tyneside); 2, Mr. and Mrs. Fenwick (Newcastle); 3, Mr. Lawson (Newcastle). Breeders Class (Igglayer): 1, Mr. Lowthian (Priory); 2, Mr. and Mrs. Renton (Newcastle); 2, Mr. Shand (Tyneside).

THE April meeting of the **Bristol A.S.** was one of great interest to the Tropical members at the meeting. The meeting consisted of question and answers session, with two well-known members of the Rolls-Royce A.S. doing the answering. The experts were surprised at the quality of the questions and an enjoyable evening was had by all members and friends that were present.

MEMBERS of the **Sudbury Aquatic Club**, which was formed in September, 1972, wish it to be known that they are not associated with or have any connections with any other club or society in the Tropical Fish world. A cordial welcome is extended to all Aquatic Societies at the first Open Show in June.

IN April, the **Whiteaway and District Fishkeepers Society** held their annual general meeting, when the following officers were elected: President, K. Overment; chairman, F. Grogan; vice-chairman, C. Russell; secretary, S. Daniels; treasurer, Mrs. M. Grogan; show secretary, Mrs. E. Daniels; committee members, R. Fielding, S. Bransgrove, D. Calley, G. Jennings, Mrs. I. Calley.

AN informal talk was given to the **Brighton and Southern A.S.** recently by Dick Mills, on filters and the various uses of different types. While this was going on, R. J. Banker, F.R.A.S., judged the Table Show. The results were as follows: Class G, Tropical Catfish: 1, Mr. and Mrs. Corbin; 2, H. Maddison; 3, V. Aldis. Class H, Corydoras and Brochis: 1 and 3, V. Aldis; 2, H. Maddison.

ON Thursday, 8th March, approximately 40 aquarists from several societies attended the Hendon, Spring Mini Convention. The speaker was Mr. M. J. Hardy, Managing Director of Aquatic Nurseries Ltd., of Hampson. His interesting and often amusing talk concerned his recent tour of the Far East. Slides were shown not only of actual fish collecting locations and the fish themselves, but also many slides of the Hong Kong fish farms—a remarkably enlightening experience. Also included in his tour were the Japanese Koi Carp farms and several marine exporters establishments.

Mr. Hardy is about to engage on a similar tour of South America and Hendon hope to see the results of this trip—perhaps in the autumn.

COMMITTEE members of the **Amersham and District A.S.** will be as follows: Chairman: K. North; Vice-Chairman: D. Barker; Secretary: S. Thompson, 8 Windmill Wood, Amersham; Asst. Secretary: A. Hall; Show Secretary: R. Jessop, 22 Okeley Lane, Highfield Estate, Tring, Herts.; Asst. Show Secretary: P. Daniels; Librarian: Miss N. Thompson; Mrs. M. Daniels; Publicity Officer: J. Berridge. Forthcoming events in June are: 4th: Bring and Buy. 12-a-side match with High Wycombe A.S. 17th: Club members' Coach outing. 20th: Speaker on Filters. 4th July: Coldwater fish by club members. Visitors and new members very welcome.

AS the Castleford and District A.S. had so much difficulty finding suitable accommodation in Castleford, it was decided to give up this title and the society will now be called **Ponte-**

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fract and District A.S. Meetings take place the first Wednesday in each month at the Willow Park Hotel, Pontefract, 7.45 p.m. Would winners at last year's Castleford show kindly return trophies to the show secretary, Mrs. B. Cohen, 29 St. Oswalds Avenue, Pontefract, Yorks. New chairman is Mr. Barry Nock. Secretary: B. Stevens, 72 Falcon Drive, Love Lane, Castleford, Yorks. Mr. Stevens would like all secretaries to oblige by letting him have their show schedules. Old and new members welcome.

AT the Annual General Meeting of Littlehampton and Bognor A.S. the following were elected: Chairman: R. Jones; Secretary: Mrs. Gladys Mingsay, Larnshield, Worthing Road, Littlehampton; Treasurer: R. Mingsay, Show Secretary: R. Newton. The attendance at the meeting was very good, and the members agreed to run two exhibitions this year as last year's had been such a success in terms of stimulating interest in the club. On Sunday, 23rd September the Society will hold its first exhibition at Bognor Regis, in a large marquee on the seaford. This new venture is likely to stimulate more interest at Bognor Regis, and some meetings may be held there if the demand warrants it.

For the time being, all meetings are still being held at the Crown Hotel, High Street, Littlehampton, at 8 p.m. on the first and third Thursdays of each month. Visitors and new members are always welcome. At a recent meeting, J. Burdies, well known to most aquarists for his knowledge of cichlids, ably demonstrated his versatility by giving a most authoritative, interesting and indeed stimulating talk on "Native Marlines".

The table show results were: Sexed Pairs: 1, H. Maddison; 2, M. Rumsey; 3, M. Bowley.

Labrynthins: 1, H. Maddison; 2, M. Rumsey; 3, D. Cosgrove. Danios and W.C.M.M.: 1 and 3, D. Parsons; 2, H. Maddison.

