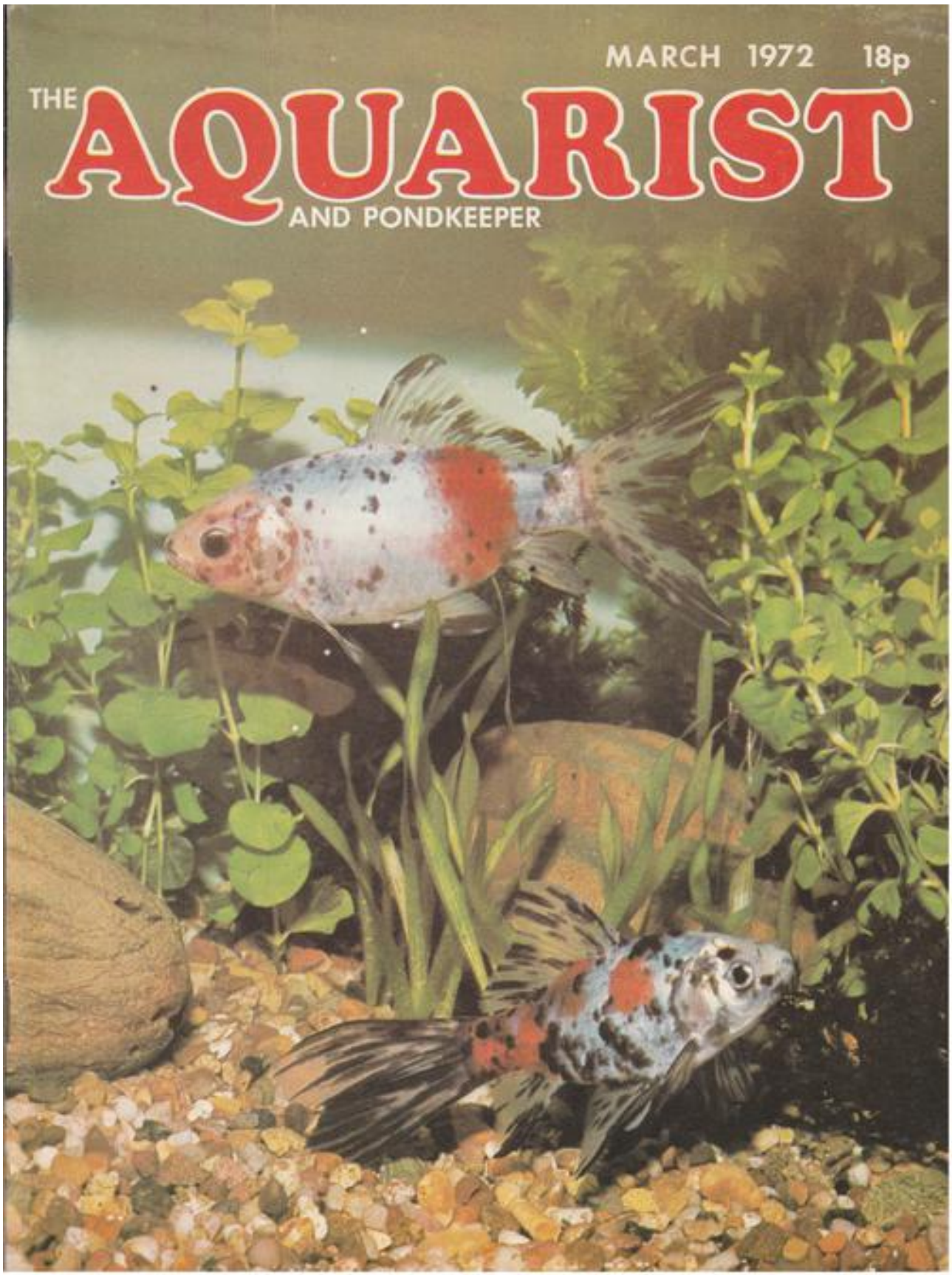
MARCH 1972 18p

THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

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The Editor accepts no responsibility for views expressed by contributors.

Our Cover
Shubunkins

INDIAN FERN

Written and illustrated by J. Dunbar

Ceratopteris thalictroides, or Indian fern, must be one of the most useful plants available today, both for decoration and the protection of new-born fry.

For decoration in the community aquarium there are many uses. At its different stages of growth, it can be used either in the foreground, middle or for the rear of the tank. This gives you plants of three varying sizes. I have found that as the plants reach four to six months of age, the leaves stay rather narrow, unlike the leaf illustrated in the photograph; at this stage I usually remove them, replacing with a younger specimen.

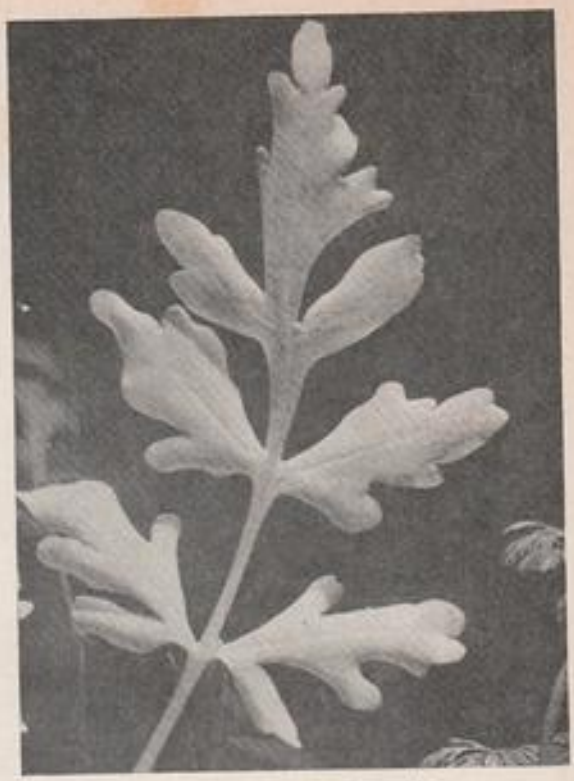
While being decorative, Indian fern can be used in the rear corners where it will camouflage the uplift tubes of undergravel filters and heaters and thermostats. On mature plants stems can reach eighteen inches in length.

The plant is such a rapid grower, usually sending out new stems every ten to fourteen days, that one is able to prune away decaying leaves, but always leave the tank with plenty of lush green foliage. The decaying leaves usually have a number of young plants growing from them; these are plucked off and replanted in the gravel where they will soon take root.

Indian fern is a plant which isn't very particular as to its water conditions making it an excellent plant for the beginner who can use it as a centre-piece.

I have found that the plant grows as well in tanks having outside filtration as in those with undergravel filters. All the Indian fern plants which I have, descended from one original plant which I bought some three years ago.

For the aquarist who goes in for breeding livebearers, Indian fern is a blessing for the protection of new-born fry. Young plants from decaying leaves can be scattered over the aquarium's water surface as in the photograph; where, after a week or so, long hairy roots will hang down into the water, providing ample hiding places for the fry.



Leaf of mature Indian fern plant

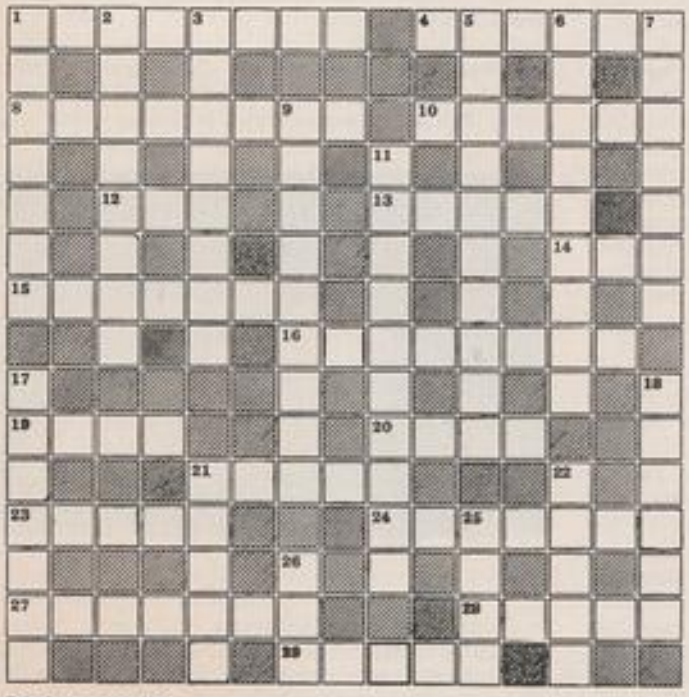
Young plants on water surface

Young plant newly planted

Extensive planting of Indian fern for aquarium decoration

The AQUARIST Crossword

Compiled by M. W. CLARKE



Solution on page 405

CLUES ACROSS

1. Marsh type plants for the pond (8).
4. Lady in distress on the coral reef (6).
8. Rodney takes this to the bankside to help relaxation when fishing (4, 4).
10. It usually contains three or more musical movements (6).
12. Long flowing fins often do so (3).
13. Lovers can run away from home to do so, for fish its a corner of the tank (5).
14. Prosecute (3).
15. Angular point of view (7).
16. *Loricaria parva* (8).
19. Angry mountain of fame (4).
20. Value of a Silver Dollar's scale (4).
21. Bear of the north (5).
23. A game bird (5).
24. Once a larva it's always a larva (7).
27. The first (7).
28. The street for nimble journalists (5).
29. Avoid (5).

CLUES DOWN

1. A game for *Abramites microcephalus* (7).
2. Prize-winning cichlid from Russia (3, 5).
3. To artificially supply water (8).
5. Genus of very decorative plants (10).
6. Gourami hunted for ladies' handbags ? (9).
7. Scientifically they are known as Botia's (7).
9. The "get somewhere fast" type of plant (9).
11. Recluse of the seabed (6, 4).
17. *Thayeria boehlei* (7).
18. A Swiss bungalow (6).
21. Spain is mainly composed of this if where the rain is said to fall is true (5).
22. Becomes essential with the good jumpers (5).
25. *Idus idus*, may be silver or golden (4).
26. Liquid measurable in yards (3).

OUR EXPERTS' ANSWERS TO YOUR QUERIES

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

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

TROPICAL QUERIES

by Jack Hems

I have purchased some young snakeskin gouramis. Will these anabantids live on good terms with my moonlight, giant striped, blue and Leer's gouramis in a four-foot tank?

The snakeskin gourami (*Trichogaster pectoralis*) is not a quarrelsome fish, but I think you ought to know that it does grow to a very large size. In less than eighteen months a 2 in. fish may attain some 6 or 7 in. And this is not maximum size. I have seen specimens of almost a foot.

I should like to know how to keep and feed the mudskipper.

Fishes of the genus *Periophthalmus* need a spacious aquarium furnished with stonework and tree branches making islands in the water. This should be salty and not more than about 4 to 6 in. deep. The temperature inside the aquarium should be in the neighbourhood of about 79°F (28°C). The best known mudskipper is *P. barbarus*. This species takes worms of various sorts, small grubs, flies, and the like, quite freely. I have even seen specimens swiping miniscule heaps of a well-known flake food off a rock.

I should like to be given some details of the spawning habits of the bumble-bee catfish (*Leiocassis siamensis*).

Up to the present time this fish has not bred in captivity. Indeed, no member of its family, the *Bagridae*, is believed to have bred (as yet) in captivity.

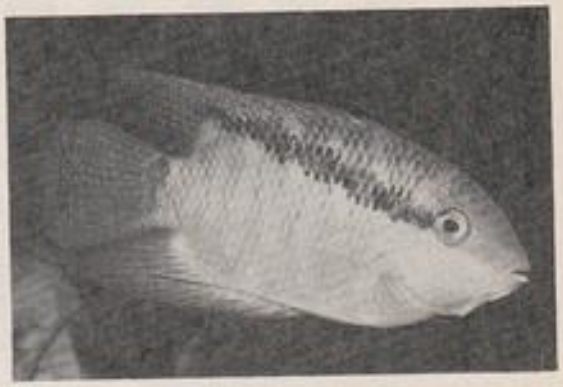
Have I done wrong in introducing Arnold's cichlid into my community tank?

If you mean the dark-spotted fish known to science as *Pelmatochromis arnoldi*, then the answer is yes. This 3½ to 4 in. cichlid is a great bully and fin-tearer. It is best given a tank to itself.

I placed some pieces of cork bark in my aquarium about a week ago, but now the water is quite brown. Will the colour of the water have a harmful effect on the fish?

The water in your aquarium must be changed very gradually for fresh over the next few weeks. You should have given the cork bark a good soaking before you introduced it into your tank. For if you leave things as they are the increasing acidity of the water will kill the fish.

I have just bought two *Cichlasoma festivum*. The dealer told me this cichlid will not harm the other fish in my aquarium. Is this correct?



Cichlasoma festivum

In its larger sizes, *C. festivum* is not to be trusted with fishes much smaller than itself but, in general, it is a timid species that avoids contact with the other inmates of a community tank.

Since introducing a couple of *Gyrinocheilus* loaches into my aquarium, I have had nothing but trouble. They stir up sediment and they chase after my large angel fish and bite at their sides. Yet the books and a lot of dealers praise these loaches for the good they do in the aquarium. What is your opinion of this fish?

Firstly, let me say that *Gyrinocheilus aymonieri* is not a member of the family *Cobitidae* and is, therefore, not a loach. It is pure and simply a fish with a sucker mouth. That *G. aymonieri*, like some of the loaches, finds the body slime of some fishes attractive to suck is a well-known fact. Hence it is best to keep it away from pancake-sided fish or sluggish fish with tall sides. All bottom-searching and bottom-frequenting fish will stir up sediment. The remedy here is to keep the bottom clear of excessive sediment by regular siphoning. To sum up, then, my opinion of *G. aymonieri* is that, given a well-tended aquarium and the right companions, it is a useful fish to have around; for it does live almost exclusively on algal growths.

I have just taken possession of a three-foot tank. Discussing the setting up of this tank with some fishkeeping friends, I was given to understand that it will cost a small fortune to furnish it with plants. Is this true?

It is not true. Provided you buy plants such as *Hygrophila polysperma*, *Sagittaria subulata*, and, perhaps, a swordplant (*Echinodorus*) or two to give height and add to the decorative effect, you should have some change to come from a £1.

What size tank would I need to house a pair of full-grown red oscars? Furthermore, what requirements in the way of food and temperature would promote rapid growth of young oscars to breeding size?

A tank 48 in by 15 in. by 15 in. would make a good home for a pair of full-grown oscars. A temperature of about 75°F (24°C) would suit the fish very well. As for food, red meat, cooked and minced offal such as heart and chicken liver, young livebearers, and earthworms would make a satisfactory diet.

I should like some information on the platinum tetra. My local dealer appears to know little or nothing about this species but insists that it will give no trouble in a community tank.

The platinum tetra (*Gephyrocharax atracaudatus*) is one of my favourite fish. It is lively, swims mostly in the middle levels of the water, is a shoaler, eats anything, is long-lived (upwards of four years) and is as glistering on the sides as a piece of white gold sprinkled with the dust of blue diamonds. It is native to Panama and attains about 2 in.

I should like to keep some discus fish in a large aquarium I have just bought second-hand. Our tapwater is soft and, under test, gives a pH reading of 7·0. Do you think I should go ahead and buy some discus fish?

The water should suit the discus very well provided it is acidified by straining it through peat to give a reading of 6·5 to 6·8. But make certain that the compost you use is lime-free, and any rockwork used for decoration, or else you will soon find the pH will rise to 7·2 and above. Another thing, before filling your second-hand tank with water, give it a good soaking in two or three changes of water and then, before finally setting it up, cover all interior seams and the underside of the top angles of the frame with silicone rubber sealant.

Would you recommend Ulrey's tetra for a community tank housing a collection of smaller fishes?

Hemigrammus ulreyi is a fish I would most certainly recommend for a community aquarium. It is pleasingly coloured, active, hardy, easy to feed on anything alive or dried, and does not fall out with other species.

COLDWATER QUERIES

by Arthur Boarder

I have an old weathered, cattle drinking trough made with concrete which is 54 × 15 × 10 inches, on each side of a division. Are there any fishes smaller than goldfish which I could keep and perhaps breed in it and could I grow a water lily in the trough?

The trough should make a good receptacle for fishes. As it is rather shallow any extremes of weather could affect it but as you are able to run a heater to it this would be all right in cold weather. However, in very hot weather the water would warm up a lot but if you had any of the goldfish varieties I do not think that they would be upset by this. Many of these fish can stand a water temperature of nearly 80°F, and if you have a water lily or some duckweed to shade out much of the sun, the fish should come to no harm. There are not many fishes smaller than goldfish which you could keep. Perhaps Bitterling would be useful but they would not breed unless the tank contained plenty of mulm in which the mussels could live, as

these are essential for breeding Bitterling. I feel sure that you would be successful with shubunkins or fantails as you could transfer the parent fish to the other side once spawning has taken place. There are a few water lilies which could grow in your trough, such as the types *Nymphaea pygmaea, sp.* You would have to set them in a shallow tray so that the crown of the plant was well below the surface.

There is no need to treat the concrete trough in any way as its age would make it quite safe for fishes. It is only fresh concrete which could give off free lime which could harm the fishes.

I have a tank 24 × 18 × 12 in., in which I have six goldfish about four inches long. A short time ago one of the fish began to lie on the bottom and made frequent rushes to the top to expel a quantity of bubbles. It later died. A week later another fish was acting in the same manner. I have frequently refilled the tank from a bucket which has been used for working with bacteria. Could there have been something in the bucket which affected the fish?

If the bucket had been used continuously in the laboratory for bacteriology experiments it is possible for some bacteria to have got into the tank. The action of the fish suggests that it is swim-bladder trouble but of course it is quite probable that this could have been partly caused by something introduced with the water from the bucket. You state that the goldfish are four inches long; if this refers to body length then you may be over-stocking as the tank will only hold, safely, 12 inches of body length of fish. Clean out the tank and restart with water from a safe source.

I have made a pond in the garden with the aid of a plastic liner and filled it with water. I have planted it with cuttings. As I shall not be able to stock the pond with fish until the spring, should a keep the same water or empty it and refill with fresh before introducing the fish?

You should keep the pond filled with water until about a fortnight before you want to put your fish in. Then a good wash round and fresh water should be quite safe by the time the fish arrive. The water plants will not grow during the winter and you may have to replace them if they have not got established by the start of the warmer weather.

I have a 24 × 12 × 12 in. tank in which I have 3 comets and 2 goldfish. I have an aerator but at night the larger fish go to the surface and blow a few bubbles. Do you think I am over-crowding the tank with fish?

The tank should be safe with 12 inches of body length of fish. However, this is not the end of the problem. When fish mouth at the surface it is a sure sign that the water is impure. This could be caused by the wrong feeding as well as if the water did not contain sufficient oxygen. When water lacks oxygen it is usually the larger fishes which are in trouble first. Although you have an aerator this will not clear foul water. I suspect that you have been over-feeding with dried food which has tended to pollute the water when it started to decay. See that you have sufficient water plants; do not overstock nor over-feed and all should be well.

If I buy some Koi in the spring will it be safe to put them straight into an outside pond?

It depends on whether the fish have been reared in this country in fairly cold conditions or are recent imports from Japan or a warm water source. If you make enquiries from the supplier he should be able to advise you. Certainly it would be dangerous to put Koi into a garden pond in the spring if they had been raised under almost tropical conditions. In such a case they should be gradually brought down to about the temperature of the water in the pond.

I have two tanks, 24 × 15 × 12 in., with cold-water fish. I have an assortment of plastic plants and after a time they smell badly, but yet the water has no offensive smell. I change part of the water once a fortnight and add fresh. Is this safe and how can I clean the plastic plants to stop the bad smell?

The quickest way to stop the plastic plants from smelling is to sling them out of the tank and replace them with proper growing water plants. If you are going to use the plastic plants I do not see why you cannot go the whole hog and use plastic fishes. There may be a use for such plants in a marine tank where few plants could grow but in a coldwater tank I think they are not only useless but quite out of keeping with the whole idea of freshwater aquaria.

In your articles you sometimes refer to large, medium and small ponds. This is rather vague and I would like to know how you define them?

Naturally, the measurements of a particular pond are likely to vary with one's own estimates. When I refer to garden ponds I do not include small lakes or large ornamental ponds likely to be found at stately homes, etc. I can only give a rough estimate which will be found applicable to garden ponds in general. Although no hard and fast rule can be given I usually refer to a small pond as one of not more than about 7 ft. by 5 ft. A medium pond would be about up to 14 ft. by 10 ft., and any above that I class as a large pond. As for stocking them it is not necessary to estimate the number of fishes as you would for a tank. There is a great deal of difference between the two. One usually allows 24 square inches of surface

area to each inch of body length of fish but this would be too much for the garden pond. A small pond should not hold more than about twelve fishes of not more than four inches long overall. This allows for their growth and perhaps breeding. When considering the stocking of larger ponds, the rate of growth must be taken into account more particularly as the fishes are likely to grow at a faster rate. For instance, if several Orfe are placed in a fair sized pond they could grow very quickly and four inch fish could be a foot long inside three years, as long as they were well fed.

