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A GARDEN IN YOUR AQUARIUM

A reasoned approach to the use of plants

By Bill Simms

"SOME OF MY TROPICAL FISHES appear to be sick. I have only seventeen fish in the tank, and about a dozen nice plants, but I have to clean out the bottom each week. What is wrong?"

Nearly all the readers of this journal will have heard some variant of this question at one time or another, and will know that there is not just one answer—but many. Too much food and too few plants are among these answers. But it is not the answers as such that I wish to deal with here. It is, rather, the fundamental approach to aquarium keeping. In the question above is implied a wrong approach, and it is typical of the loose thinking that is becoming more prevalent lately.

Most beginners acquire an aquarium to keep some fish, and when they seek advice everyone talks about fish, water temperatures, food, and lighting. Just occasionally, as a sort of afterthought, plants may be mentioned; but never with sufficient emphasis.

A friend of mine who keeps a tropical fish shop quoted me the question that opens this article, and told me that similar questions crop up in his shop regularly each day. He was of the opinion that matters in this respect were getting worse, and that until there was a different approach to the subject there would be very little change.

The approach he suggested was: "Make an ornamental water garden in the aquarium with lots of plants, and employ a few fish to fertilise the plants."

In that suggestion lies the complete answer to keeping a balanced aquarium in good health, whether tropical or cold water. Where there are a lot of plants, growing under a good light, they will eat up the dissolved minerals in the water faster than a few fish can produce them, and will keep the pH balance neutral, too.

But if this balance is reversed—so that there are more fishes and fewer plants, in the way that many people try to keep an aquarium—then it becomes obvious that the plants will become soured and acid, because they are smothered by the dirt from the fish, and then the water becomes foul and acid.

It is impossible to say that X number of plants should be used for each fish kept, because fish and plants vary so much, but my pet shop friend has his



1. *VALLISNERIA SPIRALIS*—TORTA
Use about four dozen of this type of plant.

opinion about this too. He maintains that there should be a minimum of six plants to each tropical fish kept. That when a tank is planted with a proper balance it should be possible to see half of the fishes only at any one time, because the plants would be so dense that they hid the rest.

With a densely planted aquarium the types and numbers of infusorians that live in the water, and help to keep it pure, are increased tremendously for they multiply among the plant leaves easily, being comparatively safe from the fishes.

Each kind of plant harbours a slightly different sort of population of infusorians, and because of this there should, where possible, be five or six kinds of plants at least. These should rarely be planted in groups of less than half a dozen, so that these various infusorians will have a base from which to multiply.

What I consider to be a minimum number of plants for the normal 24-inch tropical aquarium would be about seven dozen. Say, four dozen of the *vallisneria* or *sagittaria* types; two dozen of a more fancy type such as *hygrophila*, or *ludwigia*; and about a dozen more plants that can be used either singly or in small

groups, such as the many kinds of *cryptocoryne* or sword plants.

These can be arranged according to the likes of the aquarist, but my suggestion is that the *vallisneria* types should be divided in half and used in the rear corners, densely, with a double row right across the back. Set the *vallisneria* about $\frac{1}{4}$ inch apart each way, starting in the back corners, and working forward so that you eventually achieve a nice semi-circle, thin at the middle back.

The two dozen fancy kinds can then be split to make a dozen in the rear centre (in front of the thin line of *vallisneria*), with another half dozen in each of the two front corners, each kept in its own group. These could well be three different kinds of plants. Set all the plants slightly apart in their groups. Planting a number together in the same hole results only in decaying plants.

The *cryptocorynes* or sword plants can be used as dot plants or small groups in the remaining centre front of the aquarium. The whole effect then should be luxurious and should look most effective.

Continued on page 56

2. *HYGROPHILA POLYSERMA*

This can be included among the two dozen fancy types.

3. *CRYPTOCORYNE WILLISII*

A dozen of this kind will add variety and charm.



BASIC NEEDS FOR BREEDING GOOD GUPPIES

PART 2 CARE

By D. Phillimore and G. Goodall

To grow to their full potential Guppies must be given the best conditions possible; water to a Guppy is like air to us. If the air that we breath is polluted in any way or there are too many of us breathing a small amount, we will suffocate, this also applies to Guppies. Always remember to give your fishes plenty of room; they need at least 12 square inches of surface area to every inch of fish. With Guppies this means the overall length from the tip of the nose to the end of the tail. Guppies will, of course, live in very crowded tanks and can tolerate fluctuating temperatures and conditions, but you must remember, we are breeding Fancy Guppies and wish them to grow quickly to full size and keep good shape and colour.

Ordinary tap water, happily enough, is the ideal. There is no special water conditions needed except in areas where water is heavily chlorinated; then it would be a wise move to age the water for 48 hours. We know breeders all over the country who use ordinary mains water or well-water and any additions other than one teaspoonfull of sea salt per gallon of water is completely unnecessary and this has been proved in competition. One-third of the aquarium water should be syphoned off every week and at the same time, uncaten food and foreign bodies laying on the bottom of the tank should be removed with it. The tank should then be carefully topped up with fresh water heated to approximately the temperature of the tank. About every two months the tank should be syphoned off to within an inch of the bottom and filled with fresh tap water. This will not harm the inhabitants, in fact it acts as a tonic. The simple corner or sponge filter should also be cleaned weekly.

Guppies can thrive in any temperature between 65°F to 85°F, but we would suggest that between 72°F to 80°F they are at their best. The higher the temperature the quicker the metabolic rate, meaning that the whole life cycle of the fishes is speeded up, in effect. Fishes kept at 85°F must be fed and cleaned twice as often as fishes kept at 75°F and four times as often as those kept at 65°F, so if you are

unable to feed your Guppies frequently, keep them at a lower temperature scale.

It is a wise fish-keeper who keeps a few remedies handy. We recommend some sea salt, methalene blue, and a strong household disinfectant such as Dettol to dip your nets in after use (of course a net for each tank is far better). The Methalene blue is for white spot and the salt for fungus which you are quite likely to end up with if you feed Guppies on *Tubifex* and even *daphnia*.

Breeding

There are many ways that one can breed Guppies. To list a few: In breeding. Out crossing strains that are established. Out breeding. Line breeding and Flock breeding.

Let's break them down one at a time. In-breeding, we have heard many times that male Guppies are so unlike one another that it is impossible to get a pair to look alike; this is not true. It is possible to have tanks of Guppies all looking the same in basic body colour, finnage shape and finnage-colour. The body sizes will differ slightly over a brood but not to such an extent that would worry an exhibitor in breeders' classes. In-breeding Guppies is, without doubt, the best method for those who wish to study heredity. Practically all other methods are unreliable. Wrong conclusions may be drawn, as Guppies are not always what they look. Some traits mask other traits as, for example, a three quarter black male with a red tail might not be carrying any of the characteristics of redness, the red being an extension of the three-quarter black. If your brood is hetrozygos to three-quarter black (some three-quarter blacks and some greys) then in this case it would be impossible to breed the three-quarter black out of the strain without loosing the red, unless, of course, as with in-bred fish, the red is unattached to the three-quarter black. But it must be remembered that while in-breeding you are congregating all the finer points in one fish, be they good or bad. The best thing to do is to use the largest and most colourful male to the largest and most colourful female. You can expect

your broods to be smaller after about the third generation until about the sixth generation; then an improvement will be seen, but the end result will probably not be as good as the pair you started with.

Flock-breeding

This is, of course, the worst method of breeding Guppies. To clarify this we must remember that the modern Fancy Guppy is very far from his wild brother. Nature will always bring her weight to bear in returning any highly developed fish back to its wild state. Flock-breeding is the easiest way for her to do this. If a two foot tank was set up and a pair of top-class breeding Guppies left to their own devices in it, within a year the result would be a tank of tiny semi-wild fishes that would not resemble their parents in any way. Why? This really boils down to a matter of common sense. It will always be the smallest, most virile male that mates with the females; the male with the larger caudals would be hampered by these tails which, to the fish, must feel ungainly. So we end up with a tank of very fit wild Guppies. But some of the top American breeders flock-breed.

We will explain what those breeders do and you can draw your own conclusions whether it is flock-breeding or not. Firstly, they set up at least a two foot tank and introduce a pair or trio of good quality stock. As soon as the young are born the parents are removed, along with any of the youngsters that do not look 100 per cent fit. After a week or two they start vigorously culling out the brood so that by the time the fishes are old enough to mate they have only two or three of the best males and females culled from a tank of up to two hundred or more fishes. This is not flock-breeding; it is selective breeding and does not impress us, as to reach a good standard for English shows, we need breeders' teams of like-fish.

Out-crossing strains that are established

Let us first find out what a strain is. It is a brood of fish whose genetical make-up runs in a fairly definite pattern. So what happens when two established strains are crossed? This is usually a backward step or retrogression. It is easy to see why; the genes have been so mixed that they are not producing a definite pattern. We have out-crossed in this way and the results have been a definite downward trait. However, when we cross the young brother to sister we reverse the process and sometimes end up with show-stoppers.

In-breeding/Out-breeding

This, we thought, would be a good cross, so we in-bred two different lines and after the sixth generation, we out-bred them. The result was big flashy

fish, but the young from them were rubbish, as with this method the genetical make-up had been shot to pieces. So what do we do? The best way to produce big and colourful Guppies is to start with related fish from a strain that are known to cross with good results, in-breed these fish, brother to sister for several generations then out-cross them. This with the help of hybrid vigour that comes with this method, will result in big, colourful Guppies that will produce pure strains of fish that look alike, thus enabling those interested to study the genetical make-up without the danger of retrogression when just the in-breeding method is used.

Line-breeding

Pairing closely related fish is line-breeding. Aunts, uncles, nieces and nephews are all used. It has none of the drawbacks of in-breeding and is mainly done to keep a strain pure. You simply pick whichever trait that you are interested in and mate that fish with any relative from the line.

Now let us get down to the way we breed our Guppies. Assuming that is, that you want to breed the larger type tails or broadtails, let us say that you have come across a large and beautiful male and you want to produce him as near as possible. You must then obtain a female that is large and chunky and who has black colouration in her dorsal and caudal fins. This is known as CP gene (caudal pigmentation) and means that the female will usually throw broadtail males. A virgin female is preferable if possible but if the female used is pregnant this does not matter too much. A Guppy female can have five broods from one insemination, if a female which has already been with a male must be used, then the best time to introduce the new male is while the female is dropping her young in the hope that he will fertilise her as soon as possible. If a mating takes place within the first five days, the resultant brood will all be fathered by him. The longer it takes him to fertilise the female, the less of the brood will be his. After about ten days none of the young will have been sired by him, but all by the previous male. However, the following brood should all be from the last male, so obviously a virgin female is the most practical to be used.

The time to remove the male is when the female's belly will appear to have very distinct bulges on either side when viewed from above. When the brood arrives, usually at 28 days in a temperature of 75°F, we remove the female to ensure that the young do not get eaten and that they get their fair share of the food that is offered. Remembering that the stomachs of baby fish are small and therefore empty quickly, they must be fed four or five times each day, the main source of food being brine shrimp. We shall go deeper into this in a later article. By

the time the young are a month old, they are ready to sex out and there are two ways of doing this. You can wait for the thickening of the anal fin but the best way is to look for the gravid spot in the young females. We transfer them, one at a time, to a wine glass, holding the glass up to the daylight until the light shows over the shoulder of the glass then the gravid spot can be plainly seen. If you have any doubts, then the fish should go in the male tank. It is better to have a few females in with the males than one male in the female tank. Gold and Albino Guppies are much harder to sex in this way. We keep our eyes open and take the males out when we see a thickening of the anal fin. We then bring our fish on for four months and by this time we can see what we have got. We then breed the best male and female from this cross and the resulting brood will contain a small percentage of the males that closely resemble the original male. From these fishes you can line breed until they all look alike, i.e., truly line-bred fish. If you have a fish house large enough or a friend to help, you

could then split the first brood, and after six or seven generations they could be out-crossed with a high chance of producing those show-winners.

What you have just been reading is the method we had to use to get show stock. Now it is much easier to obtain good quality breeding Guppies as there are many good guppy breeders about who are willing to help breeders of the future by letting their stock go at not too high a price, and what is more to the point, you will get the pedigree of their fish and with a little knowledge of basic genetics, you would know beforehand what your newly acquired fishes would be likely to produce. Another way of obtaining stock is by joining one of the specialist Guppy groups that are well distributed around the country, but remember that no matter how good the stock, all the pedigree in the world will not give you show-stoppers unless you look after them in the way they deserve. They must be fed properly; cleanliness is high on the must list, and you will only get out of any hobby what you put into it and this applies especially to Guppies.

BUBBLE-EYES

By K. C. Speaks

I LIKE BUBBLE-EYES! To me they are the Hush-puppies of the Goldfish world. The sacs of fluid chiefly below the normal eyes give an expression which is both doleful and whimsical. May I hasten to add that when the bubbles are developed to the extent of those depicted in the Chinese stamp (see *Aquarist*, May, 1963), I find the effect less than pleasant.

The Goldfish Society of Great Britain in the standard endorsed by the Federation of British Aquatic Societies have suggested a chunky fish with modest but adequate sac development. The short paired fins, especially the stiffly held caudals, are essential features as aids to stability for a goldfish lacking a dorsal fin. The short finnage is also conducive to withstand lower temperatures.

In 1948 Hervey and Hems in their book "The Goldfish" referred to the Water bubble-eye as being a breed well-known to the Chinese and particularly

prized in the province of Kwangtung although still apparently unknown outside China.