THE April meeting of the Gainsborough A.S. was very well attended and members were entertained by a tape and slide show on "The Breeding and Rearing of Killifish," presented by John Blizard of Sheffield and District A.S. He also judged the monthly Table Show, the results of which were as follows: Platies: 1, Mr. and Mrs. W. D. Gilding; 2, Mr. and Mrs. K. Cowan; 3, Mr. and Mrs. R. Harris. Small Anabantids: 1 and 2, Mr. and Mrs. W. D. Gilding; 3, Mr. and Mrs. R. Harris. Large Anabantids: 1, Mrs. Robinson; 2 and 3, Mr. and Mrs. Harris. Junior Section: Platies: 1, G. Gilding; 2, N. Cowan. Small Anabantids: 1, 2 and 3, G. Gilding. Large Anabantids: 1, N. Cowan; 2, D. Thorpe; 3, M. Brumby.

THE Greenford and District Aquarium Club offer sincere thanks to all who came and supported their first annual dance which was held at the G.P.O. Social Club, Northolt, recently.

THE annual general meeting of the Croydon A.S. was held in April and the committee members still hold the same posts with the exception of the assistant secretary, who is A. S. Pearce.

THE Iford and District Aquarist and Pondkeepers' Society had a very interesting programme on the subject of "Water," presented by H. Gove of the South Essex Water Board, at the April meeting. In a most absorbing account, Mr. Gove dealt with the development of the water supply in Essex since the early nineteenth century by use of some excellent films, and included in his illustrations some very fine shots of wild life on the Abberton and Hanningfield reservoirs. Supporting Mr. Gove were his projectionist, G. Davies and a chemist from the company, J. C. Burrage, who answered questions put to him by members of the Society. The April Table Show was for any variety of Characin, Platy or Single Tail Goldfish and the award for the Best Fish in the Show was won by Mrs. Pat Reside. Anyone interested in fishkeeping, tropical or coldwater, will be welcome at future meetings in the Library (Hainault Room) and further details may be

obtained from the hon. secretary, Ron Rath, 103 Heath Road, Chadwell Heath, Romford.

RESULTS of Scottish Aquarists Festival were as follows: Tropical Furnished Aquarium (Society): 1, Dunfermline; 2, Land of Burns; 3, Alloa. Coldwater Furnished Aquarium (Society): 1, Land of Burns; 2, Falkirk. Marine Furnished Aquarium (Society): 1, Land of Burns. Tropical Furnished Aquarium (Individual): 1, R. Goodwin (Lanarkshire); 2, A. Donaldson (Ayrshire/Cummock); 3, W. Auchterlounie (Alloa). Coldwater Furnished Aquarium (Individual): 1, C. Clarkston (Edinburgh); 2, D. Crosswell (Scottish). Furnished Aquarium (Schools): 1, Allan Glen's; 2, Queen's Park. Aquascapes: 1, Dunfermline; 2, Edinburgh. Singletail Goldfish (Single Fish): 1, Mr. and Mrs. Brearley (Belle Vue); 2, A. Young (Edinburgh); 3, J. S. Hall (Aireborough). Twin-tail Goldfish (Single Fish): 1 and 2, J. S. Hall (Aireborough); 3, A. Young (Edinburgh). Native Coldwater: 1, 2 and 3, J. S. Hall (Aireborough). Coldwater—Any Species (Pairs): 1, J. S. Hall (Aireborough); 2, J. Thompson (Edinburgh). Guppies (Single Fish): 1, J. Ainslie (Dunfermline); 2, S. Naismith (Lanarkshire); 3, M. McKenzie (E. Kilbride). Mollies (Single Fish): 1 and 2, J. S. Hall (Aireborough); 3, J. Nimmo (Lanarkshire). Platies (Single Fish): 1, I. Ward (Dunfermline); 2, W. Ferguson (Alloa). Swordtails (Single Fish): 1, G. Moir (Alloa); 2, W. Bell (E. Kilbride). A.O.S. Livebearers (Single Fish): 1, H. D. Spence (Ayrshire/Cummock); 2, J. S. Hall (Aireborough); 3, D. Potter (Land of Burns). Livebearers—Any Species (Pairs): 1, J. S. Hall (Aireborough); 2, D. Wilson (Muirhouse); 3, E. Simmens (Alloa). Barbets "A" (Single Fish): 1 and 2, J. McGarva (Falkirk); 3, G. Moir (Alloa). Barbets "B" (Single Fish): 1 and 2, J. Murray (Scottish); 3, A. Lyons (E. Kilbride). Barbets—Any Species (Pairs): 1, C. Gordon (Ayrshire/Cummock); 2, J. Nelson (Lanarkshire); 3, I. Wood (Lanarkshire). Chaecins "A" (Single Fish): 1, S. Naismith (Lanarkshire); 2, J. Miller (Ayrshire/Cummock); 3, A. Hynds (E. Kilbride). Chaecins "B" (Single Fish): 1 and 2, I. Ward (Dunfermline); 3, H. Hogburn (Dunfermline). Chaecins "C" (Single Fish): 1, W. Andrew (Muirhouse); 2, M. Dunn (Muirhouse); 3, S. Broom (Muirhouse). Chaecins (Pairs): 1, W. Colquhoun (Falkirk); 2, H. Black (Dunfermline); 3, D. Jamison (Lanarkshire). Rasboras (Single Fish): 1, I. Henry (Dunfermline); 2, H. Black (Dunfermline); 3, J. Sinclair (Muirhouse). Danios and Tropical Minnows (Single Fish): 1, W. Bone (Land of Burns); 2, A. Watson (E. Kilbride); 3, T. Wilson (Edinburgh). Egg laying Toothcarps (Single Fish): H. D. Spence (Ayrshire/Cummock). Rasboras, Danios, Tropical Minnows and Egg laying Toothcarps (Pairs): 1, W. McGill (Ayrshire/Cummock). Fighters (Single Fish): 1, J. Thompson (Edinburgh); 2, S. Blackley (Edinburgh); 3, J. S. Hall (Aireborough). Gouramis (Single Fish): 1, J. Sinclair (Muirhouse); 2, J. S. Hall (Aireborough); 3, D. Wilson (Muirhouse). Gouramis (Pairs): 1, I. Henry (Dunfermline); 2, D. Wilson (Muirhouse); 3, Mr. and Mrs. Hase (Belle Vue). Cichlids—Dwarf (Single Fish): 1, S. Brearley (Belle Vue); 2, J. Milligan (Edinburgh); 3, T. Wilson (Edinburgh). Cichlids—Malawi (Single Fish): 1, D. Dredge (E. Kilbride). Cichlids—Large (Single Fish): 1, A. Christie (Lanarkshire); 2, W. Andrew (Muirhouse); 3, J. Silver (Lanarkshire). Cichlids—Any Species (Pairs): 1, B. Jones (Scottish); 2, A. Dale (Lanarkshire); 3, H. Christie (Lanarkshire). Catfish "A" (Single Fish): 1 and 3, S. Naismith (Lanarkshire); 2, I. Ward (Dunfermline). Catfish "B" (Single Fish): 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. Brearley (Belle Vue); 3, H. Black (Dunfermline). Catfish—Any Species (Pairs): 1, D. Jamison (Lanarkshire); Mr. and Mrs. Brearley (Belle Vue); 3, I. Henry (Dunfermline). Sharks (Single Fish): 1, J. S. Hall (Aireborough); 2, D. Jamison (Lanarkshire); 3, D. Bray (Falkirk). Loaches (Single Fish): 1, J. Gordon (Falkirk); 2, D. Wilson (Muirhouse); 3, D. Dredge (E. Kilbride). Igglayers—A.O.S. (Single Fish): 1, Mr. and Mrs. Haap (Belle Vue); 2, J. McLachlan (E. Kilbride); 3, S. Blackley (Edinburgh). Egg layers, A.O.S. (Pairs): 1, J. Ewing (E. Kilbride). Aquarium

