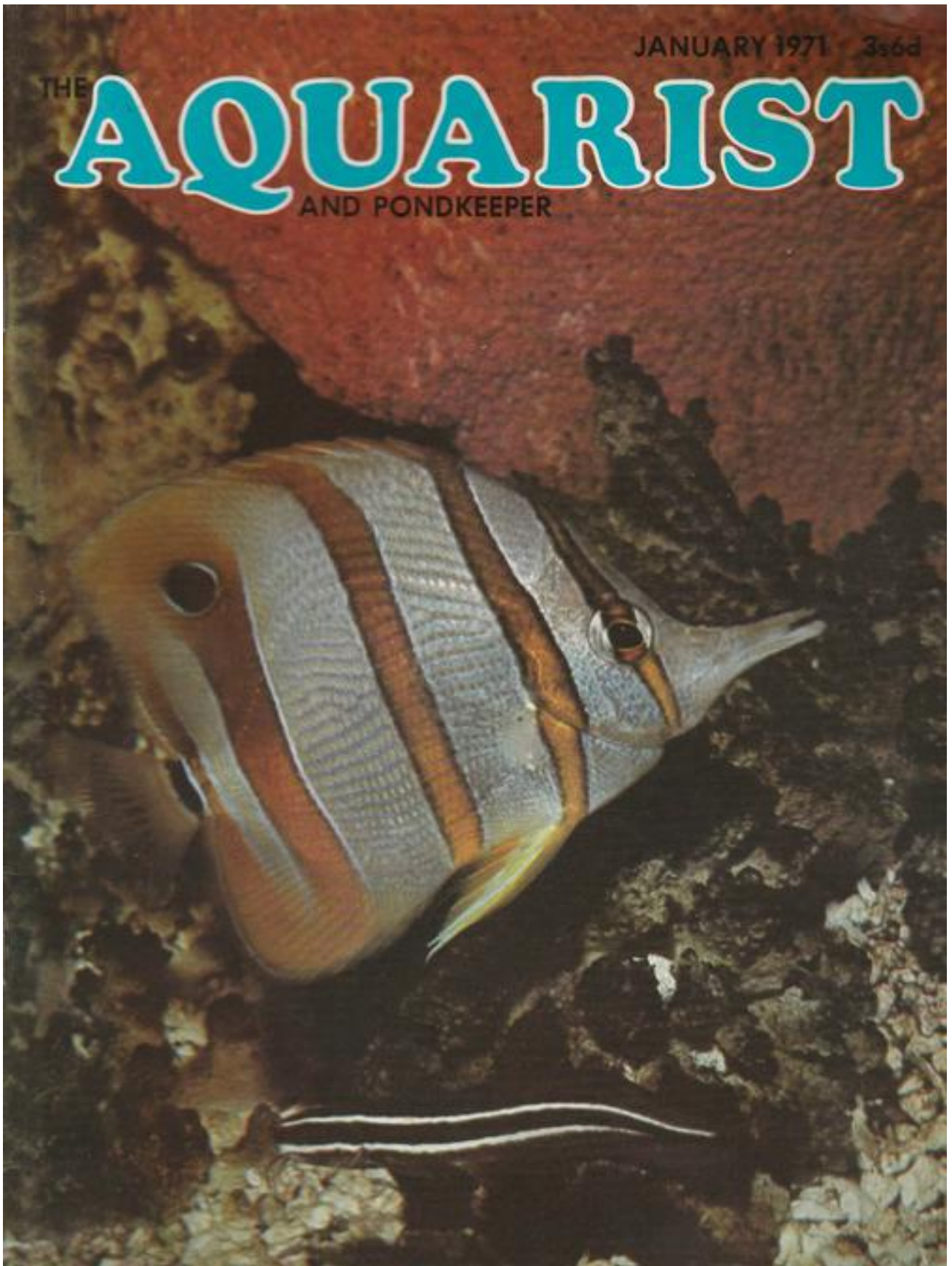


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THE

AQUARIST

AND PONDKEEPER





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Our Cover

The Copper-banded Butterflyfish (*Chelmonrostratus*) hails from the Philippines and the Malayan Archipelago. Its small snout-like mouthparts indicate its predilection for a diet comprising tiny creatures such as crustaceans for which it searches in the interstices among the coral.

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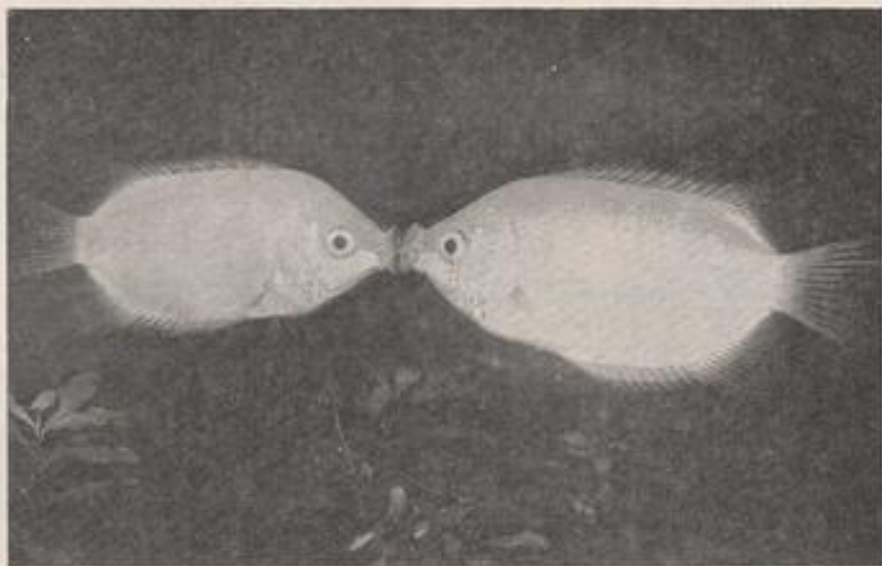
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KISSING GOURAMIS

by J. Sinclair



I WOULD LIKE to state that I am not an experienced breeder and that I have only been keeping tropical fish for about two years.

I had three kissing gouramis (*Helostoma temminckii*) about 6 in. long in my community tank, two pink and one green, which is actually grey in colour. The green one, I believe, is the wild species and I was told that it would not breed with a pink gourami.

When they were in the tank I noticed that one of the pink gouramis and the green one were always together and if the other pink one tried to come close, they chased it away. I decided then to try and spawn the pink and the green gouramis and I put them in a tank 36 in. x 18 in. x 15 in. and left them for about four weeks. I kept watch from time to time but nothing happened. The only explanation I could think of was that they had too much room in this tank so I set up another tank, 24 in. x 12 in. x 12 in. and transferred them to it. Nothing happened the first week so I tried changing their feeding; then I took out the plants and filter and left them for another week. By this time the tank was green with *algae*. Two or three days later I noticed the top of the water had about 300 eggs on it. There was not any kind of bubble-nest but the eggs were scattered. They hatched out about 48 hours later and the fry were free-swimming in two days. I fed them on Liquifry for ten days then I introduced them to Baby Tetramen and fed them on it for about two weeks. I tried feeding them brine shrimp but

they didn't take it. I lost about two-thirds of the fry and only managed to save about 75 of them. The spawning took place on 18th March and by the beginning of June I was able to give them to friends as the growth rate was so fast, probably due to the fact that there were only 75 fry in the tank. At the first spawning I didn't take the pH as I was so surprised that I had managed to spawn the gouramis. I didn't change the water either (as I was told that this might kill the fry), until the fry were about six weeks old.

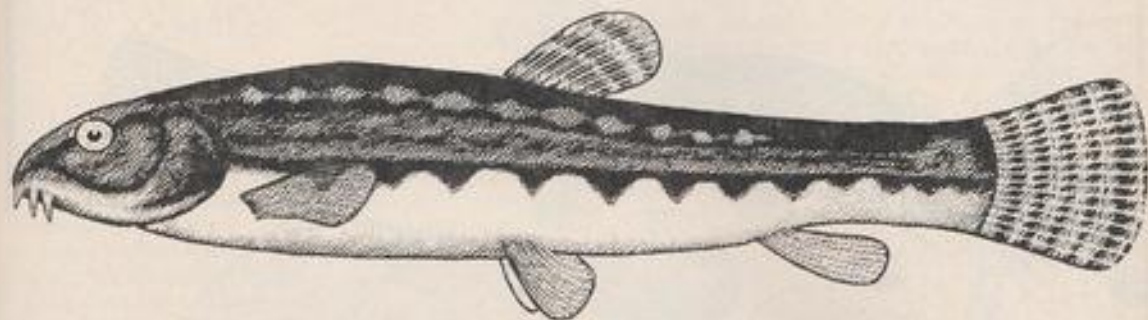
I set up the same tank in June and put the same two fish in it. When the tank was again full of *algae* they spawned; this time I thought I had about 1,000 eggs, of which I managed to save about half. The pH was 7.1 alkaline, the temperature was 78°F and the water was soft, as it is naturally in this area.

When I first noticed the action of the gouramis, the pink and the green keeping the other pink one out of the way, I thought perhaps the kissing gouramis, like the Angel fish, paired off for life but I have since proved this wrong as I have recently spawned the two pink gouramis.

Some of my friends came to see the gouramis and asked me how I knew which one was the male and which one was the female as they had looked at the two pink gouramis and couldn't see any difference. I explained that the only difference I could find was the body of the female was much deeper and thicker than that of the male, the male being more streamlined.

Junior Aquarist

TWO NATIVE LOACHES *by Bill Simms*



Spined Loach

SOME YEARS AGO the peculiar behaviour of a stone loach saved me from a wetting. I was watching the wildlife in and around a moorland stream some miles from where I had parked my car, but the weather appeared to be set fair and I had no worries. But then a small loach that had been calmly rooting about the bottom of the stream started to dart about in the water. Frequently it came to the surface to gulp air, and then to dart about near the surface. Its antics reminded me that this fish has the old name of "Weather Fish", so I looked around at the sky. Sure enough, low down on one horizon was a bank of dark-looking clouds. I was lightly clad so straight away I started off for my car. I just made it in time to dodge a downpour and since then I have taken more interest in loaches.

This incident has been given here because it illustrates a characteristic of loaches—though I have seen it only this once. With some overseas species it is more marked than with British loaches, for often they will dash about at any change of weather.

In Britain there are two freshwater loaches: the Stone Loach, *Nemacheilus barbatula*, and the Spined Loach, *Cobitis taenia*. The first is fairly common in fast-flowing streams in most parts of Britain. It frequents clear water, preferably pebbly, and there lives on small living creatures in the water for it is exclusively carnivorous.

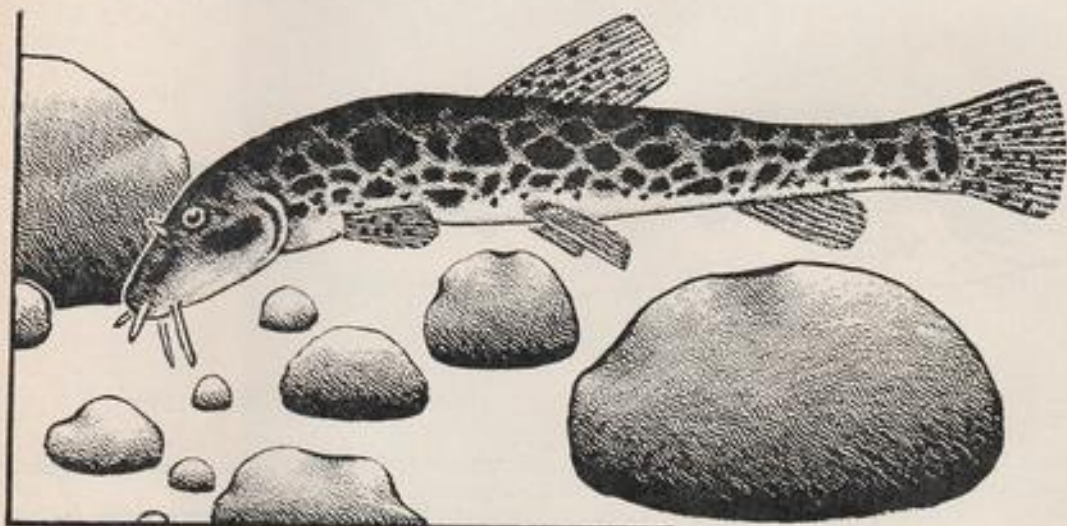
I have kept one of these in an aquarium for some time, and on a diet of *Gammarus pulex*, and an occasional small worm, it thrived. Because this fish frequents streams I kept an aerator running freely all the time, and the water appeared to suit it well at room tem-

peratures, although I suppose that it would have liked colder conditions better.

Around the mouth of the stone loach are six barbels, with two of them longer than the others. Its pretty marbling of dark brown on a ground of brownish-olive, is irregular, with blotches scattered right along the body. The scales, instead of overlapping slightly as do those of other fishes, lie flat on the skin. It reaches a length of about 4 inches, and it is said that it feeds mainly at night, but those I have seen appeared to be searching for food in the daylight. Certainly, those I have had in an aquarium were daytime feeders—though, of course, such conditions are artificial.

One of the peculiarities shared by loaches is the ability to breathe air instead of water. A loach, when it is in warm water (which has slightly less oxygen content), will swim to the surface and take a gulp of air. This facility is shared by many fishes living in small stretches of water liable to drying up at times. Mudfishes are sometimes left buried in dried mud for months on end, and revive easily when water returns.

The Spined Loach, our second native species, is not very common, being confined to the south midland streams and rivers. Its colouring is the same as that of the stone loach, but the markings are more regular, forming a pattern, so that it is fairly easy to distinguish. There are also some other more definite features. The stone loach has two of its six barbels longer than the others. In the spined loach these six barbels are all the same length. In addition, the feature that gives the spined loach



Stone Loach

its name are the erectile spines that lie in a groove on each side of the face, just in front of and lower than the eyes.

While the stone loach is always found in fairly clear water that runs over pebbles, the spined loach appears to prefer a stream with a muddy bottom. Therefore the place where a loach is found should give the first clue to its identity. Afterwards the other points are easily checked: markings, barbels, and absence or presence of spines. Although the adult spined loach is usually an inch shorter than the stone loach, this is no real help to identification, for a 2-3 inch loach could easily be a young stone loach.

Stone loaches spawn in April—May, and their small eggs are allowed to lie on the bottom among the gravel, or on plants when these are present. Spined loaches spawn about a month later than stone loaches. They are similar in their feeding habits, but because spined loaches live nearer to muddy ground they will obtain a greater variety of live food.

Both loaches are reputed to make a grunting noise when handled, but I have never heard this. It is probably just a matter of luck, for a creature that gulps air should quite easily be able to emit a sound of some sort.

Should you decide to keep a stone loach in an aquarium, then provide a sand and pebble base, with plenty of crannies for the fish to hide in. Make sure that the water is pure, and give sufficient aeration to cause a slight current in the water as it circulates.

Plenty of live food should be available before you start, and should include a fair proportion of small freshwater crustaceans. Loaches can be kept alive on chopped earthworms and scraps of raw meat, but a more natural food will produce better results. I have found that tap water, allowed to stand overnight near the aquarium, is the best for any necessary water changes.

FIND THE PLANT

by Doreen Thiel

The first is in GRIN but not in SMILE
 The second is in INCH and also in MILE
 The third is in CREAM but not in MILK
 The fourth is in COTTON but not in SILK
 The fifth is in SUNSHINE and also in RAIN
 The last is in TAXI and also in TRAIN.

The answer is on page 353

A QUESTION OF IDENTIFICATION

(*Chaetodontidae*)

by R. D Sankey

IT IS QUITE ASTOUNDING to find in these days of relatively advanced science that classification of fish, especially marine fish, has not really advanced to any great degree since well before the turn of the century. Classification: this word is the nightmare of nearly all biologists. One has only to look at any variety of marine magazines and books to appreciate the misunderstandings and disagreements to do with nomenclature on this topic.

So perturbed was I about the classification of certain groups of marine fishes, that I found myself trying to regroup certain species and genera. It was not long before I found that there were four particular families that appeared to offer total confusion, these being the following: (1) *Chaetodontidae*; (2) *Balistidae*; (3) *Pomacentridae*; (4) *Acanthuridae*. So taking these families in this order I began to analyse them. I soon found that this was no ten minute affair and I now realise that, in fact, this is a job of about a life and a half in duration.

I started off with family *Chaetodontidae*, the butterfly-fishes. This particular family contains between eight to ten genera of extremely well coloured and popular fishes. The most predominant genera being the *Chaetodon*s and according to the accumulation of literature there are some thirty-five to forty-five species of this genera alone; of this fact I am somewhat dubious as little is known of the reproduction of these fish. As we know, a species is defined in a basic unit made up of individuals that can produce like offspring that are fertile, i.e. offspring that have identical chromosome numbers as either male or female parents. Now from this we can easily deduce that the only sure method of classification is that of tremendous research as regards the breeding behaviour and also constant chromosome number counts; and for this all that is required is a mass of equipment, a group of scientists and, finally, a fortune to keep the whole thing going. As all this is really out of the question, we are limited to organising the species on the following facts:— likeness, ray distribution, bone structure and guesswork. Initially, using these methods, I found that in the genera *Chaetodon* there were some very definite sub-groupings, between five and eight to be exact; whether or not there is any relevance in these sub-groupings is extremely hard to determine but all one

can say is that there are some very definite characteristics within these sub-groupings. Below are shown four of my sub-groupings:—

A	B	C	D
<i>C. auriga</i>	<i>C. ephippium</i>	<i>C. multistriatus</i>	<i>C. chrysurus</i>
<i>C. pinnis</i>	<i>C. xanthocephalus</i>	<i>C. poliolepis</i>	<i>C. laxatus</i>
<i>C. vagabondus</i>	<i>C. armatus</i>	<i>C. quadrimaculatus</i>	<i>C. mertensii</i>
<i>C. lineolatus</i>		<i>C. citrinellus</i>	<i>C. triangulum</i>
<i>C. falcatus</i>		<i>C. milleri</i>	
		<i>C. pomacentrius</i>	
		<i>C. guttatus</i>	

These groupings were brought about due to the fact that each member of a group showed like characteristics throughout a series of analyses that were particular to that group.

These analyses are as follows, and a group letter is used to indicate the group as a whole:—

Range:	A From South Africa to Tahiti and Hawaii	B Central Indo-Pacific to Hawaii	C Mainly Hawaiian but some as far as Indo-Pacific	D Each species reps. an area from Red Sea to Philippines with little overlap
Structure:				
Dorsal hard rays	12-13 averaging 12	13	13-15 averaging 14	12-13 averaging 13
Dorsal soft rays	23-28 averaging 25	24	20-25 averaging 21	21-23 averaging 22
Anal hard rays	3	3	3	3
Anal soft rays	15-20 averaging 18	21	20-25 averaging 21	16-18 averaging 17
Number of scales in lateral line	23-25 averaging 28	32-34 averaging 32	34-47 averaging 40	32-36 averaging 33

Apart from these characteristics there are further marked likenesses within each group, e.g. skull structure is very similar, the spinal curvature and mouth structure, and also basic patterning of scales.