The reason why I recommend the rate of stocking for a tank is that through years of trial and error I have established that, with proper care, this is a safe rule. The old one which I disproved many years ago was to have an inch of fish to each gallon of water. This could have been safe for a tank with a fairly shallow depth, but a gallon of water in a container which was very deep could not sustain as many fish as one of the same capacity but very shallow, giving a much larger surface area.

I have a tank, 24 × 12 × 12 inch, with a red-cap oranda and two fantails. The red-cap has the white tubercles on its gills and front fins and is chasing the fantails about the tank. If spawning is anticipated is this not unusual for early January. The tank water is at 60°F?

It may be unusual but it is the temperature of the water which as brought the fish into breeding condition, and of course, the male must be in prime condition. I made experiments over many years and found that the average temperature of the pond water when my fish spawned was 61°F. Some were in the lower fifties and some in the upper seventies. Orandas can breed with fantails but the youngsters will be a mixed bag.

Last year we bred a number of shubunkins but lost most of them through dragon-fly larvae which hatched from the weed. Is there any way of stopping this loss in future?

It is always a tricky task to catch any pests which may have hatched in the rearing tank. I have had some trouble in the past through the tadpoles of newts which have hatched from eggs laid on the weed when in the pond. I find that an excellent method to adopt is to visit the tank at night with a strong torch. Many pests either come to the surface at night or are easier to see and catch at night time. If this is unsuccessful you can get a spare tank ready with water from the hatching tank. Then catch the fry with a white based saucepan, or similiar object. Any pests can be seen easily and removed. Treat the fry very carefully as they are rather delicate when small. The weed from the hatching tank can be washed and the tank refilled, using the original water.

IVY-LEAVED DUCKWEED

by B. Fry

IVY-LEAVED DUCKWEED is a charming little plant that either grows well for you or not at all. It is, or appears to be, the only member of its far-flung genus which does not float water-repellent foliage at the surface; ordinarily it grows on or near the bottom or just below water level.

The leaves or fronds are narrowly lanceolate in shape, about ½ in. long and joined one to another by narrow stalks. The roots are as slender as threads. Every frond has its own little root. Where conditions are to its liking, ivy-leaved duckweed forms tangled masses of pale- to dark-green foliage. It is hardly necessary to say that these tangled masses of greenery make a safe retreat for pursued or shy fry. And as a spawning plant for small oviparous fishes such as *Tanichthys albonubes* or Schubert's barb it is one of the best.

Lemna trisulca, to give this plant its botanical name is widely distributed and occurs in most parts of the world, excepting Africa and South America. A handful of *L. trisulca* taken from lake or pond can usually be acclimatized to the warmer water of a tropical aquarium without much difficulty. It is advisable, though, to bring about this temperature change very gradually.

The great enemy of ivy-leaved duckweed is *algae*. For once *algae* gets in among the fragile foliage and is not kept under control, the plant is doomed. Fortunately ivy-leaved duckweed is tolerant of a fair amount of shade. It is, therefore, not too much of a business to keep *algae* at bay.

Once upon a time, *L. trisulca* was included among the long list of medicinal plants used by herbalists. It was prescribed for all sorts of illnesses such as gout, jaundice and inward inflammations. In the aquarium, ivy-leaved duckweed is not faddy about the mineral content of the water and will even stand some salt. It flourishes best, however, in crystal clear water rich in the nitrogenous excretions of fish.

One last word. It is a plant ideally suited to a peat-floored aquarium inhabited by a trio or small family of killifish, tiny livebearers such as *Heterandria formosa*, or pygmy centrarchids.

WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author

I WOULD like to begin this month's feature by thanking those people who sent me Christmas cards—especially the Officers and Council of the Federation of British Aquatic Societies. I must also apologize for no W.Y.O.? appearing in the January issue of the magazine. Unfortunately, because of university examinations and other work, my copy did not reach the Editor until it was too late to appear in the January issue. However, I have now been able to use some of the many letters for which I did not have space in previous editions.

Mr. D. Preece writes from 3 Morgan Terrace, Park Hill, Tredegar, Mon., on the subject of convict cichlids—raised by Master Andrew Patterson. Mr. Preece informs us that a description of these fish can be found in Innes' book, or in McInerny's book, under the guise of "zebra cichlids." Mr. Preece recently purchased a pair of these fish, which readily spawned. About 80 fry were hatched, 30 per cent of them being albinos. During spawning, the parent fish killed four 1½ in. marble oscars, two *Tilapia* of 1 in., two 1 in. blue acara and two marble angels. He retained seven fry, and although he is now well aware of their ferocious nature when breeding, he is tempted to introduce just one into his large tank to see how it behaves with other fish when it is free of the responsibilities of breeding. The latest addition to Mr. Preece's large tank is a 1 in. tiger oscar, and it is being fed on chopped earthworms, raw liver and Tetramin. Mr. Preece found Mr. D. K. Brown's article on "The rearing of young Discus" (May edition) to be the most fascinating item in *The Aquarist* last year, and his favourite aquarium books are Innes', and McInerny's "All about Tropical Fish"—the latter book he describes as being ". . . truly exceptional —a supreme book for the average aquarist."

Regular writer Mr. S. Fox, of 126 West Farm Avenue, Longbenton, Newcastle upon Tyne, NE12 8RU, sends his views on some of my recent comments on aquatic plants. In his opinion, most aquarium plants are problem plants to somebody. Regarding *Cabomba:* he says that one should only keep the *particular species* of *Cabomba* which will thrive in the specific conditions in any given aquarium, and he states that the aquarist would have to spend some time and money in order to find the most suitable species.

Mr. J. Amott, who lives at 7 Market Place, Codnor, Derbys., admits that he is past the "three score years and ten," and he says that his methods, like himself, are "somewhat ancient." He never tests his water, but can grown *Cabomba* without any trouble. He seldom uses aeration, and only makes occasional use of an outside filter. He says that many would consider his water to be "dirty water"—but his fish are trouble-free and non-cannibalistic. He finds that *Cabomba* does best in gravel which is fresh, and starts to fail after such gravel has been in use for more than two years. Mr. Amott considers that washing the gravel does no good; it needs to be thinly spread outdoors so that the sun and weather can get at it. It is then suitable for *Cabomba* again. He pinches any flower buds off his plants as he finds that flowering diminishes the vigour of the plants.

Mr. S. A. Heap, of 108 Aldwyn Crescent, Hazel Grove, Stockport, Cheshire, SK7 5HX, is a member of the Belle Vue Aquarium Society, and has regularly been sending me copies of the Society's most interesting magazine, *Aquascope*. He also writes about *Cabomba* plants. His plants, grown at pH 6, and a water hardness level of 130 p.p.m., and pH 7, and 150 p.p.m., with three 40 watt bulbs over a 36 in. × 15 in. × 15 in. tank, and two 40 watt strip lights over a tank of the same size, grew so quickly that he had to pull them out each week, cut them in half, and replant the flowering tops. After several such cuttings, the plants flowered. As it became difficult to get rid of unwanted plants, he gave all his stock away, and none is now flowering. His plants flowered with undergravel and with outside filtration—also with no filtration at all.

In a second letter, Mr. Heap informs us that, many years ago, he found a large tortoise wandering in the road. The tortoise hardly ever drank water. Mr. Heap thinks that the drilling of a tiny hole in the edge of a tortoise's shell would be painless, and he wonders if Miss L. G. Williams will ever have her ears pierced. His tortoise hibernated in a box of straw in his greenhouse, and during the summer it was allowed to wander wherever it wanted. Neighbours frequently had to return the animal. (My own tortoise, Tojo, who featured in recent column, has refused to hibernate this year—so far. It's now near the end of December, and for the first time in many years he just will not

go to sleep—even though he has been placed in a box of hay, kept in a cold outside store. I wonder if the mild weather which we've had so far is the cause? Have any other readers met with the same problem this winter?).

Mr. T. Wielogørski's home is at 44 Wilton Crescent, Wimbledon, London, SW19 3QS, and his 'A' level studies have been taking up so much of his time that he has had to cut down on his stock of fishes. (I know exactly the problems of trying to combine studying and fishkeeping—but it's even more difficult when one does a full day's work, and some writing for magazines, as well!) He has a pair of Dwarf Gouramies in a tank which is heavily planted with *Vallisneria* and pygmy chain swords. His pair spawned and produced 100 plus fry, but an attack of white spot killed off the fry. He's hoping to have another spawning soon. (I've still been unable to raise any of the fry produced by my pair—about which I wrote in the December issue.) Mr. Wielogørski also has an adult oscar in another tank, and it tears up the plants and has a voracious appetite for Tetramin and snails. He is trying to find a mate for his fish but considers £1·50 to be too expensive for his pocket. He finds that Tetramin is appreciated by all his fish and, as the makers claim, it does not cloud the water. Mr. Wielogørski asks if readers have had any success in (a) keeping crayfish, and (b) in acclimatising shore crabs to the aquarium.

Master A. D. Heath is 16 years old, and writes from 14 Grosvenor Avenue, Carshalton, Surrey, on the subject of planting an aquarium with only one kind of plant. In a 3 ft. coldwater tank he has more than 150 *Vallisneria* plants which developed from 12 originals, and more are being produced each week. Other kinds of plants do not grow in the tank. In contrast, in his 2 ft. tropical tank, where Cryptocorynes and swords predominate, *Vallisneria* will not grow at all. Master Heath strongly disapproves of filters, aerators, etc., being used in aquaria. He thinks that tanks should be as "natural" as possible—even though there are certain things which the aquarist must do to his tanks. W.Y.O.? is always the first item which he reads in the magazine.

Another letter on the "single" planting theme comes from Mr. T. Barr, of 40 Oxford Close, Mitcham Surrey. About two years ago he kept a 36 in. × 15 in. × 15 in. tank, lighted by two 25 watt bulbs and a 24 in. warm white flourescent tube, and planted exclusively with *Vallisneria spiralis*. The tank was choked with plants in just eight weeks, and required constant thinning. Several plants flowered, but although attempts at pollination were made, no seeds were produced. When he plants *Vallisneria*, Mr. Barr cuts back the leaves to about 6 in.; when two or three new plants are produced on runners, he discards the parent plant. This method gives him plants with leaves of well over 24 in. in length. When Cryptocorynes and *Sagittaria* were introduced into the tank, the *Vallisneria* suffered a noticeable set-back. Mr. Barr concludes that *Vallisneria* seems to do best on its own.

Photograph 1. Bladderwort

I recently asked readers to give us prices of fish, plants and equipment, taken from advertisements in old editions of *The Aquarist*. Mr. Barr has copies back to 1949. He says that the average price of heaters was about 15s., and air pumps from 25s. to £3. Plants' prices were quite low: *Vallisneria* 3d., Spatterdock 2s., and large Cryptocorynes at 3s. 6d.; however, fish were quite expensive: black widows at 4s.,

neons at 8s. 6d., harlequins at 7s. 6d., etc. These prices were taken from a 1952 edition. Mr. Barr points out that 8s. 6d. in 1952 would be equal to at least £1·00 today, and he says that ours must be the only hobby where prices over a period of twenty years have actually been reduced or, at least, maintained.

It's always pleasant to receive a letter from a lady aquarist, and Mrs. D. Hanning writes from 11 Seaton Place, Ford, Plymouth, PL2 1PS, on the subject of *Cabomba*. She has a 19 in. × 11 in. × 14 in. all-glass tank, without a heater. It is lighted by a 40 watt bulb, contains guppies, swords, and white clouds, and is planted with only *Cabomba*. She started with only a few small pieces of the plant, and now has a forest of it in three tanks—as well as having given some plants away. The plants grow very long, but have never flowered. Her other tanks contain Cryptocorynes, Amazon swords, *Hygrophila* and hairgrass—plus one plant which she cannot find in her aquarium book. (Photograph 1 shows bladderwort—an interesting aquarium plant which catches tiny aquatic animals for its food. Notice the tiny "traps," which capture the plant's "food," in this close-up photograph. Bladderworts are some of the few aquatic plants which obtain their nourishment in this way.) Mrs. Hanning was given two small pieces of *Hygrophila* about six months ago, and as soon as the plants reached 6 in., she nipped off the tops and planted them. She now has a 3 ft. tank filled with 12 in. tall *Hygrophila* plants, and has no room for any more.

In the November issue, I quoted from a reader who told about an aquarist who had been bitten by his piranha fish. Confirmation of the piranha's attack on its owner comes from Mr. R. B. Roshier, of 58 Fintryside, Mains of Fintry, Dundee, Angus, Scotland, who sent me three cuttings from local newspapers. Apparently the owner of the fish, Mr. Gordon Chalmers, who lives at 12L Butterburn Court, Dundee, had been attending to his fish when his piranha bit his finger. The resulting wound from the 6½ in. fish required four stitches. The fish later died, and a post-mortem report from Dundee University said that the cause of its death was probably haemorrhaging in the region of the heart. (I wonder if the piranha's sole found a plaice in heaven?)

A quick jump takes us across to 21 Slemish Way, Tonagh Estate, Lisburn, the home of Mr. I. McMahon, who writes on the subject of marines. Recently he purchased three Hyware marine undergravel filters and some more coral sand. He completely covered the base of his tank with these filters, and then added a layer of filter wool—so that the sand would not be sucked through the filters. He has an average depth of 2 in. of sand, and the difference which this set-up made to his aquarium is "fantastic." The fish are more active, feed better, and look better. Mr. McMahon had trouble in trying to keep the pH of his marine tank at 8·3, but when he added some Sea-coal to his filter his problems were solved. He feeds his fish on *Tubifex*, white worms and flaked foods. He recently bought a Powerstreem Conversion Kit and finds that it is "great." Mr. McMahon says that he recently sent a query to Interpet, and that it is "a really first-class firm to deal with." He ends by saying that he would very much like to set up a 7 ft. marine tank.

Mr. T. Massey, a regular writer, lives at 22 Cypress Gardens, Yew Tree Estate, Walsall, Staffs., and he would like to know what other readers consider to be the easiest and most difficult fishes to keep. His choices are any species of tetra for the first group, and gouramies and angels for the second group. Mr. Massey kept a 24 in. tank, planted with only Amazon sword plants, for six months; the plants

Photograph 2

grew fairly well but he thought that the tank looked drab, and added other kinds of plants. About six months ago he purchased two baby discus, costing 75p each. His fish would only eat chopped *Tubifex* and presented him with a feeding problem. After a time the fish refused to eat, and finally died. "No more discus for me!" says Mr. Massey.

Talking of discus, I thought that you would be interested to hear of an incident which I recently had with my own two young discus. (Photograph 2 shows the smaller of the two.) Since the fish has been "off colour," I had been keeping them at a temperature of 90°F to help kill off any disease organisms. Before bed one night I decided to give the fish a complete water change. This was done, the fish replaced in the cleaned tank, and I went off to bed. Next morning, before I rushed out to school, I glanced into the tank to see how the fish had reacted to their water

change. Both fish were flapping on their sides at the water surface. A quick examination showed that the heater in the tank had failed and that the water temperature had dropped to nearly 40°F—*a drop of about 50°F.* I thought that the fish were beyond hope, and I had only five minutes left before I had to be at school. In a frenzy, I grabbed a spare Maxamatic, fitted a plug, dropped the unit into the tank, switched it on, and rushed off to school, late. When I returned home at lunch time, I fully expected the discus to be dead. Nothing could have been further from the truth! Both fish were swimming round happily, and started to feed immediately they were given food. A later examination of the heater and thermostat in the aquarium showed that one of the heater leads had pulled out of the plug socket on the thermostat lead. The thermostat was designed so that the neon indicator was lit when the heater was on; it would also appear to have been designed so that the neon indicator light remained lit even when one of the heater leads had pulled out. I shan't be using that particular design of thermostat again! I'll stick with the Maxamatic which "saved the day." Both discus have done exceptionally well since the unfortunate incident and I'm left wondering just how many other species of fish could have endured such a large drop in temperature, and survived fit and well. It makes one wonder!

Finally, a few questions for next month, including those in the main body of the text: (a) What have been your experiences with bladderwort? (b) What is your opinion on artificial aquarium plants? (c) Do you know of any special recipes for home-made fish foods? (d) Have you had any success with the breeding of cardinal tetras? (e) How would you deal with a fully planted and stocked aquarium which sprung a leak at the bottom of the front glass? Please remember to PRINT your name and address on letters, and include the date; don't make the letter too long, and enclose a S.A.E. if you require a reply, please. Have you ever sent your opinions, yet? I'd be pleased to hear from you. Good-bye until next month!

PRODUCT REVIEW

BIOLOGICAL UNDER-GRAVEL FILTER, manufactured by Algarde Plastic Products, 49 Dury Falls Close, Hornchurch, Essex. The filter is available in two sizes: 23in. × 11in. at £1, and 17in. × 9in. at 89p.

These two new filters, from Algarde Plastic Products, are undergravel filters made from a "solid," ribbed base, of a light plastic—grey in colour. This base has rows of perforations. The edges of the base are flat, for about 1in., and make a good close contact with the base glass of the aquarium. Each base plate has a plugged opening at each of the two back corners, and the supplied air-lift can be fitted into either opening. The air-lift is easily fitted, and is of clear plastic.

To use the filter, it is placed in the clean base glass of the aquarium. Clean aquarium gravel is then used to cover the filter plate, and this, together with the water, seals the edge of the plate to the aquarium base glass. (It may also be stuck in places using a silicone sealer, but this is not essential.) A minimum of 1½in. of gravel is recommended—but a greater depth makes the filter even more efficient. The air-lift accepts ¼in. plastic air line tubing, which is pushed down to near the base of the expansion chamber of the base plate. One may also fit an air stone if desired. When an air pump costing about £2—£3 is used, aquarium water is filtered about three times per hour, using one air-lift; this turnover rate is suitable for marine aquaria, but ordinary tropical freshwater tanks can be operated with a smaller air pump. For a very high rate of water turnover, an extra air-lift may be purchased and fitted. With an undergravel filter, one does not have to change filter wool, charcoal, etc.

Under test, I found the filter to be most efficient in operation, producing a clean aquarium. The air supply can be regulated to produce the required rate of water turnover. For larger tanks, two filters can be used.

Although I do not personally use undergravel filters at present, there are many people who do, and for such people I could certainly recommend either of these filters as being both well made, efficient, and reasonably priced. B.W.

AQUALARM, supplied by Aqualarm, 168 Woodslands Road, Ditton, Maidstone, Kent, price £7·50, including postage and packing.

This new item, which is fully guaranteed for one year, is a well-designed product which is very pleasing to the eye (see illustration on page xxi of December issue). It provides the serious aquarist with a piece of equipment which should remove all worries about tanks over-heating or dropping in temperature.

The unit has a metal case, which is blue in colour, and is fitted with four rubber feet to prevent furniture from being scraped or scratched. The front of the unit is painted in matt black, has three red lights, and a switch for turning on the unit's buzzer warning system.

For use, the unit needs two thermostats for each aquarium which is to be monitored. There are two three-core leads from the unit. One of these is wired to the mains, and the other bears a connector for wiring up to the thermostats needed for each tank. When the two thermostats are fitted, the "over" thermostat is adjusted until it operates at a temperature just above the normal operating temperature of the tank. The "under" thermostat is adjusted until it operates at a temperature just below the normal tank

temperature. When both are correctly adjusted, the "over" and the "under" temperature lights on the front of the unit will both be out when the unit is switched on. The mains light will be lit when the mains are on. When the unit and thermostats are thus adjusted, the buzzer switch is clicked to the "on" position—and no sound is emitted. Should the temperature in the monitored tank rise above normal, the buzzer—which is loud enough to be heard from quite a distance—will sound, and the "over" light will light up. The converse happens with the "under" thermostat and light. One can thus immediately hear, and then see, whether the heater in the tank has failed, allowing the water to cool, or whether the thermostat has failed to cut out the heater, causing the water to over-heat. One can quickly correct the offending item. Should the mains supply fail, the buzzer will sound and the mains light go out. One can then check fuses or check for a power cut—and take appropriate action. (The buzzer is operated by a battery fitted in the unit.) The unit should be tested every three months, following the instructions supplied with the unit. A number of tanks can be monitored with the same unit, but each needs two thermostats for the unit to work. Thermostats are not supplied with the unit, the reasons given being that individuals can buy those best suited to their needs and pockets. The Aqualarm may be placed in the lounge, and an extension lead taken to, say, another room, or to a fish house.