Plants: 1 and 2, D. Potter (Land of Burns); 3, T. McInnes (Land of Burns). Breeders (Guppies): 1, J. Gilpen (Lanarkshire); 2, S. Naismith (Lanarkshire); 3, J. Ainslie (Dunfermline). Breeders (Mollies): 1, D. Wilson (Muirhouse); 2 and 3, G. Payne (Lanarkshire). Breeders (Swordtails): 1, G. Payne (Lanarkshire); 2, J. Ewing (E. Kilbride); 3, G. T. Lee (Ayrshire/Cummock). Breeders (Platies): 1, D. Jamison (Lanarkshire). Breeders—A.O.S. (Live bearers): 1, H. D. Spence (Ayrshire/Cummock); 2, J. S. Hall (Aireborough). Breeders (Egg layers "A"): 1, H. Christie (Lanarkshire); 2, A. Christie (Lanarkshire) (Breeders Certificate). Breeders (Egg layers "B"): 1, A. Lyons (E. Kilbride); 2, A. Christie (Lanarkshire). Breeders (Igglayers "C"): 1, J. Thompson (Lanarkshire); 2, A. Watt (Alloa); 3, A. Wattmore (Falkirk). Breeders (Egg layers "D"): 1, G. Reid (Alloa); 2, S. Naismith (Lanarkshire); 3, H. D. Spence (Ayrshire/Cummock). Breeders (Coldwater): 1, J. S. Hall (Aireborough).