My interest in this variety of goldfish stems from the National Aquarium Society exhibition of 1953 when Mr. T. Horeman of Tachbrook Tropicals exhibited four adult specimens which were among a consignment of fishes that he had received from China. A few months later, at the Midland Aquarium Show, I had the opportunity to buy some young 2 in.—2½ in. fish from Mr. C. D. Roe of Shirley Aquatics, who had a consignment flown in from Singapore just prior to the show. I understood that he had previously located and imported several Bubble-eyes the year before.

My six young fish grew well through the autumn and winter and proved to be three of each sex. I paired them and obtained small spawnings from each pair. Two of the spawnings were disappointing; the fry produced showed spike dorsal fins and one or two complete dorsal fins. The other pair, however, produced a high percentage of fish with clear backs and they were colouring well within two months. I exhibited a team of them in the Breeders' Class at the Hendon Show in August and they were awarded 82 points by Mr. A. Boarder who judged the section. Over a dozen of the youngsters grew into fish superior in quality to their parents. It has been a matter of some regret that circumstances caused me temporarily to give up fish breeding and, as far as I know, the strain was lost.



Scale model of Goldfish Society of Great Britain Standard Bubble-eye made by the author. Photo by R. Masters.

It was not until the year 1968, that I was again able to obtain some more Bubble-eyes. These were not up to the standard of my earlier fish nor was I as lucky with the sex ratio of the six I selected to grow on for this year's breeding programme. Only one of the six proved to be a male.

Using the best female with my solitary male I obtained a spawning resulting in a hatch approaching six hundred fry. All but forty grew complete dorsal fins and the remainder had dorsal spikes. Not one had a clear back! The result was similar in proportion with a second spawning using another female. In each case the parent fish had clear backs and good dorsal profiles.

From a third spawning, using a female from a totally different strain, the results so far appear to be better with approximately a third of the fry having clear backs, although the caudal fin cleavages appear disappointing.

The irony of these experiences is that of the two young fish which resulted from a small indiscriminate spawning of Bubble-eyes which were in a conditioning pond prior to spawning in aquaria, one has a clear back and divided caudal fins. It would appear to me that any breeder of this or any other variety of goldfish lacking a dorsal fin must be prepared for a low success rate until a strain has been established. With a high degree of luck a pair might be acquired which combine to produce a fair proportion of fishes with the desired characteristics. On the other hand it could involve many check spawnings.

To short circuit the search for the right combination, hand spawning could be used. The eggs of the best

available females being fertilised by the milt of the best males in different permutations. Alternatively, group spawning using several females with a slightly larger number of males could be tried. This method is used successfully by some commercial hatcheries in the Far East and U.S.A.

Bubble-eyes are well suited to goldfish breeders who have modest tank and pond facilities. The fry can be culled at an early stage. The number of youngsters retained can be reduced to an absolute minimum within one season, unlike with the single tails where a larger proportion must be retained to ensure the correct selection.

To the keen goldfish breeder there is the additional challenge to improve the characteristics of his strain by selective breeding. Most of the fish available tend to be rather long in the body and finnage.

The main sources of stock at present are importations from the Far East. Although the oriental breeder will, no doubt, have established strains which produce a higher proportion of good quality fish, he will retain the best for his future breeding stock and also for growing on as highly priced specimen fish. Nevertheless, some potentially good young fish are being brought in by British importers at reasonable prices.

Fancy goldfish prices have generally remained stable over the past twenty years which in terms of real money mean they are cheaper than in the past. A friend of mine bought six young Bubble-eyes this year averaging just under one pound each, which included specimens with the best potential I have seen. As far as I know he is not likely to part with them—because he too likes Bubble-eyes!



"I share it with my neighbour"

PEARLS AND PEARLING

By Henry Tegner

THE PEARL SHELL, *Umio margaritifera*, is very widely distributed throughout the rivers and other fresh waters of the British Isles. In the past these bivalves were known by such varied names as Pond Mussel, Swan Mussel, Pearl Mussel, and Painter's Mussel. The last mentioned was so-called because artists liked them for containing their water-colour paints. A good Swan Mussel may attain a width of over seven inches. These molluscs are long-lived creatures and some biologists have suggested a life-span of a hundred years. The individual freshwater mussel of Britain's ponds, streams and rivers is estimated to produce over a million eggs per annum. They retain their ova, within their shells, until the larvae stage is reached then this is ejected by the parent shells. The larva, now called glochidia, attaches itself to the gills of fish, such as trout, roach, perch and even tiny sticklebacks, the fish now convey them on their ventral fins until they are shed in other parts of the stream or lake. The actual shell develops when still attached to the fish when they drop to the bottom to form fresh colonies of mussels.

The pearls of Britain, found in these freshwater shell fish, have a very considerable history. Pliny the eminent Roman writer says in his admirable work *Historia Naturalis* that the freshwater pearls of Britain are amongst its most important exportable commodities. In still earlier times, when the Phoenicians came to the shores of Britain in their long-boats from the Mediterranean in order to trade their silks and ceramics for our furs, gold and tin—pearls were amongst the Phoenician traders' most sought-after articles. The Crown of Scotland which may be seen by the public on display in Edinburgh Castle contains no less than seven splendid pearls of Scottish origin. Every one of these gems measures more than a quarter of an inch in diameter, these are, of course, exceptional examples. However, when I was examining these pearls one day, the custodian of the jewel-room in the Castle casually mentioned that a lady had recently visited the Castle and had brought with her a pearl, taken from a river in the Western Highlands, which was a far finer specimen than any in the Crown of Scotland.

The pearl, beautiful as it is, is strangely enough a form of imperfection in an otherwise normal bivalve.

The intrusion into the living mussel of some extraneous substance, such as a minute portion of grit, is believed to cause irritation to the interior. In self-defence the mollusc coats this irritant with layers of nacre, or mother-of-pearl, which is the normal iridescent lining of the shell itself.

Pearl fishing was in the past quite a business in Scotland and also to a lesser degree in Wales. It was practised largely by gipsies who had a considerable knowledge, probably handed down from generation to generation, of the whereabouts of the best mussel beds. Today this industry is practically non-existent but you can still buy British pearls quite easily. Jewellers in a number of Scottish towns specialise in them. I saw a beautiful specimen, only last year, in the window of a shop in Grantown-on-Spey, the size of a large pea, this was priced at £20. Pearls are regularly dealt in by jewellers in Perth, Edinburgh, Aberdeen and Pitlochry. Nearly all the pearls available in these cities are of Scottish origin. They come mainly from the rivers of Don, Dee, Spey and Tay or their many tributaries. Because of the alleged, exceptional beauty of these Scottish gems, the trade has given the pearl, to be found in *Umio margaritifera*, the name of "Scotch" or more properly "Scottish" pearl. *Umio's* pearls, nevertheless may be discovered in any shell from Cornwall to Caithness!

Recently whilst wandering by the lovely banks of Tay, north of the city of Perth, I came upon a great pile of empty mussel-shells. These were the refuse of some casual pearl-fisher. The pearl-fisher of old would use a box with a sheet of glass as its bottom. With this placed on the surface of the river the bed of the river can be viewed as through a clarifier. The glass clears surface ripple and the sun's reflection. Searching for the mussel-beds is exciting as most quests are. Once found a bed should never be entirely stripped, the smaller shells, unlikely anyhow to contain a pearl, should be left as a breeding stock.

The professional pearlers of old frequently used coracles or flat-bottomed boats from which to search the river beds but the amateur today usually just wades in and with a long cleft-stick, a pail, and perhaps a looking-box, he hunts for a pearl-of-price.

INVERTEBRATE

"KANGAROOS" OF THE ARCTIC SEA

By Michael Lorant

PROF. G. E. MACGINITIS (research scientist of the Smithsonian Institution in the United States, who was principal investigator of sea life at the U.S. Navy's Arctic Research Laboratory at Point Barrow, Alaska) returning from the Arctic region, published a report on his findings.

According to the professor, abundant and fantastic are the animals of the shallow Arctic sea bottom. All are invertebrates—worms, sea anemones, and a host of others—many of which spend their lives buried in the bottom mud. Some of these creatures and their particular way of life are truly remarkable. A delicately peach-coloured sea anemone, a bottom-dwelling animal remotely related to the coral polyps, for instance, when subjected to unfavourable conditions such as overcrowding in the bottom mud, casts out through the mouth a translucent white inner lining with translucent, stubby tentacles that are suggestive of a pickled onion. If conditions remain adverse, more offspring are cast off, each one becoming smaller than its predecessor. In other words, when in trouble, *the animal spits out babies*—presumably an emergency measure for preservation of the species. Apparently the same thing happens in the sea; partly grown specimens of these offspring dredged from the bottom at first were mistaken for a new species mainly because they are multi-coloured—purplish-red, lavender, lemon-yellow, but all with translucent, peach-coloured tentacles.

Among the more numerous animals found on the shallow bottom were nemerteans, or ribbon-worms, notable for their ability to stretch the body to twice or more its normal length. Two specimens of one species that washed ashore—as a means of self-preservation, *literally tied themselves in knots, curled up into balls*, and then secreted bags of mucous stuff around themselves.

Very abundant, mud-dwelling animals off the Arctic coast are the echiuroids, otherwise known as "spoonworms," or "sausage-worms." They burrow very deeply in the mud and are seldom seen unless washed ashore in storms. One species was bright

green in colour and about three inches long; *these worms were eaten by Eskimos.*

Among the most abundant animals in the sea are the small, transparent *Sagitta*, or arrow-worms. Thousands were obtained in tows for plankton. One species, about half-an-inch long, is among the *kangaroos of the invertebrate world*. *Two specimens were carrying young in a marsupium (pouch) formed by folding the posterior lateral fins together.* In the laboratory some of the young, about 3 millimeters long, began escaping from this marsupium.

An extremely important part of the bottom fauna at Point Barrow, were the bryozoans, or "moss animals." They look like corals but of a higher order, covering stones with growths that resemble patches of moss, made of delicate lace. Hardly a stone was found which did not have at least one "moss patch." These miniature moss forests provide refuge for numerous other minute animals. Many of the lace-like colonies are truly beautiful. Some of them are peach-coloured, others deep red, others again look like yellow lacework.

Marine annelid worms, or polychaetes, comprise an important group in the Point Barrow fauna. Among them was one species, of the type known as *sillids*—a flesh-coloured worm with brownish-red eyes emitting a bluish-white light. It lives ordinarily hidden among the bryozoan growth on stones, but its luminescence betrays the worm.

Numerically the most abundant animals are amphipods, members of the sand flea family, which form an important food source for fish and seal. Great numbers live on the underside of ice cakes from which the bearded seal can sweep them with its whiskers.

If seals can live on them, why not men? "It would seem," states Prof. MacGinitis, "that they should form a source of food for personnel forced to abandon ship or make a forced landing. *Apherusa glacialis* (the species found in such numbers on the bottom of ice cakes) could quite easily be gathered with nets from the swarms that dart away when an ice cake is disturbed."

WHAT IS YOUR OPINION?

By B. Whiteside



KEITH CHILDS is 14, and lives in Wirral, Cheshire. He does not know where lime-free gravel can be bought, but while on holiday in Devon, he got some gravel off Slapton beach. He does not know if it's lime-free but after removing shells and seaweed, he used the gravel in his tanks, with no ill effects. In reply to Mr. Stapleton's question about fishkeeping examinations, Keith suggests that he studies for a B.Sc. degree in zoology, and becomes an ichthyologist. He suggests that he contact the British Museum (Natural History) or the Marine Biology Station, Port Erin, Isle of Man.

Mr. I. D. Taylor, of Knaresborough, Yorks., obtains lime-free gravel from "Nitrouit," Jubilee Mill, Copgrove, nr. Harrogate, Yorks. This is a large concern with mills up and down the country. He thinks that it could be got from any mill supplying animal feeds. His gravel is flint, and comes in various grades; he finds that $\frac{1}{4}$ in. "turkey grit" is best. $\frac{1}{8}$ in. "chicken grit" would do for breeding tanks. The price for each is 12s. 6d. per cwt., the smallest quantity supplied—cheap at the price! The gravel is very clean.

Mr. B. Morgan is from Luton, Beds., and he writes about Cryptocorynes. He finds that they like slightly hard water—D.H. 5°-10°, × pH 6.9-7.1. *C. ciliata*, *longicauda*, and *versteegii* all like a good depth of gravel—4 in. to 6 in.—for good rooting. They like good light. *C. beckettii*, *nevillii* and *affinis* thrive in 2 in. to 3 in. of gravel, at the front of Mr. Taylor's tank, where the mulm collects with the 7 in. gradient from the back. Some of these latter plants have twenty leaves, propagating rapidly—especially the *nevillii* which has formed a fine light-green carpet. With hairgrass, he wrapped a very tight strip of lead round the clump, and pushed it under the gravel. Three weeks later green leaves appeared for 3 in. round the clump. For large tanks Mr. Taylor uses undergravel filters; for small tanks, no filter, mulm being siphoned off every 3-4 days, and fresh water added. Baby fish grow well with such water changes.

Mr. Taylor asks for information on *Monodactylus argenteus*. He has had his in a community tank for three months and they are growing well. His are in

freshwater and they like $\frac{1}{2}$ in-1 in. earthworms, although they will take flake foods. They have got on well with zebras, cardinals, paradise fish, etc. Like Mrs. Hutchinson, he has met with problems with hatchet fish. He is setting up a special tank for them.

Dundee, Scotland, is the home of Mr. J. Wiseman, and he's had trouble with algae in his 36 in. × 15 in. × 12 in. tank, despite the presence of a sucking loach and a red-tailed black shark. Being a relative newcomer, Mr. Wiseman started off with 3 × 40 watt pearl bulbs. He had a lot of algae and his plants were weighed down with it, the tank having a nasty smell. He decreased the lighting but still had bother. After trying various "cures" he changed to 2 × 9 in. × 40 watt striplights. The algae disappeared after 3-5 weeks, and plants, except for *vallisneria*, all grew well. The lights are on for ten hours per day.