After all this all that is required is an adequate hypothesis on the actual classification, but I am still left in a somewhat confused state. I am glad to say that the above does definitely show something in the way of likenesses within these groups, but I am afraid to say that all I can offer is these suggestions:

(1) These groupings are, in fact, different genera and that the species within these genera are complete and different species.

or

(2) The genera of *Chaetodon* as we know it now may contain very much fewer species but with many varieties of the same species; e.g. as in *Symphosodus aquafasciatus axelrodi* where we have colour variants of just this one species, i.e. blue, brown, green and red.

or

(3) In fact, as we know so little about the reproduction of this particular family, perhaps some of these very much connected "species" are males and females of the same species.

I would be very much interested in any information from anybody who has done any work in this field or, in fact, any information that may help me go a little deeper into this and other families.

THE GREEN LIZARD

(*Lacerta Viridis*)

IN CAPTIVITY

by Andrew Allen

THE GREEN LIZARD is one of the brightest and most lively members of the European Herpetofauna, and one that is easily obtainable in this country. It is the second largest European lacertid, and a specimen worthy of any collection. But the mortality rate in England must be enormous, as the lizards are housed in inadequate quarters and fed on unsatisfactory diets. It can be the most beautiful centrepiece of a vivarium or community, or can become a fickle specimen prone to illness.

It is easy to go wrong from the very start, in the selection of the lizards. When I first bought two individuals from a pet-shop, many years ago, I was handed two large, fine specimens, apparently in the peak of condition. But they were both males and harried each other unmercifully, while one was very old, and possessed of small blood-red ticks. They both died quickly, almost inevitable from the very start. So unless you can provide more than twenty square feet of floor space, choose only one male. All specimens, male or female, should be fairly young, and should be checked for ticks or other external parasites.

Having bought them, where are you going to keep them? If you have a vivarium or aquarium of four feet or above in length, then you will be able to lodge a true pair indoors. Place the vivarium in a sunny window, and provide it with one or more 60 watt light bulbs (out of reach of the lizards), to maintain the day temperature somewhere about the eighties Fahrenheit. A tight-fitting lid should be provided, with ample perforated zinc for ventilation. Interior design can be to your own tastes, but certain points should be noted. Drinking water is necessary, but in the indoor vivarium it need only be in a small dish a couple of inches in diameter. The flooring can be either a mixture of soil and peat, or ordinary aquarium gravel. The former should be of such a consistency that the lizards can construct their own burrows in it. A central flat stone should be placed beneath one of the light bulbs, and branches provided for climbing. The plants, which may make or mar an arrangement, should be chosen for their acceptance of fairly dry conditions. Cacti, succulents and variegated ivies are good choices.

There are problems about keeping *L. viridis* indoors, for it may resent the restricted conditions. The winter months are a cardinal problem. You can keep the

lizards awake throughout the winter, but you have the worry of knowing that you are shortening their life span, and disrupting their natural breeding cycles—possibly with unfortunate results. The other alternative is to hibernate the lizards "artificially." This would consist of removing the light bulbs and accustoming the lizards to cooler temperatures in October, removing them to a cooler situation, and, when they become a little drowsy, filling the vivarium with dry leaves and removing it to a cold, but frost-proof, shed or garage. In the spring the vivarium should be constantly checked, and transferred indoors when the lizards show genuine signs of waking up. If the vivarium is too heavy to be manhandled into a shed, the lizards can be hibernated in a suitably padded, escape-proof wooden box. On awakening they should immediately be provided with drinking water and appetising food.

Keeping these lizards indoors is thus a somewhat risky business, fraught with pitfalls, and one that I cannot fully recommend. If possible it is far better to keep the lizards in more spacious outside accommodation, under considerably more natural conditions.

There are two possible types of outdoor accommodation. The first of these is the outdoor vivarium group, represented by greenhouse and lizard house. The greenhouse is an excellent way to keep this lizard, and allows the full development of a community. The lizards will enjoy the sunshine and warmth, and will hibernate naturally. Encouraged by their surroundings they will mate and breed, and demonstrate most of the habits exhibited in the wild state. They will become far tamer than in the indoor vivarium, despite the fact that they are no longer entirely dependent upon hand feeding. I have had no losses during hibernation over a period of more than five years of keeping green lizards in a greenhouse; for they choose their own hibernacula, which are eminently more suitable than any we could choose for them ourselves.

An equally good outdoor arrangement is the reptiliary, though great care must be exercised in its design and construction. The outer walls should be three feet high, and as smooth as possible. The ledge or overhang, the really vital part, should protrude nine inches into the vivarium, and be absolutely glass-smooth, without even the tiniest cracks. The reptiliary

must be in a position where it will catch every last ray of the sun, and away from any trees. All plants should be ruthlessly sheared off at about one and a half feet from the ground. Green lizards are superb and agile climbers, and a poorly designed reptiliary will give them very little test. If they manage to escape early on, then your money will have been wasted; but if they only escape once they have become established, then the likelihood is that they will return. If they do not manage to escape, the reptiliary will satisfy their every need, providing abundant sunlight and natural food from outside. Deep, well-drained soil must be available so that they can construct hibernacula in dry places well below the frost line. Even better, build a hibernating chamber which will guarantee immunity from the worst excesses of our coldest British winters. In a large reptiliary you will have ample opportunity to integrate the lizards into a wider community, and a large pond will not be out of place.

If you wish to associate these lizards in a community in greenhouse, reptiliary or outdoor vivarium, then my article on the subject in the January 1969 issue of *The Aquarist* may prove of assistance. If you wish to keep them with other reptiles in the indoor vivarium, then your choices are far more limited. No amphibian may be kept with them, for they will not tolerate the arid conditions. As most snakes would enjoy a green lizard for a snack, the choice is restricted to other lizard species. If the lizards are being hibernated then the choice is very small. Schrieber's lizard (*L. schrieberi*) is one possibility, as are young specimens of the eyed lizard (*L. ocellata*), and fully adult slow-worms (*A. fragilis*).

If the lizards are being over-wintered then a number of tropical and sub-tropical species may be considered as companions. Several of the medium-sized geckos such as adult *T. mauritanica* will bring variety to the vivarium. Various zonures and the crag lizard (*pseudocordylus sp.*) will tolerate much the same conditions, as will many medium-sized skinks, such as the Mabuyas and various Chalcides species. Desert Agamas are feasible companions, but are not a species that is strongly recommended to the amateur. Desert, or semi-desert species should be chosen, and they must be comparable in size to the green lizards—for *L. viridis* has a reputation for cannibalism.

Bad regulation of feeding is another cause of mischief. The green lizard will eat a wide variety of food, and is not specialised in its tastes; thus monotony of diet is the main danger. All manner of insects, spiders, woodlice, slugs, stick-insects, centipedes, millipedes, earthworms and many other small invertebrates will be taken. Mealworms are a favourite item in the diet, but should be given with discretion, for they are a rich food with indigestible chaetae, and overfeeding can lead to various intestinal complaints. The lizards like to lick demerara sugar, or honey

perhaps, and also appreciate all manner of seedless fresh fruits, like the flesh of apple, orange, grape, plum and banana. The choice is wide, and finding food should present fewer problems than with most reptiles, but it must always be remembered that variety is the key to good health. The lizards are individualists, and will soon sort out their own preferences, and each reject a certain proportion of the offering. Seasonal food such as Crane flies and flying ants should be used to vary the diet, and if you have a greenhouse or reptiliary it is a good idea to establish an ants' nest in it. The lizards will dig up some of the grubs, the toads will enjoy the adult workers, and the flight of the Queens will be greatly appreciated by all the inhabitants, even such staid individuals as the newts.

It is hoped that this will give some guide to those considering keeping this lizard. It is a beautiful lizard, perhaps the most beautiful of all European lizards, and has a temperament to match. It will become so tame that it likes nothing better than to snooze for an hour on your shoulder, or make exploratory tugs at your ears or eyelids to test for edibility. Draped along a branch, basking in natural sunlight, it is a superb sight, a natural focus in any vivarium or reptiliary, however varied its companions may be.

But remember that it should be given only the most spacious and natural quarters, for a green lizard sulking in a small vivarium in a dark corner is a travesty; for its colours will soon become drab, and it will lose all the vivacity and liveliness that make it such an excellent inhabitant of the vivarium, reptiliary or greenhouse.

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at Alexandra Palace, Wood Green
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9th, 10th, 11th JULY 1971

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A NATURALIST'S NOTEBOOK

by ERIC HARDY

CONSERVATION YEAR aimed very much at preserving wetlands. Angling became possible this year at the Ivy Millpond reserve at Godstone, Surrey, because pondweeds, caused by silting, were cleared with Aquadeath, states the London Natural History Society. This isn't in the Ministry of Agriculture's 1970 list of approved chemicals; but it has Aquacide, a diquat salt, though with limitations because it may lead to illegal pollution. Marginal weed is being pulled up at this water to preserve its uncommon water-plants, golden dock and narrow-leaved water parsnip. The latter also grows in a ditch near Crossness, near Ching Bridge on the Whitehall Road, Chingford, Hertford Heath and by the lake in Syon Park.

The society records studies at Moat Mount pond, Middlesex, showing that crucian carp tolerate a wider range of temperature than common carp, and are far less nocturnal, favouring more open water in daylight but feed at the surface almost only at night. A resident breeding population of South America guppies (*Poecilia reticulata*) has been established in the River Lea at Hackney, as in south Lancashire's St. Helens Canal. 1970, by the way, was marked by the late breeding season of many fish. Flounders in our north-western estuaries were about a month late and salmon and sea-trout migrations through the estuaries were later than usual, when the dry weather of May reduced the flow of freshwater.

Efforts to create a reserve at West Kirby salt-marsh, a tidal growth of reeds and other plants on the Dee shore below the golf dunes towards Hoylake Red Rocks, would safeguard the natterjack toad's last Cheshire breeding haunt.

The latest position on the Lancashire sand-lizard crisis, after an early November airing of the position on northern TV by Sam Smith of Liverpool University (who has the bulldozers almost on his doorstep at Ainsdale exterminating one of its last colonies of 30) is summed up in a further letter to me from Keith Corbett, London University, in late October: "I was unable to obtain the necessary co-operation from the (Nature) Conservancy staff at Ainsdale (duneland reserve) which would have enabled the necessary liaison between the reserve and local herpetologists. Only now have the bureaucratic obstructions been ironed out. All should be well for next spring, but we have of course lost this winter when habitat and animals will be finally bulldozed . . . The staff were

obsessed with permit problems to the complete exclusion of conservation effort."

Mr. Smith's accusation that the Nature Conservancy "wiped out a colony of these lizards when they felled some trees in the (Ainsdale) reserve" is admitted. Mr. Russell Gomm, deputy regional director North-west for the Nature Conservancy, said: "We have to admit wiping out a colony of sand-lizards in the reserve. We are very sorry about it. We were bulldozing a road through the area. There should have been research to make sure nothing like this would happen, but unfortunately we were under pressure at the time." He claimed that they had not been approached about such an important colony being in danger. I certainly broadcast the plight of the lizards in my weekly Radio Merseyside talks on 1st July, and in *Aquarist & Pondkeeper* earlier, and Sam Smith had been plugging the position for over a year, with the natterjacks there too.

In fact, public meetings, coffee-breaks and expensive luncheons organised for social-climbers to wear their expensive gowns in Southport, raised large sums of money to preserve big game in Africa and wildfowl on the Severn, while on their doorsteps the sand-lizard faced imminent extermination, unknown and uncared for by them. Apparently the Nature Conservancy hasn't accepted the claim of a local subspecies on these dunes, marked by its green colour. Mr. Smith even finds the behaviour of the common toad there sufficiently different to warrant special attention.

At a meeting of the natural history societies committee of the Council for Nature in London in November, I raised the urgency of saving these Lancashire sand-lizards. It was agreed to place on the agenda for its next meeting some guidance to teachers to avoid collecting specimens of such animals. Indeed, it was suggested that the future could well see organised breeding of various specimens required for teaching as well as pet-keeping, to avoid depleted wild stocks. The expense of purchasing frogs, etc. imported from the Continent for school dissections was mentioned, and the difficulty of breeding them to suitable size within two or three years. The chairman blamed the old curricula and examinations which specified animals like the once-common frog, now no longer common in the London area.

The position of the proposed Wild Plant Protection Bill, which affects collectors of aquatic plants, is

worth mentioning. As it lost its place in the ballot for private bills, it is planned to introduce it via the Lords and to simplify it by first reducing the list of 75 protected rarities to 15, and then add extra names after it becomes law. This is to reduce the debate in parliament, avoiding popular wise-cracks about bloody cranesbill and Killarney fern. The promoters will use the new Standard List of English Names of plants being prepared by the Botanical Society. Owing to differences in Scottish law, it will not include Scotland. Apparently we are the only country in western Europe without such legal protection for plants.

The Museum of Wales is bringing up-to-date its list of Welsh freshwater fishes. Compared to England, the Principality has a thin distribution of Cyprinodont fishes. Many of the so-called local sub-species of

trout claimed there by Gallachan and other older writers are no longer accepted. Llyn Tegid's gwyniard and Llyn Padarn and Peris's char are the most interesting species, both landlocked from pre-glacial times. Char also inhabit Llyn Cwellyn on the west side of Snowdon, the Llyn in the middle of the three lakes of Cors-y-Gedol near Barmouth, and Llyn Bôdlyn in Merioneth. A former claim for a Denbighshire water was presumably an introduction, as at Llyn Caereuni, now a trout-lake. Plenty of local Welsh names exist for fish that confuse the visitor, such as *Cochiad y dail* ("reds of the leaf") for late-running sea-trout ascending Caernarvonshire's rivers Gwyrfa and Dwyfor and Gunther's Welsh black-finned trout *S. nigripinnis*, no longer acceptable as any different from native trout.

WHAT IS YOUR OPINION?

by B. Whiteside



I RECEIVED NO replies to the questions posed in the October issue, but I did receive a couple of letters concerning the item from Mr. S. Jackson, of Arlesey, Bedfordshire. Before writing about the letters received I should like to explain about the October column's contents. The particular article was typed in April 1969, from letters received by me at that time, and was forwarded to the Editor. Unfortunately the item was misplaced and turned up earlier this year. The Editor and I decided that, as the opinions which it contained were still of interest, it could be used. The several questions posed at the end of the item may have been a little "dated"—in fact some of them have been used again in more recent issues—hence the probable reason why I had no opinions on these for this month's column. However, I did have two letters concerning Mr. S. Jackson's letter about coldwater fish. Both requested Mr. Jackson's full address as the writers wanted to contact him. Unfortunately I do not now have the original letter from Mr. S. Jackson. I receive up to twenty letters per month from readers and I do not have the space at home to keep them for more than a couple of months. They are then usually burned. As Mr. Jackson's letter was received many months ago, it has long since been destroyed, and I do not have his full address. In future, unless requested to do otherwise, I'll print the full address of each letter-writer, so that interested readers can contact him or her, if they wish to do so.

The first letter came from Mr. R. A. Bigwood, of "Crayle House," Cottage Road, Stanford-in-the-Vale, Nr. Faringdon, Berks. He wished to obtain a reliable strain of coldwater fish and wrote to Mr. Jackson, at the address given in the October column. His letter was returned by the post office marked: "Not known at Arlesey." Mr. Bigwood concluded that, in *The Aquarist*, quote: "the wrong name and address has been printed or that Mr. Whiteside's information is not to be relied upon." He went on to say: "I shall be pleased to receive the correct name and address of the person referred to in the article to enable me to get in touch without delay, and an assurance that Mr. Whiteside's articles are genuine."

I can assure Mr. Bigwood that the name and address, as printed, were correct. I should also like to assure Mr. Bigwood that my articles are genuine and that his conclusion that my information is not to be relied upon is incorrect. It is possible that Mr. S. Jackson has moved house from Arlesey to another area. Should he read this, or anyone else who knows of his present whereabouts, I hope that he or they will contact me with the aim of letting Mr. Bigwood know of his present address.

Mr. J. E. Walker, of "Thornlea," Green Lane, Higher Poynton, Cheshire, also wrote to me asking for Mr. Jackson's full address. He is a coldwater fan and would like to contact others in his area. He too wishes to purchase some decent fish. With his letter he included a very attractive coloured photograph of

his rectangular garden pool, complete with its waterfall. The pool contained a large water lily, complete with blooms, and the paved area around the pool was a colourful show of roses and urns of flowering plants. Mr. Walker has raised some fish in his pond but they were not "class." He has tried for years to find out where he could buy decent fish for indoor tanks. As Mr. Walker has retired, he has plenty of time to indulge in his hobby of keeping fish. When we find Mr. Jackson's present address we'll also send it to Mr. Walker.

I used a long, interesting letter from Mr. J. Dalley, of 1 Wortley Road, High Green, Sheffield S30 4LQ, in my September column. The Editor forwarded another interesting item of Mr. Dalley's to me. Recently, when Mr. Dalley came out of hospital, he found that his wife had done wonders in looking after his aquaria—but plants of duckweed had got a firm hold in his tanks. Mr. Dalley considers it to be a pest, as do most of us, and he has invented a simple gadget which he has called a "duckweed remover." It is made from an ordinary plastic flowerpot. The bottom $\frac{1}{2}$ in. is sawn off. (It may be used, full of peat, for growing hairgrass, etc., in the aquarium.) The top part is made into the duckweed remover, in the form of a sieve, by sticking a piece of muslin, or other fine material, over the base of the cut, plastic flowerpot. It can be stuck in place with $\frac{1}{2}$ in. plaster, or strapping, all around the outside, bottom edge of the pot. (Clear tape is unsuitable as it is not waterproof.) Having argued with the shopkeeper for about half an hour, as to the type of cloth required for his gadget, Mr. Dalley said: "I'm sure I want muslin!" "You certainly do, Sir!" was the shopkeeper's reply. To use the duckweed remover one places the four fingers of one hand over the muslin base and dunks the gadget near a patch of floating duckweed. Duckweed and water flow into the pot. The fingers are then removed as the pot is withdrawn, leaving the weed on the muslin, and letting the water return to aquarium, via the sieved base. With practice one can clear even the thickest tank of duckweed in five minutes; with luck no fish will be caught. Mr. Dalley finds mollies to be the most curious, energetic and lovable little fish which he knows—as surface feeders. He's got an albino female with pink eyes, and she is very tame—and probably blind. She depends upon her owner for hand-feeding. This fish is always getting into the duckweed remover; it's a sort of game which Mr. Dalley and the fish play.

Mr. M. Poole, of 2 Belle Vue Road, Paignton, who is the magazine editor of *Toras Topics*, the newsletter of the Torbay Aquarist Society, has another interesting issue this month. It deals mostly with the society's second open show, and it sounds as if it were a huge success—with 533 entries, 20 furnished tanks and more visitors than programmes. Approximately 600

members of the public visited the show. It must have been most encouraging to such a progressive society. Their newsletter also includes details of their Xmas party, an article on *algae*, and an interesting—if off-putting—account of an operation, performed by a vet, on an oranda with a marble-sized growth on its head, amongst other news items. I should be pleased to receive a copy of any other clubs' magazines.