THE third open show results of the Scunthorpe Museum Society Aquarist Group were: Guppies: 1, Mr. and Mrs. Jermay (Grimsby and Cleethorpes); 2, G. Gillespie (Castleford); 3, M. and D. Laycock (Sheffield). Swordtail: 1, M. and D. Laycock (Sheffield); 2, Mr. Amdron (Doncaster); 3, J. Furness (Castleford). Mollies: 1, P. Atkinson (Grimsby); 2, J. S. Hall (Aireborough); 3, T. Smith (Sheffield). Platies: 1, Mr. and Mrs. Blades (Cresswell); 2, Mr. and Mrs. Milne (Doncaster); 3, Mr. and Mrs. Burch (Hull). Small Barbets: 1 and 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Fletcher (Doncaster). Large Barbets: 1, Mr. and Mrs. Daines (Doncaster); 2, N. Taylor (Gainsborough); 3, Mr. Jackson (Grimsby and Cleethorpes). Small Characins: 1 and 2, D. and M. Laycock (Sheffield); 3, B. Banks (Thorne). Large Characins: 1, Mr. and Mrs. D. Stone (Chesterfield); 2, J. A. Whiteley (Aireborough); 3, G. Thickbroom (Castleford). Dwarf Cichlids: 1, J. A. Whiteley (Aireborough); 2 and 3, Mr. and Mrs. Sellars (Lincoln). Large Cichlids: 1, Mr. and Mrs. Sellars (Lincoln); 2, Mr. and Mrs. Scull (Goole); 3, D. Foster (Don Valley). Angels: 1, E. Kirk and Sons (Grimsby and Cleethorpes); 2, Mr. and Mrs. Dixon (Gainsborough); 3, B. Purford (Grimsby and Cleethorpes). Corydoras-Catfish: 1, Mr. and Mrs. Sellars (Lincoln); 2, Mr. and Mrs. Bailey (Sherwood); 3, Mr. and Mrs. Wells (Doncaster). A.O.V. Catfish: 1, G. Gillespie (Castleford); 2, V. and J. Hardie (Scunthorpe); 3, Mr. Simpson (Thorne). Loaches: 1, Mr. and Mrs. Shipley (Goole); 2, R. Holt (Goole); 3, Mr. and Mrs. Withers (Gainsborough). Sharks: 1, T. Smith (Sheffield); 2, R. Holt (Goole); 3, J. A. Whiteley (Aireborough). Pones: 1, T. Smith (Sheffield); 2, Mr. and Mrs. Bailey (Sherwood); 3, G. Thickbroom (Castleford). Small Anabantids: 1, Mr. and Mrs. Shipley (Goole); 2, K. Barnett (Doncaster); 3, Mr. and Mrs. Scull (Goole). Siamese Fighters: 1 and 2, M. and D. Laycock (Sheffield); 3, Mr. and Mrs. Milne (Doncaster). A.O.V. Anabantids: 1, Mrs. A. Robinson (Scunthorpe); 2, G. Hancock (Hull); 3, Mr. Candow (Thorne). A.V. Goldwater: 1, 2 and 3, J. S. Hall (Aireborough). Rivulus: 1, G. White (Scunthorpe). Aphyosemon: 1, Mr. and Mrs. Blades (Cresswell); 2 and 3, Mrs. J. Kirk (Grimsby and Cleethorpes). A.O.V. Killifish: 1, Mr. and Mrs. Milne (Doncaster); 2, Mr. and Mrs. Gabe (Chesterfield); 3, J. A. Whiteley (Aireborough). Danios and Minnows: 1, M. Day (Gainsborough); 2, J. Furness (Castleford); 3, J. S. Hall (Aireborough). Rasboras: 1, Mr. and Mrs. Norton (Grimsby and Cleethorpes); 2, Mr. Wells (Doncaster); 3, Mr. H. Kuhn (Lincoln). A.O.V. Tropicals (up to 8 ins.): 1, A. Barrett (Castleford);

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2, P. Stamford (Don Valley); 3, J. Baker (Castleford), A.D.V. Tropicals (over 8 ins.); 1, G. Thickroom (Castleford); 2, Mr. and Mrs. D. Caldwell (Scunthorpe); 3, J. S. Hall (Aireborough). Pairs (Egglayers): 1, B. Palford (Grimsby and Cleethorpes); 2, Mr. and Mrs. Scarll (Goole); 3, T. Smith (Sheffield). Pairs (Livebearers): 1, E. Parks (Chief Valley); 2, Mr. and Mrs. Stephenson (Sherwood); 3, Mr. and Mrs. Daines (Doncaster). A.V. Marines: 1, Mr. and Mrs. D. Caldwell (Scunthorpe). Breeders (Egglayers): 1, B. Banks (Thorn); 2, R. Middleton (Gainsborough); 3, Mr. and Mrs. Borrill and Son (Lincoln). Breeders (Livebearers): 1, J. Rhoades (Scunthorpe); 2, Mr. Parks (Chief Valley); 3, Mrs. Bach (Hull). Novice (Single Egglayer): 1 and 3, Mr. Horsfield (Thorn); 2, D. Foster (Don Valley). Novice (Single Livebearer): 1, Mrs. E. Parks (Chief Valley); 2, Miss D. Crabtree (Aireborough); 3, Mr. Brookshaw (Thorn).

Eighteen aquarist societies benched a total of 503 exhibits.

At the first meeting in April of the Severn Side Ichthyological Society members enjoyed a slide and tape show on cichlids, given by Mr. Harry Jones which covered many species from Central and South America as well as Africa. He gave details on the breeding and rearing of many species and some fine slides made an interesting show. Mr. Mark Thorneycroft gave a lecture on parasites on fish. He gave members some useful hints on the prevention and cure of these harmful creatures. The second meeting in April was one of general discussion between members, when a visit to Chester Zoo was discussed. Meetings of the society are held on the first and third Friday in the month at the Labour Club, AbbeyForge, Shrewsbury and all are most welcome.

RESULT of the Table Show of the British Marine Aquarists Association (West-Midland Group), was as follows: 1, J. Vickers; 2, T. Lewis; 3, M. Carroll. A talk on the natural system was given by B. Hudgema. West Midland members said they would go down to London to see the new London group which is now formed.

The film on the Great Barrier Reef will be shown on the 17th June at the Liberal Club, New Street, Dudley (next to Police station).

THE Edmonston Section Fancy Guppy Association held their open spring show on the first Sunday in April. This attracted many members of other sections from as far as Birmingham and beyond. Altogether it was a very friendly and enjoyable afternoon made successful by all section members who helped to run the various activities.

Best swordtail, double sword: Ken Lee. Best shorttail, lyre tail: Ken Lee. Best male: G. Steadman. Best female: A. James. Best breeders: D. and B. Phillimore. Best exhibit: D. and B. Phillimore. Meetings, 2.30 p.m., first Sunday in the month, British Legion Hall, Holwell Hill, Enfield.

THERE was a good show of members at the April meeting of the Weymouth A.S. The main event of the evening was a talk on "Judging" by F.B.A.S. judge Mr. J. Snibwell. The table show results were as follows: Rainbow: 1 and 4, K. Forrester; 2, T. Edwards; 3, M. Medway. Danios and Minnows: 1, Mrs. V. Worth; 2, G. Fitzgerald; 3, K. Forrester; 4, A. Worth.