14 year's old Tony Devey lives at Walthamstow and his "hardest to catch" fish are the coolie loach and the freshwater sharks. Tony keeps all his tanks in his bedroom, except for a few in the garden where, in summer, he keeps frog spawn. He prefers nylon wool to glass wool for use in filters.

Nigel Whurr is 17, and lives at Felixstowe, in Suffolk. He ordered a £2 selection of plants from a large plant firm but was told that, with such a low-priced order, plants could only be sent cash-with-order. Nigel, being a schoolboy, thought that £2 was not "a low price." He received the plants, one week after sending the £2, and most of them were brown—"15s. 0d. worth of plants for £2," said Nigel. He finds the kuhli loach and the sucking loach hardest to catch. He keeps a large community tank in his family kitchenette, and two others downstairs in the back of the family shop. Nigel supports his cover glass on two metal strips which cross the tank, one at each end.

Mr. D. R. Hubble, of Sheppey, in Kent, dislikes plastic plants in the same way, and for the same reasons, as he would loath plastic fish. He finds that hand-tame fish, both large and small, will respond not only to fingers, but to bits of string, forceps, etc. He thinks "conditioned reflex" is a better term. Mr. Hubble likes the smaller tropicals although he does have a

Jack Dempsey. He thinks that, if one wants a few relatively under-coloured, large fish, one should keep some of our magnificent British forms, like silver rudd, or minnows, or perch.

Mr. D. W. Hough is from Kent and he writes about filters. With a 24 in. x 12 in. x 12 in. he found the following with: (1) "Dynaflow"—advantages: easy to clean; silent; excellent aeration. Disadvantages: expensive; so efficient that it left nothing for the plants to feed on, so they died; did not fit angle-iron tanks; no air-pumps so vacuum cleaner could not be used. Price £7 11s. 0d. (2) "Hykro" Outside Power Filter. Advantages: fits any tank. Disadvantages: fussy to clean; any mistake in taking down could result in floods; leaked at joints owing to different rates of shrinkage of different components; siphon tube perished completely after six months, and no spares obtainable. (Mr. Hough and I disagree on this second filter, as I'll show later.) Price 25s. 6d. (3) "Inter-pet Airstream Slimline." Advantages: easy to clean; just the right flow to keep the water clear and leave enough mulm for plants to thrive on; spares easily obtainable; fits any size of tank. Disadvantages: none to report after three months' use. Conclusions: the "Dynaflow" would probably be good in a 48-in. tank, but is expensive. His two "Slimlines," plus two air stones work off a "Hyflow, Model A" piston pump, costing £1 less than the "Dynaflow" and noise level is even lower. Mr. Hough thinks that the "Hykro" is a "thoroughly fussy and complicated design, and achieves no result that could not be obtained more simply."

(Personally I find the above "Hykro" filter to be the best filter which I have tried. The price is reasonable and the filtration excellent (on a 30 in. x 15 in. x 15 in. tank.) A recharge of filter wool takes me about thirty seconds. Through my own carelessness I once had a small flood; the fault was mine, not the filter's. The filter has an excellent water turnover and the inlet return can be placed several feet away from the siphon outlet. I admit that the strainer did slip off the siphon, after a month's use, but a spot of clear adhesive soon fixed it permanently. Aeration is good, and the unique design requires little air, so that a small air pump only, is required for operation.

I reviewed this filter, several months ago, in *The Aquarist*. Mr. P. Brown, our next letter-writer, agrees with my views.

A well-known British filter, which I tried recently, gave me a lot of bother as the siphon and air-lift tubes shrank, and kept coming apart, and the air-stone, which worked well at the start, soon became clogged. A letter to the makers brought an apology, an explanation based on the shrinkage of the plastic tubing, and a free set of improved replacements. After replacing the new components, I met with no better performance,

and I have consigned the filter to my "spares" cupboard. These are my experiences based on several months use of both filters. I have no connection with either firm, and bought both filters at the full retail price. Like most consumers, I want efficiency, and value for money.)

Mr. P. K. Brown writes from Wrekin College, Wellington, Salop, about a lace plant which cost him 10s. 0d. It was grown in coarse gravel in water with pH 7.4, D.H. 6°; lighting from "Gro-Lux" for ten hours per day. The plant grew well for a couple of months, then lost its leaves, and finally rotted away. Mr. Brown has had a Spatterdock—*Nuphar pumilum*—for some time. It had only two leaves when bought from a large firm but is now a magnificent plant grown at 80°F, in water of pH 7.4 and D.H. 3°. Mr. Brown's blue acaras have bred a number of times, in an 18-in. tank, by themselves. The fish were 2 in. long, and there was a 4 in. flower pot, with the base removed, in the tank. Normal food only was supplied. Eggs hatched in 48 hours, and the fry were raised by normal cichlid methods. For an 18-in. tank, Mr. Brown suggests an undergravel filter, although he dislikes these. He would prefer the use of enough plants only, for small tanks. For 24-in. tanks he uses an internal corner filter. For tanks of about 36 in. he uses external power filters. Of these, Mr. Brown finds the two "Hykro" ones (which I reviewed in an earlier issue) the best he has come across. He also has a power filter which he moves round from tank to tank. He used "Gro-Lux" lighting on his tanks for about eighteen months and when the livebearers were ready to give birth, he moved them to a fry tank, and never noted any ill effects on the health of the mothers or their young. Mr. Brown ends by saying that he enjoys *The Aquarist* products reviews as they keep him abreast of new items.

Mr. R. C. Mills, of Perivale, Middlesex, informs us that lime-free gravel can be obtained from George Garside (Sand) Ltd., Hockliffe Street, Leighton Buzzard, Beds.

Shenfield, Essex, is the home of Mr. H. Manners, and he states that lime-free gravel can be got from two very helpful young men at the Spectrum Gravel Company, of 191 High Street, Maldon, Essex, telephone Maldon, Essex 3112. Mr. Manners finds that their gravel allows him to set up a tank and maintain a required pH and D.M. Fish and plants thrive under these ideal conditions. He always uses undergravel filters in well-planted tanks, and outside filters for plantless tanks, e.g., for cichlids. The release of nitrates, from the use of the former filters, would be possibly harmful in a plantless tank, Mr. Manners thinks.

Mr. Stanley Fox writes, from Newcastle-upon-Tyne, about Cape Fear Spatterdock, *Nuphar sagittifolium*, which he thinks is one of the most beautiful of aquarium plants. The plant has a large rhizome, and undulating, bright, translucent, green, spear-shaped leaves, carried on delicate stems. The plant may die down somewhat in winter, and likes extra feeding in its growing season. Mr. Fox suggests that plants should be purchased in late spring or early summer so that the plant has the summer to settle down in its new tank before winter. Root temperature is also important, Mr. Fox finds, and 68°F at rhizome level is best. A pH. of 7.2 is suitable, and good, but not excessive lighting is required. The rhizome should only just be covered with gravel and the plant does well in a pot of humus, topped with gravel. One may also place the humus, and the spatterdock rhizome, in a paper handkerchief; fold this tightly and tie with a strip of paper handkerchief, planting the lot normally. This treatment also suits the Madagascar lace plant. (Don't use greaseproof paper, as the paper would not decay as the handkerchief will.) Peat is a suitable form of humus. Mr. Fox ends by saying that all plants should be left in peace, undisturbed.

The last letter comes from Mr. J. A. Kettle, of Islington, London, and it's in reply to Mrs. D. Hutchinson's comments on piranhas. Mr. Kettle first kept these six years ago—nine fish of 1 in. in length. They grew quickly, four reaching from 4 in. - 6 in. in length, but the other five died from natural causes. Although kept together, the fish did not fight amongst themselves. Mr. Kettle finds their colouring attractive, from olive across the back, silver on the sides, with black spots, to a fire-red belly. The 6-in. fish were taken to various shows, but the judges didn't seem

interested, and Mr. Kettle seemed to be the only person showing piranhas at that time. The last four fish died from a cancerous growth on their sides. Mr. Kettle has had another piranha for three months, and it has doubled its size to 3 in. He thinks them to be the most attractive of fishes. He also collects fish stamps, and gives displays of these to fish and stamp clubs, together with a talk and live specimens of the fish shown on the stamps. Mr. Kettle asks if readers can suggest sources of coloured photographs, or pictures, to help illustrate his talks.

Well, that's the lot for this month's issue. It's nearing the end of February as I write this, nine weeks since I badly damaged my left wrist in an accident while reglazing an old aquarium. Since writing the last "W.I.Y.O.?" I've undergone a second operation in which I had the severed median nerve sutured—a highly unpleasant experience! My arm is now in its third plaster cast, to prevent movement of the wrist which could tear the nerve again, and I'm painfully doing my physiotherapy exercises to try to improve my limited finger movements. I've now a painful six month's wait to see if sensation returns to the hand. Before this develops into a "What's Your Moan?" column, I'll repeat my former warning: take care when working with glass!

Now for some questions on which I would like your opinions: (1) How well can you grow *Vallisneria spiralis*, and under which conditions? (2) Why are combined heaters and thermostats not more popular? (3) Are your aquaria earthed? (4) Which is your favourite cichlid, and why? (5) Which aquarium plant can you grow best, and how? (6) Have you any experiences of fish feeding with patent baby foods? I look forward to your comments.

PRODUCT REVIEW

TETRAMENU "4 in 1" tropical fish food, made by Tetra Werke, in Western Germany, and distributed by Herb Royal Ltd., (Tetra Division), Colley Lane Estate, Bridgwater, Somerset, price 5s. 9d. per 1 oz. plastic container.

This food, or should I say these foods, are not new, but this is the first time that I have seen them on sale in my area. The plastic container has a revolving lid, with a round hole, and this can be turned to select any of the four foods in the container. The four flake foods are: 1. brown flakes, containing "twenty raw materials for a balanced food"; 2. green flakes, "a genuine plant food providing green vegetable"; 3. yellow flakes, "a growing and conditioning food for

young fish"; and 4. red flakes "to promote colours and spawning condition".

"TetraMenu" contains fishmeal, fishliver, roe, ground oats, crustaceans, insect larvae, egg yolk, aquatic plants, kelp, wheatgerm and codliver oil. The given analysis is: protein 42 per cent, fat 4 per cent and fibre 9 per cent.

My fish were keen on all four flakes and, a point which pleased me, the flakes were a good size—not so large that they required breaking up for smaller tropicals, yet not a fine powder which could cloud the water. A useful selection of four foods, in one handy container!

B.W.

AQUARIUMS: A SURVEY

By P. G. Boud

ALTHOUGH FOR MANY aquarist breeding and exhibiting of fish is the principal interest of the hobby, undoubtedly there are many others to whom the decorative aspect of fish-keeping is the paramount one.

This applies particularly to the smaller collection or installation; indeed, it may encompass only a single tank. They have to be content with a limited display as many people do not have the room or the time to devote to the matter.

If the decorative interest is the prime one, this immediately leads on to a suitable housing of the fish—the choice of tank and illumination. Until a few years ago the problem of the choice of a tank was largely one of selecting a suitable size angle-iron tank, and whether to have a half or a full cover. Exceptionally, the supplier had almost to be persuaded to make a tank to particular dimensions, rather than to supply a standard stock size.

It may appear rather obvious to say that the function of a tank is to house the fish as adequately and securely as possible; but this ignores the important aesthetic aspect. Keats' often-quoted lines: "A thing of beauty is a joy for ever" come to mind when observing some appalling set-ups considered from the aesthetic point of view. The fish may be superb, but the tank and the ancillary equipment are an eyesore. Rusty frames, blackened covers, corroded wire supporting filthy-looking filter units with their attendant circulatory pipes clogging up the hood. Air pumps buzzing merrily away. Plastic covers repaired with surgical tape after having buzzed and vibrated themselves on to the floor! As for the electrical installation! One is filled with trepidation; it's amazing there are not more fatalities. The wiring suggests it has been done by one of the more primitive people from a backward area. To think the owner will happily plunge his arm up to the elbow in such a tank!

For many years there was a design that remained standard and static up to the middle thirties. Some readers will recall this to mind. It had broadly similar proportions to the current angle-iron ones, but its distinguishing feature was a pointed perforated "roof" which was located by sliding down into the pressed steel corners standing proud of the top horizontal frame

angle. This arrangement effectively prevented the "roof" from sliding horizontally. This type of aquarium bore a curious resemblance to some Victorian rectory from which it may well have originated. It was probably painted an institutional or workhouse green.

Today the choice is much wider, both from the aspect of materials and styling. Apart from the traditional use of glass, pressed steel, angle iron and stainless steel, tanks are constructed from various plastics, including fibreglass, anodised aluminium and even concrete. To take the most familiar first, steel frame tanks. These, as it is well known, are available in many standard sizes; odd dimensions to fit particular locations are readily available. Many people restrict the use of pressed steel frames to the smaller sizes and they are frequently used as small breeding tanks. Plastic covered frames are now tending to replace the painted steel and the extra cost is worth while, eliminating as it does rust-stained frames. The nylon is to be preferred to the polythene as it is reputed to adhere to the frame better, thus avoiding rusting beneath the plastic covering.