Well, those are all the communications which I received as a result of last October's article and none, in fact, were answers to the questions posed. Most of the questions asked were sent by the writers of the letters in the October column. Perhaps the questions were a little too technical for most readers. I hope that we'll have a better response to this month's questions!

Meanwhile I could, perhaps, write a little bit about what I'm doing with my own fish and plants at the moment. I've just had one *Aponogeton* species produce its third flower head within a few weeks. The plant is shown in the centre of the photograph. I regularly pollinated the flower heads with a fine paint brush, and some of the flowers on one head became fertilized and subsequently produced some fruit and seeds. When the fruit appeared to be ripe, I removed the whole flower head and placed it in the outside filter on the tank in which the plant flowered. The seeds later germinated and about ten baby *Aponogeton* seedlings developed. These rooted into the nylon filter wool and, when they were about 1 in. high, I removed the little seedlings and placed them in a community aquarium. They have not yet grown very large but it is interesting to watch their slow progress. At the moment I have a large Amazon sword plant which has produced floating flower stems. These have produced, from the three flower stems, a large number of little plantlets, as well as a number of very small flowers. The plantlets are progressing well and some are now about 5 in. tall. I weighted down the flower/plantlet stems so that the young plants can root into the gravel. The root systems are too small yet to allow me to separate the individual youngsters, but I should imagine that, if all goes well, I should have a couple of dozen young Amazon sword plants of reasonable size, in about a month's time. The parent plant takes up about one third of a 30 in. \times 15 in. \times 15 in. aquarium.

The third plant which I have coming into bloom at the moment is a *Sagittaria* species. The flowers are just about to open from the buds and I look forward to seeing what evolves. By the way, none of these plants has received any special treatment of any kind. They are growing in ordinary calcium carbonate-free gravel, receive no extra feeding, share the tanks with a variety of other plants, exist with a variety of fish species, and receive only ordinary tungsten lighting for about 10-12 hours per day. The *Aponogeton*



Photo B. Whiteside

Aponogeton sp. (centre)

plant which flowered has now died down for an apparent rest and has lost most of its leaves.

In the fish-breeding line I am still working away at my strain of three-quarter-black, red-tailed guppies. One batch, which is now about three months old, seems to have several good males with large finnage, of a good colour, and a number of females which have also got a reasonable amount of red in their tails. I also have about forty youngsters, about 1½ in. long, from a red wagtail, lyretail swordtail. They are the most varied collection of colour combinations which one could imagine—from a red female. The elongation of the fins is just beginning and it would appear to be as varied as the coloration. I can hardly wait to see what I end up with as the fish differentiate sexually. Another interesting event has been to watch a pair of *Pelmatochromis kribensis* spawn, and look after their young. The process is much more interesting than the majority of television programmes! As the young plants and fishes grow bigger, I hope to write about them in more detail in future issues.

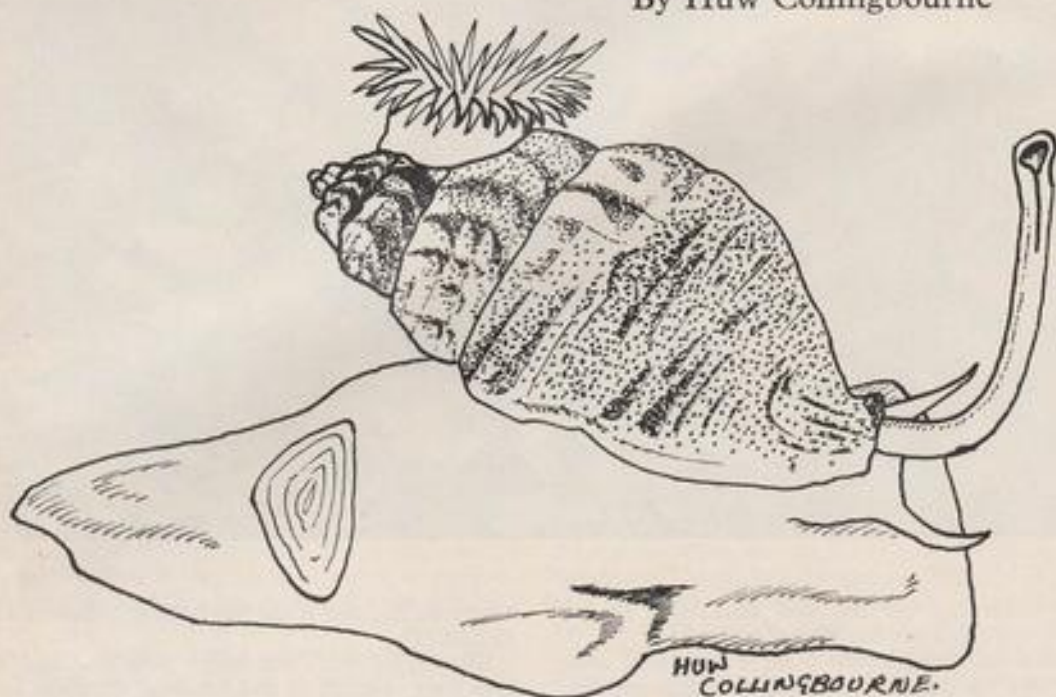
I've just ordered a set of extension tubes for my camera and hope to have some further attempts at close-up aquarium photography. If I have any success I hope to be able to illustrate some more of my future articles. At the moment I wish I had the space, time and money for another half dozen aquaria. Everything seems to be full to capacity at the moment.

I suppose that this is the perennial cry of every keen aquarist!

Have an enjoyable and happy New Year, and let's have your opinions on the following questions for a future edition: (1) If you were asked to make a full selection of tropical plants for a 24 in. × 12 in. × 12 in. aquarium, with no price limit, what would be your selection, and why? (2) How do you separate your white worms from their culture material? (3) Have you ever had any *Cryptocoryne* species flower; if so, which and under what conditions? (4) Have you managed to keep any "tropical" fish at temperatures lower than the average 75°F for extended periods? If so, which, at what temperature and for what specific reason? (5) Over the years, I have tried a variety of designs of aquarium hoods, in a variety of materials, used both with and without cover-glasses. None has fully pleased me. Which hood have you found to be the most satisfactory? i.e., what are its advantages—and disadvantages, if any? (6) Do you know of any local breeders of good quality cold-water fish who are willing to sell? (7) Have you any "home-made" gadgets which would be useful to other aquarists? I look forward to hearing from YOU this month. Please print your name and address clearly. I hope to print addresses in full in future issues. *If you do not wish to have your full address printed, please say so in your letter, otherwise I'll assume that you don't mind if I print it all.*

THE COMMON WHELK

By Huw Collingbourne



THE COMMON WHELK, *Buccinum undatum*, is the largest British univalve mollusc likely to be found by aquarists. Its beautifully coiled shell is frequently discovered washed up at the tide-line on our native shores and kept as varnished ornaments in cupboards and on mantelpieces.

Its hard, limey shell is used by large hermit crabs to protect their soft, meaty abdomens from hungry predators. When empty, whelk shells are scarce; it is said that hermit crabs which have grown too large for their former homes, will kill whelks for the use of their shells.

In aquaria, whelks may not be kept with crabs because crabs would probably eat them. However, a whelk could destroy scallops, mussels, cockles or other bivalves and care must be taken when choosing tank-mates for a whelk.

The whelk itself has a body, creamy white in colour, and up to six inches or more in length when the foot is fully extended. The foot collects dirt upon it as it is very slimy and sticky. Attached to the hind part of its creeping foot is a tough, horny, lid or operculum

which closes the shell when the whelk's body is withdrawn. Above the foot is the simple head with its eyes and feelers. Between the head and the foot is a tube which is withdrawn most of the time. This will be discussed later in the article when feeding is described. Above the head is a long retractable siphon tube. All of the soft fleshy body may be drawn inside the shell. Basically the shell is composed of calcium carbonate taken from the food, and the sea water in which the whelk lives. This is then secreted in the form of a shell, by the part of the body called the mantle. The hardened shell provides the base for the fan-worm, *Pomatoceros triqueter*, also hydroids, various acorn barnacles and anemones.

Throughout life the common whelk is very voracious. It hatches from a cluster of tough papery egg cases after eating several hundreds of its unborn brothers and sisters. When the whelk is fully grown I find that live cockles, *Cardium* spp., form an excellent staple diet. Its whole foot engulfs the cockle and forces the shell open. At this time the tube between the head and foot is extended and the flesh of the bivalve is rasped out of its hinged shell.

SORTING AND FEEDING THE YOUNGSTERS

BREEDING GOLDFISH

by Arthur Boarder

AT THE end of each breeding season the sorting of the young fish will be a task which must be done if the standard of the strain is to be maintained. I intend to deal with the recognised varieties of goldfish in this and following articles so that anyone interested in a particular variety can obtain some guidance. In the first place it may be as well if I enumerate the various kinds of goldfish which are most commonly kept by aquarists in this country. They are:—the common goldfish; comet; shubunkin (London and the Bristol); fantail; veiltail; moor (fantail and veiltail types); oranda; lionhead; celestial; bubble-eye and pearl-scale.

It may be thought by some aquarists that it is not necessary to go into any detail about the common goldfish, but here I disagree. Whether the breeder wants to go in for exhibiting his fish or just breeds as a hobby or to multiply the fish in his pond, it is still very important to have some knowledge as to what to look for and aim at when breeding and sorting the young ones. Even if the fish are only to swell the numbers in the garden pond it is far better to stick to only the best type than to breed in a haphazard manner and to let all shapes and colours breed together each year. A good type of goldfish of any variety costs no more to feed and look after than does the veritable runt. One would not think of spending a lot of money keeping a cross-bred dog or even cattle when thoroughbred kinds could be kept at the same cost. Beginners in goldfish breeding may think that all goldfish are alike but a visit to a good aquarist show would soon dispel this idea.

If one took the trouble to closely inspect a number of goldfish in a glass tank it is probable that not two could be found quite alike in shape or colour. When goldfish are bred in a garden pond with no sorting or supervision it is probable that very many of the youngsters are not worth the food they eat. This is not the only reason for sorting, if too many badly shaped or coloured fish are left in the pond, the number of such poor specimens will increase each year so that in the future few really good fish will be bred at all and the general quality of the fish will deteriorate considerably.

The common goldfish is an excellent fish for the garden pond and anyone starting with keeping cold-water fishes would be well advised to keep some for a year or two in order to gain some experience with these before branching out with what might be rather more difficult fish to keep and breed. The common goldfish is a somewhat sturdy fish with a well proportioned body. The general shape from nose to where the tail (caudal fin) starts, should be in the form of an ellipse. The top curve should correspond to the lower curve in shape and these curves should show no break or irregularity. The fish should show no hump back or snoutiness of the head. All the fins should be well proportioned, not too long or flowing, but fairly short in relation to the rest of the fish.

Too deep a body or too thin a type would not be the kind to keep for breeding and remember that if such fishes are left in the pond to breed it is probable that many of the fry will take after them. It is far easier to spoil the strain of fish in a pond than it is to keep it up to a high standard. The colour of the common goldfish can vary considerably. I favour the all red fish as I think that this type is the more handsome. Also I know from experience that it is far more difficult to breed a self-coloured red fish than it is to breed multicoloured or silver ones. When judging a common goldfish class I would always show preference to a self-red fish. Any silver or black on a fish I would down point. Any black on a goldfish is a sign, either that it is not mature and has not completely finished its colour change, or the black is where there has been some damage to the fish.

If one requires to keep the strain of goldfish in the pond up to a good standard then it is important to catch all the season's youngsters to sort them out carefully. Even then it is necessary to keep these fish by themselves for a time until they have changed colour completely before the best have been returned to the pond for breeding purposes. If goldfish are allowed to remain in the pond when they have not changed colour within about a year it is a bad policy, as each year it will be found that more and more fish will not change from the original bronze and in time

they will predominate so that in time hardly a red fish will be bred.

When considering the change of colour it must be realised that the colour change is hastened considerably by the use of warmth. A temperature of 65°-70°F., for the youngsters will bring them into colour far more quickly than if they had remained at a lower temperature. Even with the added warmth it will be found that some fish do not change as quickly as others, and these are the ones to be discarded. If making a start with common goldfish the aquarist will do well to visit a dealers shop where there are a fair number of fishes on display. It is then advisable to spend some time inspecting the fish to seek out the best ones in shape. The price will probably be the same as for the poorer fish. It is almost certain that the majority of goldfish purchasers

would not know a good fish from a bad one, and so the discriminating buyer will have plenty of opportunity of choosing some really good fish with which to make a start.

When returning any chosen fish to the open pond it is necessary to choose the right time for this procedure. Fish which have been kept for a time in rather warm conditions should not be placed immediately into much colder water. Wait until the weather is on the mild side and then float the fish container on the pond for an hour or so until the water in it has gradually come to the same temperature as the pond water. If the fish are under about two inches overall in length it is advisable to wait until the spring until they are put out into the garden pond.

My next article will start with the description of the comet goldfish.

CICHLIDS AT LARGE By Michael Furniss

RECENTLY a friend asked me: "Why do you have plastic plants in your tank and not live ones?" I explained patiently, for about the hundredth time, why one just can't keep plants in the same tanks as Oscars. He went on to enquire why I used up so much tank space on large fish when he could keep half-a-dozen smaller ones for each of mine. I told him that I did have some smaller fish at home (here I must explain that I and one of my tanks of large fish are at boarding school), but they did not attract me as much as my Cichlids and other large fish. He asked me why and there I paused. Why *did* I prefer my large, rubbery-lipped, stupid-looking, dull brown *Osphronemus goramy*, which takes up a 24in. by 12in. by 15in. tank all to itself, to a shoal of Neons or Cardinals with their glittering, scintillating colours?

As I say, I stopped and reflected and then started on trying to explain the personality of these fish; I failed then, but I shall try now. I think that size is one factor which contributes greatly to this; take, for instance, a shoal of Cardinals darting around in a well-planted tank. All right, I grant you that they are pretty, but can you tell one from another? If one is missing can you say immediately: "Poor old Fred—George, or Bert—has died?" Do you even consider calling a Cardinal, George? Normally you do not, and this, for me, is the great attraction of larger fish. I can look in a tank and say: "How is old 'Ossy' today?" and when I feed Oscar I can see how high I can get him to jump out of the water.

Then again, every day I notice the actions of each individual fish and therefore its "personality" tends to grow on me. I see my *Tilapia melanopleura* bullying all the other fishes in the tank until it comes face to face

with Oscar, when it turns tail and flees behind a rock. I see my Oscar, when food is in the offing, waiting at the surface, rolling his eyes and wagging his tail in anticipation.

Of course, the keeping of these large fish presents a bit of a problem. Tanks cannot be planted as the plants will be uprooted; even my tank at school, filled with plastic plants to give some semblance of order, normally has at least one piece of plastic foliage floating on the surface when I switch on the lights in the mornings. At home I do not bother; gravel, rocks to provide cover and heaters are all that I include in my large fish-tanks except for the fish and the excellent under-gravel filters. These filters, incidentally, I find to be by far the best. I use them in all my tanks and even that with the largest of fish in is kept exceptionally clear.

Tanks set up like this are, in fact, cheaper than those set up for smaller fish. One fish shop owner, whom I know personally, says that before she bought the shop she would never have dreamt of setting up a tank, two feet long, without spending at least £5 on plants, and I agree with her. Dense thickets of vegetation are essential in a small fish tank, so you can cut out all that expense when keeping large varieties.

Therefore, a word of warning to conclude this pro-Cichlid propaganda—beware of larger fish! They hold, for me at any rate, a fatal fascination which has led me from an inadvertently bought Jack Dempsey—because it "looked so pretty"—to a love of *Clarius* and Electric Catfish, an obsession for Oscars and a complete lack of compassion as I feed adult guppies to my *Osphronemus goramy*.



Bacteria in Aquariums

Perhaps you will find this item of interest for inclusion in a future copy of your magazine.

FISH-TANK TUBERCULOSIS (Extract from *Nursing Mirror*, 23rd October, 1970).

This column has often drawn attention to health hazards from domestic pets: the increasing frequency of the home, and even hospital, aquarium warrants an awareness of possible dangers. A leading article (*British Medical Journal*, 23rd May, 70) draws attention to an organism like the *Bacillus tuberculosis* which grows at a low temperature and which can infect cuts sustained in swimming baths. This is old knowledge: what is new is that the bacterium can also flourish in tanks of tropical fish, and that cleaners of such household aquaria may develop indolent skin lesions on their hands should the water be infected by diseased fish, the portal of entry being any abrasion produced inside the tank or present before exposure to the fish. The skin lesions may occasionally spread to other parts of the body. While treatment with the usual anti-tuberculosis drugs seems generally ineffective, the skin nodules tend to disappear spontaneously over a period of months. Nurses, particularly health visitors, who may encounter such skin nodules in the home, should certainly remember this possible origin of the condition, and when cleaning out their own fish tanks should remember to wear surgical gloves.

G. E. WALKER, S.R.N., R.M.N.,
Hon. Secretary,
Aireborough and District Aquarist Society.

Not So Sad Coldwater Scene

On reading October issue of *The Aquarist* I see H. W. Johnston (in Our Readers Write) is remarking about the sad state of the coldwater scene at most of the open shows. While I am inclined to agree that at most of the shows there are only two classes, i.e. single tail and twin tail or Common Goldfish and Fancy Goldfish, I do not agree that coldwater fish showing is on the decline. I have been to most of the open shows in the North and at many we have had to ask for more room to bench the coldwater entries and many times the coldwater classes have had more entries than many of the tropical classes.

Some of the societies are including more coldwater classes in their schedules. Accrington Aquarist

Society, of which I am a member, had seven (7) classes of Coldwater and the number of entries was 62 which should be proof that the coldwater scene is far from sad, in fact the 1st and 2nd in the Champion of Champions at the B.A.F. this year were coldwater.

S. WALSH,
Blackburn, Lancs.

B.M.A.A.

The formation of the "British Marine Aquarist's Association", was first announced in the October edition of *The Aquarist*. Response from readers was immediate and the Society now has a constantly growing membership of amateur marine aquarists. It is unfortunate, however, that many hobbyists still suspect that we are associated with another, now defunct, marine organization. Indeed, almost every month in the pages of this magazine, we see letters written by disillusioned aquarists who are still wondering where their membership fees went when they attempted to join this other Society. May I emphasise here, that the B.M.A.A. has no connections with this other Society and we regret that the B.M.A.A. membership should suffer because of the distrust caused by the actions of the officers of another Society.

Those enthusiasts who have not yet joined the British Marine Aquarist's Association are advised to write to the secretary, Mr. D. Horton, 125 Lowlands Avenue, Streetly, Sutton Coldfield, Warks., who will forward full details of the Association and will send a form of application for membership. Subs. are 30/- yearly, and this money finances, among other things, the Association's monthly newsletter. This contains articles and information on all aspects of marine life, which are written by members. Regional clubs are being formed all over Britain and further information on these can be supplied.

HUW COLLINGBOURNE, P.R.O.,
p.p. The British Marine
Aquarist's Association.

I.M.S.S.

Would you please enclose the following in "Our Readers Write."