Visitors and new members are welcome at the Assembly Rooms, Waverley Hotel, Abbotsbury Road, Weymouth.

THE first full meeting of the London and South-Eastern Regional Group B.M.A.A. will be held on the 23rd June at the Zoological Society of London, Regents Park, London, N.W.1 at 1 p.m. Admission: 50p per head, including films and refreshments. Prospective and non-members welcome.

CHANGE OF VENUE

Ashington and District A.S. now meet at the Universal Social Club, Woodhorn Road,

Ashington, every other Wednesday at 7.45 p.m. Secretary: H. Kennard, 8 Tinson Place, Ashington, Northumberland.

NEW SOCIETY

RECENTLY formed is the Northallerton and District A.S. The meetings are held on the third Wednesday of every month at "Ye Olde Golden Lion" public house, High Street, Northallerton (opposite the Town Hall), at 7.30 p.m. New members would be welcome. Any information can be obtained from the Chairman, Mr. P. Atkins, 22 Bullmoor Close, Northallerton, Yorks., or the Secretary, Mrs. A. Turner, Allison House, Scruton, Northallerton, Yorks.

NEW FEDERATION FORMED

THE Scottish Aquarist Festival saw the inauguration of a new Confederation of Aquarist Federations and Associations.

This Confederation has been jointly formed by the F.N.A.S., the F.S.A.S. and the Y.A.A.S. As a first step the Joint Judging and Show Standards Committees had a very fruitful meeting, and, as a result have now an agreed programme of Judging, Show Standards and Breeders Pointages. As well as a mutual recognition of each others Judging Panels and Show procedures.

This amalgamation, based on National and local identity will make this organisation one of the largest in the world.

SECRETARY CHANGES

Scunthorpe Museum Society Aquarist Group: V. Hardie, 126 Baydale Road, Ashby, Scunthorpe DN16 2QG.

Hartlepool A.S.: Mrs. R. Newton, 143 Elwick Road, Hartlepool, Co. Durham TS26 9BW.

Dunstable and District A.S.: Mrs. P. A. Hayes, 56 Spencer Road, Luton, Beds.

Tonbridge and District A.S.: D. R. Purchard, 6 Albert Road, Tonbridge, Kent TN9 2SR. Telephone: Tonbridge 63225.

Hyde A.S.: A. Darby, 1 Fernin Street, Hyde, Cheshire. 061-368 4968.

Keighley A.S.: A. Asquith, 46 Daleide Road, Riddlesden, Keighley, Yorks.

Leamington and District A.S.: Mrs. P. M. Sussidley, 4 St. John's Terrace, Leamington Spa, Warks.

CANCELLATION OF SHOWS

The Rossington A.S. regret that due to circumstances beyond their control the proposed open show for 1973 has had to be cancelled. It is hoped to successfully complete an open show in 1974.

Due to circumstances beyond their control the Hutton County A.S. has had to cancel their Open Show scheduled for the 17th June, but hope to hold it later in the year.

AQUARIST CALENDAR

2nd June: Bristol Agro Aquarist third Open Show, at Wesleyan Church Hall, Beyants Hill, St. George, Bristol. Enquiries to Show Secretary, G. Sprake, 134 Yew Tree Drive, Kingswood, Bristol, BS15 4UP.

3rd June: Bournemouth A.S. Annual Open Show at Kinson Community Centre, Pelham Park, Bournemouth. Show Secretary, J. V. Jeffery, 30 Brenmar Avenue, Southbourne, Bournemouth, BH6 4JP.

3rd June: Accrington and District A.S. Open Show at St. John Ambulance Drill Hall, Bull Bridge, Accrington, Lancs. Schedules, etc., from S. Walsh, Show secretary, 133 Lammack Road, Blackburn, Lancs, BB1 5LA.

3rd June: Loughborough and District A.S. Open Show will be held at the Sports Centre, Granby Street, Loughborough. Show Secretary, L. Purdy, 10 Cleveland Road, Loughborough, Leicestershire, LE11 2SP.

3rd June: South Derbyshire and District A.S. Annual Show (Members), Good Companions Club, Church Gresley, nr. Burton-on-Trent. Show secretary, R. Brabbin, 42 West Mead Road, Barton, nr. Burton-on-Trent.

3rd June: Sudbury A.S. First Open Show St. Andrews Church Hall, Harrow Road, Wembley, Middlesex. Schedules from L. Brazier, 66 Ormsby Way, Kenyon, Middlesex.

3rd June: Half Moon A.S. second Annual Open Show to be held at the Post Clarence Social Service Centre, Post Clarence, near Middleton. Details from show secretary, P. McGee, 21 Allington Drive, High Grange, Billingham.

9th June: Vauxhall Motors Aquarist Section first Open Show; in conjunction with the Vauxhall Motor Sports Day Spectacular. All enquiries to A. Philip, show secretary, 15 Hollybush Road, Luton, Beds.

9th June: Lisnavit Major A.S. Open Show, The Town Hall, Lisnavit Major. Show secretary, J. J. Edwards, "Glanfion," Mill Park, Llambethias, Cowbridge, Glamorgan, CF7 7HG.

9th June: Havant and District A.S. Third Open Show at St. George's Hall, Waterlooville. Show secretary, V. B. Hunt, "Casglas," 120 London Road, Widley, nr. Portsmouth, Hants.