There are a number of top-covers available; one supplier lists eight types. While plastic top-covers are becoming available for tanks up to 24 in. × 12 in. the larger ones are usually constructed from aluminium or light-gauge painted tinned plate. It is advisable to paint the interior of those of aluminium, preferably with white polyurethane, to avoid the blackening as the surface of aluminium oxidises in the moist air; this makes it much easier to maintain a reflective surface, otherwise the vigorous use of wire wool is necessary in attempting to restore the surface to its pristine polished state. It is hardly worth attempting to economise by buying half-over covers as this increases water evaporation quite considerably, apart from the need to frustrate the propensity of species to jump from the tank.

Stainless steel-framed tanks are available from several manufacturers. One of the most attractive is an American design assembled from imported American components. This design is available with full or half covers also in stainless steel. The largest single all-over cover is 30 in. × 12 in. and incorporates

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HERPETOLOGICAL NOTES

By Stephanie J. Peaker, B.Sc.

Boas

I HAVE BEEN ASKED by a reader to comment on boa constrictors or as they are more correctly called Common Boas (*Constrictor constrictor*). Young snakes of this species can often be obtained from dealers who import them from tropical South America. Provided they are given the correct treatment they will thrive and quickly grow into healthy four to six footers. The Common Boa is found from parts of Mexico to as far south as northern Argentina and mainly inhabits tropical forests. Before buying boas it must be realised that a vivarium heated to 75-85°F is necessary to maintain this species throughout the year. If buying them in winter it is as well to collect young specimens from the dealer and protect them from chilling on the journey home by providing warm hot water bottles. It is also advisable to check with the dealer that they have been kept warm at all times and that the ones bought have been seen to feed.

I prefer to keep several snakes in the same vivarium since they encourage each other to feed and two or three small boas can be kept easily in a cage three feet long, two feet wide and two feet high. Heating is best provided by tubular heaters wired to a thermostat. The snakes must be prevented from coming into direct contact with the heaters since they can easily be burned. A good way to instal the heaters is to separate off a small area of the cage using perforated hardboard and have the heaters in this compartment. Artificial lighting can be provided but bright lights are not necessary for these forest dwellers. Smooth, clean sand and pebbles make a good floor covering for the vivarium but peat is also attractive to show off brightly coloured species like the Common Boa. Thick branches can be provided for the snakes to climb amongst and although not strictly necessary, I prefer to provide some form of shelter.

Mice are ideal as food and it is as well not to buy specimens smaller than two feet in length since small mice are needed at this stage and can be difficult to obtain. Food should be given to young snakes as often as they will feed. If any difficulty is experienced with sloughing, a soak in tepid water will usually help.

A sub-species of the Common Boa, the Imperial

Boa (*Constrictor constrictor imperator*) is sometimes seen on dealers' lists and is also suitable for the tropical vivarium.

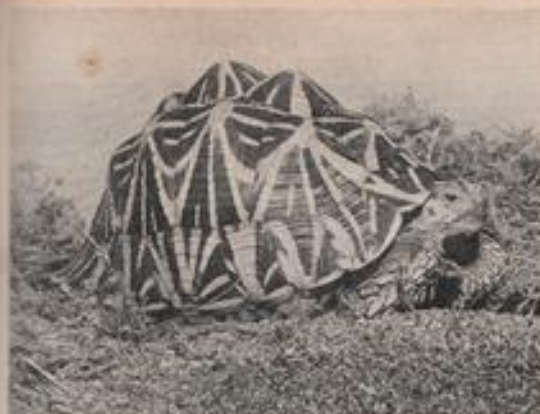
The most expensive part of keeping tropical reptiles is keeping the vivarium warm and if a cage is being kept at high temperatures, other suitable species can also be included. Small pythons can be kept with boas and I saw a number of young African pythons offered recently by a London dealer.

Xenopus

Rapidly losing popularity in laboratories is the South African Clawed Frog (*Xenopus laevis*). Many thousands were kept a few years ago for human pregnancy tests but with the development of a simple chemical method, the Clawed Frog is out as far as medical laboratories go but doubtlessly will still retain its popularity with herpetologists. The East African Clawed Frog may also be available as is sometimes called Muller's Frog (*Xenopus mulleri*). A species I have not kept is *Xenopus gilli*, a South African species only discovered in 1926. Clawed frogs are so-called because their three inner toes have small curved claws. These can be very sharp and may scrape the skin of the unwary hand picking the frogs up. Clawed frogs make an eerie sound that can be likened to hitting an empty cup with a tea spoon. This noise is usually made at night. The Clawed Frog is clumsy on land but in a large tank of water is swims brilliantly using its webbed feet to manoeuvre. Incidentally one of the major causes of death in these frogs is injury caused by dropping them. They are very slippery and a large net is perhaps the safest way to transfer them from tank to tank.

Starred Tortoises

A large number of Starred Tortoises (*Testudo elegans*) from India have appeared on the market at a very reasonable price. It must be remembered that this is a tropical species requiring continuous heat during the winter months. Since tortoises are rather



Indian starred tortoise

active animals, they need large enclosures which can be expensive to heat. Unless a tropical tortoise

enclosure is built specially for this and similar species I suggest that this very attractive tortoise should not be purchased. I hope to deal with the care of tropical tortoises more fully in future notes.

On the subject of tortoises, it is worth remembering the care the common Mediterranean species need on waking from hibernation. The eyes, nose and mouth should be washed with warm water and if the eyes are at all blocked with mucus a solution of boracic powder in water should be used to bathe the eye-lids. The tortoises can then be left to paddle in a shallow bowl of water and many will take the opportunity to drink. A greenhouse is very useful to keep the tortoises in during the first few cold weeks of spring and this treatment sets them off to a good start and large quantities of food may be eaten at this time. Plenty of drinking water should be available. As the weather becomes warmer, the tortoises can be put in their outdoor enclosure for the day and eventually left out all night. It is worth remembering that these reptiles appreciate having a snug shelter for the night and which they can enter to avoid rain.

“CHAMPION OF CHAMPIONS” Contest

THE PREMIER award for fish-keepers will be contested for the fourth time at the British Aquarists' Festival to be held on the 10th and 11th October at Belle Vue, Manchester. The preliminaries for this exciting event are already under way, and we wish to make a special request to Club Secretaries for full co-operation in notifying us promptly of their Open Show date.

This is most important to ensure the smooth running of the national contest, and to avoid disappointing delays in awarding the gold-plated pin to winners of “The Best Fish in the Show” competitions. It is these winners who qualify as entrants for the “Champion-of-Champions” Contest at Belle Vue, and it will greatly assist the organisers if Secretaries will forward the entry form for the “Champion-of-Champions” Contest **within five days after the Show date.**

Secretaries who have not received this entry form are urged to advise us promptly, and a copy will be sent, together with details of the Contest and the gold-plated pin for presentation. Forms have been sent to Secretaries where the Show date is known, but there are many Clubs still to be covered. The closing date for “Champion-of-Champions” entries is 21st September, 1970, but it is important that we have prompt advice of

“Best Fish in the Show” winners on the completed entry forms without delay.

To summarise; will Secretaries please advise us of the date of their Open Show. We will send entry form, full details, and the gold-plated pin for presentation to “Best Fish in the Show” winner.

Complete the entry form when winner is known, and send it within five days to “Champion-of-Champions,” *The Aquarist and Pondkeeper*, Half Acre, The Butts, Brentford, Middlesex.

Winners of “Best Fish in the Show” awards who have not received an entry form may apply for one by writing to us at the above address.

Entries for the Contest must be single fish (not pairs, etc.).

Other important points that should be made clear: to qualify for entry in the “Champion-of-Champions” Contest, the “Best Fish in the Show” award must have been won at an Open Show (and by this is meant a show open to any member of the public and not by invitation only), and also where show schedules are available. Winners at Table Shows and Table Shows open by invitation are not eligible to enter the “Champion-of-Champions” Contest.

AQUARIUMS: A SURVEY

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a hinged reflector, storage compartment which is large enough to house a spare heater, pump, net, dry foods, remedies, and can accommodate a choke for fluorescent lighting. It can be obtained in a black crackle finish or polished stainless steel; the latter can appear quite striking and harmonises well with a modern room decor.

A design which is becoming popular is the bow type of tank. This is now available in either a plain or a plastic-covered frame in sizes up to 48 in. \times 15 in. The advantages of the bow tank, irrespective of the aesthetic aspect, is that it appears to diminish the effect of refraction. This is the foreshortening appearance which straight-fronted tanks have, where the internal width seen from the front seems noticeable less than the actual internal width.

The traditional straight oblong tank is also available, with specially mitred joints sealed with silicon rubber adhesive. The manufacturer claims that the finish is unaffected by the corrosive action of sea water. Sizes up to 36 in. \times 12 in. \times 12 in. have ribbed pattern frames and are constructed from standard section aluminium alloy; sizes from 24 in. \times 15 in. \times 15 in. use heavy-duty section. Two designs of hood, of metal alloy finish on either gold or black, one having a hinged flap, the other a feed hole, are available.

The greatest departure from the traditional oblong and bow tanks has been made with the plastic tanks, of which there are now quite a variety, in single moulded plastic, ranging from under 30s. 0d. to over £21 for a 36 in. \times 15 in. \times 15 in. semi-bow type. Some are neat and attractive in design. However, caution is advised when considering certain types having a moulded plastic cover. The manufacturers, in order to avoid softening and deformation of the cover, specify that the filament strip light should not exceed 30 watts. This low rating is simply not adequate for satisfactory plant growth with reasonable periods of illumination, and if this type is chosen, consideration should be given to the fitting of fluorescent tubes to the cover.

The small single-moulded plastic tank without the refinements of covers or drip trays are useful for segregation purposes or for keeping live food, although they tend to be rather small for breeding. For the latter function, particularly with the smaller species where a relatively low water level is of advantage, it would be difficult to improve upon the type of tank which comprises an all-plastic moulded frame and glass panels sealed to the frame with silicone rubber. These are inexpensive, costing under £2 for an 24 in. \times 8 in. \times 8 in.; a size not generally available in the cheaper standard range.

Recently, there has appeared a novel design manufactured from plastic acrylic sheet, which in appearance resembles nothing so much as an elongated glass

bubble. These are available in three sizes, having the rear in marine blue, silver front surround, with either a mustard, grey or blue top water-level shield, complete with hood and light fittings. The smaller size can be wall mounted or fitted into a bookcase. However, the curvature tends to have a distorting effect and there is the problem of adequate cleaning.

Another range of plastic aquaria which have been available now for quite a few years, and one of the earliest departures from the traditional design, excellent in both construction and design, are of the bow styling. Turquoise green perspex is used for the sides and back of the aquarium; black plastic bands hide the water level, the strip lights at the top and the gravel level at the bottom. A flush-fitting plain cover maintains the clean lines of the design. The heater is concealed behind a vertical panel inside the aquarium. This range is unique in the manner in which a micro-switch, in conjunction with a glass rod, functions as an efficient thermostat. The slight expansion of the aquarium as the temperature rises is sufficient to operate a short-travel micro-switch controlling the heater. The adjustment is effected by a small knurled brass knob. The electrical circuit comprises a strip-light harness complete with light holder, push buttons, and a neon lamp to indicate whether the heater is on or off. The heater is not supplied but it is simplicity itself to connect it to the terminal block supplied as part of the wiring harness.

Another advantage is that the back of the aquarium is not flush with the side, but is recessed back a little, allowing room for a panel to be slid down grooves on the extension of the tank sides, thus completely concealing all unsightly wiring. This may not matter when placed against a wall, but when housed in a room divider or in a position where the tank is viewed from both sides, the neatness is an obvious advantage.

This range has now been extended by the introduction of a design having a sloping oblique front, incorporating fluorescent lighting equipment. This pleasing modern styling is suggestive of some forms of Swedish decor. The length, 24 in., height 16 in., width at top 13 in., at base 11 in., available with either Gro-lux or "Kolor Rite" fluorescent lamps. The colour scheme is the same attractive turquoise perspex and black.

In addition, mention must be made of a new fibre-glass tank which simulates a leather finish. At present, the standard colour is maroon, but the supplier states that it will be available shortly in white, blue and grey, with cover to match. This aquarium is constructed from a single moulded glass fibre from which the front aperture has been cut. It is on the large side, being 37 in. \times 18 in. \times 18 in. and, with hood, costs £33, which does not include connection covers or any electrical fittings.

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water. If some weed is lifted from the water the eggs will show up quite plainly with a pale amber colour. Sometimes the female fish will lie on her side on top of a bunch of weed as if exhausted but she is probably only resting and will soon thrash with her tail and swim off, laying more eggs as she does so.

Once the eggs are laid and the male has ejected his sperms over them, it is probable that most of the eggs will be fertilised very soon after. The sperms will live in the water for some time, probably an hour or two and they are able to move about in the water with the aid of a tiny tail, with actions similar to those of a tadpole. They are very minute and thousands could be found in a single drop. As it may take a little while for the sperms to fertilise the eggs it is a wise plan to wait for an hour before removing the bunch of weed with eggs for hatching elsewhere. I have often used a bowl to remove such a bunch so that I can scoop up some of the surrounding water at the same time, which may contain some living sperms.

Whilst the fish are spawning the aquarist may like to catch a certain pair for selective breeding. It is usually quite simple to catch fish which are in the throes of spawning as they become so excited that they take little notice of any interruption. If there are more than one variety of goldfish in the pond, this will be a good time to catch any individual pair which is needed for a particular experiment. Have no fear that the resultant eggs will not be true to the actual pair removed from the pond, as no eggs are fertilised whilst still in the female fish.

Many goldfish will spawn again the following morning and so if bunches of plants have been removed from the pond it is essential to supply more in case of a further spawning the next day. Healthy goldfish are capable of spawning every month throughout the warm months. Again one must not expect that all the fish in a pond will all spawn on the same day. Some which do not spawn with the main shoal one day will do so the next.