I too paid out 30s. to Mr. Jennings two years ago this December, at a Convention of Aquarists in Leeds, at which he was speaking. I have repeatedly written to him, but have got no satisfaction. To be fair—he did reply, but I have had no receipt for my money. He did say that he had passed the information on, but I have never received anything whatsoever from the Society. Like Mr. J. S. Gallop, I too would like to know where all the 30s. have gone.

I am afraid the New British Marine Aquarists Association will have to have a better organisation to get people to join, after the fiasco of the I.M.S.S.

In fact I am contemplating whether to write to "Breakthro" about this, as it is certainly getting money under false pretences.

BARBARA HELM,
New Wortley,
Leeds, LS12 1EE.

Coldwater Catfish

In spite of the excellent article "The American Catfish" by J. C. Thiefaïne in the October issue I note in the answers to Coldwater Queries in the November issue that Mr. Boarder still insists that the common catfish available in Britain is the European catfish *Silurus glanis*, specimens of which he states may reach a weight of over thirty pounds. Mr. Thiefaïne says 600 lb.

In order to settle this question perhaps Mr. Boarder will tell us where specimens of the European catfish can be purchased in Great Britain.

JOHN S. VINDEN,
Three Cocks,
Brecon, Wales.

Brine-shrimps

I would like to reply to the letter: "Risk with Brine Shrimps?" by S. J. Lithgo in the November edition.

From the article I gather that it was the larvae which were imported from the Great Salt Lake. These would already have been able, during the normal process of living, to take in some of the pesticide from the lake. A few hundred of these larvae would therefore equal a few hundred small doses of pesticide, or one large fatal dose. However, the aquarists obtains his brine shrimps from the eggs, which have not been able to absorb any pesticide and so when these eggs are hatched in pesticide-free water the shrimps will not be contaminated, and are therefore safe as food.

R. H. BIRCHALL,
University of Keele,
Newcastle, Staffs.

Calling Mr. W. Mellor

After reading those very interesting articles by Mr. W. Mellor, dealing with his experiences in keeping piranhas, I found myself so intrigued that I went out and bought a *Sensaalms nattereri*. I've had him about 4 to 5 months and he is about 4 inches long.

First of all I tried feeding him with dry food but he didn't seem to take to it, and, although I didn't like the idea, I put some swords and guppies into his tank, these he devoured in a day or two, and he seemed

very vicious. As a matter of fact he bit through the six plastic bags which I carried him home in.

Now, the interesting point is that a month ago I put 3 swords and 3 guppies into my piranha's tank, and believe it or not he has not harmed them. I have actually seen the swords and guppies swimming right under the piranha's mouth. If he had wanted to do so he could easily have eaten them time and time again. I cannot understand this sudden friendship which seems to exist between the piranha, the swords and the guppies, I feed him on earth worms, and odd bits of raw meat every two days. Is there some explanation for this friendly caribe?

Another point I would like to raise: When are we going to hear more about W. Mellor's piranhas? I hope it will be soon.

Please, does anybody know where I can buy a pair of Paddle Gills, or Swordtail Characins (*Corynopoma rüsei*) I am anxiously hoping to purchase them for breeding in the near future.

D. G. TUMMES.

Stain-Remover Wanted

On opening a bottle of "Malachite Green" recently I had the misfortune in depositing half of its contents over the living room carpet, which is now (to say the least) of contemporary pattern.

Cleaning attempts have proved futile so if you or any readers could suggest a way of removing the stain (without dyeing the carpet) I would be most grateful.

L. J. WARREN,
Ty'r Helig,
190a Christchurch Rd.,
Newport, Mon.,
NPT 8BD.

Mystery Solved?

I paid particular interest to the letter on "Mysterious Spawning Behaviour" by Mr. Tate in the November issue as, only a few days previously while breeding Thick-lipped Gouramis (*Colisa labiosa*). I observed the same occurrence. The bubbles that Mr. Tate mentions were emitted in my case also but appeared to come from the gills and were forced out in a fine mist. I can remember reading somewhere that the Dwarf Gourami (*Colisa latia*), in times of great excitement, expels air forcefully from the labyrinth organ. It mentioned that in the Dwarf's case an audible sound resembling a croak was heard. To produce an audible sound the air would have to be expelled at quite a force and may, in its passage along the outside of the body, appear to come from out of its scales. Expelling air from the scales, I am sure, would be anatomically impossible. The fine mist of bubbles definitely came from the gills of my Thick-lip male and were expelled seconds after the breeding embrace

at which moment the male would be at the height of his excitement but no sound was heard.

M. BAINES,
Chapel-en-le-Frith,
Cheshire.

With reference to "Mysterious Spawning Behaviour," November issue. I am a very new "Tropical" enthusiast, but from the start have been fascinated by Gouramis, and would like to say that recently I have had Honey Gourami, dwarf and thick-lipped, spawning and all three males despatched quantities of bubbles from the whole length of their bodies. Watching, I would say that they came from the gills and dispersed along the body before rising to the bubble-nest. Unfortunately, my dwarf failed to hatch (maybe he ate the eggs). The Honey hatched but I failed to keep them alive. The thick-lipped,

however, are now 2 weeks old and still swimming freely.

I hope to try again soon as I find their breeding habits fascinating, and I am determined to raise young from my pairs. Among the other fish I also have a trio of Australian Rainbows, who appear to be breeding, but I have been unable to get any information on the breed so I am not sure; mine have been "cleaning" gravel in the manner of Cichlids.

In conclusion I began with one 24 inch tank in May and now have six ranging from 4 foot.

MRS. SHEILA HEYS,
Redbourn, Herts.

Answer to Find the Plant:

RICCIA

Junior Aquarist

PUGNACIOUS CRUSTACEANS *By Henry Tegner*

MILLIONS OF CRABS crawl, creep and scuttle around our coastal sea waters whilst one species, the Spanish, or swimming crab, uses his paddles to swan through the shallows. The more usual forms of crab found in British waters consist of the common shore-crab, which the French have named appropriately *le crab enragé*, the edible-crab, the tiny pea-crab, and the spider-crab whose long spindly legs and small beaked head makes him an ungainly creature. Crabs are great moulters and particularly during their youth for as the crab grows he has to cast his carapace for a new coat. I have often wondered, whilst watching a crab writhe and twist so as to rid himself of his old jacket, whether this moulting process was a painful one or not. A bird moults gradually almost one feather at a time; a crab casts its dress fairly quickly all in one go, as it were. After moulting the crab goes through a fearful stage whilst his eventual coat of mail is still in a plastic form when he is the prey of nearly every form of marine predator, fish, bird and crustacean. The soft-shelled crab was once, not so long ago, thought to be an altogether separate species; now we know that all crabs go through soft-shelled periods. These pulpy crustaceans are considered great edible delicacies abroad and particularly in America where a dish of soft-shelled crabs is many a gourmet's delight.

Crabs are by nature extremely pugnacious creatures, hence, presumably, *le crab enragé*; they are also cannibalistic. Frequently, during internicine conflicts, an individual will lose a claw or a leg—no matter for in this respect nature provides by ensuring that the crab grows a fresh limb.

The little pea-crab is common along our beaches and can prove a very tempting bait for such sea fishes as pouting, hake, whiting and the shark-toothed wrasse or sea perch. The so-called edible-crab (all crabs are edible but most are sparse fleshed morsels) is taken in pots and cages baited with scraps of offal and is highly regarded for its succulent flesh and particularly the meat of its powerful instrument of sustenance and defence, the claws. The claws of the male are generally larger than those of the female and so the former sex is more highly regarded on the fishmonger's slab. The powerful pincers of *Cancer pagarus* can inflict a painful wound on bare hand or foot and, like the proverbial bulldog, the edible-crab is a tenacious biter. It is, I think, the edible species which appears in the signs of the Zodiac and to the astrologer is indicative, surely, of tenacity.

Off the shores of the British Isles the spider crab, with its attenuated legs and disproportionate body, attains but small stature but in foreign seas some of these crabs achieve a leg-span of over four feet and their carapaces can resemble, to a marked degree, the human skull. Japan, for one, prides itself on the size of these spindly sea creatures and they are sold, after being dried and deodorised, as ornamental pieces. As a form of house decor crabs can be disappointing for they quickly lose their pristine, marine colours once removed, for any length of time, from their natural element and the process of deodorisation is something few of us have the patience or fortitude to endure.

WHY NOT JOIN A SOCIETY?

The following details will be of interest to readers wishing to become members of a society. The benefits of active membership in terms of information, experience and helpful associations cannot be over-emphasised. In past issues of *The Aquarist* lists have been published of societies affiliated to the Federation of British Aquarists Societies and the Federation of Northern Aquarium Societies.

Federation of Scottish Aquarist Societies

Letters to any of the societies listed below should be addressed to the society c/o Hon. Secretary, B. W. Fraser, 121 Farne Drive, Simshill, Glasgow S.4. A s.a.e. must be enclosed.

Aberdeen A.S.	F.G.A. Scottish Group	Parson Peebles A.S.
Alloa & Dist. A.S.	Fintry Community Centre A. Club	Peebles A.S.
Ayrshire A.S.	Forfar & Dist. A.S.	Perth A.S.
Bo'ness T.F. Club	Kirkcaldy & Dist. A.S.	Renfrewshire A.S.
B.K.A. Scottish Group	Lanarkshire A.S.	Rolls Royce (Hillingdon) A. Club
Clyde A. Club	Leith A.S.	Scottish A.S.
Cumnock & Dist. A.S.	Montrose & Dist. A.S.	Weirs A. Club
Dundee A.S.	Moray A.S.	West of Scotland Exotic F. Club
Dunfermline A.S.	Muirhouse A.S.	West Lothian A.S.
Edinburgh A.S.	National Engineering Laboratory A.S.	Whitburn & Dist. A.S.
Falkirk A.S.	North Berwick & Dist. A.S.	

Association of Yorkshire Aquarist Societies

Letters to any of the societies listed below should be addressed to the society c/o Hon. Secretary, A. B. White, 1 Moss Carr Road, Long Lee, Keighley, Yorkshire BD21 4SA. A s.a.e. must be enclosed.

Aireborough & Dist. A.S.	Harrogate A.S.	Selby A.S.
Barnsley & Dist. A.S.	Horsforth A.S.	Sheffield A.S.
Blakeborough A.S.	Huddersfield A.S.	Skipton A.S.
Bradford A.S.	Hull A.S.	Stockbridge A.S.
Castleford A.S.	Keighley A.S.	Swillington A.S.
Chapletown A.S.	Leeds A.S.	Tadcaster A.S.
Cleveland A.S.	Middlesborough A.S.	Thorne A.S.
Dewsbury A.S.	Mixenden A.S.	Top Ten A.S.
Doncaster A.S.	Bold Privateers A.S.	Wakefield A.S.
Halifax A.S.	Scarborough A.S.	York A.S.

Midland Association of Aquarists' Societies

Letters to any of the societies listed below should be addressed to the society, c/o Hon. Secretary, L. Appleyard, 79 Mildenhall, Tamworth, Staffs. A s.a.e. must be enclosed.

Atherstone A.S.	Hinkley A.S.	Rubery Select.
Bedworth A. & Pool Soc.	Kidderminster & Dist. A.S.	Smethwick A.S.
Burton & Dist. A.S.	Leamington & Dist. A.S.	Society of Aquarists for
Binks & Bullow A.S.	Leicester Fishkeepers' Club	Sth. Staffs.
Cannock & Dist. A.S.	Leicester A.S.	South Derbyshire & Dist. A.S.
Coventry Pool & A.S.	Longborough & Dist. A.S.	Stone A.S.
Daventry A.S.	Lower Gornal A.S.	Telford A.S.
Derby Regent A.S.	Longbridge & Dist. A.S.	Tamworth & Dist. A.S.
Dudley & Dist. A.S.	Lucas Sports Club Aquatic Section	Tamworth Killifish A.S.
Fancy Guppy Assoc.	Midland A. & Pool S.	Tube Products A.S.
Federation of Guppy Breeders	Midland Tropical Aquarists	Tipton & Dist. A.S.
Societies (West Midland Section)	North Warwickshire A.S.	Walsall A. & Pool S.
Guest Keen & Nettlefolds	Northampton & Dist. A.S.	Warwickshire Fire Brigade S.
Pool and A.S.	North Staffs. A.S.	Wednesbury & Dist. A.S.
The Haden Aquarists' Select.	Nuneaton A.S.	Wolverhampton & Dist. A.S.

IN SUPPORT OF DAPHNIA

By Lionel Vanderplank

MR. BOARDER says in his article on Goldfish in the November issue: "If only these aquarists could examine the water where these creatures (*daphnia*) were caught under a microscope, they would be amazed what pests could be seen." Or would they? Has Mr. Boarder examined the water? I don't dispute that water generally contains countless bacteria, algae, protozoans and many other minute living creatures but to assume that the water where *daphnia* are caught is necessarily richer in microbes than water, say, containing healthy fish shows that he has not examined water from different sources in any detail. To make a proper examination of any water requires a considerable amount of knowledge and apparatus. A good centrifuge is required to concentrate the microbes first of all; then, either one must use various staining techniques or a phase-contrast microscope to view the microbes once they are placed on a suitable glass slide and to determine what bacteria and fungi that are present it is generally necessary to cultivate smears from the concentrate of various types of agar media. So many people think that tap water is pure and free from all microbes; even in highly chlorinated tap water there are often a good supply of microbes in their dormant or encysted stage but, nevertheless, alive and capable of becoming active once again. Some tap water is rich in protozoans and other creatures; these are not dangerous to humans or others so no steps are necessary to rid the system of them; many water supply pipes are rich in fixed protozoans such as *Vollicella* which are considered beneficial as they feed on bacteria; however *daphnia* and other crustaceans are not often found in tap water in this country although they do occur occasionally. The chief offender is the larger fairy shrimp which can breed in the water mains. The best *daphnia* ponds are often those with a high concentrate of nitrates and rotting vegetation which breeds various kinds of bacteria which form the food for protozoans and in turn the food for *daphnia*. *Daphnia* ponds are often clear water but smelly due to gases caused by the breakdown in decaying vegetation matter. If such ponds are isolated from other water and do not contain any fish or eels, the *daphnia* is likely to be absolutely safe and disease-free since the microbes that cause the decay of vegetation are quite different from those that cause diseases, and one cannot change into the other, no more than a Goldfish can change into a Dace or Eel. If the pond has never had any fish in it and is isolated from other water it will not have any larvae forms of Anchor worms (*Lernaea* sp), Fish lice

(*Argulus* sp) or Gill Flukes (*Gyrodactylus* sp) which are the greatest danger from feeding masses of *daphnia* to aquaria and pond fish. The only danger from *daphnia* in such ponds is that of Dragon-fly and Damsel-fly larvae being introduced with the *daphnia*. As far as garden ponds are concerned they are probably there already, and in an aquarium they can be spotted and destroyed before they do too much harm. *Daphnia*, of course, should be washed in (clean looking) tap water and for the fussy, treated with zinc-free Malachite Green for half an hour before use, but without doubt *daphnia* is the finest food available for most fish and no other food will produce weight for weight such a growth rate in fish as *daphnia* will. There are far greater dangers from diseases with dried foods than *daphnia* as small amounts of uneaten dried food quickly decays and encourages disease-forming bacteria that in all probability has been introduced into the aquarium in the tap water that in so many cases is drawn from rivers containing wild fish of which a few are frequently diseased.

Seeing the small polythene bags with perhaps one to four hundred *daphnia* in them being offered to aquarists at 2s. 6d. a bag, it seems a costly and useless way to feed fish, but good sources of *daphnia* are hard to come by these days. A few years ago I was able to catch 4 to 10 lbs of live *daphnia* in 10 to 15 minutes, but now, due to various forms of pollution, such rich natural sources have gone and I have to breed my own and have several 4,000 gallon ponds set aside for this purpose. Such a pond can produce 4 lb or more a day of live *daphnia* from March to October, and about $\frac{1}{2}$ lb a day during the milder periods of winter. Such artificial ponds have to be rich in bacteria, algae and protozoa to produce the *daphnia*, but as stated above, these microbes are not the disease-forming ones so are no danger to any fish. The type of waters that often contain *daphnia* and dangerous pathogenic bacteria, protozoa and crustacean parasites are ditches (Rhymes in the West Country) which are connected up with rivers and canals, such ditches also have eels, sticklebacks and other fish which are the source of the disease-giving microbes. Authors so often give the impression that there is just one kind or species of *daphnia* available in this country, where in actual fact there are many different species, some small, some quite large. Some live in water that dries up during the summer and they survive as eggs; these species breed mostly in early spring and autumn. Other species only breed in permanent water during the

summer months and these over-winter as eggs on the bottom of the pond. Recently I isolated a species of *daphnia* the adults of which were smaller than newly hatched brine shrimps and were extremely useful for feeding newly hatched fry; unfortunately I lost the strain but it shouldn't be difficult to isolate again next summer. The colour of *daphnia* is no indication of their race or species but depends on what they are feeding. In green water they feed on various free-swimming algae and become greenish in colour; in well oxygenated water they feed on protozoa and have a pale pink colour; in less oxygenated water they become

a deeper red, and the bright red *daphnia* are found in water very depleted in oxygen. Aquarists prefer these red ones because they keep and travel better than the paler ones as they have more haemoglobin in their bodies and can survive in water with very little oxygen, which others fail to do. Goldfish and Koi, given unlimited supply of *daphnia*, will grow 5 to 6 inches in length in 3 months, and I have yet to find any other food which will equal this type of growth. The only real snag with *daphnia*, I find, is getting enough of it economically, and breeding it seems to be the answer.

ALBINO MOLLIE *By Tony Dee*

NOW AND AGAIN the discerning aquarist is almost certain to run into a fish which commands more attention, for a time, than all of the rest of his stock put together. Indeed, in spite of the very wide gap between human and fish, and the great differences in environment and culture, I believe it is possible to form attachments, of a sort, between a human being and a fish. Fish tend to know when it is feeding-time, and rise to the occasion. When I say "rise," I am thinking of a large male Leeri Gourami which has been in full colour with red breast and gorgeous lacy "plumage" for three months or more. He spends most of his time at the back of a well-planted aquarium, visible only if you know where to look . . . but when I approach the tank in my white coat, which I wear for work, he slowly rises and drifts forward to the front glass, propelled by waving pectorals, where he "displays" in full colour, for a minute or more. If I put some food in, he joins the other fish in lazily consuming it. That he is aware of my presence and reacts to it there is no doubt. But the fish which has given me the greatest pleasure in this respect is a female albino Mollie which I bought six months ago at a local dealer's shop. I purchased her as a curiosity . . . but she became a pet. Perhaps because she is blind, or nearly blind, she is remarkably tame. She tends to feed at the surface of the tank, where she continually "nibbles" away at the surface of the water. In this way any stray item floating on the surface is "tasted" and the fish can discover if it is eatable. I soon found that she could just see, with her pink eyes, a white or light-coloured object within an inch or two of her nose, and a small flake of cooked fish, or piece of shrimp or crab, or other suitable food—held with the forceps in front of Molly, caused great excitement. Indeed, she reacted so well to the stimulus of food that I think is constantly hungry, being denied by her blindness the ability to scout round the aquarium in the constant search for food as other fish do.