I found the unit to be most efficient in operation, and it would be ideal for the aquarist who keeps large numbers of fishes, or smaller numbers of expensive fishes. However, I do have a number of reservations—although these are purely personal. For each tank, one must buy two extra thermostats, and these would cost about an extra 50p each; another point is that, with two *extra* thermostats in a tank, one has to try to conceal these if the aquarium is kept for decorative purposes.

However, disregarding these two points, this efficient and neat little unit is a good form of "insurance" for the aquarist who has an expensive collection of fishes—or for the ordinary aquarist who does not want to take any chances with his stock. For those who can afford this unit, I consider that it would be a good investment. Even one warning from it could save more than the cost of the Aqualarm and thermostats.

B.W.

COLOUR AND PATTERN INHERITANCE IN KOI

by F. L. Vanderplank Ph.D.

Koi or Japanese Carp can be obtained in a very wide range of self and mixed colours, also in a wide range of different scale types of patterns. Some aquarists are under the impression that there are certain set types that are bred by the Japanese. One such reader, Mr. J. F. Gregory, wrote in the July (1971) *Aquarist* "I understood that Koi had been line-bred to keep varieties pure and not crossed and mixed up just to see what could be produced!" This is quite a widely but erroneously held belief which has been obtained from writers about Koi and possibly from the Japanese themselves. Koi are highly complex hybrids, crosses between at least two different species (possibly three species) and therefore have a very mixed chromosomal and genetical make-up and cannot be line-bred. The probable reason why some people have come to think that Koi are line-bred is because of the Japanese names for the different colour-groups, but these Japanese names are merely descriptions of the different colour-groups or varieties. As I have stated in another article, the unnatural colours of goldfish and koi (and other fish) is due to a virus (or viruses) of the natural pigments of these fish. Since the natural pigments of these fish can be made up of several different chemicals, the action of the virus produces different colours from these. The mixed colours of

shubunkins and calicos is caused by a conflict of two distinctive types of pigmentation in goldfish and to obtain one hundred per cent nacreous (calico) offspring a metallic goldfish must be crossed with a matt goldfish; if nacreous (calico) fish are selfed only 50 per cent will be nacreous. To obtain one hundred per cent mixed coloured koi, white (pearl) koi must be crossed with red. Most offspring will be red and white (*Kohaku*); the numbers of other colours will depend on genetical variations of the chemical nature of the pigments. Many koi are treasured for the brilliant metallic lustre which is caused by very heavy deposits of guanine. This does not appear to follow any known genetical pattern and so is most probably caused by another virus, as is the black pigment in many tropical fish and in goldfish, but not the black pigment found in koi. Koi have been produced by crossing the common carp with goldfish varieties which originated from two species of carp independently, namely the Crucian carp, sometimes known as the Prussian carp, *Carassius carassius* and the Chinese carp *Carassius auratus*. Both these species have now been completely inter-bred in the present-day goldfish. If naturally coloured "goldfish" are crossed with naturally coloured carp, the same hybrid as koi is produced but in its natural olive-green colour. The Chinese bred naturally coloured "goldfish" for food.

The Japanese bred carp purely as food and similarly in Europe carp were, and still are, bred primarily for food. Due to the atrocious conditions used for breeding "goldfish" the red, orange and yellow colours were produced due to viral infection of the fish's pigment, also many abnormal shapes of the body and fins were produced by genetical mutations. The Chinese, being artistic people, kept and then developed these monstrosities for decoration of their ornamental pools.

The Japanese developed red (or golden) carp at a much later date and then developed koi. The multiplicity of colours is a very recent development (during the last thirty years). The Germans and Central Europeans developed common carp with very large scales on their sides known as mirror or German carp. Also another true variety is one with very fine scales and often called a scaleless variety. The Japanese have inter-bred both these varieties into their Koi breeds which adds to the complexity of varieties available. The large-scaled variety is called by the Japanese *Doitsu* by which they mean *Deutsch* which is what a German calls himself, so there is no particular mystery about these European scaled varieties that have been introduced into koi. Only the numbers of different varieties have been considerably increased by this hybridisation. These large scales are due to true genetic mutations and are generally recessive, but they follow definite patterns and are transmitted in accordance to the normal genetical laws. However, the pigmentation, and hence the colours of large-scaled varieties, is not a genetical mutation and does not follow any definite pattern, but there are tendencies for certain colours to be associated with particular patterns. At present koi, even the common self-coloured metallic varieties, are relatively expensive when compared with goldfish but many people were successful in breeding them this year (1971) and I see no reason why koi should not become as plentiful as common goldfish. However, certain colour combinations and scale patterns will not be so easy to breed until a great deal more is discovered about the genetics and the viral infections of the fish's pigments. Koi do not need any special treatment to breed; in fact they can be treated exactly the same way as for breeding common carp. However, to obtain the maximum numbers showing fancy (or unnatural) colours special treatment of spawn and fry during the first six weeks is necessary. Details of such treatment is at present a trade secret but I have little doubt that it will become common knowledge before very long. Some commercial breeders have spent a great deal of money on research into breeding of koi and so cannot be expected to divulge their information as freely as some people expect. As with other breeds of domesticated animals, it will be quality and rarity that pays the best prices and the Japanese have produced some really fantastic fish. No doubt we shall be able to do the same once we have built up the necessary breeding stock.

Crossword Solution

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

CONTROLLING FREE-SWIMMING GREEN ALGAE

by F. L. Vanderplank Ph.D.

ONE OF THE aquarist's most tedious problems is the growth of *algae* in his tanks and ponds. There are hundreds of different species of *algae*, which come in most colours from the deepest blue-green, so that they appear almost jet black, various shades of green, browns, reds and yellows. Most aquatic *algae* start life as free-swimming single cells; some spend all their lives in this stage, whereas others settle and grow into threads, or frothy masses. It is the single celled free-swimming *algae* that are most difficult to deal with especially when one has newly hatched or young fry, the *algae* prevents the fry from finding their natural foods and if the *algae* get too numerous they are apt to die and their dead decaying cells pollute the water with the liberation of sulphurous gases which kill all the fry. Many methods have been tried to control the growth of *algae* and the only successful one to date is to keep the fish tanks in such subdued light that green *algae* are unable to grow but the colourless forms of some of their species such as *Euglena* can and do grow in such conditions and can be a danger to fry. However, most fry can and do eat the colourless protozoans as they are not true *algae*. In fact quite a few of the free-swimming so-called *algae* are protozoans that have a symbiotic relationship with small *algae*. The green *algae* live inside the protozoan and benefit from the waste carbon dioxide and minerals while the animal benefits from the oxygen given off by the *algae* and possibly from other substances as well. The aquarist is not so much interested in the species and habits of the *algae* and protozoans as how to keep these under control. There is no doubt that fry grow quicker in a good light if *algae* can be controlled. In nature *algae* form the food of various rotifers, crustaceans (*daphnia*, etc.) and numerous similar species of small water animals, but these are also excellent food for fry and young fish, so do not survive long enough to control the *algae* in a tank with nnmerous fish fry. Many chemical methods of control have been tried and recommended from time to time; chemicals such as sulphate of iron, copper sulphate, permanganate of potash, etc., all are highly toxic to fish and although they can be used with large fish to control the *algae*, fry are more sensitive to these chemicals than are the *algae* and consequently they cannot be used. The ideal method of control would be some fish fry that feed on these free-swimming *algae* and only a few species do this and all that do are either rare or difficult in one way or another. However, tadpoles of the Clawed frog (or toad) *Xenopus laevis* feed ravenously upon most species of free-swimming *algae* and will clear most aquaria tanks in a few days. Not only that, they will not harm any young fry since they cannot, in their early stages, eat anything so big as a newly hatched Angel fish or Goldfish. *Xenopus laevis* are easily spawned either naturally or artificially with the injection of 300 to 500 international units of progestrone. Their eggs are small, transparent and not much bigger than those of Goldfish and at a temperature of 75-78°F they hatch in 3 to 4 days. The young tadpole is only slightly bigger than a newly hatched Goldfish and hangs on the sides or on vegetation for the first day or two then, like Goldfish, becomes free-swimming. The tadpoles are very small, transparent and spend all their time swimming in open water, feeding on free-swimming *algae*. They feed entirely on this for the first month or six weeks by which time they have grown to an inch in length and can then take small daphnids, but if no daphnids are available they will continue to feed on free-swimming *algae*. They will not and cannot eat any other kind of *algae* as all their food is consumed by filtering particles out of the water. They can be fed artificially on powdered nettle (stinging nettle) leaves or finely powdered dried shrimp. They grow to about 2½ to 3½ inches long in 3 to 4 months and

Continued on page 408

OUR READERS WRITE

Tropical or Coldwater?

I have frequently seen, much to my concern, fishes more suited to the unheated aquaria sold as tropical fish, indeed some of them would be far more at home under ice during the more severe winter months than in an aquarium complete with functioning heater and thermostat, maintained at 75°F. I appreciate the fact that the dealers do stand a much better chance of maintaining a sale of them in tropical aquaria as coldwater fishes outside the goldfish range are not particularly popular. However, imagine the unfairness of it all when the coldwater enthusiast purchases such a fish outside the summer period and introduces it to a low water temperature. Such a drop in temperature would obviously be detrimental to the fish's well-being, disease being the result, or ultimate death.

What are these fishes more suited to the coldwater aquarium one might ask? Our native fishes are obviously discounted and one wouldn't really expect to see the very hardy Chinese Paradise Fish and White Cloud Mountain Minnows in the dealer's coldwater fish tank. I refer really to the fishes from North America. One species in particular, the Black-banded Sunfish (*Enneacanthus chaetodon*) is more often seen as a tropical fish, indeed not so very long ago it was classified "A.O.S. Tropical" at the open shows. I have some good healthy specimens at home which are occasionally under ice during the winter months. This brings me to a statement in the "Tropical Queries" column of *The Aquarist*, November issue, which is misleading to say the least. Mr. Hems states "The Black-banded Sunfish thrives best in clear neutral to acid water kept at a temperature of from about 62°F to 75°F." This range serves only to "burn the fish up." Let's face it, a fish of this nature must be wintered, and I mean wintered properly. As a result the fish shows better health and colour the following spring. It comes from as far north as the State of New Jersey and as far south as South Carolina. The winters in this region can be very severe indeed.

I believe, though I am not certain, a number of these "tropical sunfishes" are actually imported from the Far East where they are, needless to say, bred in tropical conditions. A far throw from their natural habitat one would say and not the fish to introduce to the coldwater aquarium, however I have one such specimen of Black-banded Sunfish which survived the ice of last winter and it was given to me by a friend who originally plunged it into a pond during the early part of October direct from the dealer's aquarium. This is an exceptional case of direct introduction I must admit. Under no circumstances should one introduce fishes to coldwater conditions after they have been living in temperatures in the seventies, unless of course the transfer is to be carried out during the summer months. There is no risk in this case.

Although I have been describing a specific species of fish here one must not allude from the fact that there are other fishes of a similar disposition. The Red Shiner (*Notropis lutrensis*) often referred to as the Red Horse Minnow and Fire Minnow or other fanciful names dreamed up by wholesalers are slowly increasing in availability and moreover classified tropical. In view of the fact its natural environment covers roughly the same area of the United States as the Flier or Peacock-eye (*Centrarchus macropterus*) a coldwater species and sold as such, it can hardly be labelled a tropical fish. At this very moment I have a number of them living quite comfortably at a temperature of 40°F. Two months ago I acquired them at a dealer's establishment where they were housed in water registering 78°F and as a result had to gradually "break them down" to the temperature of the home aquarium which was 62°F—not a practice to be repeated too often. I have had the same trouble with another species, the Sailfin Shiner (*Notropis hypselopterus*).

I have actually seen other species such as the Blue-spotted Sunfish and to go outside the U.S.A. the Japanese Weather Loach and a fish similar to the Bitterling so far unnamed sold as tropicals.

There will perhaps come a time when coldwater fishes outside the goldfish range will increase in variety to such an extent that the demand for them will blossom out in this country. I trust by that time these fishes will be sold in accordance with the temperature range to which they belong.

V. B. Hunt,
"Caeglas," 120 London Road,
Widley, Nr. Portsmouth,
Hants., PO7 5EW.

Jack Hems writes: Plainly Mr. Hunt is not a careful reader of the printed word; for those who are careful would have noticed that I made no mention of the temperature tolerance of the Black-banded Sunfish in the issue of November, 1971. I merely gave the temperature range that suits this fish best.

Well-practised fishkeepers know that, given an exceptionally good summer and a warm autumn, some of the hardier fishes of the United States can come through a winter outdoors with no ill effect.

But, understandably enough, only in climatically favoured parts of the British Isles. We would certainly be lacking in intelligence if we expected more from fishes native to a country with a climate less erratic and very much warmer and sunnier from May to September than our own.

Dr. Samuel Eddy, Professor of Zoology at the University of Minnesota, who has written one of the most useful books on the identification and distribution of the freshwater fishes of the United States (*The Freshwater Fishes*, by Samuel Eddy, Ph.D., Wm. C. Brown Company, Dubuque, Iowa, 1957) observes that " . . . sunfishes thrive best in water which reaches temperatures above 75°F." John S. Vinden in his excellent paperback called *The Home Aquarium* (Pan Books Ltd., London, 1961) tells us that the Black-banded Sunfish " . . . is not a hardy fish . . . and in England it is usually sold and treated as a tropical fish. While it will live quite comfortably in the tropical tank . . . it can be kept at living-room temperature providing that this does not drop below 50°F." A. Fraser-Brunner in his *Home Aquarium on a Small Income* (Hutchinson, London, N.D.), and German authorities such as the great Wilhelm Schreitmüller, echo the same.

Inevitably, all this leads me to ask Mr. Hunt the following question: "How does he define a coldwater fish?" Does he equate the temperature requirements of, say, *Notropis lutrensis* or *Enneacanthus gloriosus* with those of our indigenous pike or chub? Would he expect *Poecilia latipinna*, from South Carolina, where it snows, to flourish under the same conditions as would suit our native stickleback or lively dace?

Believe it or not, Mr. Hunt, North American fishes, in general, are not quite as pond—or coldwater aquarium—hardy (in an unheated room) as you would have the naive and the uninformed believe.

Cichlid Food

In answer to Mr. Peter Smallman's letter (Dec. 1971 issue) regarding feeding Cichlids, the following may be of some help if he has a blender available.

Take calf liver, pass it through the blender with a little water to prevent the blades from sticking. Place the blended liver in a coated frying pan very lightly rubbed with cooking oil over a medium heat. Stir until it begins to change colour and continue a little longer to cook in this way and you will find that very soon all the water will come out of the liver (like scrambled egg separating). Pour off the water.

If at this stage the liver is too coarse for your fish, pass it again through the blender. I keep this in my deep freeze as I live in the Tropics, but in a cold country it would keep for several days.

For young fish, I dry it down still more in the oven, then regrind and dry until it is very fine and quite dry and powdery, then grade for baby fish.

The dry type floats for some time, but beware, use only the smallest pinch as it spreads over the surface of the water.

Most fish enjoy this and young fish grow well on it, in my experience.

RETA D. CECIL (MRS.),
Valley View,
Lodge Hill,
St. Michael,
Barbados, West Indies.

Controlling Free-Swimming Green Algae
continued from page 406

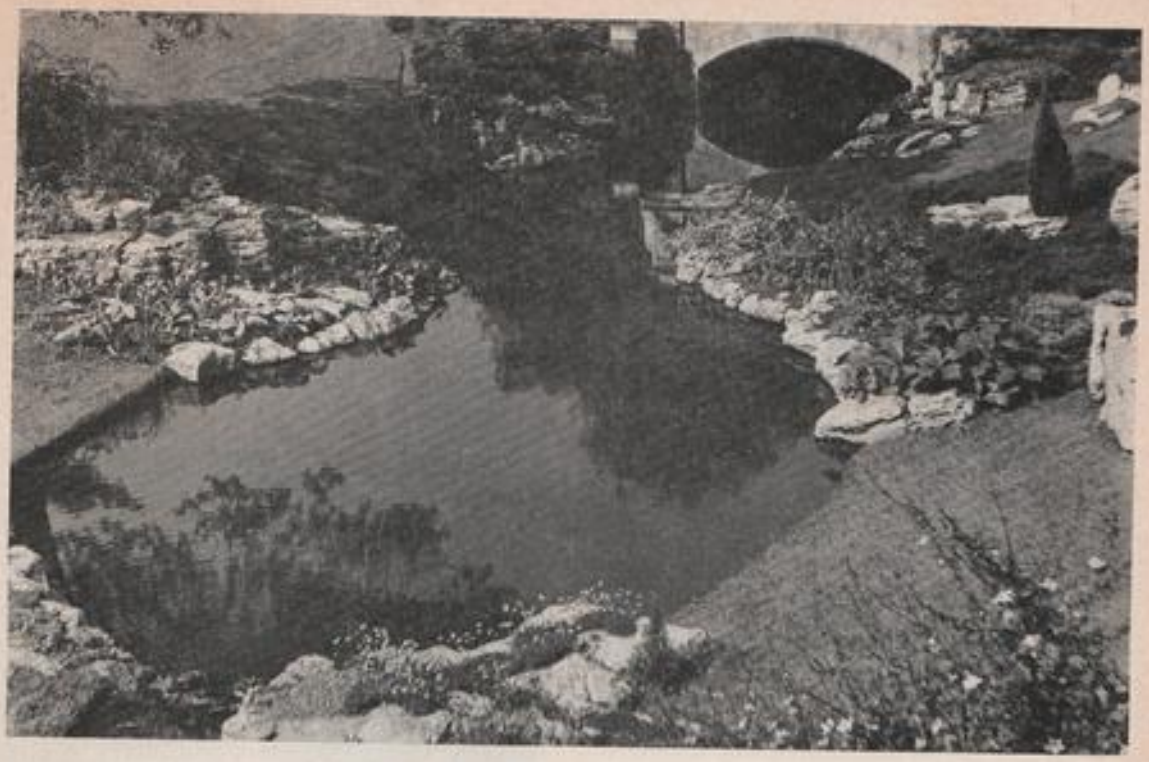
then turn into frogs. The young frogs are ravenous eaters of fish fry and young fish and so the tadpoles are best fed to larger fish when their main usefulness is over which is at between 6 and 8 weeks old and just over an inch long. I find that *Xenopus* tadpoles not only keep the water clear of green *algae* but their excreta is eaten by the fish together with a large silicate which breeds in their guts and is continually excreted by them. *Xenopus* tadpoles can tolerate a water temperature range of 55-85°F and since Goldfish and Koi are best reared at 70-78°F for their first 6 to 8 weeks and most tropicals at the same temperature range, *Xenopus* tadpoles are ideal for the job. As mature *Xenopus* can be spawned to order I keep some 40-50 pairs so I have a ready source of spawn and young tadpoles to mix with my fancy goldfish, koi and other fry during the breeding season. *Xenopus* tadpoles can be used from late June onwards to clear *algae* in garden ponds but they or the frogs are killed in late September or October when the water temperature falls below 50°F.

What Are We?

by Hilary Maynard

My first is in PERFECT but not in BAD;
My second is in REJOICING but not in GLAD;
My third is in NEVER and also in NOW;
My fourth is in DIARY but not in COW;
My fifth is in BASKET but not in BAG;
My sixth is in RIVER but not in CRAG;
My seventh is in HERS and also in MINE;
My eighth is in ROPE but not in TWINE;
My ninth is in EVERY and also in EACH;
My tenth is in RASPBERRY but not in PEACH;
My last is in MUSIC but not in BAR;
My whole is the plain name for what we all are!

Answer on page 411.



Breeding Goldfish

PREPARATIONS for the SEASON

by Arthur Boarder

AT THE BEGINNING of each breeding season coldwater fishkeepers will be looking forward once again to producing at least a few good specimens. Whether it is just a few ordinary goldfish for the garden pond or for some show specimens, the same enthusiasm will take hold. This is especially so when the fish with which one intends breeding from are fancy goldfish of a good or particular strain. When one is dealing with common goldfish there is not much to be done in the form of preparation as this is usually carried out in the garden pond and the fish need no more than a healthy state of the water for them to reproduce.

It is when a special strain is being used that one must be much more particular. Most healthy goldfish will get the urge to spawn in the spring as long as the pond water is in good condition. Of all the conditions necessary for such a spawning the most important one is the oxygen content of the water. When at school many years ago I was taught that water was composed of H_2O, meaning two parts of hydrogen and one part of oxygen. One would therefore imagine that at all times the water in either a pond or tank would hold sufficient oxygen for the benefit of the fish. However, this is not so as one soon learns that the water can contain several foul gases and also lack enough oxygen to enable the fish to remain healthy.