If there have been no signs of spawnings in the pond one is inclined to get rather discouraged as the spring goes by. However, there are one or two tips which can be tried to encourage a spawning. Never forget that the water must be in good condition before the fish are likely to spawn. If they show no signs, it will be well

worth while to change most of the water for fresh. I have known goldfish to spawn quite late in the season when the pond has been completely emptied and refilled with fresh water. If one does not want to go to the trouble of emptying a pond, perhaps because of its size, it is possible to freshen up the water without interfering with the whole of the water. Just insert an aerator in the side of the pond and keep it on for some hours. It may be thought that this slight aeration will not do much good but as a few bubbles rise up from the aerator stone they will bring up a little water. This spreads out over the surface and becomes freshly oxygenated. This water gradually sinks and more water from below will come to the top. This apparently small movement of water will make a considerable difference as to the amount of water freshly oxygenated.

I have known pondkeepers take a water-can full of water from the pond and pour it back. This can be repeated several times and this will incorporate more oxygen into the pond. This procedure is more likely to do good in a deep pond where it must be realised that the water near the surface may be well oxygenated but that near the bottom may be quite foul. The aeration as described will benefit the deep pond and may encourage the fish to spawn if they have shown no signs of doing so before.

The temperature of the water which is likely to start the fish spawning is not as important as some pondkeepers might think. I have had spawnings at most temperatures between 50°F. and 75°F., but the most have been in the lower sixties. As is well known the warmer the water the less oxygen will it hold and so if the water gets too warm the goldfish may not spawn until the temperature drops somewhat. The weather does not appear to be the deciding factor which sets the fish off on their chasing. Hot thundery weather is not as good for the spawnings as weather when the air is fresher. Another good tip to encourage reluctant fish is to catch a few and keep them separate from the others for a few days. When they are returned to the pond it may be found that spawning will take place very soon after.

My next article will deal with the treatment of the eggs and newly hatched fry, also how to look after the parent fish after spawning.

A GARDEN IN YOUR AQUARIUM

continued from page 41

Should you wish to use some rock-work then do not replace plants with rocks. The number of plants I recommend is really essential, and your rock-work must be used in such a way that there is plenty of root room for your plants.

With an aquarium planted in this way the number of tropical fishes you introduce—up to a reasonable

number—will not matter. They will have a good home, and will find interest, as well as live infusorians, in the plants. Their health will be far better and you will come to realise that a dense water garden fertilised by just a few fish can give a beautiful display—as well as being the correct approach to keeping an aquarium.

THE ALBINO CONVICT

BY KEITH CHILDS

T. F. WEATHERLEY's article in the November issue of *The Aquarist* inspired me to try and breed cichlids—a feat which I had never undertaken before. The only cichlids which I had kept were the Angel fish, and the longest I was able to keep one was for six months. But, being an optimist, I bought what I hoped would be a pair of convict cichlids. They were not the ordinary type of convicts, but the albino form.

The albino variety has an overall colour like that of flesh. Of course, they might appear different under different types of lighting. The lighting in my tank was a 30 watt striplight. The tank had been previously set up to accommodate my new fish.

In the tank was gravel, a flower-pot, a piece of slate and tap water. The tank was 18 × 12 × 12 in. and held 8 gallons.

I added no plants because I had read that most cichlids were plant destroyers and "diggeruppers!"

When the fish were placed into the tank I noticed that the larger, plumper fish seemed to be making all the opening advances. "He" spread his fins out when "he" approached the "female" (rather like a male fighter) and along the top of "his" dorsal and the bottom of "his" anal fin, I could see a light green glint.

The smaller fish, which I assumed to be the female, fled to the rear of the tank every time the male chased "her".

The male dug small pits in the gravel, and cleaned the inside and outside of the flower pot. While this was being done, the "female" remained in the corner.

After nine days I came to the conclusion that my pair weren't a pair, or that the female was not ready, or was unwilling to breed. I was able to exchange the smaller fish for another one—one which I hoped to be a female.

Before the new fish was placed in the tank with the male, I lashed out and purchased a tubular under-gravel filter. It was the first under-gravel filter I had ever bought—all my other filters were the outside type.

The male was removed to a spare tank while I unsuccessfully tried to install the filter. Removing the water seemed a messy task and I came to the conclusion that I didn't have enough gravel to hold the buoyant filter down. So, again I lashed out and

bought a fourteen pound bag of gravel. This gravel was washed and added to the tank. An hour later I successfully buried the filter under two inches of gravel. When the air pump was connected up, I decided that the tank was too bare. I rummaged in our coal-bunker and found a large piece of coal. I washed it in a bucket of water and placed it at the back of the tank, to hide the thermostat.

I placed the two fish in the tank and waited to see what happened. I noticed two things: (1) that the "female" didn't swim away when the male approached "her"; (2) the "female" showed some interest in the male and followed him around. Sometimes the "female" spread "her" fins and instead of them being edged with green, they were edged with orange. I was still dubious as to whether the new fish was a female. But being like every aquarist—an optimist, I crossed my fingers and hoped.

For the next few days the male dug small pits in the gravel and cleaned the flower pot. Although they showed considerable interest in each other, I saw no jaw-locking.

On Tuesday, January 20, 1970, I discovered that my convicts had spawned. I had looked in the tank at 9 o'clock (a.m.) and discovered no eggs. The next time I looked was at 4.20 p.m. and to my great surprise I saw rows of eggs—not on the flower pot but on the piece of coal. I hadn't expected them to be laid so soon as I hadn't seen any jaw-locking. The smaller of the two fish, the female, was violently fanning the large amber-coloured eggs, while the male paraded back and forth along the front of the tank. I had bought some brine shrimp eggs and these were put in salt water, with the temperature about 75°F. I hoped that by the time the fry hatched out and were free-swimming I would have a pile of brine shrimps ready to feed them.

On the next day I found that a couple of eggs had fungused over. I couldn't see the eggs too clearly so I set up a periscope along the side of the tank nearest to the flower pot. I was now able to see the eggs clearly and the female was fanning them violently. The male was swimming the full length of the tank and in between this he would remove gravel from underneath the piece of coal.

On the next morning I peered into the tank and saw some of the eggs moving around. I looked into the periscope and saw that the eggs had grown very thin tails. They were vibrating from side to side and looked very odd. The parents were fed their daily portion of tubifex worms. While the male was chewing away, the female would leave the coal and her eggs, swim speedily to the worms, grab a mouthful and swim back to her eggs.

The next time I looked into the tank was a few hours later. I couldn't see any eggs. I almost broke into a cold sweat but I finally spotted the female under the piece of coal. I realised what all that excavation was about—the male was making a hideout for the fry. The periscope could not be used now, so I took it down. The male had dug a large pit under the coal and he had uncovered part of a pipe from the undergravel filter. When I saw this, I turned the aerators off for fear of the tiny fry being sucked into the filter through the holes. I discovered that a few brine shrimps had hatched in the two-gallon tank. When night came and it was time for "lights out," I found that the parents had moved the fry onto the coal—the same place where the eggs were laid. But the fry, with their large yolk-sacs, were helpless and kept falling off the coal despite the parents' efforts to keep them together. After about half an hour the parents were unable to cope and moved the fry back under the coal. They remained there for four days. Each day the parents were fed on their daily ration of tubifex worms. It had taken nine days for them to hatch and become free-swimming. It was early in the morning when I first saw the free-swimming fry. There were about thirty swimming with the parents. Later that day I bought some liquifry as the first-stage food.

I decided that the flowerpot was serving no useful purpose, so I carefully placed my hand into the tank

and lifted out the pot. My hand was not attacked, neither were the fry eaten.

The fry were fed on liquifry and grew quickly. When it came the time to feed them brine shrimps, I found that my culture had been a dismal failure—about ten had hatched out. I decided that I should have used cooking salt instead of table salt. At night the fry were returned to the pit under the coal at about nine o'clock.

Instead of brine shrimp I was able to get some daphnia to feed them. Large daphnia fed on liquifry readily produce young. When I added the young daphnia to the tank it was greedily snapped up—both by parents and fry.

The fry were still in a shoal but they remained in the lower levels of the tank, except for when I fed them dried fry food.

The parents were still making adjustments to the pit, by removing gravel. The female stirred up the mulm by vibrating her body and fanning her pectoral and anal fins. This produced a cloud, which might contain food for the fry.

One night, after "lights-out," I heard gravel being moved. I peered in and could just see the male chasing the female around the tank. I used my discretion and moved him into a 16 × 8 × 8 in. tank with a glass partition in it. On the other side of it were a golden barb and a Siamese fighter.

The next day the normal activities went on with just the female. Later that night I discovered that a golden barb had jumped over one side of the glass partition into the side containing the male cichlid.

Needless to say, the golden barb was well and truly dead, the fins split and bitten away.

The fry are doing well and now, six weeks after the eggs being laid, they are about half-an-inch long—the female still in the same tank with them.

BOOK REVIEW

By Jack Hems

Coldwater Aquariums

By Neil Wainwright. Published by Frederick Warne & Co. Ltd. 12s.

Clearly, the author of *Coldwater Aquariums* has a wealth of practical experience to draw on. What is more, his book reads remarkably well, with a refreshing absence of errors in spelling and nonsensical theorizing, which is more than can be said of some other higher priced aquarium books on the market.

The well-printed text includes not only detailed instructions on the siting, lighting, stocking and after-care of tanks for coldwater fish, but also adequate and reliable information on such matters as the cultivation

of live foods, sterilization of tanks and equipment against the possible introduction of disease, the treatment of various diseases when they appear, the effect of temperature on feeding and breeding—dealt with at some length—and the question of what to do about fish at holiday times. Moreover, guidance is also given on the making and maintenance of simple garden ponds.

Besides the ubiquitous gold fish (in its common and fancy forms), the reader is given the names, needs and characteristics of some nine other coldwater species well-suited to tank or pond life. The book is illustrated with numerous well-executed line drawings and black and white photographs and, to round off, there is a useful bibliography and good index.

Do you know this fish?

Ambassis lala

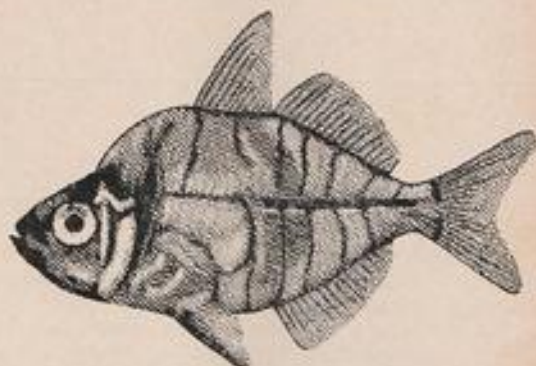
By Bill Simms

THE NEARLY TRANSPARENT BODY of this fish has given it the name of Glassfish, but there are times—if a strong light is shone on to it from the front—when the surface glints with a nice metallic tint; gold in the male, and silvery for the female. The fins are all yellowish-red, with an edging of sky blue in the case of the male.

Although it can reach a length of 2½ inches in the wild, our aquarium-reared specimens rarely achieve this. The fishes are compressed laterally (from side to side) so that when looked at head-on they become more difficult to see.

This species is found in clear fresh water, and therefore does not like slightly foul water. If placed in a densely planted old aquarium they will respond by showing much more activity. Sometimes they sulk and appear to be shy. A slight trace of table salt should be added to the water.

They can be kept in a communal aquarium, provided that the other inmates are also small and peaceful. Like many other fish they prefer live food to dried, but it should be always of a small size, like brine shrimp. Temperature range is 65 to 76 degrees F. with a rise to 80 degrees for breeding. The eggs are laid in the roots of floating plants, and the water should be kept shallow, about 4-6 inches, when breeding.



AQUARIUMS: A SURVEY

continued from page 55

Obviously, any tank needs to be adequately supported, and from the aesthetic aspect, the decorative affect tends to be enhanced if the tank is incorporated into the decor of the room rather than if it is accommodated on a stand. The improvement over the stand arrangement is quite noticeable; stands tend to make the tank appear isolated and even obtrusive. It is difficult to find an aesthetically-pleasing stand that will match some of these modern-styled aquariums. There is certainly need for development in this area! Some metal-framed stands suggest some form of debased art nouveau with their exaggerated ornate scroll work. More acceptable designs may be found in the collapsible type wooden stand which will accommodate 30 in. x 15 in. x 12 in. aquaria, at a height of 30 in.

For low-level mounting, where it is desired to view

the tank mainly from a sitting position, such as when installed in a lounge, some would prefer to utilise a coffee table of modern design; many of these tables harmonise extremely well with one of the larger plastic tanks.

The object of this article is to draw the readers' attention, or to encourage reconsideration of what some aquarists regard as a commonplace matter of "getting a tank." And if the emphasis is on the decorative aspect of the hobby, the correct choice of tank plays an important part in creating a satisfying aquatic display. There is all the difference in the world between a drab aquarium with a murky, rusty tank and discoloured cover, and that of a well-designed aquarium having crystal-clear water, lush vegetation, clean bright gravel, furnished with carefully-chosen and positioned rock, not to mention a selection of the more colourful variety of fish. The assembly forms a miniature underwater world of scintillating light, colour and movement that belongs to art and to nature!

OUR READERS WRITE



Opaline Gourami

Re.—Scientific name of Opaline Gourami (February issue).

I was most surprised to read Mr. Jack Hems' reply to a reader's query, where he stated that the Opaline Gourami had no scientific name.

I thought that it was most people's opinion that the Opaline bears the name *Trichogaster marmoratus*, and is often wrongly considered a sport of the Blue Gourami. It is, in fact a separate species.