10th June: Lincoln and District A.S. Show Secretary, H. Kuhn, 44 Scooter Street, Lincoln.

10th June: G.K.N. Pond and Aquarium Society second Open Show at G.K.N. Canteen, Salisbury Street, Darlaston, Staffs. Show details available from Ken Rowley, hon. show secretary, 156 Wolverhampton Street, Darlaston, Staffs.

10th June: High Wycombe A.S. Open Show. The venue will be Lane End Village Hall, Lane End, High Wycombe, Bucks.

10th June: Bishop Auckland A.S. Fifth Annual Open Show to be held in the Y.M.C.A., Proudfoot Drive, Woodhouse Close Estate, Bishop Auckland. Details later.

10th June: Arbroath A.S. Open Show, Community Centre, Arbroath. Details from Tony Clarke, 3 Wardykie Road, Arbroath, Angus. Tel: Arbroath 3355.

17th June: Swillington A.S. Annual Open Show will be held at John Smeatons School, off Berwick Road, Leeds, 14.

17th June: Frestonia A.S. Open Show, Amersham Community Centre, Thurlow Street, S.E.17. For details contact J. Stamp, 72 Redmond House, Last Street, Borough, S.E.1.

17th June: Bishops Cleeve A.S. Open Show at the T.A. Centre, Arle Road, Cheltenham, Glos. Schedules from show secretary, Mrs. J. Hawkins, 44 Burton Street, Cheltenham, Glos.

17th June: Salisbury and District A.S. Open Show at the City Hall, Fisherton Street, Salisbury, Wills.

17th June: Northwich & District A.S. 5th Open Show, Hartford Secondary Boys School, Chester Road, Hartford, Northwich. Details from Show Secretary: Mrs. D. J. Thorne, 28 Whingate Road, Wainford, Cheshire. Tel: Wainford 3380.

17th June: Fancy Guppy Association (Lancaster Section) Open Show, Gregson Institute, Moor Lane, Lancaster. All particulars from Show Secretary, J. P. Peek, 5 Ridge Street, Bulk, Lancaster.

23rd June: Dummow and District A.S. Open Show at the Pookes Memorial Hall, Gt. Dummow. For further details please contact show secretary, D. McMurdie, 37 Capel Road, Rayne, nr. Braintree.

23rd-24th June: Littlehampton and Bognor A.S. Annual Exhibition at the Western Pavilion, Littlehampton. There will also be an inter-club show at the same venue on the 24th June.

24th June: Littlehampton and Bognor A.S. Inter-Club Show and Annual Exhibition, Western Pavilion, Littlehampton, Sussex. The Exhibition may be extended to Saturday, 23rd June. More details later.

24th June: Alfreton and District A.S. Annual Open Show, to be held at the Adult Education Centre, Alfreton Hall, Alfreton. Details from the show secretary, B. Hickling, Parkview, 13 Coppice Drive, Eastwood, MG16 3PW. Tel.: Langley Mill 5104.

24th June: Dudley & District A.S. first Open Show at the Blind Institute, Wolverhampton Road East, Sedley. F.B.A.S. Show schedules available from Show Secretary, W. A. Hickman, 29 Ladbrook Grove, Lower Gensal, Dudley, DY3 2UP, Worcestershire.

24th June: South Shields A.S. second Open Show, Bolingbroke Hall, Bolingbroke Street,

South Shields. Benching noon to 2.45 p.m. Show secretary J. A. Cutting. Phone Boldon 4299, or write 53 Dunelm Drive, West Boldon, Co. Durham.

28th-30th June: Bristol Tropical Fish Club. 13th Open Show at Congregational Church Hall, Newton Street, Bristol, S. Show schedules available from assistant secretary, T. A. Coggins, 36 Leighton Road, Southville, Bristol, BS3 1NT.

30th June: Basingstoke and District A.S. Open Show at the Carnival Hall, Basingstoke. Schedules from R. Rich, 93 Pinkerton Road, Basingstoke, Hants.

1st July: Exeter and District A.S. Open Show. Further details later.

1st July: Chelmsley A.S. Open Show. Schedules and further information from show secretary, Mr. T. Aldrey, 4 Shenton Walk, Kingshurst, Birmingham.

1st July: Mount Pleasant A.S. (revised date). Venue Saltwell Senior High School, Gateshead. **1st July:** Glossop A.S. Annual Open Show.

1st July: Lytham A.S. Open Show at Lowther Pavilion, Lytham.

7th July: G.S.G.B. Quarterly Meeting, 2.30 p.m., Coway Hall, Red Lion Square, Holborn, London. Goldfish for Beginners' Part Three, R. Whittington. A talk by our Technical Director, J. Bandell. Feeding the Young Goldfish. Panel. Table Classes. Refreshments available.

7th July: Borehamwood & D.A.S. First Annual Aquascape and Furnished Aquaria Festival. Further information and schedules from D. J. Crucefix, 64 Milton Drive, Borehamwood, Herts, WD6 2BB.

7th July: Borehamwood and District A.S. Open Show.

7th-8th July: Dagenham Town Open Show, Central Park, Dagenham. Show schedules from show secretary, D. G. Kent, 74 Lynnwood Drive, Collier Row, Romford, Essex, RM5 2QT. Tel: Romford 67804.