Molly is a great little mother and seems more aware of her offspring being imminent than do other live-bearing females. In a community tank, where she was consistently pestered by a fine black male of the species, I had a strong suspicion that he was waiting for the young to be born, and then eating them . . . a phenomenon not unknown to the breeder of the *Poeciliidae*. I was able to prevent this by slipping a large transparent plastic sandwich cover into the tank so that Molly only was enclosed, along with a suitable quantity of water. The cover was light in weight, and floated upside-down with a fair quantity of floating plants, etc., for cover. The other fish could see Molly and made frantic efforts to get in, but she made no attempt to escape, playing happily at the surface in the middle of the cover as if unaware of the fact that she was temporarily imprisoned. Indeed, being almost blind, she may well not have known she was not at liberty. With the unwelcome attentions of other fish removed, she rapidly produced twenty-five little Mollies, all as black as night. She has never, in three separate "litters," given me a baby albino like herself, which makes me wonder if albinism is as rare in fishes as it is in humans . . . or will it come out in the next generation, I wonder?

I commenced this short article with a reference to mutual attraction between humans and fish. Molly can only be aware of me as a source of food—in fact I can scarcely be much more than the end of a pair of forceps with food in it which appears in front of her nose from time to time. She is an ugly fish, with her blank, pink eyes, and her colourless, plump little body, but I think the world of her and I shall miss her when the time comes for her to go to the fishes' Heaven . . . And there, they trust, there swimmeth One Who swam, 'ere rivers were begun, . . . And under that Almighty Fin, the littlest fish may enter in . . . H'mmm, I wonder.

BREEDER'S DIARY

By Steve Forster

PRIOR TO going on holiday this year, I sold off most of my stock, cleaned and treated the tanks and then left them to be restocked after my vacation was over.

As many readers will know by now, my personal preference is for cichlids of all shapes and sizes, from all areas of the World, but this year I decided to include other species along with the cichlids. In order to give myself as wide a field as possible, I had no preconceived choices regarding species, preferring to be guided by the selection of mature fish available in the stores.

My resultant purchases ranged through reputedly easy spawners to those said to test the endeavours of many advanced aquarists. The only thing the fish had in common was that I had never kept them before, therefore the following articles will be an actual record of what happened from the date of purchase onwards. It will include the successes (if any) and also the setbacks in the hope that if anyone else tries these species some of the mistakes may be eliminated.

Species and Prices

The fish were all purchased during the third week in September and the list was as follows:

Brachydanio frankei—Leopard danio, 2 pairs, 3s. each.

Hyphessobrycon flammus—Flame tetra, 2 pairs, 3s. 6d. each.

Nannostomus marginatus—Pencil fish, 4 specimens, 3s. 6d. each.

Polycentrus schomburki—Leaf fish, 7 specimens, 5s. 6d. each.

Hemigrammus nanus—Silver tip tetra, 2 pairs, 3s. 6d. each.

Colisa labiosa—Thick lip gourami, 1 pair, 17s. 6d. each.

Barbus tetrazona—Tiger barb, 2 pairs, 7s. each.

Danios, Flames, Silver Tips and Pencil Fish

The subject species were all housed together in a lightly planted 24 × 12 × 12 in. aquarium and apart from the Pencil fish all specimens were easily sexed. The females in all cases were heavier in the belly, a little less colourful and slightly larger in size. They all settled down quickly and accepted any food that was offered. One of the female Flames swam with a peculiar jerking motion and I thought that it would be lucky to last another 24 hours; however some weeks later it is still with us although it has not lost its peculiar motion. Apart from a quick flip onto the floor by one of the leopard danios, no mishaps have yet occurred.

Leaf Fish

Being placed in my local water seemed to have an instant effect on the leaf fish as within hours most of them were showing quite distinctive ovipositors. No signs of pairing or pre-spawning behaviour were observed but the ovipositors still appear every eighth day. This species was also installed in a 24 × 12 × 12 in. tank, heavily planted with *cabomba* and *hygrophylla* and furnished with four half-coconut shells.

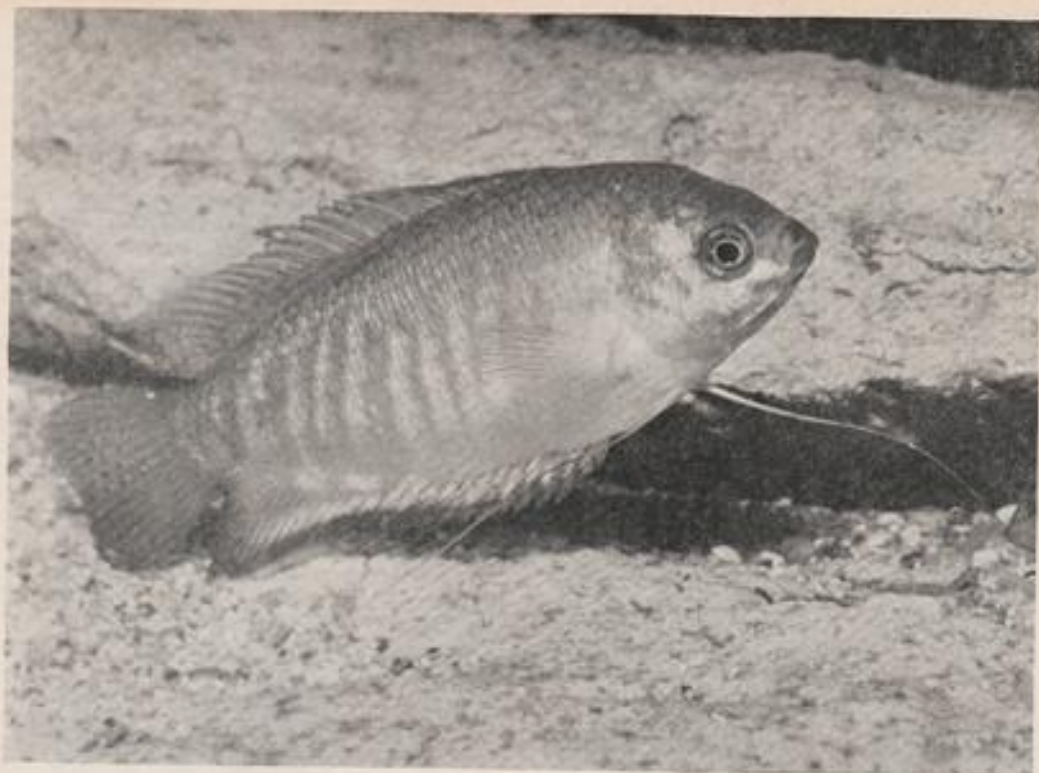
Four days after their arrival I found one of them on the floor so that cut the number to six. Another week passed and the number was further reduced by one as another died, this time due to causes unknown. I had noticed that this particular specimen had not been eating for a couple of days and each day had become a little paler in colour. When the body coloration reached a slate-grey shade the fish died. It would appear that when leaf fish start to lose colour they are on their way to the "big aquarium in the sky."

Feeding *P. schomburki* presents no problem other than obtaining supplies of live food. *Tubifex*, *daphnia*, glassworm, fresh water shrimp and live-bearer young are all swallowed with equal relish. One of the unforgettable moments in keeping these fish is seeing them open their cavernous mouths when swallowing their prey. One minute they look as if the jaw construction is quite normal then the mouth unfolds and it is reminiscent of peering into the Mersey Tunnel.



Tiger Barbs

Due to their requirement for plenty of swimming length and also because I didn't fancy trying to catch them in a well-planted community tank, the Tiger barbs ended up in an old aquarium that was designed for breeding zebras. The dimensions of the tank are



Colisa labiosa or Thick Lip Gourami

30 x 10 x 10 in. and this length suited the barbs ideally as they are on the move continuously.

Feeding is again no problem and all varieties of food are accepted. The only problem encountered with this species was the well recorded habit of bullying, where three of the fish ganged up on the remaining one. I tried two methods of overcoming this problem and as both methods were employed simultaneously I do not know which one did the trick. The three offenders were kept in a breeding trap for 48 hours and at the same time I introduced another three specimens of the same species into the tank.

I am inclined to think that the increase in numbers stopped the bullying rather than the short term of imprisonment in the breeding trap.

These fish are the most mature of the collection with the exception of the gouramis so I hope to try and spawn them within the next few weeks.

Thick Lip Gouramis

With this species I didn't have time to make any notes on their behaviour during the settling down period as they started to prepare for spawning almost immediately. This pair were in exceptional condition (and the others in the dealer's tanks were in similar shape) and no sooner were they housed in a twelve

gallon tank when the male began construction of the bubble nest.

This exercise took him the best part of the day and the spawning occurred the following morning. The male had taken on a deep blue body coloration and the dorsal fin was edged with orange. During the pre-spawning behaviour he displayed himself in front of his partner until she was interested enough to follow him in below the bubble nest. The nest measured approximately eight by four inches and was built around the tips of the cabomba plants.

The spawning then proceeded in usual gourami fashion with the male enclosing the female in a "wrap around embrace" turning her belly upwards and then applying the required pressure to release the eggs. The eggs floated upwards and after each embrace the male spat any wayward eggs into the mass of froth.

Spawning continued for about ninety minutes and when the female was depleted of her eggs, the male forced her away from the nest. Normally the female should be removed but as I was short of tank space I left her in the breeding tank and as it was well planted she came to no harm. Next month I will detail the hatching and growth of the fry.

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 just purchased a large aquarium to add extra attraction to our lounge. Would you kindly give me the names of some medium-sized fishes which would look well in it, live peacefully together, and swim at all levels in the water.

Balantiocheilus melanopterus, *Danio malabaricus*, *Rasbora elegans*, *Morulis chrysophekadion*, *Melanotaenia nigrans* and *Trichogaster microlepis* would fill the bill.

In my part of the country there is said to be rather a lot of lead in the tapwater. Will this harm my aquarium fish?

As I stated in our issue for August, 1970, a gradual building up of lead in the bodies of our fishes (and ourselves) will soon result in serious trouble. One way out of your difficulty would be to siphon away a small quantity of the aquarium water every so often and top up again with clean rainwater or distilled water. If you do this you will have little to fear.

What thickness of glass should I use to glaze a 72 in. x 15 in. x 12 in. steel aquarium frame?

Glass $\frac{1}{4}$ in. thick is advised, though $\frac{3}{8}$ in. should prove satisfactory in a very sturdy and rigid frame.

Is the black paradise fish less inclined to bully and bite than the ordinary paradise fish?

I have not kept the black paradise fish (*Macropodus opercularis concolor*) since the latter half of the 1930s, but I remember it as a spiteful fish totally unsuited to a community tank.

I have bought two very small brown discus. I cannot get them to accept dried food or white worms. What can I do to keep them alive?

Baby discus can be faddy or even refuse to eat at all if their needs are not understood. It is of prime importance to offer them very small living food such as chopped well-washed tubifex or Grindal worms dispensed from a perforated worm feeder. Also, they must not be placed with any other fishes which will jostle them away from food. And above all, see that their aquarium is kept very clean and there are sufficient vertical-leaved plants to provide shelter.

I have seen the smooth aerial roots of the house plant called *Monstera delicosa* trained into the water of a tropical aquarium. What effect do these submerged roots have on the fishes?

The unbroken roots of *M. delicosa* trailing in the water of a tropical aquarium have a beneficial effect; for they take up a lot of the nitrogenous wastes of the fishes and use them for food.

I cannot grow any plants in my three-foot tank illuminated for about six hours a day by a 20 watt Gro-Lux lamp. Can you tell me what is wrong?

I imagine you have been trying to grow plants that require a brighter light than that given out by a 20 watt Gro-Lux lamp. If you change to a 20 watt warm white fluorescent lamp you will find that most cryptocorynes and, say, Java moss, will grow well. Alternatively, use the existing Gro-Lux and the warm white lamp together. This should enable you to grow lots of other plants too. But one more word. Increase the number of light-hours given to about ten.

Can I keep two tiny red-ear terrapins in my thickly planted tropical aquarium without endangering the lives of my fishes?

Baby (hatchling) red-ear terrapins (*Pseudemys* sp.) will give no trouble until they reach a carapace length of about two inches. At this size they cannot resist taking a bite at passing fish. Clearly, then, they should be given a new home similar in set-up to the one they have been used to.

I should appreciate some information about a fish called Ladiges' gaucho?

This fish, an oviparous cyprinodont, goes by the formal name of *Cynopocilus ladigesi*. It occurs in the temporary pools of the pampas of South America. It deposits eggs in the mud before the pools dry out, and the fry hatch when the rainy season comes round again. Full grown this species measures about 1½ in. It is not difficult to keep in peaty acid water and will accept most foods given to omnivorous fishes.

I have bought some young *Osphronemus alfax* gouramis. Will these fish settle down all right in a 24 in. × 12 in. × 12 in. community tank?

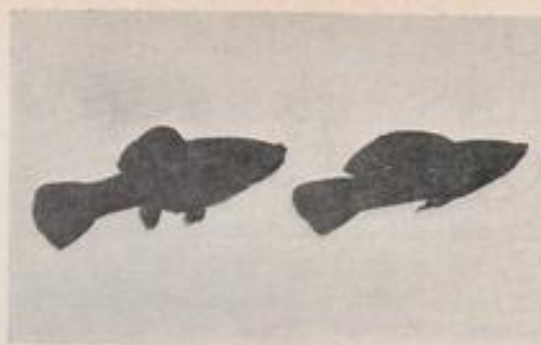
O. alfax is not an aggressive fish but it does grow to a large size—about a foot—and naturally it needs room to move around in and companions that cannot possibly be mistaken as food. In a word, your fish will soon need the tank they are sharing with other fishes for themselves.

I have acquired a pair of *Apistogramma agassizi* and I would be most grateful for your advice on their proper care. At the present time I have them in a community tank. Later on I would like to breed them.

If it is your intention to breed *A. agassizi* then you should make a start in this direction now by giving them a tank to themselves. A tank about 18 in. × 12 in. × 12 in. would do. Set it up with plants, a scrubbed flower pot turned on its side, and softish neutral to acid water. This fish, should be quite happy, however, in a community tank stocked with fishes on the small size and, above all else, inoffensive.

I am a comparative newcomer to this fascinating hobby of tropical aquarium keeping and I would appreciate your advice on the keeping of black mollies, which I think are among the loveliest little fishes I have come across in dealers' shops to date.

The black molly, like other mollies known to the tropical aquarist, flourishes best in a tank on its own because its demands are rather special. First



Black Mollies

and foremost, it needs ample swimming space in well-aerated water. Next, the water should be made slightly brackish by stirring in about a teaspoonful of seasalt to every gallon. But once this initial quantity of salt has been added it is best not to add any more. If you neglect this piece of advice you will have difficulty in growing any plants. Mollies are sun-lovers, so their tank should be well-illuminated for at least ten hours a day. The best temperature for mollies is about 75°F (24°C). Ordinarily fry will be delivered about three or four times a year, perhaps more frequently than this. By nature the molly is largely vegetarian and cooked spinach, lettuce or tender cabbage should be given every so often. For the rest a good dried food and some small live food or tiny scraps of meat.

COLDWATER QUERIES

by A. Boarder

For a number of years toads have bred in our pond. For the past two years hundreds of tadpoles have not grown legs and now in October, they do not seem to develop and will die in the cold weather. Would your care to comment on this please?

It is obvious that the toad tadpoles have not been able to find sufficient food for their proper development. It is essential that they can get plenty of the right kind of food or they will never grow at their maximum rate. Many could live through the winter and develop in the spring or summer next year. It depends on whether ice forms on the pond and remains for a long period. At the present size of the tadpoles they must come to the surface of the water for air and if not able to do so would die. Tadpoles eat large quantities of soft food during their development and this is in animal and vegetable matter. If

you have fishes in the pond there is no doubt that they ate most of the food which would have been available for the tadpoles. You should feed them with soft foods such as scalded lettuce and cabbage leaves, boiled mashed potatoes, mashed earth-worms, scrapings of soft meat, etc. Once the hind legs appear to be about half grown, tadpoles eat voraciously and continue to do so until their front legs appear. They then live mostly on the tail and as it disappears they leave the water and their food changes to small live creatures.

Can you give me any information as to how to prevent ice forming on the garden pond during the winter. Last year I placed a quantity of block salt on the ice but I lost many fish, especially the younger ones?

Too much salt could do more harm than good as it does not disappear from the water but if the water evaporates it is left behind. Salt is a very good cure for many skin diseases and troubles but it should not be used as a deterrent. One does not take doctor's medicine unless one is ailing. You can use a small tank heater in your pond. A 100 watt one would do and this should have a small weight just above it to prevent it from floating to the surface. It need only be switched on during severe weather and although it is not likely to prevent most of the pond from freezing over, it will keep open a hole so that fresh oxygen can enter the water and foul gases escape.

I have had a pond for some years and have only this year had any trouble. One of my veiltails in the pond has developed fin-rot on the tail. Is there anything I could put in the pond to prevent this from happening?

I do not think that veiltails are a good variety of goldfish to keep in the garden pond. Their flowing finnage is always likely to become attacked by fin-rot, which is a form of fungus. It appears that there is insufficient blood flow into the extremities of the caudal fin and so if any disease is in the pond, the extremities of fins are the first to be attacked. The usual salt treatment will cure the trouble but in the cold weather it is probable that the disease could strike again. Such fish should be taken into a warmer place during severe weather. I do not like trying to treat the whole pond with any substance as a preventative although some pondkeepers do add some sea salt to the pond. However this can be overdone and too much could harm water plants and fish. Good clean water tends to keep the fish in good condition. Their mucus covering is then in a fit state to repel the usual diseases.

I have lost one or two fishes in my pond including shubunkins and golden orfe. They just

became listless and black marks appeared on them. Why was this?

Black marks often appear on golden orfe and this is not necessarily through disease, however if these marks are found on mature goldfish it is usually because there has been some damage to the part. As the new flesh forms it is black for a time. Fish do not die in a pond unless there is something wrong with the state of the water. Either it contains harmful minerals or has been polluted through giving more food than the fishes could clear up. More ponds and tanks are ruined by over-feeding than from any other causes. Goldfish could live in a normal garden pond for months on end if no artificial feeding took place but over-feed for a couple of days, especially with dried foods, and trouble will occur.

The pond should be cleaned out to remove any decaying matter.

I recently bought four small orandas. Two of them have been attacked by a form of congestion which appears as red blotches on the fins and body. What is the reason for this?

From your sketch of the oranda I conclude that the fish had been recently imported. These types are raised under very warm conditions and when they are in transit or arrive at a dealers shop they may sustain a chill. Also many fishes imported during the last year have been found to be infected with a disease which, so far, has not been correctly diagnosed. These imported fancy fish should be treated almost as tropicals with a water temperature of 70° to 75°F. It is also better to provide some aeration as the warmer water will contain less oxygen. Usually a salt bath for a few days will cure such a fish if only congestion is the main trouble.

I have recently taken up coldwater fish-keeping and have two tanks, 18 x 10 x 10 in. I have bought pearl-scaled goldfish; bitterling; peacock-eyed bass and a dogfish. Can you tell me how to breed them?

You have no chance of breeding the fishes you have purchased in such small tanks as you have. Goldfish would eat the eggs or fry, bitterlings only breed when certain fresh water mussels are present to receive the eggs, sunfish are not likely to breed nor would the dogfish. I suggest that you try with a larger tank with goldfish alone and then when you have gained some experience you could branch out with other species.