C. A. IRELAN-HILL,
Colerne, Wilts.

The Marine Aquarium

Dear Sir,

With regard to your correspondent's letter concerning my article "Filtration in the Marine Aquarium" (*Aquarist and Pondkeeper*, January, 1970) may I make the following points clear to Mr. Wordle, since he has apparently missed the whole point of the article.

(1) In this article I was aiming at the rank beginner in the field of marine aquarium science. Consequently there are many generalised principles laid down in that article which an experienced marine aquarist may choose to disregard. In other words, just as a handwriting teacher, in writing a new text-book on calligraphy, would probably not concern himself with hints on how to be successful in the noble art of writing "The Lord's Prayer" on the back of a sixpenny piece, I was concerned to give sound advice to the vast majority of would-be marine aquarists, not the specialist micro-aquarium keeper.

(2) Mr. Wordle should beware of the very common, but very unscientific tendency to assume that because some principle, say X, works under certain experimental conditions, say Y, then the same principle will necessarily apply at all times under the different conditions—Z. If I might use another analogy, this type of misapplied thinking can produce the following amusing nonsense—

- First Premise (a) Bears like honey.
Second Premise (b) Billy Bunter liked honey.
Conclusion (c) Billy Bunter was a bear.

A wonderful example of the continuance of this thinking, even in 20th Century Man, was recently afforded to us by a Mr. C. Outrim, who, because he

once had a combined heater/thermostat which went awry and boiled his fishes, saw fit in a letter to you, Sir, to condemn all such instruments outright. Needless to say, thousands of aquarists could tell horror stories about perfectly ordinary separate heaters and thermostats which became defective and cooked their fish. The only thing which Mr. Outrim's experience proves is that he had selected a heater value too great for the size of his tank—hardly the manufacturer's fault, surely.

One of the most dangerous recent examples of this application of "unlogic" was seen in a Mr. G. Jennings' writings in another aquarium journal in which he pontificated that the only food needed by marine fishes is that extremely good dried food—Tetramin. What this young man was, in effect telling the world of experienced marine aquarists was that, at the time when he wrote his findings, he had only ever successfully kept Damsel fishes, Clown fishes and a few other tough species. One feels very sorry for all the inexperienced beginners who, impressed by the written word, rushed out and purchased Butterflies, Angels, Lionfishes and Batfishes etc., etc., only to have the poor creatures starve to death as a result of their refusal to eat otherwise excellent Tetramin. Certainly we at the SeAquariums had a very tedious 2-3 months explaining to beginners why they would be unlikely to keep such fishes successfully on Tetramin, despite the fact that they'd "seen it in print".

Mr. Wordle's five month old results are a magnificent testimony to the adaptability and resilience of the Demoiselles and Clown fishes. I have "successfully" kept a 1 in. *Amphiprion polymus*, two $\frac{3}{4}$ in. Skunk Clownfishes (*A. akallopisos*), a $\frac{1}{2}$ in. Domino Damsel (*Dascyllus trimaculatus*) and three Green Damsels (*Chromis cyanae*) at $\frac{3}{4}$ in. long in a TWO (2) gallon all-plastic tank for over six weeks in order to study psycho-territorial requirements and inter-specific relationships between the species mentioned—but I wouldn't consider committing these poor creatures to a longer period of such confinement. Perhaps of greater importance—I wouldn't expect any beginners or novices in this field to attempt to duplicate my "success".

GRAHAM F. COX,
SeAquariums Ltd.

THE AQUARIST

Brown and Green Algae

Subsequent to reading in *Aquarist* several items regarding so called "Green and Brown" algae and being left with non-conclusive evidence, I have carried out a short study on the subject, with the aim in mind of providing some technical answer for us laymen tropical aquarists.

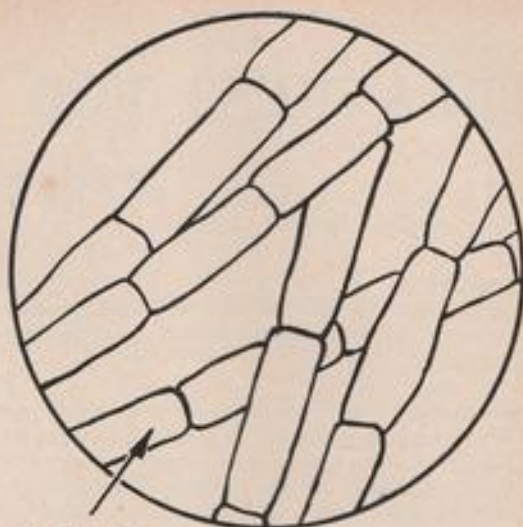
The study took two forms, one, a good read of the chapter on algae from Pelczar and Reid's excellent book on microbiology. The second half was a series of slides taken from my own tanks and viewed under a microscope.

Pelczar and Reid point out that there are many thousands of different algae to be found and the ones more likely to be found in our aquariums are the ones which are enumerated on the attached table.

The attached sketch shows a fair representation of thirty slides of each alga (plural algae) and adequately demonstrates three major differences between the two forms, i.e., (1) the green algae on average is ten times larger than brown, (2) the green algae is green, whilst this brown algae is really more yellow and only looks brown because of its dense growth, (3) the green algae is a uniform multicellular plant organism, while the brown/yellow is unicellular and mostly irregular shaped.

Besides these three main differences it was observed that the two forms play host to two entirely different living organisms and "never the twain did mix!"

To conclude (and I could go on for hours about the wonders under a microscope), I'm pleased to say both these forms were speedily removed after the investigation, by "All Clear" tablets.



GREEN ALGAE



BROWN ALGAE

GREEN ALGAE

Phylum	Common Name	Form
<i>Euglenophyta</i>	<i>Euglenoids</i>	Unicellular, motile, lacking a cell wall.
<i>Chlorophyta</i>	Green Algae	Unicellular or multicellular. A few are microscopic. Cells wall of Cellulose and pectins.
<i>Chrysophyta</i>	Yellow/ Green Golden/ Brown Algae	Mostly microscopic and unicellular. Includes a large group of diatoms which have a cell wall containing silica.

K. DE SAINTE-CROIX,
7 Torrington Street,
Grimsby, Lincs.

How Can I Breed Tiger Barbs?

November's issue of *The Aquarist* was the very first magazine I had ever read, about tropical fish. I thought the part about Breeding Siamese Fighters was the most interesting. After I had read that article I just had to have a go myself. To my surprise everything happened just as Keith Childs said, I now have got 35 fairly big fighters.

I would be very pleased if somebody could tell me anything about breeding Tiger Barbs?

MICHAEL BARKER (age 13 yrs.),
A confirmed reader of *The Aquarist*,
Bury, Lancs.

TREATMENT FOR TWIN GILL FLUKE

By J. G. and B. Osborne

Summary

THIS ARTICLE describes an outbreak of Diplozoon paradoxum in a tropical aquarium and details an effective cure.

Introduction

Diplozoon paradoxum (1) (2) is a rare parasite in the gills of tropical fish and is somewhat of a curiosity. A Diplozoon consists of two Sucking Worms of the Trematoda Class which are joined in the middle to form an X-shaped organism retaining two heads and two tails. Reproduction is as remarkable as the creature itself. Each twinned adult produces eggs which hatch into small free swimming larvae called diporpa. The diporpa, having found the blood rich surface of a fish's gill, attach themselves to it and to another diporpa. If the larvae is unable to find a gill or another larvae in the gill it will die in a few hours.

Symptoms

Fish affected with this parasite show typical symptoms of oxygen deficiency and foreign bodies in the gill i.e. hanging beneath the water surface, flayed gill plates and persistent flicking on rocks and plants.

Occurrence

The distressed fish were in an established sixty gallon show aquarium housing *Monodactylus argenteus*, *Anostomus anostomus*, *Barbus conchomius* (Rosy Barbs)*, *B. tetrazona* (Tiger Barbs)*, *B. semifasciatus* (Green Barb)*, *B. nigrofasciatus* (Black Ruby Barbs), *B. schuberti* (Golden Barbs), *B. filamentosus*, *B. everetti* (Clown Barbs) and the *Botia's macracantha*, *strigata*, *modesta*, *locachata*. Only fish marked by an asterisk were found to be suffering from the parasite.

Planting consisted of *Nomaphila stricta* and various *Cryptocorynes*. Temperature varied between 74°F and 78°F. Water hardness 120 p.p.m. CaCO₃, pH 7.6, salinity negligible. No fish or plants had been introduced to the aquarium for several weeks before the occurrence but a rare treat of daphnia caught in the North Kent marshes had been fed about a fortnight previously.

Diagnosis

A large *Barbus tetrazona* obviously dying was killed and sent for post mortem examination. Fifteen

specimens of the parasite were reported and no other diseases found.

Treatment

An initial bath in an excessively strong solution of chlorcetrinide failed to relieve the condition. A literature survey indicated that the chemical, trade name "Neguvon", manufactured by Farbenfabriken Bayer A.G. of Leverkusen, had been used successfully to treat gill flukes of the type *Dactylogyrus* (1). It was therefore, decided to ascertain its effectiveness on Diplozoon. Some difficulty was encountered in obtaining this material, but eventually the British distributor was identified as Baywood Chemicals Ltd. of Bury St. Edmunds. Due to the potentially dangerous nature of "Neguvon" delivery had to be taken via a Veterinary Surgeon. "Neguvon" is 0.0. dimethyl-2,2, 2-trichlorohydroxyethyl-phosphonic acid ester, and is a white crystalline powder, slightly soluble in water giving an unstable solution. With this in mind each successive treatment was made up freshly. The affected fish were subjected to a 15 second dip in a 2 per cent solution. After this they were transferred to another container for a few minutes to reduce the possibility of introducing the chemical to the main tank.

The effect of one treatment was almost unbelievable; an immediate improvement was observed. In fact, the *Barbus tetrazona* spent most of the next day spawning.

A second bath was found to be a necessity after seven days, presumably to eradicate parasites which had been in the egg stage at the time of the first.

Fish Toxicity

Within the limits stated in the literature (1) there appear to be no toxic effects. However, subsequent to the above treatment, a tank of Marbled and Bi-colour Angels were unfortunately subjected to a prolonged exposure to extremely dilute "Neguvon". This apparently induced a form of paralysis, for they lay on the compost with reduced gill activity. Their eyes retained complete mobility. A 75 per cent water change was unrewarding. The fish were, therefore, picked out from the tank and placed in two gallons of water containing one teaspoonful of brandy (the only stimulant to hand). Improvements were noticed after five minutes and complete recovery achieved in twenty minutes.

Human Toxicity

"Neguvon" may be absorbed through undamaged skin to give the same symptoms as if ingested, which are:—over salivation, vomiting and, diarrhoea. The antidote is Atropine sulphate by injection. It is, therefore, generally advisable that only suitably qualified persons use the chemical and even then take the manufacturer's recommendation to wear rubber gloves.

Remarks

1. It is surprising that only certain fish in the tank contacted this parasite, especially that *Barbus nigrofasciatus* remained clear, as they have been found to be prone to other types of gill infection.

2. It is several months since the last treatment was performed and no reinfestation has occurred.
3. "Neguvon" is reported (1) as an effective treatment for *Argulus foliaceus*, *Gyrodactylus elegans*, *Cyclochaeta domerguei* and *Chilodonella cyprini* and many other parasites.

Acknowledgments

The authors wish to thank Mr. W. Harold Cotton, F.R.M.S. for undertaking the post mortem examination and his most helpful assistance.

References

- (1) "DISEASES OF FISHES" by C. van Duijn, Jnr.
- (2) "AQUARIUM CARE" by Gunther Sterba.

Do you know this Plant?

Eleocharis acicularis

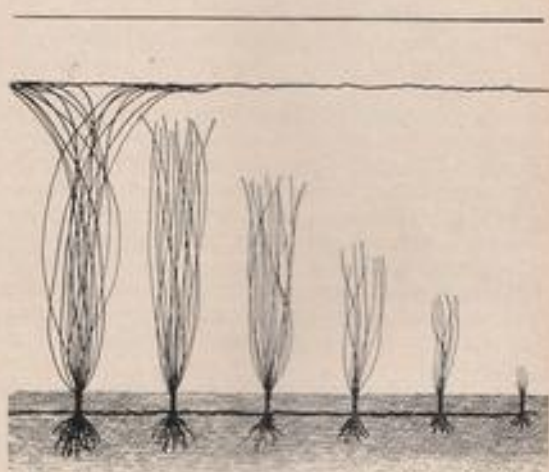


By Bill Simms

THIS IS A marsh plant, usually known as Hairgrass, or Needlegrass, for its leaves are thin and hair-like. It has a creeping rhizome branch that progresses just below the soil or sand surface, throwing up small bunches of leaves at intervals.

There are both submerged and aerial types of this plant. Below water it is like the drawing, but when in very shallow water it throws up flower-stems tipped with tiny flowers. In deep water it can develop very long leaves, sometimes up to 18 inches long, but in aquariums it is rarely so generous.

Although it will grow in tropical as well as cold water conditions it appears to do best at moderate temperatures. In Holland it grows as a wild plant, and they have strong frosts there, so it will be seen that this plant



could be very useful in a cold aquarium. It requires a very strong light.

A minor snag with this plant is its fragility when handled. The specimens usually on sale are about 3-5 inches long, and consist of innumerable plants bunched together. If this bunch is floated on water, and the bunch gently teased apart, it will be seen to consist of dozens and dozens of plants, many of them joined by the creeping root stem.

With infinite patience these can be separated out, and planted in fine sand. Make sure that the root stem is just buried but that the bunches of leaves are not placed too deeply. Given careful and patient attention like this, hairgrass will thrive and produce dense thickets of the beautiful thin leaves.