If a pond's water becomes very foul the nasty smell

it gives off can be very unpleasant and indicates at once that it is unsafe for fishes. This bad smell is usually accompanied by a dull or bluish colour and also a bluish matter can cover any blanket weed or other plants in the pond. Such a condition is most dangerous and, unless altered, the fish would soon be at the top mouthing for air. This condition will only occur when something is decaying in the water. Fallen leaves can sometimes cause this condition but more often it is decaying uneaten food which is the source of the trouble.

Providing the water in the pond is fresh and there are both sexes of goldfish in the pond, there is no reason why the goldfish should not breed. Once the days lengthen the fish get the spawning urge and so the production of eggs is possible. This may be quite a common occurrence but the rearing of many youngsters is quite another matter. As is well known to most pondkeepers, the fish are quite likely to eat their own eggs soon after they have been laid. Even if some escape and fry are hatched out, there is still the chance that many, if not, all will be eaten before they have a chance of growing into decent sized fish. The early days of their lives are the more dangerous and they resemble mosquito *larvae* more than actual fishes and so are often eaten by hungry goldfish. It must be realised that goldfish, if hungry, will take most foods especially any which move. The sight of tiny wrigglers is a temptation which few fishes can resist.

This is not to state that it is impossible to breed fish in a garden pond, as many thousands are so produced every year. If a number of youngsters are reared in a pond then it is almost certain that the pond contains plenty of water plants. The more densely packed with plants the pond is then the better the chance of breeding goldfish arises. Goldfish, like many other kinds of fish, prefer to spawn among dense batches of water weed and in such cases the eggs stand a much better chance of survival than in a pond where the plants are scarce.

Another condition which helps to keep eggs and fry more safe is the structure of the pond. If there is a very shallow part of the pond, this is where the fish are likely to spawn. It seems a natural thing for them to choose water which is too shallow for normal swimming in which to spawn. Even in the wild, such coarse fishes as Roach, Rudd and Tench, will swim into water so shallow to spawn that their dorsal fins and sometimes half their bodies are out of the water. In the wild this shallow water is usually rather warmer than that further out and the fishes appear to realise that their eggs will hatch better in such water.

If one is constructing a pond with the hope that fishes will breed in it, then it is most important to provide such a shallow part or if not one could always be constructed afterwards with the aid of broken paving stones.

Where there is no such shallow part it is possible to get plenty of eggs which must be removed to hatch in safety away from the parent fish. I have used this method with much success for many years and my system is to tie bunches of fine-leaved water plants and anchor them in the shallow corner which was included when the pond was constructed. Once the fish spawn on these bunches they are taken to a hatching tank and fresh bunches are put in their place. This method is all right when one is on hand to save the eggs as laid, but if this is not possible, then one must use such dense masses of weed that it would be almost impossible for the fish to get to all the eggs once they are laid.

Fish prefer shallow water for spawning

This uncontrolled system of breeding is all right when dealing with common goldfish, or even if just one strain of fancy goldfish is kept in the pond. Where several or even more than one variety is kept it is very bad policy to allow the fish to interbreed which they would do if such a condition was allowed. What one has to realise is that the eggs of goldfish and most other kinds of fish, are not fertilised inside the body of the female. They are laid first and are then fertilised by the male fish. The eggs, (hard roe) are expelled by the female when she is encouraged by the attentions of the male, and he releases his milt (soft roe) into the water. The milt contains myriads of tiny sperms which are shaped something like miniature tadpoles and can be propelled through the water by a whipping of the tail. These sperms can live in the water for some time and appear to be attracted to an egg. When one is found, the sperm enters it and fertilisation takes place. If there are a number of males in the pond taking part in the

spawning chase it is possible for there to be thousands of live sperms from any of the males present milling around and so it is possible for one female to lay eggs and have several different males fertilise her eggs. This is the reason why it is very bad policy to allow goldfish of several varieties to interbreed in the pond.

If one has stocked the pond with a number of different varieties of goldfish, then if good types are needed it is imperative to catch a particular pair for breeding once chasing occurs. In such a case once the pair are placed in a separate container away from other males, the resultant eggs can only be fertilised by the male present.

If the various kinds of goldfish are left to spawn among themselves there are likely to be many cross-bred types which are not worth the food they eat. This is why there are so few really good specimens of fancy goldfish seen today. So few breeders specialise in one variety as this is the only way to be sure that cross-breeds never occur. I have specialised in red-scaled fantails for the past thirty-four years and have not had any other variety in pond or tanks. If one is not particular what type of fish breeds in the pond, then as long as the water is in a good state and there are two sexes present, many fish can be obtained as long as there are sufficient water plants to provide cover for the eggs and fry.

For the specialist breeder it is much more important to take other steps when considering breeding. One will no doubt have preferences as to which variety to breed from. Once the mind is made up one should try to get as good specimens for breeding from as possible. This will save a lot of time but is not always an easy task to get the right type of fish. It must not be thought that one must get show specimens with which to breed. It will be good enough for a start to get some fairly good specimens from a well established strain. If this strain has produced winners then it is almost certain that their progeny will also carry the genes of inheritance and so pass on some or all of the good points of the parents. I know how difficult it is to get almost perfect specimens of any of the fancy goldfish today, but one need not despair. If it is possible to get some of the youngsters from a good strain this is half the battle. However, this fancy goldfish breeding is not for the impatient aquarist. It can be a long term job, in my own case I was breeding my strain for nearly ten years before I was able to show, but some of this time was taken up during the war years when there were no shows. Otherwise it would not have taken me so long perhaps.

When sorting out a particular pair of fancy goldfish for breeding, one is not always able to put together two show specimens. However, it may be possible to find a pair where the necessary points are carried by the two fish although neither has all those points. One may have the caudal fin required and the other may have an exceptionally good dorsal. One may be very deep in the body but lack one or two other features, whilst the other fish may not be as deep in the body but have good alternative points which might be produced in the progeny. After the first year it will be much easier to pick out the necessary fish with all the points required. I stated before that this is not a short-term task as it may be at least a year before a particular fish shows to advantage those points particularly required.

As I stated before it is not absolutely necessary to keep the pond to one special variety when breeding as long as one is able to sort out the breeding pairs once spawning is seen to be taking place. The best method to adopt is to keep only one variety or if not, to have either a fish house or separate tanks in which the differing varieties can be kept away from any others. When a fish house is available it is easier to sort out your breeding pairs and to make sure that no strangers are likely to be able to cross with your special fish. Under such strict segregation it is possible to know which fish are the parents of the fry and so keep records as to their potential. In my case I have rarely resorted to this method as I have only the one old established strain and so I can have twenty or more breeders in my pond and let them all spawn together. I do not know which fish are the particular parents of the fry but I do know that no other kinds or varieties have been present to cross with the fantails.

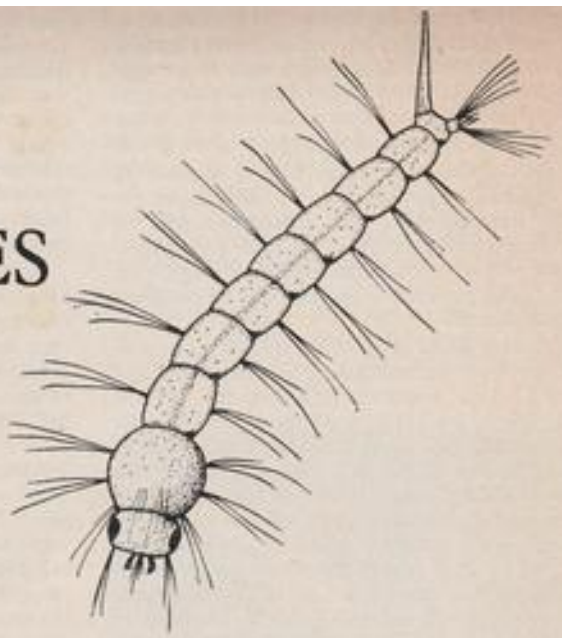
Although it would be possible to breed and rear some good specimens if I left the fish to themselves, I am afraid that very few really good fish would ever turn up. The main reason is that I do not have sufficient water plants all over the pond to give protection as I like the fish to spawn where I want them to, in the bunches provided. If any fry survived it is probable that they could be either single-tailed or at least of poor quality. The fact is that the best fantails would be unable to swim fast enough to escape the attentions of the parent fish. One point I must emphasise and that is, if several varieties are kept in the pond and a special pair are taken out when spawning to do so elsewhere, be very careful not to include any drop of water from the pond, as this could contain many sperms from unwanted males. The safest way would be to let the fish swim in clear water first.

ANSWER TO WHAT ARE WE?

PONDKEEPERS

Some Interesting Live Foods (1)

MOSQUITOES



Mosquito larval form

by S. M. H. Loquens

THE COMMON or *Culex* mosquito of the British Isles is just one of hundreds of species of mosquitoes known to scientists to date. It is estimated that in North America alone, there are some three hundred and fifty different kinds. It is well known that several of the tropical species are responsible for the spread of feverish diseases; the *Aedes* mosquito transmits yellow-fever and the *Anopheles* mosquito, malaria.

Both of these diseases were the scourge of tropical countries until the advent of modern medicine and methods of combatting the insects in their natural environment. It was wholly due to the mosquito's disease-bearing capabilities that the first attempts to construct the Panama canal were a failure. This gives some idea of how economically important it was to control this insect in the tropics. One may have no fear of contracting such diseases in Britain, however, as our native mosquito is incapable of transmitting such diseases, even if they were present.

The mosquito starts its life-cycle in almost any stretch of still water from a large pond to a water-butt or similar receptacle. The eggs are deposited, several hundred at a time, on the surface of the water. If one examines carefully a likely water surface, one may well see the greyish-coloured eggs floating together like a small raft. In this manner they drift about or adhere to aquatic vegetation for several days or a week or more, depending upon the temperature, before hatching. The *larva* that emerges is familiar to most people and widely known as a "wriggler," due to its method of movement, a sharp side to side kicking action. It spends the greatest part of its time hanging head down and motionless from the water surface. During this period of apparent inactivity, the *larva* is, in fact, feeding upon microscopic animals and plants which it wafts into its mouth by means of special appendages. Throughout this time the *larva* breathes air through a small tube at the tip of its tail, hence the characteristic head-down, tail-up attitude of the creature. After a period of a week or two, by which time the *larva* is about three-eighths of an inch long, it enters the third stage of its life cycle, the pupal stage.

The *pupa* is probably less familiar than the *larva*, a fact which could be attributed to the *pupa's* rapid swimming powers when disturbed. It is unlikely, therefore, that one will be able to observe it for long in its natural habitat before it shoots off into the depths. It is from the pupal stage that the mosquito actually emerges. During the development period the *pupa* does not feed, but rapid changes take place within, until it finally splits along its back and the mosquito draws

Continued on page 416

A DAY OUT FOR THE AQUARIST

by Sonia Roberts

It is never easy to persuade the keen aquarist to spend spare time away from his, or her, own fish collection. However, the proliferating "zoo parks" of the U.K., well aware of the booming interest in fish-keeping, are themselves serving this interest by setting up, on a nationwide basis, aquaria centres which cover the full span of the hobby as well as exhibiting exotic species which are as yet beyond the scope of the home aquarist.

Since many of these centres are part of a general zoo or even in some cases a general entertainment complex—such as at the Tower Blackpool, offering pleasure activities from pony-rides for the toddlers to ballroom dancing for teenagers—every member of the family can also enjoy a day out while the aquaria addicts have their fun!

The West Country is an especially rich hunting ground in this respect.

Aqualand, Beacon Quay, Torquay, has the largest collection of marine fish on exhibition in the U.K., and last year attracted some 100,000 visitors. It is a purpose-built aquarium sited on the ground floor level of the multi-storey car park thus eliminating the problem of where to put the vehicle while you study the fish.

A feature of the display is the generous size of the tanks which average 250 gallons and which include some 1,500 gallon tanks which, for marine specimens, are filled with natural sea water.

Largest specimen is Tiny, the three hundredweight loggerhead turtle who has frequently appeared on television, and this year a new penguin pool has been added.

Big strength of the aquarium, according to its curator, is the tropical-marine sector in which exhibits include trigger fish, scorpion fish, sea-horse and puffer fish. There is, however, also a section devoted to British marine life in which lobsters, eels, wrasse, pipe-fish and crabs can be viewed.

Aqualand is open from 10 a.m. to 10 p.m. from Easter to October, including Sundays and during the winter from 10 a.m. to dusk. Admission charges are 15p for adults and 7½p for children. There is a novelty shop but no catering facilities.

Sister establishment to Aqualand is *The Den, Teignmouth*. This is a two storey purpose-built aquarium on the town's central greensward area.

Prize exhibit here is the 9 in. long parrot fish of, as yet, a scientifically unidentified species which has been at the aquarium for two years. (Stress on tropical marine life and charges and entry hours as for Aqualand.)

Brixham Marine Aquarium provides a fascinating glimpse of the undersea life around this popular resort/fish centre. All the exhibits, which are returned to the sea in October when the aquarium closes for the season, are caught by local trawlermen within a forty mile radius of Brixham.

Among the more spectacular specimens are local sharks and octopuses but there are also lobsters, ray, skate, mullet, mackerel and dogfish in tanks decked out with local sea anemones and coral. The live fish are backed up by displays illustrating the work of the local trawling fleets.

Open from 10 a.m. to 10 p.m. daily.

Plymouth Aquarium, The Laboratory, Citadel Hill, is in fact, a by-product of the Marine Biological Association of the United Kingdom although today 99 per cent of its tanks are devoted to creating exhibits of public interest rather than for research work. It receives some 90,000 to 100,000 visitors annually and among the more exciting current marine exhibits are locally caught stingray and octopuses. It concentrates on marine life from the Western Channel.

Open from 10 a.m. to 8 p.m. in summer and 10 a.m. to 6 p.m. in winter. Admission 7½p, children half price, with a well illustrated guide book available at 10p.

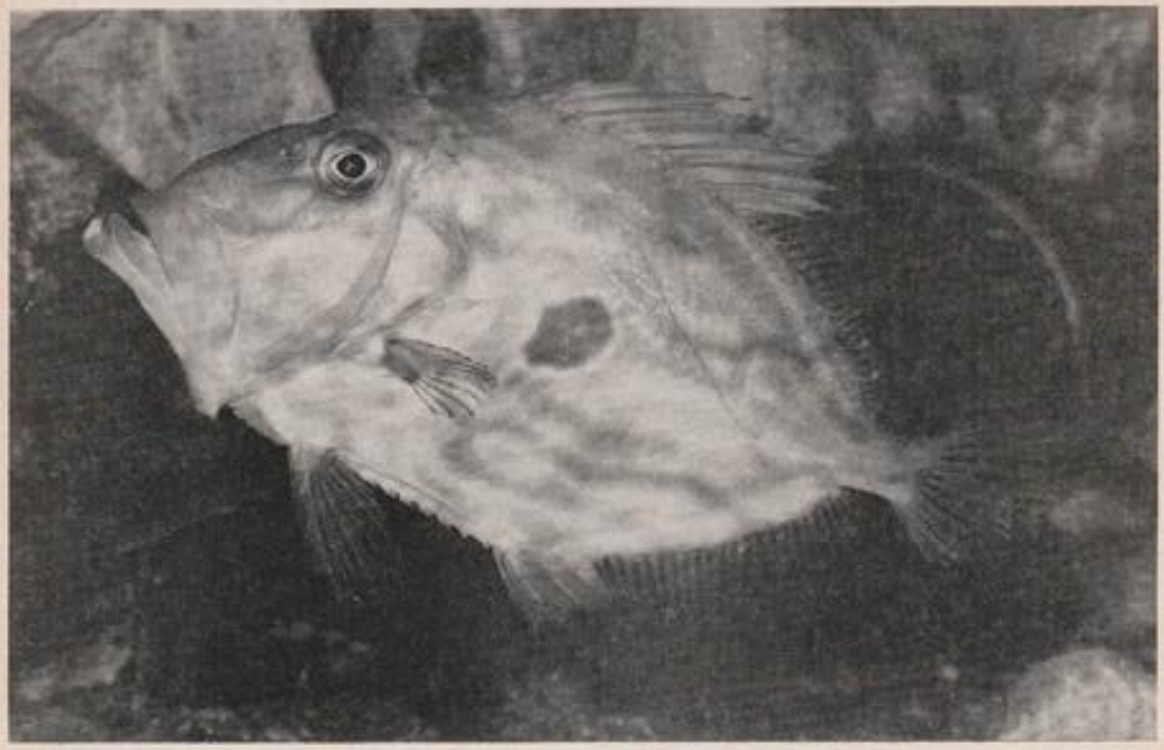
Paignton Zoo has a 39 tank aquarium showing tropical fresh-water fish and turtles including some large loggerheads and is part of the general tropical house complex for which a further 5p on the general admission charge of 30p for adults, half-price for children is demanded.

An attractive small scale aquarium can be viewed at The Harbour, Paignton and the charges for this *Seashore Aquarium*, which is open Whitsun to end September from 10 a.m. to 10 p.m., is 10p for adults, 5p for children.

Pensioners pay half-price admission, as do children to the *Weston-super-Mare Aquarium and Mini Zoo* by the Marine Lake. Price for adults is 10p and the aquarium is open from 10 a.m. to dusk throughout the summer.

Local and tropical fish are intermingled in the compact collection of the *Exmouth Aquarium* which backs up its tropical displays with an interesting exhibit of the shells of tropical marine life. Open from 10 a.m. daily, admission 10p.

fish living in natural seawater make up the *Tower Aquarium*, Blackpool. However, over the past three years this collection has been increased to include a display of both marine and freshwater fish from the tropics, now boasting some 320 species. They are especially proud of their 60 strong shoal of adult *metynnis* and have four pacus which, having been in the collection several years, have attained a length of 18 ins. Tank sizes range from 1,000 gallons up to 6,000 gallons in an attractive island site display.



John Dory photographed at Marine Biological Laboratories, Plymouth by D. Nicholson

Its the general policy of the zoo opened by Mr. C. H. Trevisick at Comyn Hill, *Ilfracombe*, in 1950, to improve the level of pet animal keeping in this country as well as to put exotic animals on public display. Therefore, not only are the mixed aquaria live stock here, very generously housed spacewise, but the staff are prepared to chat, especially with juvenile visitors about improving their own home-management techniques. Open around the year 10 a.m. to dusk. Party rates for groups of visitors available. Admission 15p for adults, children half-price.

The North West

Seventy tanks concentrating on British marine

Entry ticket is to Tower entertainment complex which offers all kinds of recreational facilities for all family members.

Marineland Oceanarium and Aquarium represents the first oceanarium to be built in Europe. As well as a wide selection of tropical freshwater and marine fish, the complex houses seals, turtles and alligators. There are performing dolphins and sea-lions and in season a number of tanks are devoted to the marine life of Morecambe Bay itself.

Admission 25p, children half-price and children under five free. Opening times 10 a.m. to 7.30 p.m. in summer, 10 a.m. to 4.30 p.m. winter.

Small collections of exotic fish can be seen at *Birdland Aquarium*, St. Anne's Pier, Lytham St.

Annes, admission 5p adults, children half-price, hours 10 a.m. to 8 p.m., and at the *Southport Aquarium*, Marine Parade, Southport. The latter is conveniently near the children's "Peter Pan's Playground."

There is also an aquarium collection viewable at *Southport Zoo* where the facilities for handicapped visitors are especially praiseworthy.

Yorkshire

Opening a brand new aquarium section in the late summer of 1971 is the *Flamingo Park Zoo*, Kirby Misperton. The Curator here tells us that recognising the phenomenal growth in the keeping of the more easy tropical freshwater and marine fish at home, the emphasis of their new 14 tank display will be on the exotic: "the kind of fish which will extend the already keen aquarist's knowledge and inspire him to carry his own collecting into new fields." Already on order for delivery when the complex (which will untimately be part of a tropical house set up containing birds, small mammals and equatorial plant life) is completed, are lung fish, climbing perch and electric cats. Concentration will be on freshwater types.

There is an excellent zoo for the aquarist with young children to visit as the grounds include a full-scale fair, a cowboy city with stage coach rides and picnic grounds. The car is well catered for, even to the extent of a filling station in the grounds. A house newspaper, Flamingo Park Gazette, priced at 2½p explains the siting of all fish and sea mammal exhibits and publications on "Dolphins and Whales in Captivity" which additionally cover the sister collections at Dudley Zoo and Cleethorpes Marineland are available.

Admission 30p, children half-price, hours 10 a.m. to dusk; full catering facilities.

Scarborough Zoo's Marineland section boasts a dolphin stadium seating 2,000 with seven "performances" a day. It has Europe's largest aquamarine pool where visitors can watch the fish being fed by deep sea divers.