8th July: Grantham and District A.S. Fourth Open Show, at the Walton Girls County Secondary School, Kitty Briggs Lane, Grantham. Details from the show secretary, C. J. Shipman, 40, New Beacon Road, Grantham, Lincs. A "V.A.A.S." Show.

8th July: Ashington Blyth and District A.S. Second Open Show to be held in Bebside and Cowpen Boys Club, Cowpen Road, Blyth. Details from Mr. G. P. Hunt, 9 Tyne Street, Ashington, Northumberland NE63 9HX.

14th-15th July: The Aquarist and Pondkeeper Publishing Exhibition, Alexandra Palace, Wood Green, London, N.22.

15th July: The Sandgroeders' A.S. Third Annual Open Show, Meols Cop School, Southport, Lancs.

15th July: Billingham A.S. 3rd Annual Open Show, at Billingham Community Centre, Billingham Town Centre. Schedules available mid-May from: J. Atwell, 34 Hatfield Place, Peterlee, Co. Durham. Tel: 4185; and A. Crossley, 32 Sledwick Road, Billingham.

22nd July: Runcorn A.S. Open Show to be held in the Parish School Hall. Details from the Show Secretary, Mr. P. Hall, 26 Okell Street, Runcorn, Cheshire WA7 5AS.

29th July: Oldham & District A.S. Annual Open Show, at Werneth Park, Oldham. Schedules (when available from Show Secretary: E. Birchwood, 30 Inverness Avenue, Blackley, Manchester, 9.

5th August: Blackpool and Fylde Open Show. The venue is the Norbreck Castle Hotel, Norbreck, nr. Blackpool.

5th August: Tonbridge and District A.S. F.B.A.S. and K.A.A.S. second Open Show at Tonbridge School, Tonbridge, Kent. Show schedules from show secretary, L. T. Mathison, 33 Nortons Way, Five-Oak-Green, Tonbridge, Kent.

6th-11th August: The Portsmouth A.S. Annual Open Show at St. Patrick's Hall, Winter Road, Southsea, Portsmouth. Setting up day will be Saturday 4th August, lodging on the 5th. Show schedules are obtainable from J. Stillwell, 34 Salcombe Avenue, Copnor, Portsmouth, Hants.

12th August: North Staffs. A.S.

12th August: Grimsby and Cleethorpes A.S. second Open Show at the Memorial Hall, Cleethorpes. Schedules can be obtained from

the Show Secretary, T. P. Walker, 51 Chesire Walk, Willows Estate, Grimsby, Lincs.

12th August: North Staffs. A.S. Open Show at Cobridge Drill Hall, Warrleco Road, Cobridge, Stoke-on-Trent. F.N.A.S. rules. Details: K. Ankers, 4 Castle Street, Chesterton (phone 739 564409), or J. S. Booth, 536 Beverley Drive, Bemiloe, Stoke-on-Trent, Staffordshire.

15th-18th August: Midland Aquarium and Pool Society, Bingley Hall, Birmingham.

18th-19th August: Harwich and District A.S. Annual Show to be held at The Queens Hotel, Dovercourt High Street.

19th August: Hodderfield T.F.S. Annual Open Show. Details to follow.

19th August: Valley A.S. Open Show to be held at Civic Hall, Raebolton. Show secretary, M. Berry, 8 Leyland Street, Blackford Bridge, Bury, Lancs. Tel: 061-766 8574.

19th August: Stroud & District A.S. Open Show. Mid Gloucestershire Technical College, Stratford Road, Stroud, at last year. Show Secretary: Mrs. D. Cole, The Hill, Randwick, Stroud.

19th August: Crewe and District A.S. second Annual Open Show at the Workshop Sports Centre, Valley Road, Worksop, Notts. Show secretary Mrs. R. Foster, 15 Hemmingfield Crescent, Worksop, Notts.

25th, 26th and 27th August: Riverside A.S. Furnished Aquarium Open Show. Show schedules from M. Goss, 10 St. Hugh, White Lion Road, Amersham, Bucks. Tel: 570 8872.

26th August: Fleetwood A.S. First Show at The Fleetwood Grammar School, Poulton Road, Fleetwood.

2nd September: Thorne A.S. Annual Open Show.

2nd September: Lucas Pool and Aquarium Food Society 3rd Open Show at same venue as last year: Spring Road, Birmingham. Schedules from: Show Secretary, K. Thomas, 11 Alton Road, Solihull, Works.

2nd September: Bethnal Green A.S. Open Show, Bethnal Green Institute, 229 Bethnal Green Road, London, E.2. F.B.A.S. Supreme Championship Trophy class C (Large Characins). Schedules and further details from: Mrs. S. Hodges, "Koi Korner", 150 Ashburton Ave., Seven Kings, Ilford, Essex, IG3 9EL. Phone: 01-590 3239.

8th September: Three Counties Group Annual Open Show. Show secretary, John Horsey, 4 Rickman Close, Woodley, Reading, Berks.

8th September: Nuneaton A.S. Sixth Open Show.

8th September: Newbury and District A.S. Open Show. Full details later.

9th September: Barnley T.F.S. Ninth Annual Open Show at The Mappletwell, Stalocross Village Hall.

9th September: One Day Open Show Harlow A.S., at Moot House, Harlow. Show Secretary: Steve Jordan, 48 Whitewains, Harlow, Essex.

9th September: Peterlee A.S. 11th Open Show. Schedules available later from Secretary, A. D. Bebbington, 40 Marlborough Road, Hastings Hill, Sunderland.