A DIFFICULT MARINE FISH

By J. A. Lomas

WITH THE GROWING popularity of marine fishkeeping, and today's modern methods, this branch of the aquarist hobby has been made fairly easy. In the past the hobby suffered a large blow from the get-rich-quick dealers who were only interested in what they could sell their prospective clients, the result of which only made the difficulties greater than ever. Nine times out of ten the dealer concerned couldn't keep marines alive for very long himself.

Here at Nuneaton Aquarium Supplies in Warwickshire we have had much success with the very efficient high turnover U/G filters—the type designed and proven by Graham F. Cox of SeAquariums, Croydon and known as a biological filter. In view of recent successes I decided to try and culture one of the more difficult species of marine animals and chose *Chaetodontophus mesoleucus* or false Angel from Malaysian waters. These fish are known to be "picky" feeders which have the habit of picking around living coral or rocks from which they peck morsels of polyp or other material, never becoming accustomed to the food that hobbyists can provide and usually succumbing from malnutrition.

The *Chaetodontophus* arrived at our shop premises with some *Chelmon rostratus*. At a glance I saw that he was covered practically all over one side with fungus so I carefully placed him in one of our quarantine tanks, the water of which was mildly ozonised. Ozone is the most effective cure I know for fungus and also finrot and any other bacterial disease.

At the end of the first week of quarantine all traces of the fungus had completely disappeared and at the end of the second week he was ready to be moved although he was not yet feeding. I placed him in a tank together with one Regal Surgeon Fish (*Paracanthurus hepatus*), two Fire Clowns (*Amphiprion ephippium*), one Clown Wrasse (*Coris gaimard*), one *Chaetodon xanthurus* and several yellow-tail blue Damsels (*Abudefduf* spp). These fish were all good feeders and so would act as teachers.

They were then fed regularly with white worms which were supplemented, from time to time, with brine shrimp, *tubifex* worms and a good dried food. White worm is a firm favourite of mine for it is eagerly accepted by most marine animals. It is strongly advised, though, to alternate this as much as possible with other good foods.



After a further two weeks (a total of four weeks in all) the *Chaetodontophus* was still not feeding. I carried on with giving the food into the fifth week. I could now see a very sunken stomach and I was beginning to think all was in vain. He was showing a definite interest in the food offered, though, for when it was placed in the tank he swam towards it eagerly as if to take it but then rejected it as though it were not good enough for him.

At the end of the fifth week he finally gave in and took one single white worm. Further offerings that day were rejected.

At the beginning of the sixth week he was eating white worms and *tubifex* worms readily. It was at this stage, after giving it much thought, that I decided to move him into one of my large showtanks containing the following established inhabitants: one Copperband Butterfly Fish (*Chelmon rostratus*), one Regal Surgeon Fish (*Paracanthurus hepatus*), one Black-Backed Butterfly Fish (*Chaetodon melanotus*), one *Abudefduf* species, and one Cleaner Wrasse (*Labroides dimidiatus*). I must point out here that to introduce a new fish into an already established habitat is asking for trouble. Marine fish, being very territorial will defend their territory against all-comers and any new

introduction is killed almost immediately unless it is a more aggressive species than any of the established occupants.

The tank's lights were turned off and the move was made. It was as though Hell had been let loose in the tank! What had been a peaceful community was now an enraged fighting force as *mesoleucus* invaded established territory, each occupant ready to defend his domain to the last. *Chelmon rostratus* planed over on his side with dorsal spines erect and butting his adversary, *C. melanotus*. The biggest danger comes from the Surgeon Fish. For those who are not familiar with these fishes, it has two knives, one in each side and to the front of the caudal fin. These knives can be withdrawn at will and with a quick flick of the tail can practically slice its adversary in two—hence the name

Surgeon Fish.

After many threats and scuffles things started to quieten down and by next morning everything was peaceful again. The newcomer had firmly established his territory under a large coral clump.

At feeding time that evening, *mesoleucus* was with the other occupants up at the top of the tank eagerly taking his food.

All this was six months ago. To date (14th February) *C. mesoleucus* is still living with the same inhabitants of his tank plus the recent introduction of one *Coris angulata* and is probably the only feeding specimen in Britain today. He is the best feeder I have in the tank and takes anything I offer him, even Tetra Min from the surface and, who knows, I may eventually have him feeding from my hand!

DANISH AQUARIUM

By Henry Tegner

THE DANES HAVE done a great deal of research work on pisciculture both with sea and freshwater fishes. I was fortunate enough to visit Denmark this spring and, whilst in Copenhagen, I was able to get out to see the beautifully laid-out Marine Laboratories and National Aquarium at Charlottenlund near the city.

The Laboratories are in the grounds of an old Royal palace which has been taken over by the Danish state. The white painted palace is situated within spacious gardens. Outside the massive, front iron gates and near the old porter's lodge is a modern concrete building, in excellent taste. This now houses a fine collection of both sea and freshwater fishes. The aquarium is open to the public on every day of the week.

Across the road from the aquarium and the laboratories is the open sea, so that the site is a truly appropriate one for an ichthyological establishment. Deep sea explorations have been extensively carried out by the Motor Ship, "Dana" which is attached to the Laboratories. Special attention has been paid to the waters surrounding Greenland and to those near the Faroe Islands which lie to the north of our own Shetlands. These expeditions are organised by the Danish Committee for Fishery and Marine Investigation, which comes under the Danish equivalent to our Ministry of Agriculture and Fisheries. All the exhibits in the aquarium are beautifully displayed in large, well-lit tanks. The fishes and marine creatures contained in the tanks are illustrated on labels attached to the tanks. Parts of outlined maps of the world are shaded in red to show the localities in which the various fishes may be found. Descriptions are in both the Danish and English languages.

It was interesting to see in one tank a sole, a plaice, and a rainbow trout. Knowing that both plaice and sole were sea-water fish, I could not understand the presence of the rainbow; although I was well aware that both sea trout and salmon were regular seasonal migrants from sea to freshwater rivers, I did not know that rainbow could continue to thrive in sea-water without a periodical visit to a less saline environment. On making enquiries I learnt that the Danes had carried out numerous experiments by placing various freshwater fishes into sea-water. Evidently freshwater fishes thrive, and rapidly put on weight, owing to the richer feeding available in the sea. The delicate taste of certain of the fresh-water fishes themselves, however, is considered to deteriorate somewhat. I was told, for example, that brown trout, after a period in the sea, begin to taste like herrings.

These freshwater fish do not spawn in sea-water, but under natural conditions they are inclined to return to fresh waters for the purpose of procreation.

Both pike and perch have been caught in the sea off the Danish coasts. These were, however, fish which had found their way to the sea of their own accord. Both these fishes are highly regarded in Denmark as an appetising dish, and particularly a big pike, whose flesh can be easily flaked from off the myriad bones.

It is interesting to note that the *truite bleu* which one so often meets with on Continental menus, frequently comes from Denmark. The Danes do a fine export business by sending out, in special tanks, to Paris, Brussels and Basle, brown trout which have been fattened in sea-water.

OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE

All queries MUST be accompanied by a stamped addressed envelope and an inquiry coupon from the current issue of *The Aquarist & Pondkeeper*.

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

THE AQUARIST & PONDKEEPER

Inquiry Coupon ^{valid} until 5th June, 1970.

This Coupon together with a stamped addressed envelope, must be attached to all letters containing queries.

TROPICAL QUERIES

By Jack Hems

I have a pair of African cichlids which were sold to me as *Haplochromis wingati*. Can you give me some information about the breeding habits and general requirements of this species?

H. wingati is a mouth-brooder. That is to say the female takes the newly-laid eggs up into her mouth for hatching. The species is a ready-breeder. It is quite happy at a temperature of 75°F (24°C) and flourishes well on a mixed (live, green and flesh) diet.

I have a floating plant in my aquarium that I have never seen before. It looks like a dwarf ambulia but its foliage is dotted with tiny yellowish green seeds or miniature grapes. Please could you identify this plant for me?

I think the plant you have is *Utricularia minor*, one of the pygmy bladderworts from southern Europe. It is a useful plant for cradling the eggs of oviparous fishes and affording shelter for small fry. It has a wide range of temperature, and can be grown anchored to the bottom or left to float. It demands a bright top light.

I have been told that there is nothing to be gained by using wired glass for the bottom of an aquarium. Is this correct?

It is not correct. The advantage of using wired glass for a tank bottom is that if you crack the glass the bottom will not fall out. Moreover, unless the damage

is extensive it is usually possible to repair the cracked glass with a bituminous compound or silicone rubber sealant.

Queries on Marines and Guppies will be welcomed as we will be running an answering column for these in the near future. Please attach the inquiry coupon to your letter and enclose a stamped addressed envelope.

is extensive it is usually possible to repair the cracked glass with a bituminous compound or silicone rubber sealant.

I have heard of a butterfly barb. I should like to know the scientific name of this fish, where it is found in the natural state, and its size?

The butterfly barb is an uncommon species from the Congo. It attains a length of about 1 in. and the experts whose job it is to name fishes for science have not yet decided whether it ought to be called *Capoeta hulstaerti* or *Barbus hulstaerti*.

Is it true that some types of peat can be dangerously acid?

If by dangerously acid you mean too corrosively acid for aquarium use the answer is yes. But peat sold by garden shops is rarely that bad. Peat dug from moss bogs or heaths is usually more acid than peat derived from sedgy wastes. Peat taken from moors adjacent to industrial areas is risky; for it is usually impregnated with the sulphurous drop-out of a smoke-polluted atmosphere.

Is the firetail killie the same as the fire killie?

The firetail killie or firetail rivulus is *Rivulus mileyi*; fire killie is a popular name for *Nothobranchius rachovia*.

Have you any information to give me on a fish called Dreissner's gourami?

Dreissner's gourami (*Parasphronemus dreissneri*) is a rare anabantid from Malaya. It first appeared in dealers' tanks (in London) about the middle of the 1930s, but to the best of my knowledge has not been heard of many times since. It attains a length of about 2 in. and is not unlike the better known dwarf croaking gourami (*Trichopsis pumilus*) in shape, coloration, and general behaviour.

Have you any idea when and where the Siamese fighting fish (*Betta splendens*) was first kept in the home aquarium?

German aquarists first saw this fish in a tank in 1892. It was bred in France about a year later.

I have just bought half a dozen young *Thayeri obliqua*. How can I tell the males from the females?

Wait until your fish grow on a bit and then compare body contours. In well-developed *T. obliqua* the female is the bulkier bodied of the two.

Is it absolutely necessary to have peat water for breeding neon tetras?

The short answer to this is no. But the fact remains that a soft and naturally acid water is more likely to produce satisfactory results than a hard and alkaline water.

Is the cichlid *Herichthys cyanoguttatus* easy to keep and breed?

This beautiful cichlid—the only one found in the U.S.A.—lives well and long in any roomy aquarium furnished with a good depth of soft sand and some rocks to spawn on and retire behind and a temperature in the seventies (°F). It is no more difficult to breed than any other obliging cichlid.

How does the pygmy sunfish breed?

The pygmy sunfish (*Elassoma evergladei*) builds a nest of bits and pieces of vegetation on the bottom of the aquarium and, if all goes well, the male guards the eggs deposited inside this nest until they hatch out. Unfortunately, the male quite often eats the eggs before they appear.



COLDWATER QUERIES

By A. Boarder

I have two ponds in my garden, one with fish and one without. The one without fish is smothered with blanket weed. I cannot seem to get rid of it. Have you any suggestions?

Why not try some fish in the pond with the blanket weed. Do not feed the fish at all and I feel sure that they will tend to keep the soft blanket weed down.

I am thinking of keeping Peacock-eyed and Sun bass in a cold tank but know nothing about them and cannot get any information from anyone about their feeding habits, etc.

These fishes are carnivorous and are not easy to keep in good condition unless one has a good supply of live foods. However, some of these fishes can become accustomed to take ordinary dried food such as is given to goldfish. This is especially so if flaked food is used, as most of this contains live food in a dehydrated condition.

I have a goldfish which lived healthily in a fish bowl but when I transferred it to a proper tank with some white rocks and gravel it became unwell and went off its food. What could be the reason?

I think that the trouble lies in the white rock. This may be giving off lime which would harm the fish; remove the rock, see that the gravel is clean and if

you use any rocks at all, see that they are well-weathered Westmorland stone as used for rockeries.

Can you help please. For three years I have had my goldfish spawn in my pond. I have collected the eggs as advised by you and given them warmth and aeration. I have hatched hundreds of fry but after they get about a quarter of an inch long they die off. I feed with brine shrimps, chopped white worms and powdered Tetramin. I rarely raise more than twenty fry?

It is difficult to say with any degree of certainty why the fry die. The only thing I can see which is so very different to the methods I use is that you use brine shrimps. I do not suggest that this is the only thing which is the cause but although I have nothing against brine shrimps as a food for young goldfish, I cannot see how plenty of these can be given without adding a quantity of salt to the water. Although I have found that a little salt will not harm fry, there must be a limit and I have found that water treated with salt will turn foul much sooner than will fresh water. You state the fish are only about a quarter of an inch long after three weeks. This is not enough, and you are either overcrowding the fry or not feeding enough. You also state that you give Liquifry after three days. This is not soon enough. I always add some when the eggs are nearly due for hatching.

This gives the infusoria time to breed and this makes an excellent food for the young fry.

Is it necessary to have a filter in a pond where I keep Koi carp, also could they be kept with Golden Orfe, Green Tench and Goldfish?

It is not necessary to have a filter in a garden pond. Normal water plants will tend to keep the water pure and as a large expanse of the water is usually exposed to the air, it will keep well oxygenated. Too much dried foods will upset the water if it is uneaten. Koi carp can be kept quite safely with the fish you mention.