Admission 25p, children half-price, hours dawn to dusk.

Midlands

Aquarists who call at *Natureland*, North Parade, The Promenade, Skegness, get a specially warm welcome from aquarium curator Mr. Dales and will be given a tour of the back of the tanks and a chance to discuss the theories on aquarium lighting for better plant growth which this establishment has this year published in the International Zoos Handbook. Mr. Dales explains that the colour, number and quality of the filters has been constantly alternated in a very successful attempt to simulate the natural lighting conditions of many species.

This aquarium is, moreover, especially proud of its filtration methods which cleanse 6½ thousand gallons of sea-water intake an hour so efficiently that within 24 hours it can be used for tropical marine life. It supplies the research laboratories of Sheffield University as well as a number of other aquaria in the area with pure sea water and as well as its tropical marine fish, has the largest outdoor marine tank in Europe containing 20 cod weighing from three to 12 lb which, like the turbot, crab, plaice, etc., are hand fed at 3 p.m. each day by the diving-suited Mr. Dales.

Growing fish to giant size is something of a speciality at Natureland, where one of the prize exhibits is the prize-winning lung fish, a first at the Belle Vue Aqua Society show three years ago and presented by Mr. Joe Dernie and now measuring four feet long. There is a 600 gallon tank holding 50 Mozambique mouth breeders which tip the scale at 1½ lb each and another of Cichlids of super size and tinfoil barbs 12 in. long. The secret—says Mr. Dales—is feeding. Most such stock have, as regular part of their diet, trout-pellets obtained from nearby hatcheries.

There is also a full collection of the more conventional tropical and local marine and freshwater fish, one of the biggest invertebrates collections in the British Isles. A speciality of Natureland has been the hand-rearing of orphan seal pups abandoned on local beaches.

It is open from 10 a.m. to 7.30 p.m. in the summer and from 10 a.m. to 4.30 p.m. in winter. Admission: Adults 40p, children half-price. Party rates available for visitor groups.

There is an aquarium with mixed contents well worth a visit which is part of the *Sherwood Zoo* complex at Hucknall, Notts. Site of the establishment is on 17 acres of open parkland and to amuse the children there are rides, pet corners and a troupe of performing parrots.

Within Easy Reach of London

"Don't be mislead by the apparently small size of the aquarium building, we have in fact quite a comprehensive freshwater collection" says the aquarium curator at *Chessington Zoo*, Surrey. There is an additional viewing charge of 2½p over the normal zoo admission here and a feature of the collection are the tanks of red ear terrapins of the type sold through aquarist stores as pets.

Over the last two or three years the long-established *Brighton*, Sussex aquarium, on the south coast, has been completely remodelled and restocked. One of its more unusual exhibits is an otter colony which has been added to the established colonies of turtles, seals and sealions which have for many years been favourites with the visitors. Fish tanks hold a com-

prehensive selection of both marine and freshwater types of all sizes.

Pride of the establishment, however, is the recently built Dolphinarium which seats over 1,000 in a carpeted interior overlooking the 200,000 gallon warm sea-water pool. A concourse below water level provides light refreshments and an underwater view of the dolphins.

Dolphin displays can, of course, also be seen at the new Oxford Street, London, W.1, Dolphinarium, at Battersea Fun Fair and at the Windsor Safari Park.

Brighton Aquarium, Marine Parade and Madeira Drive is open daily including Sundays from 9 a.m. to dusk, admission 30p, children half-price.

Eastern Counties

Interest in aquatics on the part of the general public has this year encouraged *Colchester Zoo* to add a splendid new aquarium set-up to their natural parkland zoo. The overall aim, says director Mr. Frank N. Farrar, is to show healthy animals in congenial surroundings and thereby to encourage them to breed and the same basic approach will be adopted throughout the new aquaria areas.

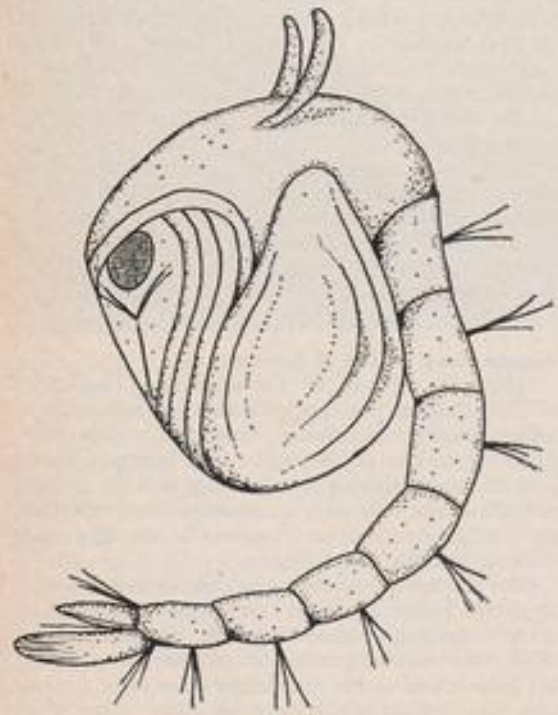
Of special interest to children is the *Harlow Town Park Pet's Corner*. Admission here is free and normal domestic livestock and farm animals roam freely among the visitors while compact but comprehensive aquarium and vivarium facilities act as an inspiration to juvenile aquarist activities.

Mosquitoes

continued from page 412

itself out like a butterfly or moth from a chrysalis. This final act then completes the life-cycle.

It is the larval and pupal stages that makes a good live food for most species of fish, but some care should be exercised. The adult *larva* should not be fed to fish that are too small, as there is a real danger that in their enthusiasm to devour them, they may well choke. It is quite safe, however, to feed screened *larvae*, i.e. small ones sifted from the larger, and it will be found that these make an excellent rearing food. The anabantids appear to have a particular relish for the larger *larvae* and will quickly come into breeding condition when given a liberal supply of them to feed upon. The *pupae*, because of their tougher outer coverings, may present difficulties to all but the larger fish species. The same precaution should therefore be carried out, and only those fish large enough to eat them should be allowed to tackle them.



Mosquito. Pupal stage

The months of June to September are the time to look out for the above stages. If one goes armed with a net and a few sweeps of a pond's border are made, there should be little difficulty in gathering some. In my experience though, small containers such as water-butts, metal-tanks and even old saucepans, seem to yield the best catches. This is probably simply due to the fact that in a larger area of water the *larvae* and *pupae* are more widely scattered, thus less are caught. When approaching likely places one should move with caution, as the slightest vibration or smallest shadow upon the surface will send them quickly to the bottom. If *larvae* are present in numbers, a few decisive strokes just beneath the surface is all that is required; a few moment's pause between successive strokes will allow those missed to return to the surface and so possibly be caught with the next sweep.

The great advantage with mosquito *larvae* as opposed to many live foods, is that they are not dependent upon dissolved oxygen in the water, but breathe atmospheric air (explained previously); thus considerable over-crowding of the catch can be achieved without the fear of mass mortality. Should too many be fed at once to fish, there will be no danger of oxygen shortage. A drawback that should be borne in mind, however, is that any uneaten *larvae* may well be hastened through their development in a heated aquarium and one could easily have a fine hatch of mosquitoes when next the aquarium cover is removed.

THE ANGLERFISH

by Huw Collingbourne

It is hardly surprising that no one had found it, lying there on the sand in the pool. It looked like nothing more than a barnacle-encrusted rock, half buried in the sand. Even when dead its camouflage was perfect.

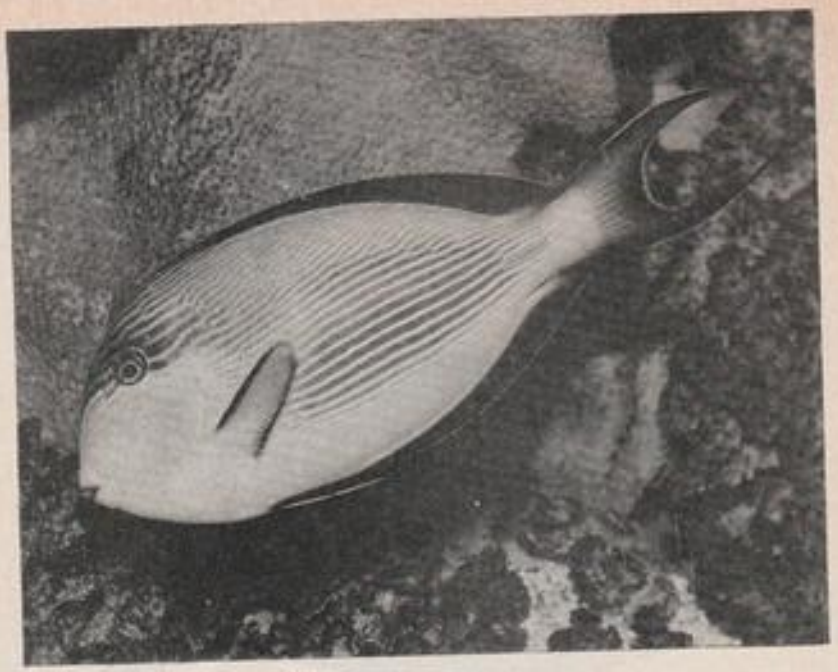
Upon closer examination the fish proved to have a tough dorsal skin, mostly grey but mottled with dark, nondescript colours approximating olives and browns. There were thorny projections on the back and several long, bony spines. The spine at the front of the head bore the vestiges of a fleshy appendage, identifying the creature as an anglerfish.

On the ocean bed the angler would hide amongst rocks or weeds where it would be perfectly camouflaged. Its first dorsal spine and vermiform lure would waggle about so that the lure would be the only conspicuous part and that would appear alive.

To a hungry fish, this would seem a lucky find indeed. But if any fish approached, the lure would be withdrawn at once and the angler's cavernous mouth would open, suddenly swirling in a current of water and bringing the fish with it, of course.

Escape is impossible: many inward-pointing, needle-sharp teeth prevent anything leaving the mouth. Also, on the floor of the mouth is a bony palate with sharp ridges projecting inwards.

To preserve the dead fish, I placed it in a small, empty sweet-jar, filled with a 5 per cent solution of formalin. After the body had been preserved for some time, I was interested to note several white worms present also and another worm protruding from the anus. It seems the fish had been infected by intestinal worms and that these had been flushed out when their host's body was pickled!



Acanthurus bleekeri

A YEAR IN THE LIFE OF "NAPOLEON"

by D. J. Watts

I WALKED INTO the pet shop, and he was the first thing that caught my eye—6 in. of majesty with a £12 price tag on him. Up to now my attempts at keeping marine fish had been rather dramatic. I had read the books, sought the little advice available but the fish still died. My longest success was a Sailfin Tang which lived for 4 months and was a reasonable size at 4 in.

At the time I had a 30-in. Juwel set-up with salt water and my 3 ft. SeAquariums Biosystem tank held my freshwater tropicals. I came to an arrangement with the shopkeeper and swapped my ozonizer (a piece of expensive equipment I consider unnecessary in a properly set-up tank) and on the 20th December, 1970, I became the proud owner of "Napoleon," alias *Acanthurus bleekeri*. He ate, as soon as I put him into his cramped quarters, prawn, spinach and dry food. All went down the same way no matter how often he was fed. Because of his size it was obvious that the tropical fish had to go into another tank. This operation was carried out in an evening, the 3 ft. tank being washed, filled with gravel and water and allowed to stand for two days. Napoleon, on the second night, was introduced to his new home which he took to immediately, exploring every nook and cranny and enjoying his new-found freedom. His mouth, however, was badly swollen where he had bumped into the glass but on treatment with acriflavine on dried brine shrimp this disappeared in a couple of weeks. His next companions were a doctor wrasse and a domino damsel. The wrasse developed velvet after the introduction of a *Xantharus* clown and both died leaving the damsel fish and Napoleon no worse for the experience. As Napoleon had nowhere to go at

night or when he was frightened, I made a retreat out of fibreglass which is his constant sleeping place and observation point. It was at about this time that he was put on a diet because he was getting very fat and he was fed only once a day instead of two or three times.

The next accident was when one of the tank cover-glasses slipped into the tank and, being frightened by the noise it made, he rushed about and cut his side very badly. I am sure that this affected me more than him as I had visions of fungus and other nasty diseases taking hold.

My next purchase was a parrot wrasse, and these three lived together until the damsel went into the wrasse's territory (a piece of coral where the wrasse slept) and there his life ended as he was trapped and torn to pieces. I arrived on the scene as the last blows were being delivered. The next two fishes were small butterflies, but they made the mistake of going into Napoleon's cave and were each dispatched within a day with nasty bruises on their bodies.

It was about this time that Napoleon started to give up eating prawns. His diet consisted of flaked food and spinach as well as *algae* off the tank sides. I read in Mr. Cox's book, *Tropical Marine Aquaria*, that these Surgeon fish mature at about 3 years. His strange and violent behaviour I put down to his coming of age. He has at least realised that he is a fully grown Surgeon fish and must stick to a vegetarian diet.

After a year he and a very quick wrasse are doing very well. He is now 8 in. long and still a bit podgy and can be easily hand-fed. His diet consists of Tetramin large flakes and brine shrimp (plus *algae*) and the wrasse has a supplement of prawn.

They live at a temperature of 80°F and the S.G. is 1·02. I change a third of the water every month and siphon the bottom gravel but so good is the under-gravel filter that hardly anything is picked up.

AN EXPERIENCE WITH FIGHTING FISH

by M. Murfitt (age 15 yrs.)

After a year of fishkeeping I was confident that I could look after fish other than guppies and swords. On 2/1/71 I proudly walked out of our local pet shop, clutching a brown paper bag with 42½p worth of fish in it. When I arrived home I floated the plastic bag containing my latest possession into a two foot aquarium. Half an hour later my male Siamese fighter swam proudly out of the bag. This truly magnificent fish immediately swam into the plants and inhabited the flower pot, making my larger sucking loach homeless. After a couple of hours it had lost all of its shyness and swam happily round the tank with the others, occasionally showing off to the old guppy which got in its way.

Two weeks later I paid another visit to the pet shop and bought another fighter—this time a female. She was mainly blue, whereas the male was nearly all red. Two days later I put the female into the tank with the male from my community tank. Immediately he went wild and was displaying all his colours vividly. I switched off the light and left them to it after seeing the female hide in the plants.

When I came downstairs the following morning the male had built a small nest. After coming back from school I found he had destroyed the original nest and built a much larger one. He kept adding bubbles when he was not busy chasing the female, who had become battered by now. The next evening I came home to see my two fish breeding. I think that this will always stay in my mind after watching them in their embrace. I was quite amused when sometimes the male would be bent double and the female swam out of his grasp! The eggs, squeezed out by the male, fell towards the bottom of the tank where the male would dash after them, hold them in his mouth and put them in the nest. Whilst this was going on the female lay almost senseless at the top of the tank. During breeding the nest somewhat decreased in size. After about two hours the male began to attack the female, so I removed her.

The male was a good father, and he repaired the nest as well as enlarging it. Three days later the fry hatched. All that could be seen were little tails hanging out of the nest. As they fell out of the nest he dashed to them and blew them back into the nest. Alas, a few days later my luck ran out. After following the instructions on the Liquifry tube, I put two drops of the liquid food into the tank. Suddenly, all of the bubbles burst and despite the male's frantic efforts to re-build the nest, all of the babies drowned. I think that the Liquifry must have affected the surface tensions of the water. I think that there could be a moral here—Let nature take its course.

THE AQUARIST

FISHKEEPING EXHIBITION

ONCE AGAIN the start of another show year is with us, bringing with it the hope that 1972 will continue the progress which has been evident over the past year with regard to the exhibits at Open Shows. Many open shows will be held throughout the year but without doubt one of the most interesting will be the **Aquarist and Pondkeeper Fishkeeping Exhibition** held in conjunction with the Federation of British Aquatic Societies at the Alexandra Palace on the 15th-16th July. All the family can enjoy the show, and there is ample parkland around the Exhibition Hall where the youngsters can play in safety. It is also ideal for picnicking. Should meals be required arrangements can be made through the *Aquarist & Pondkeeper* (write in for details). The cafeteria service is available throughout the show, and the bars are open during licensing hours.

With ample free car parking, the Alexandra Palace Exhibition hall is situated in North London within a short car ride of the North Circular ring road. This directly connects with the South Circular Road, the A1, A4, A10, A11, A13 and A40, and the M1 and M4.

The show this year is for two days only. The main reason behind this move is to encourage the aquarist to exhibit, it having been felt in the past that the three-day show was unpopular with the majority of exhibitors.

The tropical fish classes will be for both single fish and pairs, the coldwater classes being for single fish only.

A young enthusiast admires one of the attractive displays at last year's exhibition

Alexandra Palace and Park, photo: Aerofilm Ltd.

The Furnished Aquaria, Aquascope and Plant classes will again be to the fore, and from the evidence of previous years they should be well worth a visit to the Exhibition.

Judges for the Show will be invited from the Federation of British Aquatic Societies, Fancy Guppy Association, the Federation of Northern Aquarium Societies, Goldfish Society of Great Britain and the Midland Association of Aquarists Societies.

Specialist societies such as the British Killifish Association, Fancy Guppy Association, Federation of Guppy Breeders' Societies, Goldfish Society of Great Britain, and the British Marine Study Society will be invited to exhibit displays.

These will be in addition to the various displays offered by the traders.

Willing enthusiasts will be required to assist in the breakdown of the show on Sunday evening. A number of volunteers have already offered their services, and if you are interested please contact the Show Secretary, Mr. Gerry Greenhalf, 39 Garth Close, Morden, Surrey, who will be pleased to hear from you.

In conclusion, I should like to wish all the exhibitors, stewards, show organisers, etc., a happy and successful show.

C. A. T. BROWN,
Chairman,
F.B.A.S. Show Committee.

Trade enquiries to - **J. E. Young**
The Aquarist and Pondkeeper, The Butts
Brentford, Middx. TW8 8BN Tel: 01-568 8441

News from AQUARISTS' SOCIETIES

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

MEMBERS elected at the recent annual general meeting of the **Huddersfield T.F.S.** were as follow: Chairman: N. Gibson; Vice-Chairman: B. Foden; Secretary: G. F. Walker, 7, Ayton Road, Longwood. Treasurer: J. Burton; Show Secretary: M. Jessop, 8, Ryedale, Kirkheaton; News Editor: Mrs. J. Jubb; Catering Officer: Mrs. N. Gibson; Committee: J. Broadhead, J. Bradbury, P. Danielson; Junior Representative: Master A. Moss.

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WITH the annual general meeting early in January, the **Morecambe Bay A.S.** ended its first very successful year, with forty paid-up members, many of these joining in the latter part of the year. The first "Fish of the Year Show," was held in December, results as follow: "Fish of the Year"—President's Cup: 1, D. Clark; 2, B. Booker; 3, Mrs. E. Clark. Furnished Home Aquarium: 1, F. Howarth; 2, A. Bower; 3, D. Clark. Junior Fish of the Year: 1, Master A. Bower; 2 and 3, Miss J. Clark. Egglayers: A. Bower. Livebearers: H. Hindle, and of course, numerous section winners. Officers for this year are: President: A. Thompson; Chairman: D. Clark; Secretary: B. Brunskill; Treasurer: Mrs. E. J. Brunskill; Committee: Messrs. J. Pearson, H. Hindle, K. Drye; Mesdames V. Shaw, B. Bower, E. Clark; Show Secretary: Mrs. B. Booker. During the coming year it is hoped to hold the first Open Show.

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THE **TONBRIDGE & D.A.S.** have had a varied programme recently. Visitors have included the proprietors of The Hive Aquarium, who took part in a session of questions and answers and judged the three Cichlid classes, R. A. Dodkins, B.L.A.P.A., who gave an enlightening talk on goldfish, and brought A. Harris, of B.L.A.P.A., who judged the Rasboras.

Members have also been entertained by a slide show on Barbs, hired from Hendon A.S., and a talk on Dwarf Cichlids by the treasurer, R. Baker. Other judges during this period include T. Amos, R. Baker, J. Bellingham, R. Taylor and I. Mathieson. Winners of the classes were as follow: Class D: Mrs. I. Bellingham; Class Da: W. Rood; Class Db: J. Bellingham; Class Ea: J. Bellingham; Class N (O-T): I. Mathieson; Class B: Mrs. M. Davenport; Class X (O-T): K. Shoebridge.

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THE **British Aquarist Study Society (B.A.S.S.)** is holding its next meeting on 25th March. This will be held as usual at the Fellows' Lecture Hall, London Zoo, Regents Park, at 2.00 p.m.