I am considering constructing a pond in the garden but I am rather bewildered by the various methods of construction. Should I use concrete, fibre-glass or plastic lined types?

So far, most of the fibre-glass pools I have seen are

not large enough to be classed as little more than a large puddle. They are usually too shallow to be safe for fishes during a severe winter. Concrete ponds are strong and lasting if correctly made but need plenty of hard work to make, whilst plastic ones are easier to construct and last well if a strong lining, such as butyl, is used. The cost of the fibre-glass and plastic lining can be more than a concrete one, so you must make your choice.

I have reared 100-150 goldfish fry this year and they are in a large tank in the garden. I have made a container, 5 ft. by 2 ft. by 18 in. in a garden shed. The water will not freeze in the shed. When should I place the fry in this tank and if I go away from December to the end of February will the fry survive without feeding?

You can transfer the fry at the beginning of November. See that you have plenty of water plants, especially hornwort in the tank. When you are away the weather will be cold and the fry will not be feeding much if at all. If the weather turns mild and they start to feed they will be able to find plenty to sustain them from the water plants. You suggest taking water from the pond for the new tank. I suggest that you use mature tap water which is sure to be in a purer state than that in the pond. Very often if water is taken from an established pond and put into

a small container it turns foul within a few days and then the fish would be in trouble.

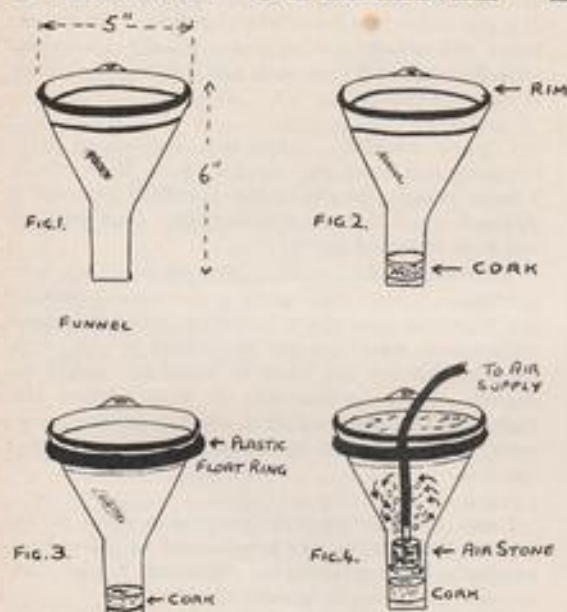
Please could you tell me how to photograph fish?

This is a fine art and only experienced photographers who specialise in this craft are likely to get good results. It does appear however that colour pictures are easier to obtain than black and white. To get fish near enough to the camera and not to have too much water between the fish and the lens, it is necessary to use a piece of glass inside the tank to restrict the swimming space. The glass is fixed near to the front so that the fish is always near the camera. Two lamps are used as a rule, one above and one at the side, so that all reflections are cut out. It is then a matter of extreme patience to wait until the fish is in the right position and displaying correctly.

My daughter has two goldfish and one has now changed to a pearly colour instead of red. Why is this?

It is probable that the goldfish is from a strain of fish which have plenty of silver in their make-up. It may have come from a stock which has some shubunkin strain in it. It is not a disease and it is not likely to change to red again. Such fish often get more silver on them each year and not any more red.

BRINE SHRIMP HATCHER *by J. Dunbar*



HAVING TRIED hatching brine shrimp in an ordinary jar submerged in the tank with not very much success, (the eggs would always build up in a heap on the other side of the jar, not giving a very high hatch-yield), I decided to have a go at making a small hatcher, giving a good hatch. After several ideas, I came up with the following. I bought a plastic funnel, measuring 5 in. diameter by 6 in. deep (fig. 1) the type for filling paraffin oil into a heater.

The next job was to plug the bottom of the spout with a cork taken from a medicine bottle (fig. 2). I then took a piece of $\frac{1}{2}$ in. plastic air line and made a tight ring joining it with a plastic plug. This ring fits under the rim of the funnel (fig. 3) and acts as a float. Next the air-stone was fitted into the spout (fig. 4) and the funnel filled up with salt water submerged into the tank, and connected to the air supply. The shrimp eggs are then introduced.

I have found that I am now getting a much higher yield of shrimps. The eggs naturally slide down the sloped sides of the funnel and are then immediately forced back up again by the air-stone, always keeping the eggs circulating. This method is cheap and effective, and well worth a try.

Monodactylus argenteus

By Jack Hems

THIS BEAUTIFUL species, popularly known to the tropical aquarist as the Malayan angel fish or mono, and to the zoologist as the fingerfish or silverfish, is extensively found in the coastal waters and estuaries (some ascend rivers) of Africa (except in the north), India, the Malay Archipelago, and northern Australia. It is a member of the widely distributed family *Monodactylidae*.

Monodactylids are characterised by a deep and strongly compressed body (roughly disc-shaped), almost invisible ctenoid scales that extend onto the elongated dorsal and anal fins, small ventral fins, and a small head and mouth. They are gregarious by nature and move in shoals.

M. argenteus is said to reach a length of some eight or nine inches, that is in the natural state, but captive specimens usually stop short at about half this size. It flourishes well in a properly cared for aquarium provided there is ample swimming space in well-aerated water (giving a neutral to slightly alkaline reaction) and a temperature in the neighbourhood of 75°F (24°C). Like most active fishes—it is seldom still—it is a hearty eater, with a marked partiality for vegetable food. (And here I think it necessary to observe that in order to limit the damage this fish can do in an artistically planted tank, it is a good plan to include a goodly proportion of, say, bruised fresh lettuce or cooked spinach in the diet.) No one who has had much experience with *M. argenteus* can argue that it is a finical feeder, and the large specimens I used to keep many years ago were fed almost exclusively on uncooked porage oats (shaken in a fine-meshed wire strainer to rid them of dust), mashed table greens, and whole or chopped earthworms. Food is rarely, if ever, taken from the bottom.

The Malayan angel fish is quite suited to life in a community tank, but it is necessary to warn those who have not kept this fish before that, after it has reached a length of about two inches, if not before, it develops a tendency to chase after, and chevv, smaller and less vivacious companions. I have heard it said that *M. argenteus* is a shy and timid fish. True enough: but only at the start; for once it has settled down in a new home it quickly becomes very bold.

A point worth raising which has to do with the care of this fish is the question of salt. Salt—that is, seasalt or non-iodized kitchen salt (a teaspoonful to every gallon)—is a refinement that many Malayan angel fish can do without. Yet it cannot be over-emphasised that the sort of conditions the fastidious like to provide for scats will suit *M. argenteus* very well too.

The appeal of the Malayan angel fish lies in its shape, its darting movements, now in the upper levels, now in the middle levels, and in its really splendid coloration. The body is olivaceous above shading through palest beige into silvery white dusted with gold below. Under a bright light the silky sides show a fugitive sheen of sea-green, or blue. A black marking extends from the nape, through the large eye, to the gill-cover; another dark marking sweeps down in a graceful curve from the front of the dorsal fin,



across the hind-edge of the gill-cover, to the anterior margin of the anal fin. The soft portions of the dorsal and anal fins are canary to orange-red, the dorsal with a splash of black at the tip. The caudal fin is yellow.

Recognition of a Malayan angel fish is good physical condition is not difficult. Almost always the sides look more convex than flat. (Never buy a fish with a pinched-in appearance above the vent.) Then the eyes: these should be full and bright. Although strength of colour is a desirable feature in this species it is not always a sign of sparkling health: many a moribund fish will display intensified markings as its body dies.

Before you release newly-purchased Malayan angel fish into your aquarium always float the plastic bag they are in in the water for about ten minutes to allow the two temperatures to equalise. (Although this precaution against an abrupt change in temperature

applies to all newly acquired fishes, it is of supreme importance to see that it is adhered to in the case of *M. argenteus*, which is a temperature-sensitive species). And one more thing. In order to make the transfer of the fish from one type of water to another as smooth as possible, submerge the bag very gradually before you let the fish out.

Although *M. argenteus* has been known to tropical aquarists since 1908 it has not, up to the present writing, been bred in captivity, and I do not know what secondary sexual differences, if any, exist.

Rather infrequently a congener called *M. sebae* comes on the market. This species appears to be found only in the coastal waters of West Africa. It has a deeper (taller) body than *M. argenteus*, and the dorsal and anal fins are quite spectacular in their development. The basic colour is a light brown overlaid with silver, and there are four or five vertical stripes on the sides. These stripes are darker in young fish than in old fish. In books published more than 40 years ago the fingerfishes were referred to under the genus *Psettus*.

THAT LONG-LOST ARTICLE

By R. H. Birchall

THERE is a saying in the university library that "a book misplaced is a book lost." As my collection of aquatic books and journals grew over the past few years I came to think the same of many fine articles which I knew to exist, but were hidden by numerous others, and the larger my "library" grew the more difficult it became to find an article rapidly.

I set about finding a solution, and found it in the form of 5 in. by 3 in. index cards. These cards are readily obtainable at most stationers and can be bought, lined or unlined, fairly cheaply (£1 for 1,000). Each article, or useful reference was then classified under a certain heading and the cards slipped into alphabetical order. If the topic recurred in a later magazine the card was removed and a new reference added, e.g., an article on the Dace occurred in the November 1970 issue. The card "*Leuciscus leuciscus*" was removed and under the previous entries, "*The Aquarist*, Nov. '70, P.275" was added.

Besides just using the system as a comprehensive index for all magazines and books, I also find it very helpful as an aquarist's dictionary. There are so many common names for each scientific name that when I came across, e.g., Dace (*Leuciscus leuciscus*), for the first time I made out a card for Dace on which

it says: "see: *Leuciscus leuciscus*." By using the scientific names one avoids duplicating references to the same fish by referring to them on different cards. Where there is a change in the scientific name this, too, is recorded by a reference to another card.

For those of us who like to flatter ourselves that we can speak a foreign language and occasionally delve into books on our hobby in this language, the card system can be very useful as a dictionary of common names for the fish names in that language.

At the moment I am trying to refine my system. I started off with different coloured cards for the various sections of the hobby: management, tropical freshwater fish, coldwater fish, marine fish, and plants, all being separate sections, but I am now merging the fish section into one. The cards are not expensive, but proper files to hold them are, and at the moment mine are still housed in their original place—my dressing-table drawers. But the files are of very minor importance; what is important is to be able to lay one's hands *immediately* on the required article without damaging years of magazines by being in too much of a hurry. The system takes time to get started (and you don't all have as much time as students do!) but once in operation you'll agree it was worth the effort.

BOOK REVIEWS

Tropical Freshwater Aquaria by George Cust and Peter Bird. Published by Hamlyn-London. 6s. For the beginner in tropical fishkeeping, this book—one in a series of paperbacks on a wide variety of subjects—is a good buy; for the authors give much useful and up-dated information on many things the tiro will want to know including the points to watch

when purchasing, setting up, stocking and maintaining a heated aquarium. Be this as it may there are those who will wince when they arrive at page 151 and study the example of a show judge's scoring card and find "specie" given as the word to describe the sub-division of a genus and "Betta Splendence" as the scientific name for the long-finned Siamese Fighting Fish.

Nomenclature is about as reliable as our betters allow it to be, though it does seem a little premature to apply the generic names of *Capoeta*, *Barbodes* and *Puntius* to cyprinids which not a few distinguished ichthyologists on both sides of the Atlantic prefer to call *Barbus* until more painstaking research has been carried out. I would like to point out also that the novice might have cause to curse the authors for what they say on page 139. For surely tropical plants should not be left lying around in cold water until the time arrives to switch on the heat? The coloured drawings which illustrate this book are most disappointing. In general they bear little resemblance to the fishes they are supposed to portray. And as for the colour! in many cases it is appalling.

JACK HEMS.

Know Your Aquarium Plants by Dr. Don L. Jacobs, price 7s.; and **Enjoy Your Modern Swordtails and Platys** by Dr. Joanne Norton, price 3s., published by The Pet Library Ltd., 30 Borough High Street, London, S.E.1.

BEING very keen on aquarium plants and their cultivation, I always look forward to reading new books on the subject. "Know Your Aquarium Plants" is another American book in the Pet Library's "Know" series which, at a cost of 7s. 0d. is, I consider, good value for money. The book consists of 64 pages. One of its most attractive and useful facets is the inclusion of thirty-eight coloured photographs of aquarium plants, most of which would be of great help to the amateur in the identification of plants which are new to him. Although the colour reproduction of a few of the photographs is not as accurate as it might be, most are very good. The book also contains 43 coloured drawings of plants, as well as some black and white line drawings of plant parts and suggested layouts for the planting of aquaria. The author, a plant ecologist, includes an amount of standard material on aquarium plants and their cultivation but has also a large number of original and useful ideas which I have not seen in print before. He gives information on the general requirements for good plant growth, deals with the subject of algae, gives specific—if limited—information on the more popular plants, and has an interesting section on plant enemies. The book has an index giving botanical and common names of plants but, unfortunately, it does not give page numbers for quick reference. The author's comments on one particular plant, *Cryptocoryne ciliata*, left me somewhat confused. He stated that this name was incorrect and that the plant has the common name of Permasword. As a distinct species of *C. ciliata* is on sale in Britain I would assume that what we call *C. ciliata* is not the same plant as Dr. Jacobs calls the Permasword. From the photograph in the book the Permasword would appear to be a species of *Anubias* or *Lagenandra*—however I may be completely wrong, and stand to be corrected.

January, 1971

I found the book to be interesting, useful and provocative and, at 7s. 0d., would recommend it for the book shelf of the plant loving aquarist.

Having recently been engaged in breeding some of the more modern swordtails, I was keen to read "Enjoy Your Modern Swordtails and Platys." Dr. Norton is one of the world's leading breeders of new varieties of these fishes and is thus an obvious authority on them. The book has 32 pages and twenty-three useful coloured photographs showing the wide range of colours and finnage in recently produced fishes. The book contains a vast quantity of very useful information for the breeder and is written in language which should be simple enough even for the beginner. There are several simple charts which show what offspring one can expect to get from specific crosses, and a chart giving possible combinations of colour and finnage. The range is quite vast. For the breeder of modern swordtails or platys I would say that, at 3s. 0d. this book is a "must."

B.W.

Swordtails For The Advanced Hobbyist by Drs. Myron Gordon and Herbert R. Axelrod, published by T. F. H. Publications, Inc., price 15s.

THIS is an interesting, soft-cover booklet, of 96 pages, which will be of special interest to those who like swordtails—especially the newer varieties which have been produced in captivity. A percentage of the material is from the late Dr. Gordon's booklet on swordtails, and it has been edited by Dr. Axelrod, who has also added a number of chapters on the more recent introductions.

The booklet is well illustrated with coloured and black and white photographs, and with drawings. The photographs come from a variety of photographers and give good coverage to the range of swordtails now available. The booklet runs to ten chapters, the first of which gives a history of the swordtail. Chapter Two introduces the reader to the hifin and the lyretail swordtail, and the following chapter deals with reproduction. Chapter Four discusses hybrids and the following chapter, which is illustrated with breeding tables, is about red swordtails. The next topic is the wagtail swords and this is followed by a chapter on the red jet swordtail. The interesting mystery of the Montezuma swordtail is the subject of the next section and this is followed by an account of an albino sword which produced over three hundred youngsters. The final chapter in the booklet deals with sex-changes in swordtails and the editing author ends by posing a dozen questions on the subject.

If you have a special interest in swordtails I would suggest that you add this booklet to your library. The photographs alone make it most useful for identification purposes.

B.W.

PRODUCT REVIEWS

PHILLIPS "MULTIFREEZE" 100% FREEZE DRIED FOOD for all tropicals and marines, produced by Phillips Yeast Products Ltd., Park Royal Road, London, N.W.10, price 5s. 6d. per plastic drum.

Most of us have tried out some varieties of freeze dried fish foods, and know all about them—or do we? What is so special about freeze dried foods? Reading that Phillips Yeast Products Ltd. had produced a new food, "Multifreeze," I contacted them and they were kind enough to supply me with some information about freeze dried foods in general, and about "Multifreeze" in particular. I would like to thank their advertising director for supplying the information for my use.

The firm began its work on this new product some considerable time ago, and although they had proved in trials that most varieties of fish would live and breed successfully, over long periods, on a diet based exclusively on Phillips Flaked Fish Foods (I reviewed these in former editions), they also knew that other varieties preferred live food. They therefore directed their research into devising a food with the palatability and nutritional quality of live food, presenting it in a form with the safety and convenience of dried food.

Two common methods of preserving foodstuffs are by drying or freezing. Both methods have disadvantages. Drying results in thermal denaturation of protein giving changes in texture and taste, and in thermal destruction of heat-sensitive nutrients such as vitamins. Freezing results in texture and palatability changes, not actually in the freezing process but mainly during thawing prior to use, and freezing requires continued cold-store facilities up to the time of use. Freeze drying is an advanced and complex process which combines the two methods, while eliminating the disadvantages of each. The freeze drying process consists of (1) freezing the foodstuff so that its water is converted into ice; (2) applying a high vacuum to the frozen material, under which condition the boiling point of water (ice) is reduced to such a low temperature that evaporation of the ice takes place while still maintaining the food in the frozen state; (3) once all the water has been removed the material can be allowed to come up to room temperature and is, henceforth, perfectly preserved. The process has these advantages: (a) no thermal destruction of nutrient occurs; (b) no thermal denaturation of protein occurs; (c) no physical deterioration takes place because of ice-thawing; (d) the finished product can be stored, almost indefinitely, under normal conditions. Because of the advantages of the process, the reconstituted preparation is as close as it can be, both physically and nutritionally, to the natural, fresh food. Fish therefore find freeze-dried foods particularly desirable.

With their "Multifreeze," Phillips have broken new ground in that it is, they believe, the first fish food of compound formula which is 100% freeze dried. The seven ingredients are: F/D heart, F/D roe, F/D egg, F/D shrimp, F/D spinach, F/D liver and F/D lettuce. The analysis of the food is given as protein 60%, fat 5% and fibre 4%. Directions for the use of the food are not printed on the pack as the makers feel that it will be purchased mainly by experienced aquarists who are themselves best able to judge how it should be included in their feeding plan. They suggested to me that fish should be fed little and often and, in any case, no more than will be consumed in five minutes. They state that they have put a lot of research into their "Multifreeze" and have given it extensive trials. The makers give the following as the food's important features: the protein content is 60%; the food is homogenised—meaning that it is highly digestible, that it eliminates the coarse particles such as are found in other foods, and that it is one of the reasons why such a high degree of floatability has been achieved; it is presented in particle sizes suited to all community fish; it floats almost as well as flaked foods; unless grossly over-fed it will not cloud water; despite the expensive process it is moderately priced at 5s. 6d. and makes an exciting alternative to flaked foods; its high nutritional quality makes it economical in use; like the Phillips Flaked Foods it is British in manufacture.