9th September: Hoylake A.S. 4th Open Show at the Hoylake Y.M.C.A., Hoylake. Show Secretary, Mr. E. Rowlands, 3 Haigh Avenue, Moreton, Wirral, Cheshire.

14th-15th September: Bristol A.S. Open Show. All enquiries to E. N. Bowden, 12 Stoneleigh Walk, Knowle, Bristol, BS4 2R1.

15th September: Weston-super-Mare and District T.F.S. Fourth Open Show at St. Johns Hall, Oxford Street, Weston-super-Mare. Show manager, J. Clarke, St. Judes, North Street, Cheddar.

15th September: Hounslow and District A.S. Annual Open Show at the Youth Centre, Cecil Road, Hounslow, Middlesex. All enquiries to show secretary H. Pratt, 23 Woodlawn Drive, Feltham, Middlesex. Phone: 01-894 0923.

16th September: Buxton and District A.S. Third Open Show at the Pavilion Gardens, Buxton. Schedules from the show secretary, A. Holland, 8 Midland Terrace, New Mills, Via Stockport, Cheshire.

16th September: Hastings and St. Leonards A.S. First Open Show, to be held at Concordia Hall, Hastings. Schedules and further information from D. J. Hunt, 239 Mount Pleasant Road, Hastings.

16th September: Stone A.S. Open Show. Full details later.

16th September: Grimwood A.S., Skelmersdale, Lancs. Second Annual Open Show to be held at the Quarry Bank Community Centre, Ormskirk Road, Skelmersdale. Details from J. B. Handford, secretary, 55 Thurston, Skelmersdale, Lancs. Tel. 24900.

23rd September: Torbay A.S. Open Show, at the Torquay Town Hall. Further details later.

23rd September: North Kent Open Show. Schedules and details available later from P. W. Cottle, 2 Challenge Close, Riverview Park, Gravesend. Tel: 0474 63862.

23rd September: Washington A.S. is to hold its 2nd Annual Open Show at the Oval Community Centre, Washington. Details are available from the Show Secretary, Mr. J. Gardner, 95 Westernmoor, Blackfield Village, Washington, Co. Durham. Schedules will be available later.

23rd September: Litchampton and Bogor A.S. Exhibition, Bogor Regis.

29th September: Northampton and District A.S. Open Show at the Drill Hall, Northampton. Schedules will be available shortly from G. Allart, 80 Chiltern Avenue, Northampton.

30th September: Pelsall A.S. second Open Show will be held at the Pelsall Community Centre, Pelsall, nr. Walsall, Staffs. For further details, apply 6 Wilsons View, Pelsall, nr. Walsall, Staffs.

30th September: Chesterfield and District A.S. Annual Open Show. Venue Clay Cross Social Centre, Chesterfield Road, Clay Cross, nr. Chesterfield, Derbyshire. Exit 29 off M1. Follow signs four miles to show. The spacious venue is situated on the A61. Benching 12-2.15 p.m. Schedules from D. Stooce, 237 North Wingfield Rd., Grassmoor, Chesterfield, Derbyshire, S42 5ER. Tel: Staveley 2775.

30th September: The Hocknall and Bulwell A.S. are holding their Annual Open Show at Bulwell Youth Club, Coventry Road, Bulwell, Nottingham. Benching is from 12 noon until 2 p.m. Schedules can be obtained from J. Sutcliffe, show secretary, 273 Wicklow Court, Beauford, Nottingham.

6th October: East London Aquarist & Pondkeepers' Association Annual Open Breeders Show. Schedules available from The Show Secretary, F. Vicker, 13 Irons Way, Collier Row, Romford, Essex.

7th October: Eboracum Aquarists First Open Show. Further details available at a later date.

7th October: Hinckley and District A.S. second Open Show at Headfield High School, Belle Vue Road, East-Shilton, Leicestershire. More information from show secretary: T. Saunders, 29 Browning Drive, Hinckley.

21st October: Sherwood A.S. Open Show, Thoresby Miners Welfare Hall, Edwinstowe, Nr. Ollerton, Mansfield, Notts. Schedules from Show Secretary, Mr. J. Igoe, 25 Marple Avenue, Mansfield, Woodhouse, Notts NG19 9EY. Tel: Mansfield 32249.

28th October: The Newcastle Guppy and Livebearer Society's Open Show will be held at the Gosforth Central Hall, Newcastle-upon-Tyne. Schedules will be available shortly from: Mrs. J. Renton, 128 Dunstan Tower, Garth 18, Killingsworth, Newcastle-upon-Tyne, NE12 0TX.

3rd November: G.S.G.B. Quarterly Meeting, 2.30 p.m., Conway Hall, Red Lion Square, Holborn, London. Goldfish for Beginners, Part Four. R. Whittington. The Bristol Shrubunkin. L. Emery. Choosing next year's Breeders. Panel. Table Classes. Refreshments available.

4th November: The Mixenden T.F.S. Open Show.

11th November: Hartlepool A.S. Annual Open Show will be held at Longcar Hall, Seaton Carew. Show Secretary: Mr. J. Watson, 42 Sydenham Road, Hartlepool, Co. Durham TS26 9BW.

17th November: K.D.A.S./S.P.A.S.S. third Combined Open Show will be held at the T.A. Centre, Surbiton Road, Kingston, Surrey. Show schedules are obtainable from D. J. Mackay, c/o 51 Mount Road, New Malden, Surrey. Tel: (Day) 01-572 0632; (Night) 01-942 9021.