At this meeting there will be a welcome return of Mr. Eli Hemmingway. He will talk on keeping and breeding some of the difficult Characins. He is one of the most successful breeders of this type of fish in this country. A warm welcome is extended to anyone who wishes to come along. Tickets are 45p each and this cost includes light refreshments. After tea the meeting continues with a talk by a second speaker. Tickets are available from Mr. F. Keens, "Highcliffe," Old Hill, Woking, Surrey. Following meetings for the year will be held on 13th May and 7th October.

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FOR this year the officers of the **Bristol A.S.** will be as follow: President: H. Jago; Vice-President: J. Phillips; Treasurer: W. Ham; Registrar: Miss H. Morgan; Committee: Mrs. A. Wicks, Messrs. E. Bowden, J. Lewis, C. Marsh, G. Stone; Secretary: Mr. H. C. B. Thomas, 2, Grove Park, Redland, Bristol, BS6 6PP. Meetings second Monday in the month at 7.45 p.m., Bishopston Parish Hall.

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OFFICERS elected at the annual general meeting of the **Coventry Pool & Aquarium Society** were as follow: President: B. Bromfield; Chairman: E. Sheehy; Secretary: C. J. Grant, 26, Cecily Road, Coventry; Show Secretary: B. Hirst; Treasurer: F. Shipston; News Letter Editor: R. Patterson. Meetings are held second Tuesday of every month at the Foleshill Community Centre, Foleshill Road, Coventry.

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A Slide Show of various types of fish, labyrinth fish and Honey Gouramis, formed the entertainment at the January meeting of the **Wellingborough and District A.S.** and 65 people attended. A. Robinson (Northampton) gave the slide show which was both humorous and educational. D. Lawrence talked about labyrinths and A. Lawrence spoke about Honey Gouramis. The future of W.A.D.A.S. in the East Midlands Affiliated Aquarist Societies organisation was also discussed. In view of the anticipated expansion of E.M.A.A.S., including the possibility of the Mid-Herts. group joining, it was decided to remain affiliated. Table Show results: Rasboras, Danios and White C.M. Minnows: 1, R. Bentley; 2, P. Crossfield; 3, E. Rosenter. Sword Tails: 1, J. Baker; 2, A. Tupman; 3, L. Barker.

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RESULTS at the annual championship table show of the **Peterlee & District A.S.** held in December were: Best Livebearer: R. Nesworthy. Best Egglayer: A. Bebbington.

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THE annual general meeting of the **Weymouth & District A.S.** was well attended and the following officers were elected: Chairman: K. Forrester; Vice-Chairman: P. Carter; Secretary: A. C. Worth, 67, Queens Avenue, Dorchester, Dorset; Treasurer: Mrs. D. A. Fitzgerald; Publicity and Press Officer: C. Field; Show Manager: E. Jones, 11, Ludlow Road, Weymouth, Dorset; Fund Raising: R. Peel and A. Billington; Committee Members: Mrs. P. Carter, T. Hatton, E. Walbridge.

Visitors and new members will be very welcome at the monthly meetings at 7.30 p.m. on the first Tuesday of the month at the Small Sidney Hall, Weymouth, Dorset.

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AT the January meeting of the South Western Group of the **British Marine A.A.**, the Chairman of the Judges and Standards Committee B.M.A.A., Mr. J. Haynes explained to members present the pointing system as devised by the standards' committee and all agreed that this pointing system would certainly be fair for Marine Aquarist benching fish. One point raised which all agreed needed a lot of considering was that of ownership of exhibit. A majority felt that it was a pity that some societies had dropped the thirty day ownership rule. The South Western Group would like to see this rule re-introduced.

A programme for this year was discussed. Mr. Derek Drake asked if any members had experienced bullying among their marine fish. Mr. Doubleday said that he had found that where Dascyllus and Chaetodons kept as pairs, one would be so dominated that it wasted away and eventually died. D. Parbain said he had also observed this with Native Marines. The answer it seems is one or at least three.

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THE following officers were elected at the annual general meeting of the **Enfield and District A.S.** Chairman: J. Coleman; Vice-Chairman: B. Huckle; Secretary: Mrs. H. M. Barker; Treasurer: L. Barker; Show Secretary: D. Watts; Public Relations Officer: R. Browett; Committee members: B. Dewsall, Mrs. Howell, L. Howell. A full programme of meetings has been arranged and in January a table show for barbs was held. The Society meets on the third Thursday each month at 8 p.m. at St. Andrew's Church Hall, Enfield, and any interested aquarist is cordially invited to attend.

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Bristol Tropical Fish Club are pleased to confirm that their three-day Open Show will take place on 22nd, 23rd and 24th June. Details may be obtained from the Show Secretary, Bob Lawrence, 26, Stonebridge Park, Easville, Bristol, BS5 6RR.

Last year's club table show awards were recently made to the following winners. Open: G. Furber; Novice: R. Lawrence. The first meeting this year included a slide show on Home Aquaria presented by the club's programme officer, M. Ellick, which featured slides he had taken of his fish and aquaria both past and present. The wide variety of species kept, including marines, provided an interesting evening.

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DISEASES and other problems formed the basis of a general discussion at the first meeting of **Hemel Hempstead A.S.** after the Christmas recess. The year's programme was also under review now that it has been worked out. For the next meeting it is hoped to hear a talk given by Mr. Jeffs.

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THE **Whitley Bay A.S.** recently held a Presentation of Shields. A. Lisle, of Blyth, won the Bi-Annual Shield, R. Massingham, of Whitley Bay won the ten point competition Shield and Mr. Mallion received a miniature shield for a previous competition. At their last meeting the chairman was pleased to welcome the wives of some of the members who came along. The members enjoyed a most interesting slide show on fish photography, the commentary being provided by D. Glynn, of Tynemouth.

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AS the lecturer was not available at the **Lincoln and District A.S.** monthly meeting, a panel of three members was organised and Mr. H. Kuhn, Mr. T. Dobbs (President) and Mr. F. Dobbs were asked questions by the members present. This proved to be quite an enjoyable night's entertainment. Anyone coming to the Liberal Club, St. Swithin's Square, Lincoln after 7.30 will be made welcome. Meetings are held on the third Monday of the month.

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THE **Portsmouth A.S.** celebrated its 21st anniversary in January with a dinner and dance at their club rooms in the Portsmouth Community Centre and more than sixty members and their guests enjoyed an excellent evening. The Chairman, M. J. Stillwell introduced Mr. R. D. Esson, Chairman of the Federation of British Aquatic Societies who was the guest of honour, and thanked the Federation for what it had done for the aquatic

hobby particularly in the last few years. In reply Mr. Esson said that it was an achievement to reach the age of majority as many aquatic societies founder long before this period.

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OFFICERS appointed for the **Hull A.S.** this year are as follow: President: T. Collingwood; Vice-President: G. Rooms; Secretary: S. Turner, 13, Hartland Close, Bransholme, Hull. Tel: 822220; Assistant Secretary: Mrs. B. Batch; Show Secretary: G. Andrews, 4, Church Mount, Sproatley, Hull. Tel: 811334. Assistant Show Secretary: B. Stabler. Chairman: T. Douglas; Vice-Chairman: T. Hastings; Librarian: P. Burrows; Treasurer: G. Batch.

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MEMBERS of the **Hounslow and District A.S.** were disappointed to hear that the speaker booked for the December meeting, Mr. Adrian Blake was indisposed and unable to come along.

Three of the members volunteered to give a short talk on different subjects to fill in the gap. Mrs. R. Brewer spoke on Penguin fish, their breeding requirements and habits and the feeding and rearing of the young fish. This was followed by a talk on Gouramis given by H. Pratt, with special reference to the amusing antics of a large Osbronomous owned by him. This led to a discussion on various gouramis. Lastly H. Parish gave a most interesting demonstration on building all glass aquarias, showing the members the correct way to go about it. This aroused much interest amongst the members.

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SOME very interesting films were shown by Mr. Medved of the Keighley Cine Circle at the January meeting of the **Keighley A.S.** The table show winners were: Table Class: 1 and 2, Mr. Ibbotson; 3, Mr. Hart. Any Other Variety: 1 and 2, Mrs. Beckett; 3, Mrs. Heap. Novice A.O.V.: 1, Mr. Hart; 2, Mr. Ibbotson; 3, Mr. Sagar. Junior A.O.V.: 1, Master P. Beckett; 2 and 3, Master P. Cutting.

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THE annual general meeting of the **Harrogate & District A.S.** was well attended. The main item of the evening, being the electing of a new committee, which will be as follows: Chairman: Mr. Pendleton; Secretary: D. Taylor; Treasurer: D. Foster; Editor: M. Levett; Committee: M. Cook, D. Pegnall, J. O'Brien, P. Stothard.

It was proposed at the meeting, to have a furnished aquarium show, the idea being that two judges go round to members homes, and judge their community tanks. Another proposal made was that a second monthly meeting be held but not as the present meetings, but just as a get together, and talk about anything concerning fish.

Mrs. Shirley Briggs, one of the best known women members, will be leaving the Society in the near future, much to the Society's regret. As a farewell present also, combined as a "thank you" present, Dave Taylor presented Mrs. Briggs with a book. The "Unitex" Challenge Shield was awarded to Mrs. W. Atkinson, for the person with the highest number of points in the Society's table shows in 1971, second was Mr. M. Levett, with Dave Taylor third.

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AT the January Meeting of the **Privateers A.S.** (Shipley), a very interesting talk on making all glass tanks, and breeding Killiefish, was given by Mr. J. Moslet of Oakworth, the secretary of the Keighley A.S. A large number of members attended and the very informative talk was much appreciated.

Rugby Fishkeepers Club, formerly Rugby and District A.S., had a large attendance at their annual general meeting. Reports given by the Chairman and Hon. Secretary related the year's success and growth, the Club membership more than doubled in the twelve months. 1971 saw the revival of the newsletter proving very successful for contact with members and publicising the club.

The election of officers was as follow: Chairman: B. V. Archer; Hon. Secretary: J. H. Petch; Treasurer: D. Bristow; Minute Secretary: Miss W. Archer; Show Secretaries: S. Rawson and B. Malin; Newletter Editor: P. Hutton-Attenborough; Librarian: P. Hutton-Attenborough; Auditors: B. Deacon and A. Pirie; Committee: B. Archer, J. H. Petch, D. Bristow, Miss W. Archer, S. Rawson, B. Malin, P. Hutton-Attenborough, J. Smith, M. Tomlin.

Visitors are particularly welcome to any meeting, held on the first Monday every month, at 8 p.m. in St. Maries Parish Room, Oak Street, Rugby. Suggestions for programmes welcomed.

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THE following appointments were made at the annual general meeting of the **Harwich & District A.S.** Chairman: A. Clayton; Secretary: M. Bird, 161, Franks Road, Dovercourt, Nr. Harwich, Essex; Treasurer: M. Manton; Committee: P. Baker, Mrs. Clayton, Master Alan Green (Jnr. member).

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THE **Loyne Aquarists** held their Fish of the Year Show early in January. The judges were Mr. T. Hallett (Accrington) and Mr. B. Simmons (Blackpool) and the trophies were presented by David James (President) and Glynn D. Smith (Hon. Vice-President) both of Marineland, Morecambe. The winner of the Fish of the Year was W. Norris (Chairman) who was presented with the Standen Trophy for his Oscar. Runner-up was B. Booker with an Annostomus and third was J. Snowden with a Guppy. Other results were: P. Charlton who won the Standen Trophy for the furnished home aquarium. The fish points for the year were—Seniors: 1, I. Peck; 2, P. Batchelor and 3, J. Peck. Juniors: 1, Graham Holden, who won the Eric Smart Trophy, second being Stephen Price and third Keith Hinchey. While the judging was in progress the members and guests were entertained by a slide lecture on the Inside Story of Fish by the President, D. James.

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AN interesting and instructive evening was spent by the members at the December meeting of the **Leicester A.S.,** the main item being a Quiz organised and presented by Dave Keely, one of the members. The Table Show for the evening was A.O.V., the winners being first R. Lewis with a Flying Fox, second C. Cartwright, also with a Flying Fox, third M. Witham with a Red Tailed Black Shark and fourth S. Searle with a Black Shark.

In December the annual dinner was held. There were 84 members and friends present, and Mrs. Ellis, wife of Councillor Ellis, presented the trophies which had been won during the year.

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MEMBERS of **Yeovil and District A.S.** enjoyed a Tape and Slide Show on the Egg Development of Killiefish, staged by club members R. Cox and D. Calway. This was followed by a Table Show for A.V. Livebearer which was judged by M. Hulbert and placed as follow: 1, Miss K. Rendell; 2 and 4, A. Rendell, 3, R. Cox.

The monthly draw organised by R. Cox assisted by Clive Forward was won by T. Perry, M. Fischer and D. Phinn. The Society wishes to take this opportunity to thank the F.B.A.S. for its Xmas and New Year greetings.

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THE officers elected at the annual general meeting of the **Glossop A.S.** were as follows: Chairman: Mr. A. Newall; Secretary: Mrs. M. Brearley, 9, Waterside, Hadfield, Hyde, Cheshire. Show Secretary: Mr. R. Tomkinson; Treasurer: Mrs. S. Hampson.

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OVER one hundred members and friends of **Brighton and Southern A.S.** attended the annual dinner and dance in January. The annual prize giving for 1971 Table Shows, was also included in the proceedings and these were presented by F.B.A.S. Judge Mr. P. Ginger. Characins: V. Aldis. Labyrinths: H. Maddison. A.O.V. Catfish: P. Tee. Corydoras: V. Aldis. Cichlids Do.: M. Whittington. A.O.V. Cichlids: Mrs. M. Tee. Guppies O. and P.: D. Soper. Egglaying Toothcarps: Mrs. J. Dawes. Plants: R. Smithers. A.O.S. Livebearer: A. Mepham. A.O.S. Egglayer: Mrs. S. Taylor. Ras. Danio. W.C.M.M.: H. Maddison. Barbs: K. Williams. Egglayer (Sexed Pair): M. Whittington. Livebearer (Sexed Pair): Mrs. J. Dawes. Egglayer (Breeders): R. Smithers. Livebearers (Breeders): C. Corbin.

Fish of the Year: K. Williams. Best Aggregate Cup: M. Whittington; 2, R. Smithers; 3, H. Maddison; 4, F. Aylward. Ladies' Trophy, Best Egglayer: Mrs. J. Dawes. Novice Trophy (Member not taking a First card before): R. Smithers. Novice Trophy (First Year of Showing): A. Mepham.

Table Show result held at the Club Meeting. Characins: 1 and 3, H. Maddison; 2, K. Williams; 4, V. Aldis. Labyrinths: 1, M. Whittington; 2, V. Aldis; 3, B. Rice; 4, H. Maddison.

Anybody wishing to join the Society please contact M. Whittington, 408 Portland Road, Hove, Sussex. Phone: BTN 415660.

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THE annual show results of the **Hartlepool A.S.** were as follow: Best Fish in Show: L. Drummond (Washington). Guppies: 1, G. Gillespie; 2, Mr. and Mrs. Stevens; 3, Mr. and Mrs. Kilvington. Platies: 1, G. Abbotson; 2, J. Foster; 3, J. A. Whiteley. Mollies: 1, Mr. and Mrs. Walker (S.T.A.S.); 2 and 3, T. Unsworth (S.T.A.S.). Swordtails: 1, P. Sowerby; 2, S. A. Thomas; 3, Mr. and Mrs. Cohen. Characins (Small): 1, I. R. Heptinstall; 2, I. Gardner; 3, J. Robertson. Characins (Large): 1 and 2, F. Sonley; 3, L. Drummond. Cichlids (Small): 1, Mr. and Mrs. Cohen; 2 and 3, I. R. Heptinstall. Cichlids (Large): 1, C. Aenright; 2, J. A. Whiteley; 3, S. A. Thomas.Angels: 1, C. Aenright; 2, D. McGuire; 3, J. A. Whiteley. Barbs (Small): 1, Mr. and Mrs. Attwell; 2, Mr. and Mrs. Cohen; 3, R. Davison. Barbs (Large): 1, Mr. and Mrs. Cohen; 2, L. Drummond; 3, I. R. Heptinstall. Rasbora E.L.T.C. Danio and Minnow: 1, Mr. Catmull; 2, I. R. Heptinstall; 3, Mr. and Mrs. Attwell. Anabantids: 1, Mr. and Mrs. Cohen; 2, G. Stevenson; 3, Mr. Nesworthy. Fighters: 1, Mr. and Mrs. Low; 2 and 3, Mr. and Mrs. Cohen. Catfish: 1, J. Robertson; 2, Mr. and Mrs. Gates; 3, S. Stevenson. A.O.V.: 1, L. Drummond; 2, G. Thickbroom; 3, P. Newton. Sharks and Labeo: 1, Mr. and Mrs. Cohen; 2, Mr. Hellens; 3, K. Adams. Coldwater: 1, I. R. Heptinstall; 2, Mr. and Mrs. Toyne; 3, C. W. Gregory. Furnished Jars: 1, J. Robertson; 2, J. Robertson, Jnr.; 3, Mr. Kilvington. Plants: 1 and 3, Mr. Milne; 2, J. Ryan. Breeders (Egglayers): 1, Mr. and Mrs. Cohen; 2, I. R. Heptinstall; 3, F. Sonley. Breeders (Livebearers): 1, I. R. Heptinstall; 2, Mr. and Mrs. Cohen; 3, Mr. Connelly. Breeders Pairs (Egglayers): 1 and 3, Mr. and Mrs. Cohen (Castleford); 2, Mrs. M. Clowes. Breeders Pairs (Livebearers): 1, Mr. and Mrs. Cohen (Castleford); 2, Mr. and Mrs. Walker (S.T.A.S.); 3, Mr. Nesworthy (P.A.S.).

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THE **Bethnal Green A.S.** held their annual dinner and dance recently which proved to be extremely successful. Mr. Frank Tomkins of the F.V.A.S. presented the Club trophies which were competed for throughout the past year, results being as follow: Wilkins Memorial Bowl: Mrs. S. Hedges. First Year Members' Cup: Mrs. S. Hedges. Points Cup: 1, P. Arnould; 2, B. Martin; 3, D. Adams. Fish of the Year: 1, J. Connolly ;2, P. Arnould; 3, Mrs. S. Hedges; 4, D. Bundy. Fish of the Month: 1, P. Arnould; 2, B. Martin; 3, J. Connolly.

IN January an Inter-Club Show and Quiz was held at Dunmow between **Dunmow** and **Newport.** The results are as follows: Newport won the Quiz by one point. The "fish show" was won by Dunmow. Best fish of the show was a Stolickas Barb won by Mr. R. Thoday, of Dunmow. The judging was by Mr. Yates, of Cambridge. There was an attendance of forty-five people.

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AT the January meeting of the **East Kilbride Aquarium Club,** Mr. Norman Grant, the Club President, judged the table show of Guppies, and a novelty class which consisted of any container set out in a humourous or attractive design. Mr. Grant then gave an excellent slide show of Freshwater fish which was enjoyed by all. The results of the table show were as follow: Seniors: Guppies (male): 1, A. Lyons; 2, J. Finlay. Guppies (female): 1 and 4, J. Finlay; 2, A. Lyons; 3, J. Ewing. Novelty: 1, J. Thomson; 2, J. Finlay; 3, A. Hynds. Juniors: Guppies (male): 1, T. South; 2, D. Watson; 3, K. McKenzie; 4, N. Murtagh. Guppies (female): 1, G. Grahame; 2, M. Weir; 3, D. Watson. Novelty: 1, K. McKenzie; 2, S. Thomson; 3, E. Thomson; 4, N. Murtagh.

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OFFICIALS for 1972 of the **Hartlepool A.S.** are as follow: Secretary: L. Willis, 88, Haswel Avenue, Hartlepool, Co. Durham; Show Secretary: J. Watson, 42, Sydenham Road, Hartlepool. Chairman: J. Chamberlain; Treasurer: J. Williamson; Press Secretary: R. Foreman. Meetings are now held on the first Monday of each month. In the Engineers' Club, Raby Road, Hartlepool. New members always welcome.

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AT the annual general meeting of the **Chelmsford A.S.** the following officers were elected, Chairman: K. Turner; Secretary: T. Heath, 36, Home Mead, Galleywood, Chelmsford, Essex; Treasurer: A. Beavis; Show Secretary: R. Horne; Committee members: J. Newiss, S. Palmer, J. Henderson, C. French and R. Horne. The club was congratulated by the chairman on a highly successful year.

Results of the table show were as follows. Mollies: 1 and 2, J. Newiss; 3, K. Machin. Barbs: 1 and 2, K. Turner; 3, T. Heath.