Again I would like to thank Phillips Yeast Products Ltd. for supplying the above information. Now, what did I think about the food? I found the plastic drum in which it is supplied to be of a convenient size, and easily opened and resealed. It is difficult to assess the value for money of the food as the weight of the contents of the container is not given. There is a wide range of particle sizes making the food suitable for fishes of various sizes and ages. The larger particles can be crushed easily between the finger and thumb, if so desired, but there is a fairly large percentage of smaller particles suitable for smaller fishes. I was impressed by the fact that the larger particles broke down so easily; some other F/D foods contain larger pieces which are like dried leather. My fish—of various species and sizes—were very fond of the food and set about eating it greedily, and with apparent relish. One small point—I found that quite a number of the particles of food sank rather quickly whenever a crowd of starving fish swirled under them; however, particles which were not eaten on the way down were soon found on the gravel, and quickly eaten, after the floating particles had been consumed; on the other hand, young swordtails in a tank by themselves seemed keener to eat the "Multifreeze" after it had reached the base of the tank. I would say that this food would be as good as live food and would recommend it to the discerning aquarist, for feeding to his better fish, as a change from flaked or granular foods.

B. WHITESIDE.



from AQUARISTS' SOCIETIES

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

THE November meeting of the **Yate and District A.S.** was also the annual general meeting when members heard of the very successful year that the Society had enjoyed. At Open Shows the events were well supported and the Society's own show had the largest entry yet.

On the last Saturday in November the last of the inter-club shows between Bath, Trowbridge and Yate was held. This was won by Bath who then became the overall winners. The new chairman is Dennis Noble, and the Secretary, M. Birney. January's meeting will be held at Stanhawe Court Hotel, Yate.

FOR the two meetings of the **Grimsbury & Cleothorpes A.S.** held in November, members had a quiz and "Any Questions?" session, and slides on fish parasites. The Society's stand at the "Hobbies for All" exhibition, held recently at Cleothorpes Memorial Hall, proved a big attraction, and it is hoped that there will be several new members as a result. The monthly Table Show result was: Angels: 1 and 2, R. Jennings; 3, C. Easton. Barbs (over 3 in.): 1 and 2, E. Parker; 3, A. Metcalf. Catfish: 1 and 2, R. Jennings; 3, C. Easton.

THE **Gloucester A.S.** held their November meeting under the chairmanship of L. Higgin. After the club business was dealt with the results of the Home Aquarium Competition were announced. These were as follows: 1, L. Griffiths 237 points; 2, M. Brooks 236 points; 3, C. Rossiter 235 points. Any person interested in joining the Society please contact M. Brooks, Hon. Secretary, 114 Melbourne Street, Gloucester, or come along to one of the meetings which are held on the first Thursday of each month at St. James's Parish Hall, Upton Street, Gloucester, at 8 p.m.

THE membership of the newly formed **Great Yarmouth and District A.S.** was increased at the meeting held on Monday, 30th November, giving a total of 85 members. An informative discussion on Aquarium Filtration took place and the Chairman, F. Seaman, concluded the meeting by demonstrating the setting up and equipping of an aquarium. The Secretary Mrs. J. Middleton of 38 Brooke Avenue, Caister, would be pleased to hear from anyone interested in joining the Society.

THE **Hull A.S.** has enjoyed a very successful year but although successful in many competitions fell just short of a final conquest when the points were decided for the "Ingamells Cup." This is for a three-way contest between Scarborough, York and Hull and was won by York. Results were as follows: Characins: 1, J. Hollingsworth. Cichlids: 1, B. Stubler (Hull); 2, P. Ingamells (Scarborough); 3, H. Maves (Hull). Livebearers: 1, 2 and 3, H. Stubler (Hull). Barbs: 1, E. Maves (Hull); 2 and 3, Mrs. B. Batch (Hull); Anabantids: 1, G. Batch (Hull); 2, R. Hollingsworth (Hull); 3, T. Collingswood (Hull). Cats and Loaches: 1 and 2, B. Stubler (Hull); 3, R. Moody (Scarborough). Rabbits, Danios and Minnows: 1, G. Batch (Hull). Best Fish in Show: B. Stubler (Hull).

THERE is a change of officers at the **Tottenham and District A.S.**, and these are: New Secretary, K. Massey, 72 Westward Road,

South Chingford, E.4; New Show Secretary, B. Thomson, 3 Reynards Court, High Road, Tottenham, N.17.

ALTHOUGH the competitive season is over, **Ealing and District A.S.** are maintaining plenty of interest until this year's season begins. Recently, the third leg of an inter-club series of matches between Ealing, Riverside and Runnymede A.S. was held at Ealing. Although Ealing won this particular match quite convincingly, Riverside hung on to their early lead to win the series by the close margin of two points. This series of matches proved to be very popular with the three Societies. The Society's long-running Table Show for individual, nominated fish—the Irvine Trophy—has one round to go, as has the Plant Trophy, and the Society's Closed Show will be held on 17th January. The Committee for this year will be elected at the Annual General Meeting on 12th January and members are reminded that there will be three meetings in January, not the usual two. Ealing v. Riverside and Runnymede final result: 1, Riverside 72 points; 2, Ealing 70 points; 3, Runnymede 38 points.

FOR the November meeting the **Bishops Cleeve A.S.** was given a talk by R. James of Cheltenham Aquatics on the subject of both cold and tropical plants which can be found in the normal home aquarium, plus some more unusual plants seldom seen. This provoked an interesting discussion afterwards. The Table Show was for A.O.V. of Cichlids: 1, J. Williams; 2, N. W. Dooley, both with Blue Acaras and a first for Mollies: L. Gamblen, with a Sailfin.

A RECORD number of entries were received for the **Sittingbourne (Kent) & District A.S.** annual inter-club show, held recently. The best fish in show award went to Mr. R. Taylor of Tonbridge A.S. for his winning cichlid with 87 points.

Tonbridge were first with Medway A.S. a close second. North Kent were third and the host club shared fourth place with Canterbury, Erith were last. While the judging was taking place Mr. M. Gawthorne showed films about the various aspects of fish life. The awards were presented by Mr. C. W. Creed. Results: Anabantids (Ex-Fighters): 1, W. Empet (Medway); 2, J. Marshall (Medway); 3, P. Wills (N. Kent); 4, C. Hunter (N. Kent). Livebearers (Ex-Guppies): 1, L. Laming (Medway); 2, S. Mathews (Canterbury); 3, J. Stephens (N. Kent); 4, M. Ellisor (Canterbury). Guppies: 1, F. Hunter (Sittingbourne); 2, M. A. Pryne (Canterbury); 3, C. Elliott (Medway); 4, C. Robinson (N. Kent). Cichlids: 1, R. Taylor (Tonbridge); 2, F. Squires (Erith); 3, J. Stephens (N. Kent); 4, J. Parker (N. Kent). Catfish: 1, I. T. Mathieson (Tonbridge); 2, J. Eames (Sittingbourne); 3, C. Hunter (N. Kent); 4, C. Wood (N. Kent). Barbs: 1, 2 and 4, J. Bellingham (Tonbridge); 3, L. Laming (Medway).

RECENTLY, **Hemel Hempstead A.S.** held an inter-club table show against Amersham A.S. as part of the Chiltern League. The same evening a quiz was held between the two clubs and thanks are due to C. and P. Bird, of Mid-Herts A.S., for acting as quiz masters. The society also thanked Carol Gardener for

her services over the past eighteen months. The Secretary is Mr. P. Trethewey, 51 Woolmer Drive, Hemel Hempstead, Herts.

AT a recent meeting in Coventry delegates from Loughborough, Northampton, Daventry, Rugby, Coventry, Nuneaton and Bedworth Societies, elected officers to the reformed **Midland Aquarist League**. President: W. Denison (B.K.A.); Chairman: K. Upton (Bedworth); Secretary: S. Woodbridge (Coventry); Treasurer: D. Tummcliffe (Nuneaton); Press Officer: M. H. Carter (Bedworth). In recognition of his services and help in reforming M.A.L., Mr. R. Tedds, of Bedworth was made Hon. Vice-President for life.

THE annual general meeting of the **Northwich and District A.S.** was held in November, when the following committee were elected to serve for the 1971 season. Chairman: P. Hyland; Treasurer: B. Pearson; Show Chairman: L. Thorne; Show Secretary: Mrs. D. Thorne, 28 Whitegate Road, Winsford, Cheshire; Assistant Show Secretary: R. Knowles; Librarian: C. Davies; P.R.O.: H. Buckley; Table Show Secretary: R. Antonio; Secretary: L. Bradley, 4 Ash Road, Sandway, Cheshire, CW5 2NV; Assistant Secretary: J. Bailey.

The annual statement reported a very successful year in all phases including the Second Open Show and second place with the stand at the B.A.P. (Bell Vue) where prize cards were awarded to L. Thorne (second Furnished Tropical Aquarium) and B. Pearson (third Angel Fish).

Would other show secretaries please send details of their open show to Mrs. D. Thorne at the above address.

ONE hundred members and friends of the **Bedworth A. and P.S.** attended the second annual dinner and dance, when the President, Mr. Ray Mayer presented members with awards gained during the past year. He also paid tribute to members who had helped the society to gain major awards during 1970. These included the M.A.A.S. shield won at Drayton Manor Park in the inter-society show, also the M.A.A.S. block and gavel jointly with Nuneaton at M.A.A.S. Convention. Award winners: The Mayer Trophy (decorative aquarium): Mr. and Mrs. Thomas. The Mayer Shield (most points in open shows): R. Shakespear. Challenge Trophy (most points in club shows): Messrs. Hdkins and Pagett, R. and R. Tedds. Rose Bowl (best junior): Kevin Pratt. Hoace Coombes Memorial Trophy (best anabantid): Master Colin Pratt.

THE **Hounslow and District A.S.** held their annual general meeting in November. The retiring chairman Mr. Barry Abbott commented on the success of the club's activities during the past year, but pointed out that more support from members would be very gratifying. He also commented on the well organized team work of the committee and thanked them for their support.

The Show Secretary, Mr. A. Pratt had been kept busy throughout the year with over four hundred entries in the table shows and a very successful open show in September. Mr. R. Nelhams as social secretary had given the members very good value for money on all the social occasions and outings that he has organised he deserves the highest praise for the effort he puts in on the members behalf. During the election of officers the chair was in the capable hands of Mr. D. Love, the following officers were elected: Chairman: R. Scurry; Secretary: D. J. Woodward; Treasurer: H. Woodward; Show Secretary: D. Brookes; Press Secretary: Mrs. R. M. Brewer; Librarian: E. Sheppard; Public Relation Officer: B. Pratt; Social Secretary: B. Nelhams; Floor Members: H. Parisii; G. Johnston.

Visitors are welcome at the meetings which are held at the Public Hall, Isleworth at 8 p.m. on alternate Wednesdays. Secretary: Mr. D. J. Woodward, 34 Uxbridge Road, Hanworth, Middlesex.

A TABLE SHOW for Mini Furnished Aquarium tropical and coldwater was held at the November meeting of the **South Derbyshire and District A.S.** Judging was carried out by Miss Hunt. The results were: 1 and 2, D. Orme; 3, C. Cotton; 4, J. Quinn. Four new members were welcomed to the society, and a "Home Furnished Aquaria" competition was arranged.

Annual show schedules were reviewed and slight alterations were made to sections, from those of the last show. J. Quinn was elected junior committee member. The society meets at the Railway Inn, Midway Road, Swadlowcote, at 7 p.m. and anyone interested in joining the society will be welcome at the next meeting or by contacting secretary Mr. T. Clarke, 14 Vale Road, Midway, Nr. Burton-on-Trent.

A NEW venture was tried at the November meeting by members of **Belle Vue A.S.** This was a "Trial by Jury". On trial—under-gravel filters—do they or do they not kill plants? The judge was Mr. S. Taylor (Chairman of Belle Vue A.S.). Counsel for the prosecution was Mr. R. Davies and Counsel for the defence was Mr. S. A. Heap. Apart from the witnesses the rest of the society at the meeting made up the jury. Both sides put up a very good case but the verdict was a majority decision for under-gravel filters. Members said that the evening was as well as being good entertainment, very informative and they learnt much about filtration. They thoroughly enjoyed themselves and agreed that it was a venture worth repeating using other topics. Results of table show: Seniors: Mr. G. Thompson; 2, Mr. F. Cobb; 3, Mrs. W. Heap. Juniors: Master J. Roberts; 2 Master J. Gee; 3, Master Woodhead.

AT their quarterly meeting early in November, the **Goldfish Society of Great Britain** members voted to add "Broadtail Mooc" to its list of popular varieties, and this may now be exhibited at G.S.G.B. shows. The drawing of this variety, and the marking schedule was prepared for F.B.A.S. in January 1968. Black is the only admissible colour. Members also agreed that the "Comet" which is already included in the G.S.G.B. list of popular varieties will in future only be recognised in the metallic group.

The G.S.G.B. Standards Committee was asked to prepare drawings of alternative shapes and sizes for the caudal fin of the "Singletail." Also it was overwhelmingly agreed that the G.S.G.B. Twintail should in future be called the "Veiltail." These changes were wanted by the members and fortunately coincide with the wishes of outside organisations, with which G.S.G.B. has been consulting during the past two years. Next quarterly meeting at Conway Hall, Red Lion Square, W.C.1, on 9th January at 2.30 p.m.

THE Annual Show for members of the **Didcot and District A.S.** was held in October and judged by D. Hancock of Reading. The results were as follows: Barbies: J. E. Davidson; Characins: J. F. Davidson; Cichlids: A. Wilkinson; Labyrinth: J. Trinder; Toothcarps: J. Trinder; Cans and Loaches: F. Ritson; Ras, Dan, Minnow: A. Watts; A.O.V. Tropical: D. Whiting; Guppies: A. Watts; Best Livebearer: A. Wilkinson; A.V. Coldwater: A. J. Davidson, Jr.; Breeders Egglayers: A. Wilkinson; Breeders Livebearers: A. Wilkinson; Best Fish in Show: J. F. Davidson (Metynnin).

The next meeting on the 6th November was the annual general meeting and the following members were re-elected to the Committee by a unanimous vote: Chairman: A. Wilkinson; Secretary: D. Charles; Treasurer: P. Trinder; Show Secretary: J. Trinder. It was decided that the club needed a Publicity Officer and J. Davidson was elected to fill the new post. A. Wilkinson was voted Aquarist of the Year and presented with the Money and Friend Shield. New members or visitors will be welcome at the next meeting on the 1st January at the Esso Research Centre on the A.34 near Stevenston at 8 p.m.

A TALK was given by John Cole, Secretary of the **Guildford and District Aquarist Club**, at the first November meeting. This proved interesting and sometimes informative and he followed his talk with a quiz. A discussion on the following inter-Club Show to be held at the next meeting was then held.

At the second November meeting there was an Inter-Club Show between Reigate and Redhill, Woking and Guildford. A large number of people were present for this occasion. The outcome of the Show was very close, Reigate and Redhill coming first, Guildford second and Woking a close third. New members are always welcome at the Guildford and District Labour Club, The Mount, Guildford, second and fourth Wednesdays in the month, time 7.45 p.m.

ONE of the items on the **Gloucester Fish-keeping and Social Club** agenda was the election of a vice-chairman, and after due discussion W. P. Kirk was elected to fill this vacancy. After the club business had been dispensed with, the members were entertained by a slide and quiz which was admirably presented by Peter Treadgold of the Stroud A.S.

On the last Sunday in November, members and their friends visited the B.B.C. Playhouse Theatre in Northumberland Avenue, London, for two radio recordings of their comedy series "All Gas and Gators" in which Derek Nimmo, William Mervyn and Robertson Hare starred.

Any person who may be interested in joining the club are cordially invited to attend one of their meetings which are held at the above venue on the last Monday in the month, or alternatively to contact the Secretary, Brian H. Stoneham, at 54 Tredworth Road, Gloucester.

AT the recently well attended annual general meeting of the **Medway A.S.**, the following officers were elected for the coming year: chairman: R. A. Mayne; vice-chairman: C. Elliott; secretary: L. Laming, 317 Maidstone Road, Chatham, Kent; treasurer: C. Elliott, Jr.; show secretary: J. Marshall, 97 Dargers Road, Walderslade, Chatham, Kent; press officer: Mrs. W. Emspet; librarian: R. Simpson; committee members: D. Gledell, I. Luke, Mrs. M. Fletcher, M. Laming, J. V. Homer. Newcomers to the hobby who would care to join would be welcome at the meetings held on the second and fourth Wednesdays of every month, at Dane Court School, Welling Street, Gillingham, Kent. An interesting and varied programme has been compiled by the committee and can be obtained from our show secretary, J. Marshall.

THE last meeting of the **Aberdeen A.S.** was very well attended. The membership of the club is still slowly rising, which is very encouraging. A "Bring and Buy" sale was held which proved very successful. At the same meeting the first Table Show was held. There was two classes, Class 1 single fish class; Class 2 pair sexed fish. Both classes any variety. The winners of Class 1 were 1, Mr. Robertson (Marked Angel); 2, Mr. Armstrong (Blue Acara); 3, Mrs. Cox (Emperor Tetra). Class 2: 1, Mr. Meston (Red Eye Tetra); 2, Mr. Barclay (Black Mollie); 3, Mr. Cooper (Zebra). Class 1, Highly Commended, Mr. Reid (Green Sword); Best Fish of Evening: Mr. Robertson (Marbled Angel). The next meeting will be an outing to the Teary Marine Lab on 19 January, meeting there at 7.15 p.m.

MEMBERS and guests at the **Coventry Pool and A.S.** November meeting were entertained by the slides taken earlier in the year in the Garden Pool Competition. The main event, however, was a talk by John Grant, the secretary, on Livefoods. Examples of all types of livefoods were available and Mr. Grant described the needs of fish and how best to satisfy them.

The Table Show results were as follows:—Caffish: 1 and 3, S. Woodbridge; 2, T. Grant; 4, T. Scott. Killifish: 1, 2, 3 and 4, B. and F. Hirst. Juniors (Characins): 1, 2 and 3, B. Hirst; 4, M. Lewis. Novices (Livebearers): 1 and 2, E. Wilkins. Novices (Egglayers): 1 and 4,

T. Manning; 2 and 3, E. Wilkins. The Best Fish was a Talking Cat owned by Stephen Woodbridge.

BOTH the chairman and secretary of the **Uxbridge and District A.S.** reported at the annual general meeting that 1970 had been a good year, although membership had not increased, club activities were well supported. Financially, the treasurer reported the club to be in a very sound condition.

In his report the show secretary said that table shows had been well supported and the open show was the best in the club's history. Members had also done well at other open shows many prizes being won. The officers and committee were returned unopposed. Club meetings are held on alternate Wednesdays at The Parish Rooms, Uxbridge Road, Hillingdon Heath, Hillingdon, Middlesex, starting at 8 p.m. New members will be sure of a warm welcome.

AT the November meeting of the **Tonbridge and District A.S.**, a very interesting talk was given by Bryon Harvey of the North Kent A.S., on the evolution and development of fishes. The talk by Mr. Harvey, which can be highly recommended to any society, was also accompanied by a slide show on this subject. The results of the Table Show:—Angels: 1, J. Regan; 2, D. Mathieson. Dwarf Cichlids: 1, D. Mathieson; 2, T. Hine; 3, Mrs. I. Bellingham. Cichlids: 1, Mrs. I. Bellingham; 2, R. Taylor; 3, Mrs. D. Mathieson.