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ARRANGEMENTS are now being completed by the **Tottenham and District A.S.** for the Silver Jubilee Open Show being held on the 2-3 April, but this did not detract from the most interesting and enjoyable time given by K. Massey when discussing "The Fish House." It was so enjoyable he has been asked to give the Society another evening to pursue the subject. H. Vinall gave us his view as a retailer of Aquatic Requirements of the customer and in particular the difference between the aquarist and customer who wanted to buy fish. New Members would be welcomed and anyone interested should contact the secretary Mr. T. Tiffany, 38 Talbot Road, Tottenham, London, N.17. Telephone: 801 1351.

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THE guest speaker at the January meeting of the **East Kilbride Aquarium Club** was Steve Naismith. He gave a very interesting talk on the keeping, breeding and rearing, of the Corydoras Catfish. Despite the cold evening there was a large turn out of members. Mr. Naismith also judged the Table Show consisting of Corydoras Catfish and A.O.V. Catfish. The results were as follow: Seniors: Corydoras: 1, J. Queen; 2, A. Lyons; 3, J. Finlay; 4, J. Ewing. A.O.V. Catfish: 1, I. McClaren; 2, A. Lyons; 3, J. Finlay; 4, A. Hynds. Junior: Corydoras: 1 and 2, K. McKenzie; 3, R. Urquart; 4, D. Watson. A.O.V. Catfish: 1, J. McLaughlan.

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TABLE results at the January meeting of the **Suffolk Aquarists and Pondkeepers Association** were as follow:—Tropical: Breeding Pairs: 1 and 4, G. Richardson; 2, N. Crown; 3, M. Trott. Coldwater: 1, John Chapman (Junior). Due to increased membership, the Society has changed to larger premises at the YMCA Hall, Norwich Road, Ipswich. The meetings are held on the second Monday of every month. The attendance now stands at an average of sixty persons per meeting.

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AT the annual general meeting of the **Brighton & Southern A.S.** held in January the following Committee was elected: Chairman: A. Dawes; Secretary: C. P. Corbin, 80 Marlborough Drive, Burgess Hill, Sussex, RH15 0EU; Treasurer: C. W. Martin; Committee: Messrs. R. Pheasant, R. Browning, M. Whittinghton, and F. Aylward.

In future, most meetings will be held on the first Wednesday in each month, at the new venue, namely the V & T Club, Franklin Road, Portslade, Sussex.

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NEW officers in **Stretford and District A.S.** are—Chairman: W. Catterall, 268 Rye Bank Road, Stretford, Manchester; Secretary: Mrs. C. Stear, 63 Derbyshire Lane, Stretford, Manchester. Tel: 061-865 3423.

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THE election of officers at the annual general meeting of the **Witham and District A.S.** resulted as follow: President: D. Malton; Chairman: E. Gee; Vice-Chairman: R. Baldwin; Secretary: M. Jones; Treasurer: Miss N. Brown; Five Committee members: T. Avery, G. Bell, L. Cole, R. Chamberlain (Show Sec.), Mr. Aitkinson. The Table Show was for Characins, the result being: 1, M. Jones; 2 and 3, L. Cole.

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AT their February meeting members and visitors of **Kettering A.S.** heard an interesting and informative talk by Alan Robinson of Northampton on the Breeding and Rearing of Barbs, especially Tiger Barbs, covering such aspects as selection of fish, sexing, water conditioning, setting up of breeding tanks, conditioning of fish, and the feeding and rearing of fry. He also judged the Table Show for Cichlids. In the Large Cichlid Class Mrs. K. Dainty was awarded first place and J. Dainty took second and third places. Mr. Dainty was also awarded first place in the Dwarf Cichlid Class with K. Taylor taking second and third places.

Members and visitors were told of a visit to London Zoo arranged for April to which the response was so good that almost half of the coach seats were reserved almost immediately, they also heard that the Furnished Home Aquarium Competition will be judged by A. Robinson, and that Wellingborough A.S., who usually turn out in force on such occasions, have accepted an invitation to visit Kettering for the March meeting for an Inter-Society Table Show.

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OFFICERS and committee of the **Keighley A.S.** were elected to stand for the next sixteen months as follow:—President and Editor: H. Smith; Vice-President: G. Crossley; Secretary, Treasurer, and Publicity Officer: J. Mosley; Assistant Treasurer and Raffle Steward: Mrs. O. Taylor; Librarian: Mr. Hart; Trophy Steward: Mr. Bottomley; Junior Representative: A. Illingworth; Committee: Mr. Asquith, Mrs. Gear, Mrs. Heap, Mr. Heap, Mr. Taylor.

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THE West Midland Group of the **British Marine Aquarists' Association** holds its meetings at the Midlands Vaults, High Bullen, Wednesbury, West Bromwich, Staffs., on the first Tuesday of each month. A slide show was shown by member O. Carrol on some of the best marine fish members had seen for a long time. In the near future it is hoped to do some work together with a diving club, which will be very good for the B.M.A.A. The night ended with a general discussion.

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A slide show and tape by C. A. T. Brown entitled "Judging Fish" were the main items at the January Meeting of **Stevenage A.S.**

The February Meeting was well attended and a very interesting talk on filtration was given by G. S. Adams of Hermitage Tropicals, Hitchin. Next Meeting is 1st March at 8 p.m., Bedwell Community Centre.

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THE February meeting of the **Weymouth and District A.S.** attracted a record attendance. Highlights of the evening were a demonstration and talk by T. Hatton entitled "The Furnished Aquarium" and K. Forrester's "Twenty Questions" with Peggy Carter, A. Billington, E. Jones and A. Worth on the panel.

Table Show winners were:—Male Guppies: 1, A. Worth; 2, E. Jones; 3, M. Medway. Female Guppies: 1, 2 and 3, E. Jones; 4, A. Billington. The next meeting will be on 7th March at the Small Sidney Hall, Weymouth, when the Table Show will be Corydoras and A.O.V. Catfish. The main event of the evening will be "Champion Catfish", a talk by P. Carter. Visitors and anybody interested will be most welcome.

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THE annual general meeting of the South London Section of the **Fancy Guppy Association** was held in January, when the following officers were elected. Chairman: H. Vinall; Vice-Chairman: T. Hibbert; Secretary: H. Brock; Treasurer: Gladys Brock; Show Secretary: J. Regan; Assistant Show Secretary: P. Knevett; Entertainments Officer: Linda Knevett; Show Stewards: K. Heybourne and K. Haynes.

A very full programme is being arranged for the year and many of the newer members are coming along well with their Guppy breeding. J. Regan has attained his Silver Badge and evidence of the improved standard is shown by the fact that three Silver awards were made at the Table Show. New members and visitors are very welcome on the fourth Sunday of every month at the Bede Centre, Abbeyfield Road, S.E.16 at 3 p.m. There is a Table Show at every meeting where some really good Guppies may be seen and always an interesting and informative programme. The Secretary is always pleased to answer letters or telephone enquiries, H. C. Brock, 20, Barnsford Crescent, West End, Woking, Surrey. Telephone: Chobham 8761.

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OWING to difficulty in finding suitable accommodation to hold their monthly meetings, **Castleford and District A.S.** have had to move to Pontefract. Meetings are now held on the first Wednesday in every month at 7.45 p.m. at Carleton Community Centre, Pontefract. At the January meeting Mr. Sutton judged the table show and gave an interesting talk on tropical fish. Results of table show were: 1, 3 and Best in Show: S. Clowes; A.V. Junior, Angels: 1, Mrs. Asquith. Cichlids: 1, K. Frew; 2, S. and A. Thomas; 3, E. and S. Clowes. Highest pointed members for 1971 were: 1, S. and A. Thomas; 2, E. and S. Clowes; 3, A. Barrett; Joint 4, Mrs. Asquith and Denise Stevens.

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THE January Table Show of **Carshalton and District A.S.** was very well attended and an interesting talk was given by Mr. F. Tomkins. The class was A.V. Tropical Fish. Placings were 1, J. Begbie; 2, T. Barr; 3, K. Thomas; 4, B. McConnell. The Society would like to thank all who attended their annual dance on the 28th January and helped to make it a great success.

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TWO meetings were held in January for members of **Grimsby and Cleethorpes A.S.** At the first Mr. R. Goodhall spoke on rocks that are safe for the aquarium and Mr. A. Robinson at the second, gave a talk with slide show on class winners of open shows. Table Show results: Breeders (Egglayers): 1, L. Ilvens; 2, R. Jennings; 3, M. Robinson. Angels: 1 and 3, R. Jennings; 2, K. Svendsen. Platies (Female): 1 and 3, D. Kirk; 2, B. Pulford. Coldwater: 1, D. Kirk; 2, A. Metcalfe; 3, J. Dawson. Rasboras, Danios, Minnows: 1, B. Pulford; 2 and 3, K. Svendsen.

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OFFICIALS elected at the annual general meeting of **Torbay A.S.** were as follow:

Chairman: M. Matthews; Vice-Chairman: F. Ossman; Hon. Secretary: P. J. Denning, 297, Teignmouth Road, St. Marychurch, Torquay TQ1 4RT; Show Secretary: J. Begg, 26, Jordan Street, Buckfastleigh, Devon. Hon. Treasurer: J. Sparks; Magazine Editor: R. Barnes; Librarian: Mrs. M. Matthews; Social Secretary: Mrs. O. Brown; Auditors: J. Davis and G. Tolcher; Committee: Mr. M. Poole and Mr. T. Bowhay, Master C. Tolcher (Junior member).

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THERE was a record attendance of ninety members at the January meeting of the **Hastings and St. Leonards A.S.** The table show for the night was Corydoras, the results being 1 and 3, G. Funnell; 2, Mrs. M. Greig.

There was a talk on Glazing an Aquarium at the end of January meeting. The speaker, Mr. D. Wilson, an experienced glazier, showed many of the tricks of the trade in handling and cutting glass. As this is the one thing which puts members off glazing their own Aquarium this was particularly well received. The table show was for own breeding (Livebearers): 1 and 3, Mrs. A. Adams; 2, C. Meaching.

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THE following officials were elected at the annual general meeting of the **Boreham Wood and District A.S.** Chairman: R. Rummey; Vice-Chairman: J. Burrows; Treasurer: R. Wooleridge; Secretary: J. Crucefix, 64, Milton Drive, Boreham Wood, Herts., Telephone: 01-953 8875. Show Secretary: D. Hounsell, 33, Kenilworth Drive, Boreham Woods, Herts. Telephone: 01-953 3540. P.R.O.: H. Crucefix. The club meets every second and fourth Monday at the Community Centre, Allum Lane, Boreham Wood. Everyone is welcome.

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EARLY in January **Plymouth A.S.** enjoyed talks given by Mr. R. Lucas on breeding Emperor Tetras and Mr. J. Rundle on breeding Siamese fishes. Attendance for the meeting was about forty-five members. Table Show results were as follow: Guppies: Novice: 1 and 2, Mrs. C. Hosking; 3, Mr. Kendall. Advanced: 1, 2 and 3, Mr. Chubb. Premier: 1, 2 and 3, Mr. Reed. Best in Show: Mr. Reed.

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AT the January annual general meeting of the **Trowbridge & District A. and P.S.**, the following officers were elected for this year. Chairman: D. Hayter; Secretary: Mrs. S. Scudamore, 45, Trowbridge Road, Bradford on Avon, Wiltshire; Treasurer: Mrs. P. Hunday; Show Secretary and Press Officer: W. Burton; Entertainments Secretary: Mrs. J. Burton; Monthly Table Show Organiser: M. Samuels; Librarian: M. Patrick. Ex-officio members with specific brief: Entertainments Officer: C. Cuss; Newsletter Editor: S. Huntley.

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DURING the past year a few people who are interested in the Fancy Guppy have opened a section of the well established Fancy Guppy Association in the Burgess Hill area. Meetings are held on the third Sunday in every month at 3.0 p.m. at the Park Centre, Park Road, Burgess Hill, or phone Ron Elmes any evening at Peacehaven 2534.

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Ealing & District A.S. held their annual Closed Show at the end of January to bring the 1971/2 season to a close. This was the chance for the more shy members to try their fish on the showbench away from the glare and occasion of an Open Show, and they made the most of their chances.

Over 100 fish were benched, including Aquascapes, Furnished Aquaria and a special class for Rift Valley Cichlids and despite the very cold day and the threat of snow all went well. The show was judged by Harry Towell and Brian Baker of the F.B.A.S., and the Best Fish in Show award went to Jim Healey's Monodactylus argus. The show included the final rounds of competitions held throughout the year.

At the annual general meeting held in January the following officers were elected. Chairman: P. G. Marsh; Vice-Chairman: J. Healey; Secretary: J. Batts, 99a, Valetta Road, Acton, London, W.3; Treasurer: R. Scrace; Show Secretary: T. Cruickshank; Social Secretary: J. Irvine; General Members: R. Searls, T. Tagg.

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WITH the opening of another competitive season, the **Federation of British Aquatic Societies** has prepared to meet the demands of the Societies and the various departments within the Federation are 'standing by'.

From the Judges and Standards Committee comes the announcement that there is a further sub-division in the Cichlid Classes. Several Societies have staged special and separate classes for 'Lake Malawi' or 'Rift Valley Cichlids' and in response to this a sub-division Dc—Haplochromis derivatives, has been set up. The genera pertaining to this Class will be: Cyathochromis, Cynotilapia, Genyochromis, Haplochromis, Hemihaplochromis, Hemitilapia, Julidochromis, Labeotropheus, Labidochromis, Lamprologus, Melanochromis, Petrotilapia, Pseudotropheus, Tropheus.

Ties, Badges, Showjars, Class and Award stickers, together with publications complete the picture of services available to Societies and this years' Free Offer is of 100 Exhibit labels available upon application together with Open Show Schedule to the Publications Secretary. The Federation's new Show Stand will visit your Show upon request for the sale of Ties, Badges, Publications, etc., details from the General Secretary, K. Pye, 35, Steeles Road, London, N.W.3, for the booking of the Stand.

The 1972 season will open with a Dinner and Dance on the 8th April and for details of all Federation news, views and happenings there is always the quarterly Bulletin. Last year's affiliations total stood at around 125.

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THE **Sherwood A.S.** thank all exhibitors who attended their Second Open Show and made it so successful with 1,075 entries. There were 46 societies and 105 independent entries. Results: Guppies: 1, K. L. Brown (Midland Tropical Aquarists); 2, K. Ankers (North Staffs.) 3, Simpson and Horsefield (Barnsley). Platies: 1, C. Marsden (Workshop); 2, M. Clarke (North Staffs.); 3, M. Allsop (Alfreton). Mollies: 1, Mr. and Mrs. J. Brearley (Belle Vue); 2, J. S. Hall, (Aireborough); 3, K. Thomas, (Lucas). Swordtails: 1, (Section Winner): B. Stabler (Hull); 2, Mr. and Mrs. Cohen (Castleford); 3, B. Townley (Belle Vue). Characins (Small): 1, L and R. Heptinstall (Castleford); 2, M. Allsop (Alfreton); 3, J. Brook (Huddersfield). Large Characins: 1, G. Thickbroom (Section Winner) (Castleford); 2, B. Booker (Loyne); 3, J. Lee (Ind.). Cichlids (Dwarf): 1 and 3, L and R. Heptinstall (Castleford); 2, H. Kuhn (Lincoln). Large Cichlids: 1, G. C. Haynes (Section Winner) (Smethwick); 2, V. Knowles (North Staffs.); 3, D. Robertson (Derby Regent). Angels: 1, J. A. Whiteley (Aireborough); 2, K. Sax (Derby Regent); 3, D. Jackson (Dukeries). Barbs (Small): 1 and 2, J. Dernie (Dukeries); 3, B. Smith (Lucas). Large Barbs: 1, Mr. and Mrs. Williams (Section Winner) (North Staffs); 2 and 3, A. Gregory (Hadon). Killifish: 1, I. Stevenson (York); 2, Simpson and Horsefield (Barnsley); 3, D. Jackson (Dukeries). Minnows and Danios: 1, G. Malpass (Section Winner) (Swillington); 2, K. L. Brown (Midland Tropical Aquarist); 3, D. Norman (Nottingham). Sharks and Foxes: 1, A. Ankers (Section Winner) (North Staffs); 2, B. Bing (South Leeds); 3, Mr. and Mrs. Stanton (Sheffield). Rasboras: 1, P. Carlisle (Nottingham); 2, J. Lee (Ind.); 3, K. L. Brown (Midland Tropical Aquarists). Anabantids—Fighters: 1, J. Rhodes (Section Winner) (Scunthorpe); 2, S. and A. Thomas (Castleford); 3, J. Turnbull (Edinburgh). A.O.V. Anabantids: 1, Mr. and Mrs. Williams (North Staffs.); 2, J. Summers (Doncaster); 3, J. Dernie (Dukeries). Breeders (Egglayers): 1, J. Lee (Section Winner) (Ind.); 2, Mr. and Mrs. Wells (Doncaster); 3, J. E. Shore (Oxsan). Breeders (Livebearers): 1, Mr. and Mrs. Cohen (Castleford); 2, L and R. Heptinstall (Castleford); 3, K. Pratt (Bedworth). Pairs (Egglayers): 1, J. Dernie (Section Winner) (Dukeries) 2, J. A. Whiteley (Aireborough); 3, Mr. and Mrs. Pogson (Scunthorpe). Pairs (Livebearers): 1, K. L. Brown (Mid. Trop. Aquarists); 2, L and R. Heptinstall (Castleford); 3, Mr. and Mrs. Williams (North Staffs.). Catfish and Loach: A.O.V. Catfish: 1, A. Gregory (Section Winner) (Hadon); 2, I. Stevenson (York); 3, Attwood and Williams (Rubery Select). Corydoras Catfish: 1, M. Buxton (Sheffield); 2, N. Jackson (Worksop); 3, B. Townley (Belle Vue) Loaches: 1 and 2, A. Gregory (Hadon); 3, Mr. and Mrs. Stanton (Sheffield). A.O.V. Tropical: 1, Whitfield and Massy (Section Winner) (Rubery Select); 2, Watson and Waltham (Spalding); 3, C. Marsden (Worksop). Juniors: Junior Egglayers: 1, R. Ankers (Section Winner) (North Staffs.); 2, G. Thickbroom (Castleford); 3, T. Shepard (Doncaster). Junior Livebearers: 1, D. Milburn (Ind.); 2, Miss Susan Clarke (Barnsley); 3, C. and G. Broadhead (Huddersfield). Ladies Class: 1, Mrs. Cohen (Castleford); 2, Mrs. Huberd (Derby); 3, Mrs. Harlow (Derby Regent). Marine: 1, W. Goodwin (Section Winner and Best in Show) (North Staffs.); 2, W. D. Taylor (Ind.); 3, Mr. Bockley (Alfreton). A.V. Female Fish: 1, G. Thickbroom (Castleford); 2, Miss B. Kaye (Top Ten); 3, M. Clarke (North Staffs.). Coldwater: Goldfish and Comets: 1, Mr. and Mrs. Toyne (Section Winner) (Sheffield); 2, P. Bramley (Ind.); 3, C. Asquith (Castleford). Fancy Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). A.O.V. Coldwater: 1, M. Clarke (North Staffs.); 2, J. S. Hall (Aireborough); 3, Mr. Pollard (Huddersfield). Shubunkins: 1, A. Kaye (Top Ten); 2 and 3, J.S. Hall (Aireborough). Person with most awards: J. S. Hall (Aireborough). Person with the most entries: J. S. Hall (Aireborough). Society with most points: 1, Castleford; 2, North Staffs; 3, Aireborough; 4, Hadon.

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RECENTLY members of the **York and District A.S.** heard an interesting talk and slide show by Mr. R. Hampson on Furnished Aquaria in America. The Table Show results were as follow:—Guppies: 1, L. Hunter; 2 and 3, A. S. Allison; 4, L. Kirlew. Mollies: 1, L. Hunter; 2, A. S. Allison. Swordtails: 1, T. Richardson; 2, P. and L. Rees; 3, A. Skinner. Junior Class: 1 and 3, R. Swallow; 2, J. Kirlew; 4, P. Hough.

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THE committee for this year of the **Bradford and District A.S.** is as follow:—President: G. Fairclough; Vice-President: J. P. Chorley; Secretary (acting): J. P. Chorley, 31 Spencer Avenue, Great Horton, Bradford 7, Yorks. Telephone: Bradford 75760; Treasurer: E. J. Brown; Social and Publicity Officer: B. Northrop; Committee: M. Solly, A. Herberts, A. Sharp, T. Barnes.

NEW VENUES

Meetings of the **Haden A.S.** will now take place the first Tuesday in every month in the Carlton Room at Halesowen Public Library. Starting time 7.30 p.m. Club secretary: Mr. R. Smith, 28 Thornhill Road, Halesowen, Worcs.

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Suffolk Aquarists and Pondkeepers Association: Y.M.C.A. Hall, Norwich Road, Ipswich.

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Riverside A.S.: First and third Mondays in each month, at St. Saviours Church Hall, Cobbold Road, Off Askew Road, London, W.12.

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Kidderminster and District A.S., now meet at the Alma, Habberley Street, Kidderminster (opposite Mill Street, Hospital). Meetings are held every other Tuesday at 8 p.m. New members always welcome.

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The Half Moon A.S., Billingham, will be meeting alternate Mondays in the Salutation Hotel, Billingham.

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Peterborough Fishkeepers Association: As from Tuesday, 1st February, the monthly meetings (first Tuesday in the month) will be held at the "Old Scarlett", Sycamore Avenue, Dogsthorpe, Peterborough.

NEW SOCIETIES

A new society has been formed in the Goole area, and will be known as the **Goole and District A.S.** Officials are:—Chairman: J. Scarll; Secretary: G. Fotheringham, 41 Gordon Street, Goole; Show Secretary: P. Shipley, 76 Jefferson Street, Goole; Treasurer: Mrs. J. Lockwood. Meetings will be held fortnightly at Goole High School, commencing at 7.30 p.m. The inaugural meeting was held on Monday, 17th January, when 16 founder members were present. Plans for the club programme were made and the club's officials were elected. New members will always be made welcome.

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Ringwood and District A.S. Meetings held the first Thursday in month at 7.45 p.m. in the Ebenezer Hall, Ringwood. Officials are: Hon. Chairman: J. Lane; Secretary: T. Langdown, 7 Kings Arms Lane, Ringwood, Hants.

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The **Leytonstone and Stratford District A.S.** now has a membership of about thirty. The meetings are held once a week on Thursday at Baptist Church, Harrow Road, Leytonstone. The Chairman, R. J. Lugmayer welcomes all new members who wish to join. The society is affiliated to North East London area group.

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A new Aquarist Society has been formed in York, called **Eboracum Aquarists.** Meetings are held on the first Tuesday of every month at the Woolpack Hotel, Peasholme Green, York. Correspondence from other Societies welcome. Details of membership, etc. from The Secretary, Mrs. L. Stephenson, 45 Hamilton Drive Es t, Holly Bank, York.

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Officers elected at the newly formed **Newbury and District A.S.** were:—Chairman: G. Swait; Vice-Chairman: R. Lloyds; Secretary: Miss M. Bance; Treasurer: N. Richards; Other Committee members: R. Goss, K. Lloyds, J. Cook, D. Brookes and T. Hale. Meetings will be held on the third Monday of each month at the Municipal Buildings, Market Place, Newbury. All new members and visitors will find a warm welcome, and the Society would like to hear from other Societies as they would be glad of any advice on any matter relating to the running of the club.

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Welwyn Garden City A.S. meet at "The Scout Hut", Great Dell, Welwyn Garden City, on the first and third Monday of the month at 8 p.m. The committee members are as follow: Chairman: M. Graham; Secretary: Mrs. B. Nash, 33 Capenfield, Welwyn Garden City, Herts. Telephone: Welwyn Garden 29088; Treasurer: L. Bracy; Show Secretary: B. Hancock, 43 Drakes Drive, Stevenage, Herts. The Society has a growing membership and new members will be welcomed, please write or telephone the Secretary for further details.

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SECRETARY CHANGES

Torbay A.S.: F. J. Denning, 297 Teignmouth Road, St. Marychurch, Torquay TQ1 4RT.

Leamington and District A.S.: Mrs. P. M. Stoodley, "Neaum Crag," 7 St. Margarets Road, Leamington Spa, Warwickshire.

Half Moon A.S.: R. Greenley, 6 Robson Street, Haverton Hill, Billingham, Teesside. Tel.: 561095.

Chesterfield and District A.S.: B. Kerry, 153 Boythorpe Road, Chesterfield.

Hyde A.S.: Mr. and Mrs. D. Buxton, 17 Longrigg Avenue, Stalybridge, Cheshire.

Stretford and District A.S.: Mrs. C. Stear, 63 Derbyshire Lane, Stretford, Manchester. 061-865 3423.

Whitley Bay A.S.: M. Rodgers, 34 Steward Avenue, Seaton Delaval, Northumberland.

Harrogate and District A.S.: D. Taylor, 1 Ashgate Rise, Raw Gap, Knaresborough, Yorkshire, HG5 0HZ.

Riverside A.S.: P. Maslin, 26 Northaw House, Sutton Estate, Sutton Way, North Kensington, W10 5EP. Tel.: 969 1036.

Norwich and District A.S.: R. G. Green, 1 Kempe Close, Norwich, Norfolk, NOR 11R.

Kidderminster and District A.S.: G. J. Wilcox, 3 Heathfield Crescent, Kidderminster, Worcs., DY11 6PF.

Peterlee and District A.S.: A. D. Bebbington, 40 Marlborough Road, Hastings Hill, Sunderland.

Nomad Aquarist Club: Mrs. Elizabeth Blackwell, c/o 9 Bourne Lane, Caterham, Surrey, CR3 5SP.

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SECRETARY CHANGE OF ADDRESS

Newport (Essex) and District A.S.: Mrs. M. S. Kimbley, 85 Wanstead Park Road, Ilford, Essex.

AQUARIST CALENDAR

1972

5th March: Keighley A.S. Annual Open Show, Victoria Hall, Keighley.

12th March: Belle Vue A.S. Open Show, Openshaw Lads Club, Crossley House, Ashton Old Road, Openshaw, Manchester. Details from Mr. R. Davies, 38 Wetherby Street, Higher Openshaw, Manchester, 11.

19th March: Top Ten A.S. Open Show to be held at Huddersfield Town Hall.

26th March: Worksop A. and Z.S. Annual Open Show at the same venue as last year North Notts. College of Further Education, Blyth Road, Worksop. Schedules available shortly from the Show Secretary, Mr. P. G. Sibson, 17 Clinton St., Worksop.

26th March: East Dulwich A.S. Third Open Show. To be held in the Territorial Army Hall at Highwood Barracks, Lordship Lane, S.E.22. Show secretary, K. G. Quennell, 41a Carden Road, Peckham, S.E.15 3UR.

26th March: Nelson A.S. Annual Open Show will be held at "The Civic Centre," Stanley Street, Nelson. Details from R. McKenna, show secretary, 52 Bath Street, Nelson, Lancs. BB9 0NP.

2nd April: Hyde A.S. Third Open Show, Hyde Lads Club, Beeley Street, Hyde. Schedules: W. D. Haddow, 18 Laburnum Avenue, Hyde, Cheshire.

2rd and 3rd April: Tottenham and District A.S. Silver Jubilee Open Show at the Haringey Sports Council, Drill Hall, High Road, Tottenham, N.17 (opposite Spurs ground). Schedules from: Show secretary, K. Massey, 72 Westward Road, Chingford, E.4. Tel: 527-7851.

3rd April: Southampton A.S. Open Show, The Avenue Hall, The Avenue (opposite Cemetery Road), Southampton. Show secretary, M. Mansbridge, 36 Wakefield Road, Southampton.

3rd April: Tottenham and District A.S., Silver Jubilee Open Show at the Haringey Sports Council, Drill Hall, High Road, Tottenham, N.17 (opposite the Spurs Ground). Schedules from Show Secretary: K. Massey, 72 Westward Road, South Chingford, E.4. Tel.: 527-7851.

9th April: East Kilbride Aquarium Club Open Show, Civic Centre, East Kilbride. Receiving of entries commences at 10 a.m. Show secretary: J. Finlay, 6 Loch Goil, East Kilbride.

9th April: Houghton and District A.S. One-day Open Show, Philadelphia Welfare Hall, Herrington Burn. Schedules available in February from C. A. Enright, 27 Longarce, Houghton-le-Spring, Co. Durham.

9th April: Sheffield and District A.S. Open Show at the Granville College, Granville Road (near the Railway Station), Sheffield, 1. Schedules from: F. Toyne, Show Secretary, 10 Barber Crescent, Sheffield. Tel: 62382.

9th April: Stockton-on-Tees A.S. Seventh Annual Show at St. Peters and Paul's School (off Durham Road, A177), Stockton-on-Tees. Schedules available from Show Secretary, M. Merrifield, 15 York Crescent, Billingham, Teesside.

15th April: Bath A.S. Open Show, St. Peters Hall, Dorset Street, Bath. Schedules available from show secretary, S. Daniels, 21 Haycombe Drive, Whiteway, Bath.

16th April: Scunthorpe Museum Society Aquarist Group Second Open Show at the Drill Hall, Cottage Beck Road, Scunthorpe.

16th April: Warrington A.S. Open Show, Bell Hall, Oxford Lane, Warrington.

16th April: Medway A.S. Open Show. St. John Fisher School, Ordnance Street, Chatham, Kent (1 min. Chatham Station). Schedules J. Marshall, 97 Dargets Road, Chatham, Kent. Phone Medway 63712.

22nd April: Thurrock A.S. Open Show. New venue, Park School, Bridge Road, Grays, Essex. Details from show secretary, D. C. M. Durrant, 172 Trinity Road. Southend-on-Sea.

22nd April: Independent A.S. Open Show will be held in the Public Hall, Islington Town Hall, Upper Street, Islington, N.1. Schedules from the show secretary, B. Islip, 85a Colneyhatch Lane, London, N.10.

23rd April: York and District A.S. Details later.

23rd April: Freelance A.S. Open Show at St. Stephens Hall, Surrey Square, S.E.17. Details from J. Stamp, 72 Redman House, Lant Street, SE1 1QW (407 4066).

29th April: Uxbridge and District A.S. New venue, The G.P.O. Motor Repair Depot, Willow Tree Lane, Yeading Lane, Yeading, Hayes, Middlesex. Full particulars available from the show secretary, N. V. Lee, 46 Airedale Road, Ealing, London, W5 4SD.

30th April: Nuneaton A.S. Open Show, Friary Youth Centre, Abbey Street, Nuneaton. Details from show secretary, Mrs. P. Deakin, 1 Greenhill Drive, Barwell, Leicester. Tel: Earl Shilton 42788.

30th April Coventry Pool and Aquarium Society Open Show, Foleshill Community Centre, Foleshill Road (A444), Coventry. Show schedules from B. Hirst, Flat 5, Quinton Parade, Coventry, CV3 5HW. Large s.a.e. please.

30th April: Stretford and District A.S. Annual Open Show at the A.E.I. Club, Moss Road, Stretford. Details from A. Stear, 63 Derbyshire Lane, Stretford, Manchester. 061-865 3423.

30th April: Ilfracombe and District A.S. First Open Show will be staged under F.B.A.S. rules, etc., at the Holiday Inn on the sea front, Ilfracombe.

7th May: Roehampton A.S. First Open Show to be held at Alton Parish Hall, Alton Estate, Roehampton, S.W.15. Details from Show secretary: D. Lambourne, 7 Wheeler Court, Plough Road, S.W.11 2AX. Tel: 01-223 2630.

7th May: Dukeries A.S. Open Show at the Winifred Portland Technical Grammar School, Sparken Hill, Worksop. Show secretary, M. Woodley, 20 Park Street, Worksop.

7th May: Ashton-under-Lyne and District A.S. Annual Open Show. The venue, Dukinfield Town Hall, King Street, Dukinfield.

13th May: Southend, Leigh and District A.S. Open Show, St. Clements Hall, Leigh-on-Sea (not 20th May as previously stated). Show secretary, R. D. Orford, 8 Blenheim Chase, Leigh-on-Sea, Essex.

13th May: Trowbridge and District A. & P.S. seventh Annual Open Show will be held at the Nelson Haden Girls School, Trowbridge. Schedules available from show secretary, W. S. Burton, 17 Polebarn Road, Trowbridge, Wilts.

14th May: Hull A.S. Fifth Open Show.

14th May: Derby Regent A.S. Open Show. Sherwood Foresters Recreation Centre (Normanton Barracks), Osmaston Park Road (A5111), Derby (follow R.A.C. signs). Show Sec.: R. G. Harlow, 180 Mansfield Road, Derby. Tel: 44322.

14th May: Gloucester A.S. first Open Show at the Education and Leisure Centre, Painswick Road, Gloucester. Schedules from secretary, B. Walker, 41 Hailes Road, Coney Hill, Gloucester.

14th May: Merseyside A.S. Open Show, The British Legion Club Ltd., Holyoake Hall, 2 Cramond Avenue, Liverpool, L18 1EG.

21st May: Northwich & District A.S. Fourth A.M.D.A.S. Open Show. Venue to be announced later. Details from show secretary, Mrs. D. J. Thorne, 28 Whitegate Road, Winsford, Cheshire. Tel: Winsford 3380.

21st May: Croydon A.S. Open Show at Sir Phillips Games Recreation Centre, Moorland Avenue, Croydon, Surrey. Details from show secretary, A. J. H. Smith, 3, Hindhead Way, Wallington, Surrey.

21st May: Yeovil & D.A.S. Open Show, The School Hall, Church Street, Martock, Nr. Yeovil. Show Manager: Mr. D. Phinn, 5 Hill Terrace, Bowerhinton, Martock, Somerset.

27th and 28th May: Fancy Guppy Association International Guppy Show at the Glebe Farm Community Centre, Glebe Farm Road, Stechford, Birmingham, 33. Open to viewing Sunday, 28th, 3 to 5 p.m. Show secretary: D. R. Beacham, 17, Pedmore Close, Woodrow South, Redditch, Birmingham.

28th May: Corby and District A.S. Open Show. Sunday, Corby Civic Centre. Further details will be available shortly.

28th May: Boston A.S. Open Show, Blackfriars Theatre, Spayne Lane, Boston, Lincs. Details from S. Noble, 175 Wood Farm Road, Boston, Lincs.

4th June: Half Moon A.S. First Open Show to be held in Haverton Hill Pensioners Club, Haverton Hill, Billingham, Teesside. Schedules available, show secretary, Gordon Brown, 47 Gilside Road, Billingham, Teesside.

4th June: Lincoln & District A.S. fourth annual tropical fish show. Further details and programmes can be obtained from the show secretary, Mr. H. Kuhn, 44 Scorer Street, Lincoln.

4th June: Accrington and District A.S. Annual Open Show at St. John's Ambulance Drill Hall, Bull Bridge, Accrington. Show schedule and information from show secretary, S. Walsh, 133 Lammack Road, Blackburn.

4th June: Loughborough and District A.S. Annual Open Show will be held at the Loughborough Sports Centre, Granby Street, Loughborough. Show secretary, T. H. Parry, 447 New Ashy Road, Loughborough, Leics.

4th June: South Derbyshire and District A.S. Annual members show—details later.

4th June: Bournemouth A.S. Annual Open Show to be held at Kinson Community Centre, Pelhams Park, Kinson, Bournemouth. Entry forms and schedules available after 1st May from Show Secretary, J. V. Jeffery, 30 Braemar Avenue, Southbourne, Bournemouth, BH6 4JF. No entries will be accepted at the door.

4th June: GKN Pond and A.S. Open Show at GKN Canteen, Salisbury Street, Darlaston, Staffs. Further show details available from Ken Rowley, hon. show secretary, 156 Wolverhampton Street, Darlaston, Staffs. Directions can be obtained from A. Wright, 94 Bloxwich Road North, Short Heath, Willenhall, Staffs.

10th June: Llantwit Major A.S. Annual Show. The address of the show secretary is A. Ibbertson, 84 St. Mary's Avenue, Barry, Glam.

11th June: Thorne A.S. Open Show is to be held in the Thorne Grammar School. All information to H. C. Jewison, 94 Hawthorne Road, Thorne, nr. Doncaster.

11th June: Bishops Cleeve A.S. Third Open Show at the Tythe Barn, Bishops Cleeve on the A435, Cheltenham to Evesham Road. Show schedules will be obtainable from the show secretary, Mrs. M. Scrivin, 27 Warden Hill Road, Cheltenham, Glos.

11th June: High Wycombe A.S. Annual Open Show at Lane End Hall, Lane End, High Wycombe.

11th June: Warwick County Fire Brigade A.S. Open Show at the Town Hall, High Street, Coleshill. Details will be available after 1st April from R. J. Tromans, 27 Moxhull Road, Kingshurst, Birmingham, tel: 021-789 7543.

17th June: Riverside Open Show at St. Saviours Church Hall, Cobbald Road, off Askew Road, London, W.12. Show schedules available at later date from M. Goss, 3 Boulters Court, Plantation Road, Amersham, Berks.

18th June: Glossop Open Show, The Education Centre, Talbot Street, Glossop. Details from Mrs. M. Brearley, 9 Waterside, Hadfield, Hyde, Cheshire.

18th June: Swillington's Seventh Open Show. Details later.

22nd, 23rd and 24th June: Bristol Tropical Fish Club Annual Open Show to be held at the Congregational Church Hall, Newton Street (off Stapleton Road), Bristol 5. Details and schedules from show secretary, R. Lawrence, 26, Stonebridge Park, Eastville, Bristol, BS5 6RR.

24th June: Mid-Herts. A.S. Open Show. Held in conjunction with Cell Barnes Fete at Cell Barnes Hospital, St. Alban's, Herts. Details from Show manager, Mr. C. S. A. Withers, 15 Charmouth Road, St. Albans, Herts.

24th June: Anson Aquatic Club Annual Show. Details later.

25th 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, 15 Meadow Close, Eastwood, NG16 3DQ.

25th June: Gosport and District A.S. Open Show will be held at the Crofton Community Association, Stubbington.

2nd July: Lytham A.S. Open Show at Lowther Gardens Pavilion, Lytham, Lancs. All enquiries to show secretary, Mr. O. Wright-13 Cambridge Road, Ansdell, Lancs.

2nd July: Grantham and District A.S. Third Open Show. Please note new venue this year, Walton Girls Secondary Modern School, Kitty Briggs Lane, Grantham. All on ground floor. Details and schedules from the Secretary, G. Platts, 85 Grantley Street, Grantham, Lincs.

2nd July: Castleford and District A.S. Annual Open Show at Carleton Community Centre, Carleton, Pontefract, Yorks. Details from secretary B. Stevens, 72 Falcon Drive, Love Lane, Castleford, Yorks, or phone Mrs. Gates, Pontefract 3213.

2nd July: Exeter and District A.S. first Open Show, Kennford Village Hall, Exeter. Benching by 12 noon. Show schedules and entry forms available from the secretary, W. F. Bye, 14 Beaworthy Close, Exeter, EX2 9LB, Tel: Exeter 78936.

2nd July: North Warwickshire A.S. Open Show. The Settlement, Kingstanding Road, Kingstanding, Birmingham. Details from T. Stow, 108 South Road, Erdington, Birmingham, 23.

8th July: Basingstoke A.S. Open Show. Carnival Hall, Basingstoke. Schedules from M. Strange, 10 Loddon Court, Neville Close, Basingstoke.

8th-9th July: Romford & Beacontree A.S., Dagenham Town Show, Central Park, Dagenham, Essex. Schedules as soon as available. Show secretary, Mr. D. G. Kent, 74 Lynwood Drive, Collier Row, Romford, RM5 2QT. Tel: 70-67804.

9th July: Loyne A.S. Show, Lancaster University, Lancaster.

22nd July: Port Talbot and District A.S. Open Show at the Y.M.C.A., Port Tablot, under F.B.A.S. rules. Show secretary, M. John, 36 Golden Avenue, Sandfields, Port Talbot.

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

6th August: Provisional date—Tonbridge & D.A.S. First Open Show. Details to follow.

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

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

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

20th August: Bedworth A. and P.S. Open Show, Nicholas Chamberlaine School, Bulkington Road, Bedworth. Schedules from T. Pagett, 74 Lister Street, Attleborough, Nuneaton.

26th August: Plymouth A.S. Open Show at Plymouth Y.M.C.A.

26th August: Plymouth District Aquarist and Pondkeepers Society Open Show at Y.M.C.A., Plymouth.

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

2nd September: Bethnal Green A.S. Open Show. Full details later.

3rd September: Whitley Bay A.S. Open Show to be held in the Empress Ballroom, Whitley Bay. Show schedules will be available at a later date.

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

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

10th September: Brighton and Southern A.S. Open Show. Further details later.

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

15th-16th September: Bristol A.S. Open Show, St. Michael's Parish Hall, Bishopston, Bristol. Details from H. C. B. Thomas, 2, Grove Park, Bristol, BS6 PP.

16th September: Havant and District A.S. Second Annual Open Show will take place at the Deverell Hall, Purbrook. The show secretary is V. B. Hunt, "Caeglas," 120 London Road, Widley, nr. Portsmouth, Hants.

16th September: Hounslow and District A.S. Open Show at Hounslow Youth Centre, Cecil Road, Hounslow.

24th September: Northampton and District A.S. Open Show. Details later.

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

24th September: Torbay A.S. Annual Open Show will be held at The Torquay Town Hall. Full details will be advised later.

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

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

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

29th October: Doncaster and District A.S. Third Open Show.