RESULTS of **Halifax A.S.** Open Show in October: Guppies: 1 and 3, I. Stephenson (Y); 2, P. Walker (Y). Swordtails: 1, M. and M. Burnap (A); 2, N. Turner (M); 3, J. Brennan (O). Mollies: 1, N. Turner (M); 2, H. Gardner (A); 3, A. Gregory (N). Platys: 1, R. Wilkinson (H); 2, H. and R. McKenna (N); 3, M. Willey (B). Characins (Small): 1, R. Johnson (A); 2, P. E. Gregory (O); 3, M. Dwyer (A). Characins (Medium): 1, N. Turner (M); 2, I. Stephenson (Y); 3, H. and R. McKenna (N). Characins (Large): 1 and 2, Mr. Illingsworth (N). Barbies (Small, Large): 1, 2 and 3, P. E. Gregory (O). Rasbora Danio Minnow: 1, D. Kennedy (B); 2, M. Tonge (O); 3, D. Shields (H). Sharks Frying Pan: 1, N. and V. Fearn (S); 2, P. Dwyer (A); 3, N. and V. Fearn (S). Fighters: 1, J. Faulkner (R); 2, A. Dawson (O); 3, A. E. Whitlock (T). A.O.V. Anabantids: 1, G. Bease (R); 2, B. Dawson (O); 3, F. Ledger (T). Corydoras: 1, R. Wilkinson (H); 2, Mr. Wilbraham (O); 3, A. Baldwin (N). A.O.V. Catfish: 1, Mr. Illingsworth (N); 2, D. Fryer (H); 3, J. Blake (H). Loaches: 1, P. E. Gregory (O); 2, D. Cleary (A); 3, C. Smith (H). Dwarf Cichlids: 1, H. and R. McKenna (N); 2, Mr. Williams (O); 3, A. and B. Smith (T). A.O.V. Cichlids: 1, M. and M. Howard (B); 2, R. Johnson (A); 3, H. and R. McKenna (N). Toothcarps Bottom Spawners: 1, 2 and 3, J. Roberts (N). Toothcarps Top Spawners: 1, Mrs. Gear (K); 2, M. Tonge (O); 3, I. Stephenson (Y). A.O.V. Tropical: 1, D. Kennedy (B); 2, A. E. Whitlock (T); 3, M. and M. Howard (B). Breeders Egglayers: 1, Mrs. Gear (K); 2, H. Naylor (H); 3, P. E. Gregory (O). Breeders Livebearers: 1, H. Gardner (A); 2, R. Wilkinson (H); 3, P. Walker (Y). Pairs Egglayers: 1, F. E. Gregory (O); 2, Mr. Williams (O); 3, Mrs. Gear (K). Pairs Livebearers: 1, S. Hall (A); 2, J. Grady (H). Goldfish: 1, J. and I. Moorehouse (B); 2 and 3, S. Hall (A). A.O.V. Coldwater: 1, P. Moorehouse (B); 2 and 3, S. Hall (A). Furnished Jar: 1, I. Kovanevic (H); 2, P. Moorehouse (B); 3, Mrs. Gear (K). Best

 **A TABLET
A DAY, SENDS
WHITE SPOT AWAY**
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In Show: D. Kennedy (Carapo Knife Fish), Judges: B. Penzance, H. Loder, Halifax (H); Airborough (A); Oldham (O); Bradford (B); Top 10 (T10); Yeek (Y); Mixenden (M); Nelson (N); Runcorn (R); Keighley (K).

OFFICERS elected at the annual general meeting of the **Southend, Leigh and District A.S.** to serve for 1971 were:—president: D. Finch; vice-president: D. Edwards; secretary: Mrs. J. Norris, 38 Leigh Cliff Road, Leigh-on-Sea; treasurer: D. Cheswright; journal editor: P. F. Capon; assistant editor: R. D. Orford; librarian: L. Mitchell; assistant librarian: E. Joyce; P.R.O.: T. Russel; table show secretary: K. Adams; committee members: T. Clark and R. B. Carries; refreshment secretary: Mrs. T. Clark.

The election of officers was chaired by John Mason, a past-president, with the assistance of T. King and J. Cooper as tellers. Mrs. Hilda Halsey presented the cups, including the Halsey Memorial Trophy in honour of her late husband Stan who was a past-president, local aquatic trader and friend to all society members. The cups presented were: Halsey Memorial Trophy for highest points in table shows: T. Clark; Southchurch Cup for second highest points in table shows: R. D. Orford; Abbot Cup for highest points in junior competitions: Master M. Chapman; Brookes Shield I first in Mini tanks: A. Russel; Brookes Shield II second in Mini tanks: T. Clark; Barnes-Oak Cup best breeders egg-layers: G. Coe; Coronation Cup best breeders livebearers: Mrs. V. Burison; Duboisson Cup best Characin: T. Clark; Len Willis Memorial Trophy best Killifish: B. Dunn; Gales Cup, Home Furnished Aquarium: K. Lane; Jones Cup I Members best fish: T. Clark; Jones Cup II Best coldwater: T. Clark; Saunders Cup second coldwater: T. Clark; Julia Giles Award for meritorious breeding: Not awarded.

The Society meets every first and third Tuesday in each month at St. Andrews Hall, Electric Avenue, Westcliff (entrance in Westborough Road).

MEMBERS of **Wolverhampton A.S.** have had a varied programme this year with talks by visiting speakers and members on Killifish, live foods and tropical plants, film and slide shows. New members are always welcome at the once-monthly meetings held the third Tuesday of each month at 7.30 in St. Peter and Paul's School, Redcross Street, Wolverhampton.

Weymouth & District A.S. moved to their new venue for the November meeting at the Sidney Hall (Council Room) and the evening programme included a film and tape lecture on Cichlids. There was a long discussion on next year's Weymouth Quinquicentenary (400 years), the town's big celebration.

Cards and prizes were given out by the Show Secretary to the winners of the Club's annual show. Old and new members are always welcome to the new venue, or should contact D. Rogers, 149 Dorchester Road, Weymouth.

THE officers elected by the **Creswell and District A.S.** were as follows: Chairman, T. Broomfield; Treasurer, J. Fletcher; Hon. Secretary, A. M. Deakin, 33 Sirwell Road, Worksop, Notts.

AT a recent meeting of the newly-formed **Chelmsford A.S.** K. Turner was appointed Acting Chairman; Treasurer, L. Norris; Secretary, Mrs. B. Turner; Committee, J. Newlin, Mrs. H. Brown, R. Isbourne.

At the first meeting eight people sat in a huge Council Chamber but there have been 15 new members. Early in November K. Jones gave a talk on Marine Fish, which was most interesting. Mr. Jones owns Essex Tropicals, North Station Road, Colchester, Essex. Two Oryzias Gouramis were raffled this month which were won by B. Brown. The next meeting will be held on 5th January, 1971, in Committee Room 4, Chelmsford Library, at 7.30 p.m. All new members welcome. Further details may be obtained from K. Turner, 36 Broctonfield Road, Chelmsford, Essex.

THE Bethnal Green A.S. welcome all their friends to the Annual Dinner and Dance, to be held on 30th January. Further information can be obtained from P. Arnould, 24 Rawson House, Skipworth Road, Hackney, E.9.

The past two months have been very good for the B.G.A.S. at open shows with members taking a large number of awards. Club results at our own table shows: Fish of Month (October): 1, P. Arnould; 2, A. Connelly; 3, Mr. Huggins; 4, J. Gower; Fish of Month (November): 1, Mr. Davis; 2, Mr. Carter; 3, Mr. Cowell; 4, Mr. Dodd; Points Cup (Plays): 1 and 4, Mr. Carter; 2, Mr. Connelly; 3, Mr. Cowell.

THE King's Lynn and District A.S. held a very enjoyable taped/slide show on Killifish early in December. The taped commentary was made by the Show Secretary, B. Capper, who was congratulated by all present on a very fine first effort. The slide show was held in conjunction with a Loach and Large Cichlid Show—the Loach award was won by A. Ford with a Khullu Loach, whilst S. McMann took the Cichlid class with an Oscar.

Wednesday, 6th January, is the date set for the next meeting, to be held at the Eagle, Norfolk Street, Kings Lynn. The show at this meeting will be for three classes—A.V. Coldwater, Guppies and Killifish. Whilst judging is taking place a "Being and Buy Sale" will be held when members will be able to auction off surplus fish, plants and equipment.

NOVEMBER was a slightly quieter month for members of the **Bracknell A.S.** It started with the last round of the Three Counties Quiz League in which Reading A.S. ran out as the eventual winners with 59 points, second being Bracknell A.S. and Basingstoke A.S., both with 53 points; fourth was High Wycombe A.S. with 46 points. At the second meeting members were entertained by Jim Allen from the local Met Office, who gave a very interesting talk on meteorology.

The final results of the Table Show League were also received. Two new trophies were kindly donated by the Chairman, Brian Johnson and Jack Berryman. The first, for the Specialist Class of the Table Show, was won by M. Carter with 23 points; second being J. Berryman with 14 points and third Richard Armstrong with 8 points. The second trophy for A.O.V. was won by L. Little with 31 points; second was M. Carter with 29 points and third, J. Berryman with 16 points. The result for the Table Show was: 1, L. Little; 2, M. Carter; 3, M. Carter; 4, J. Dixon.

THE Kettering A.S. held its Annual General Meeting in October. The following is a list of the new committee positions: Chairman, T. Johnson; Vice-Chairman, Mrs. B. Jeffers; Secretary, Mrs. M. Johnson; Treasurer, J. Springham; Show Secretary, M. Tyrrell; Members, R. Vickers, S. Tice, R. Jeffers, M. Crick. The November meeting had a record number of table show entries. It was the first showing of the Fish of the Year competition and it was won by M. Tyrrell with a Combnail, second being T. Turner who showed a Red Tailed Black Shark.

MEMBERS of **Yeovil and District A.S.** voted to support an Open Show in 1971 and expressed their confidence in Show Manager, D. Phton and his show committee. Also discussed was a proposed second meeting each month, and it was agreed to meet on the first

Thursday and fourth Wednesday for a trial period of three months. The main event of the evening was a film show, hired from Horsfield's and made possible by B. Stidson, who kindly brought his projector and screen to the meeting.

THE Sittingbourne and District A.S. had two surprise visitors at the club headquarters early in November. The town Carnival Queen, Beverley Jervis accompanied by the Queen of the Cats from Ypres (Belgium), Sittingbourne's twin town, made a flying visit to the club while attending the civic banquet and ball. The Club Chairman, John Perry, welcomed the girls and showed them the entries for the Table Show which was judged by B. Mather on his first visit to the Club. After the judging Mr. Mather gave interesting comment on the entries and presented the awards. Results: Swordtail Cup: 1, J. James. Seated Pairs: 1, J. Gambell; 2 and 3, J. Gambell. Breeders Class: 1, M. Scott.

MEMBERSHIP of the **Port Talbot and District A.S.** has steadily increased since the Society was formed last April and there are now over seventy members on the books. Members have put on two displays in the town, both being very well attended by the general public. A full programme of slides, cine films, lectures, and inter-club shows has been arranged for the coming winter months. Anyone interested in joining please come along to the Blaenau Schools, Margam, on alternate Tuesdays at 7.30 p.m. when they will be sure of a warm welcome, or contact the Secretary at 8 Dolphin Place, Sandfields, Port Talbot, phone 4652.

THE Goldfish Society of Great Britain held their annual Convention and Open Show in October. This year a departure was made from the London area and the event moved to Leicester where facilities were provided and excellently staged by the group of members residing in the area. Three speakers formed the programme, whilst judging took place. The first, Mr. J. Linale, chose "Goldfish Breeding," and points to note from his talk were good feeding for the adult fish during summer and autumn, a winter rest period indoors but under cool conditions, and a spring/early summer breeding programme fitted according to the availability of live food. The speaker also mentioned the test crossing in late summer of fish born the previous year, as a dress rehearsal to serious line breeding the following year.

Mr. R. A. Dodkins followed on "Running Your Fish-house." Mr. Dodkins favours concrete tanks built a foot or so above ground level to avoid slopping, with circulating water incorporating biological filtration, with angle-iron tanks above.

The third speaker, Mr. A. Sutton, on "Feeding your Fish" was concerned with the high cost per pound to the aquarist of the dried foods obtainable and he introduced some of his own—shredded dried Elodea and dried shrimps or prawns were included. This speaker also uses many different live foods including chopped garden slugs and spoke well of commercial trout pelleted foods obtainable within the Society. A raffle and auction sale of quality surplus fish were also held. The judging of the 120 exhibits was carried out by members Messrs. M. Cluse, W. Leach and W. Wilson with the welcome addition of Mr. T. L. Dodge of the M.A.P.S. as the guest judge. The results were as follows:—Adults: Singetail: 1 and 3, K. Speaks; 2, R. Whittington; 4, H. Berger. Met. Twintail: 1 and 2, J. Linale; 3, S. Tibble. Nac. Twintail: 1, L. C. Betts; 2 and 3, N. Giles; 4, S. Tibble. Globe-eye: 1 and 2, G. Fern; 3, S. Tibble; 4, B. Herbert. Bramblehead: 1, T. Halpin; 2 and 3, J. Linale; 4, Miss Berger. Pearlscale: 1 and 2, Mrs. R. Dudley. Celestial: 1, J. Bondell. Pom-pom: 1, H. Berger; 2, J. Bondell. Bubble-eye: 1 and 4, C. Long; 2 and 3, K. Speaks. Common Goldfish: 1, H. T. Jago; 2, Mrs. P. Whittington; 3, H. Berger; 4, N. Giles. London Shubunkin: 1 and 2, Mrs. P. Whittington; 3, H. Berger. Metallic Fantail: 1, Mrs. A. Wilson; 2, M.

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AQUARIST CALENDAR 1971

28th February: Rotherham and District A.S. Open Show, New Venue, Brinsworth Manor School, Brinsworth Lane, Brinsworth, Rotherham. Schedules from A. W. Harrison, Secretary, 35 Osbert Road, Broom, Rotherham.

14th March: Belle Vue A.S. Open Show to be held at Openshaw Boys Club, Crossley House, Ashton Old Road, Openshaw, Manchester 11.

3rd April: Thurrock Open Show at Thameside School, Arthur Street, Grays, Essex. Schedules from Show Secretary, D. C. M. Durrant, 22 Kingsman Road, Stanford-le-Hope.

4th April: Houghton District A.S. Open Show. Schedules available in February from H. Leighton, 102 Abbey Drive, Sunnyside East, Houghton-le-Spring, Durham.

4th April: Nelson A.S. Open Show, Civic Centre, Stanley Street, Nelson.

18th April: Sheffield and District A.S. Open Show, The Meersbrook Vestry Hall, Meersbrook Park Road, Sheffield 8.

24th April: Reading and District A.S. Open Show at Brock Barracks, Oxford Road, Reading. Show Secretary, B. Grant, 20 Dover Street, Reading.

25th April: York and District A.S. Open Show, Show Secretary: P. Carey, 29 Yearsley Grove, Huntingdon Road, York YO3 93X.

25th April: Prevalence Aquarist Society Open Show at All Saints' Church Hall, Surrey Square, Walworth, London, S.E.17. Details from: Mr. J. Stamp, 72 Rodman House, Borough, London, S.E.1. Tel: 407 4066.

1st May: Trowbridge and District A. and P.S. Sixth Annual Show at Nelson Haden Girls' School, Trowbridge.

2nd May: Croydon A.S. Open Show, Stanley Hall, South Norwood Hill, S.E.25. Schedules from A. J. H. Smith, 3 Hindhead Way, Wallington, Surrey.

2nd May: Scunthorpe Museum Society Aquarist Group first Open Show. Details from V.

Hardie, Hon. Secretary, 126 Baydale Road, Ashby, Scunthorpe, Lincs.

2nd May: Dukeries A.S. third open show to be held in the Winifred Portland Technical Grammar School, Sparken Hill, Worksop, Notts. Show Secretary, Mr. M. Woodley, 56 Silversdale, Dinnington, nr. Sheffield.

8th May: Derby Regent A.S. Open Show, Sherwood Foresters Recreation Centre (Normanton Barracks), Ossington Park Road, Derby. (Follow R.A.C. signs.) Schedules from R. T. Bull, 36 Queens Drive, Littleover, Derby.

9th May: Worksop A. and Z.S. Open Show at the North Notts College of Further Education, Carlton Road, Worksop, Notts., the same venue as last year. Schedules available shortly on application to Show Secretary, P. G. Sibson, 17 Clinton Street, Worksop, Notts.

15th May: Usbridge A.S. Open Show, Meadow School, Royal Lane, Hillingdon, Uxbridge. Details from N. V. Lee, 46 Airedale Road, Baling, W5 4SD.

16th May: Merseyside A.S. Open Show.

22nd May: Southend, Leigh and District A.S. Open Show will be held at the Liberal Hall, Clarence Road, Southend. Details from the Open Show Secretary, R. D. Orford, 8 Blenheim Chase, Leigh-on-Sea.

23rd May: Loxley A.S. First Open Show, Gregson Institute, Moor Lane, Lancaster. Schedules from Mrs. M. Norris, 70 Wyresdale Road, Lancaster.

23rd May: Coventry Pool and A.S. Open Show, Foleshill Community Centre. Details of schedules later.

29th May: Catford A.S. Open Show.

29th-30th May: The F.G.A. International Guppy Show, Glébe Farm Community Centre, Stockford, Birmingham.

30th May: Coventry Open Show, Poleshill Community Centre, Coventry.

6th June: Bishops Cleeve A.S. Second Open Show at the Tythe Barn, Bishops Cleeve on the Cheltenham to Evesham Road (A435). Schedules

from the Show Secretary, Mrs. C. F. Scrivin, 27 Warden Hill Road, Cheltenham, Glos.

6th June: Bournemouth Aquarists Society. Annual Open Show will be held at Kinson Community Centre, Pellams Park, Kinson. Show schedules and entry forms available from Show Secretary, Jack V. Jeffery, 30 Breamar Avenue, Southbourne, Bournemouth, BH6 4JF, after 1st April.

6th June: Accrington A.S. Open Show.

12th June: Llantwit Major A.S. Open Show at the Town Hall, Llantwit Major. Show secretary, A. Ibberton, 84 St. Marys Ave., Barry, Glam.

20th June: Glossop A.S. Open Show. Venue Glossop Centre, Talbot Street, Glossop, Derbyshire. Schedules from Secretary, Miss M. D. Smith, 3 Chapel Lane, Hadfield, via Hyde, Cheshire. This is an A.M.D.A.S. Show.

27th June: Wednesbury and District A.S. first Open Show at Boys' High School, St. Paul's Road, Wednesbury. Schedules from T. Shipton, 9 Gloucester Road, Wednesbury.

4th July: Lytham A.S. Open Show at the Lowther Gardens Pavilion, Lytham. Show Secretary, R. Thompson, 83 Alexandra Road, St. Annes, Lancs.

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

15th August: North Staffs. A.S., Stoke-on-Trent third Open Show.

21st August: Weymouth and District A.S. (proposed date).

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

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



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