I have a tank 18 in. by 10 in. by 10 in., in which I have two goldfish of 4½ inches, one at 3½ and the other at 1½ inches. I have a filter and an aerator working. These fish are quite healthy and growing. As the tank is only said to hold 7½ inches of fish, surely the rule of an inch of fish to 24 square inches of surface area no longer applies?

You have missed the point as to the advised rule for the number or size of fish for a tank. The rule as given is supposed to apply to a tank where no filter or aerator is in use. As you are using both, you are able to keep alive and healthy far more than the permitted number. Also, an experienced aquarist may be able to succeed with more than the stated number of fish. This he could do by restricting the amount of food given. This makes all the difference as to the health of the fish. When the rule is stated it is mainly for those aquarists who are not experienced and who would soon be in trouble with their tanks if they over-crowded them. I often stock my rearing tanks with far more fish than I would recommend to beginners. At the moment I have just over 40 young goldfish each with a body length of an inch at least, in a concrete tank which has the following inside measurements: 22 in. × 11 in. × 9 in., and rather less at the bottom in width and length. This tank should hold not more than ten such fish. The reason why so many fish keep very healthy is because I have an aerator going all the time, day and night. This is not a strong flow of air as one small pump is serving nine such tanks. Even a small flow of air means that the water in the tank is in constant circulation. These fish are only six months old and have changed colour. However, in other tanks where there are only half the number of fish, their sizes are about twice that of the ones in the crowded tank. For anyone with a cold-water tank and not using an aerator, I still say stick to an inch of fish to each 24 square inches of surface area if you want to keep free from trouble.

I have a fish-house and wonder if I can keep Peacock-eyed Bass and Sun Bass in coldwater tanks in it?

You can certainly keep Sun Bass in your cold tanks in a fish-house. They are very attractive fish but you must realise that they are mainly carnivorous. The supplying of sufficient live foods can be a problem. Many such fish can be accustomed to take good quality flaked food as long as it is introduced gradually along with live food. Garden worms are an excellent food for these fish and if some are mashed up with added flake food at first, the fish can be brought onto the dried food almost entirely with patience on your part. Never try to cut out the live foods suddenly altogether or the fish may suffer.

My uncle has kept a goldfish in a tank 12 in. by 8 in., for 21 years and he wants to know if this is a record?

I would not say that this is a record as goldfish can live for many more years than this. They are of the carp family and such fish are well-known to be long-lived. However, it is not everyone who can keep a fish healthy for so long and so he can be congratulated on having kept the fish all these years.

I have made a fair-sized garden pond with a ledge all round it. On this ledge I have placed some galvanised troughs which I have made. I intend planting them with various specimens. I understand that fresh galvanising can be dangerous to fish and so I have given them a coat of lead paint followed by one of a bituminous paint. Will the paint be harmful to fishes?

The bitumen paint will not be harmful to the fishes as this is used to paint water tanks for drinking purposes on board ships. You can wash the troughs out well before putting them into use.

I have been successful with breeding tropicals and now wish to try my hand with coldwater fishes. Can you advise me on size of tank, prices for tank and other accessories, and type of goldfish with which to start?

Do not use a tank less than 24 in. × 12 in. × 12 in. You need no other accessories, but perhaps an aerator would be of help when hatching the fry and rearing them. For prices, just look through the advertisement pages of *The Aquarist* and you can take your pick. I advise that you get a tank which will not rust as this saves a lot of trouble in later years. As you intend breeding in a tank there is no preference as to which variety you try to breed with. Any of the fancy varieties will be of more value than common goldfish. You will find that one tank is insufficient for your purpose as either the eggs or the parents will have to be removed from the spawning tank. If you don't do this you may have little chance of success.

JULY'S BIG ATTRACTION IN LONDON

ALL INDICATIONS POINT TO SUCCESS for **The Aquarist and Pondkeeper Fishkeeping Exhibition**, for which preliminary arrangements are well in hand and have already produced evidence of enthusiastic support for the event.

It is evident at this early stage that Alexandra Palace will be a gathering point for aquarists from all quarters in July, and that they will find much to interest them. The general public, too, will be strongly attracted through widespread publicity to the prospect of a colourful exhibition combined with a family outing in the acres of parkland around the Palace; and with a strong accent on schools' exhibits the ranks of the junior aquarists should swell considerably after July.

The Exhibition, covering nearly 20,000 sq. ft., will be a major event in the aquatic calendar. It opens on Friday, 10th July at 10 a.m. and continues until the following Sunday, three busy days in which the best and the latest in fishkeeping skills will be on parade. A vast amount of expert organisation is necessary for an event on this scale, and the sponsors are once again indebted to the Federation of British Aquarists for their willing and capable co-operation in planning and running the Exhibition.

Thanks go, too, to the many enthusiasts who have offered their services as stewards; more are needed especially for Thursday and Sunday and the Show Secretary will be pleased to hear from you if you are interested and available. Refreshments will be available for helpers at the Exhibition Hall before the opening and of course throughout the time it is open.

Show schedules have now been distributed and further copies are available from the Show Secretary, Mr. S. Mooney, 44 Coniston Road, Muswell Hill, London, N.10.

The schedule of classes includes Society Furnished Aquaria, Tropical and Coldwater, and similar classes for individual entries; Furnished Aquaria, Marine, open to individual entries; Junior Furnished Aquaria; Society Junior Furnished Aquaria; and a special class of Furnished Aquaria entered by schools. Pairs of

Characins; Cichlids; Danios and W.C.M.M.; Guppies; Swordtails, Platys and Mollies; A.O.S. Live-bearers, each have their class and other classes cover Rooted Plants and cuttings. In addition to the competitive classes there will be exhibits by specialist societies, and the traders' displays in themselves will offer abundant interest including one of the finest displays of marines to be seen anywhere.

Among the many authorities who will be on hand to answer questions and give advice are our technical experts, Mr. J. Hems and Mr. A. Boarder, at *The Aquarist and Pondkeeper* stand, where the Editor will also be in attendance.

Handsome trophies have been presented for competition by leading companies in the trade and by this magazine, which will also present Award Cards and souvenir trophies to first, second and third-place winners; fourth place winners will also receive Award Cards.

Admission charges have been kept at a level that will encourage the maximum attendance from family groups in particular, and special concession rates are available for parties, i.e., 3s. per head for parties

of 15 and over. Application for party tickets should be made to the Show Organiser, *The Aquarist and Pondkeeper*, The Butts, Half Acre, Brentford, Middlesex.

Handbills, posters and car stickers are also available from the Show Organiser.

An immense amount of energy and organisation is being put into the planning of the Exhibition by the Federation, show officials and the many willing helpers, and will continue right up to opening day to ensure that this event will be one that no aquarist can afford to miss—and one that will recruit many more enthusiasts to the arts of fishkeeping.

A note for those visiting the Exhibition on the Saturday and Sunday — As a result of requests for midday meals, the organisers have arranged with the Catering Department at Alexandra Palace to supply three-course meals on Saturday and Sunday. The meals will be available to ticket holders only and application should be made to The Show Organiser, *The Aquarist and Pondkeeper*, The Butts, Brentford, Middlesex. Tel. 01-560 6221.



Alexandra Palace and Park Photo: Aerofilms Ltd.

THE AQUARIST & PONDKEEPER FISHKEEPING EXHIBITION

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

Schedule of Classes

Society Furnished Aquaria Tropical
Society Furnished Aquaria Coldwater
Individual Furnished Aquaria
Tropical
Individual Furnished Aquaria
Coldwater
Individual Furnished Aquaria Marine
Junior Furnished Aquaria
Society Junior Furnished Aquaria
School Furnished Aquaria
Pairs of Characins
Pairs of Cichlids
Pairs of Danios and W.C.M.M.

Pairs of Guppies
Pairs of Swordtails, Platys, Mollies
Pairs of A.O.S. Livebearers
Rooted Plants (one plant will
comprise an entry)
Cuttings (three cuttings of same
species or variety will comprise
an entry)

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

Book the dates Friday 10th to Sunday 12th July

Show Schedules available from
S. Mooney, Show Secretary,
44 Coniston Road,
Muswell Hill, London, N.10

P. J. Golding, Show Organiser,
The Aquarist and Pondkeeper,
The Butts, Brentford, Middlesex
Telephone 01-560 6221

The fishkeeping
event in
London to be
held at

**Alexandra
Palace**
Wood Green
London N22

Awards and Trophies

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

Challenge trophies are being presented to the First Awards in each class and are being donated by Inter-Pet Supplies Ltd.; South Coast Aquatic Nurseries Ltd.; T.F.H. Publications (London) Ltd.; Shirley Aquatics Ltd.; SeAquariums Ltd.; Philip Castang; House of Fishes; Thomas's Ltd.; Herb Royal Ltd.; J. T. Hunt (Aquapets) Ltd.; Armitage Bros Ltd.; Spratts Patent Ltd.; Federation of British Aquatic Societies; *The Aquarist and Pondkeeper*.

Open to the public

FRIDAY, 10th July, 10 a.m.-9 p.m.

SATURDAY, 11th July,
10 a.m.-9 p.m.

SUNDAY, 12th July, 10 a.m.-6 p.m.

Unlimited free parking and ample room for the family in the grounds.



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.

MEMBERS of Hinchley and District A.S. were given a lecture recently on "Fish Home Construction," by Mr. Fox, of Rosedale Aquarist, Eathorpe. Due to the weather the show for A.V. Egg-layer Pairs had to be cancelled. The Lecture consisted of slides with a commentary. All new members are welcome and any enquiries should be made to D. Sparrow, 172 Brookside, Harrogate, Leeds.

THE Keighley A.S. held their Second Open Show recently when a magnificent trophy was presented to A. S. and M. J. Allison from York for "Best Fish in Show." Also "Champion of Champion's" Award and Gold Pin. Results: Guppies: 1, Mr. and Mrs. Ormsby, Southport; Swordtails: 1, Mr. and Mrs. Barnap, Keighley; Mollies: 1, Mr. Tunney, Stockbridge; Platies: Mr. York, Ind. A.O.V. Livebearers: 1, P. Reynolds, Swillington. Small Barbs: 1, Mr. Whiteley, Aireborough. Barbs (large): M. J. Allison, York. Small Characins: 1, Mr. Pirth, Bradford. Characins (large): 1, Mr. Holdsworth, Privaters. Rasboras and Danios: 1, Mr. Taylor, Aireborough. Carps and Minnows: Mr. Spence, Ind. Sharks and Flying Foxes: 1, Mr. Scarll, Selby. Fishers: True Colour: 1, Mr. and Mrs. Cohen, Castleford. Fishers: Multicoloured, 1 Master Heptenstall, Castleford. Small Anabantids: 1, Mr. Whiteley, Aireborough. Large Anabantids: 1, Mr. Scarll, Selby. A.O.V. Tropical: A. S. and M. J. Allison, York. Toothcarps: 1, Mr. Barley, B.K.A. Angelfish: 1, Mrs. Gear, Keighley. Dwarf Cichlids: 1, D. W. Smith, Tadcaster. Large Cichlids: 1, Mr. and Mrs. Ormsby, Southport. Corydoras: 1, Mr. Taylor, Aireborough. Loaches: 1, Mr. Pickles, Keighley. A.O.V. Catfish: Mr. and Mrs. Gates, Castleford. Breeders (Livebearers): 1, Mr. Reynolds, Swillington. Breeders (Egglayers): 1, Mrs. Gear, Keighley. Pairs (Livebearers): 1, Mr. Bennett, Ind. Pairs (Egglayers): 1, Mr. Cohen, Castleford. Common Goldfish: 1, Mr. Cowtra, Bradford. Fancy Goldfish: 1, Mr. Moorhouse, Bradford. Shubunkins: 1, Mr. Isherwood, Acorington. A.O.V. Coldwater: 1, Mr. Hooper, Bradford. Junior Livebearers: 1, Miss Sutcliffe, Southport. Junior Egglayers: 1, Master Thickbroom, Castleford. Junior Coldwater: 1, Master Hall, Aireborough. Judging was done by Mr. Gordon Holmes and Mr. Barry Pengilly. There was a record 469 entries. A judging competition was held at the last monthly meeting, the winner being Mr. Heap with 16 points; 2, Master Mosley. 53 people attended making a pleasant evening. Fish of the Month, Cichlids: 1 and 3, Mr. Pickles; 2, Mr. Collins; 4, Mr. Crossley. Junior A.O.V.: 1, Master Mosley; 2, Master Illingworth; 3, Master Taylor; 4, Master Waddington. A.O.V. 1 and 3, Mr. Pickles; 2, Mr. Liddemore; 4, Mr. Crossley. Novice A.O.V.: 1 and 2, Mr. Mosley; 3 and 4, Master Cordingley. There were 44 Table Entries.

RECENT events in the programme of the Kingston and District A.S. have been a table show for A.V. Characins and A.V. Danio, Rasbora and W.C.M.M. Results: Characins: 1, 3 and 4, J. A. Pollard; 2, D. Gollup. A.V. Danio, Rasbora, W.C.M.M.: 1, 2, 3 and 4, W. D. Harper. During the evening the club heard an interesting lecture on Coldwater Fish given by Bob Hassen.

There has been a table show for A.V. Cichlids and A.O.V. Tropical. The results were as follow: A. V. Cichlid: 1, D. Day; 2, B. J. Pawley; 3, J. A. Pollard; 4, G. Greenhalf. A.O.V. Tropical: 1, G. Greenhalf; 2, A. Greenacre; 3, B. J. Pawley; 4, D. Smith. R. Biggs also gave a very interesting lecture with drawings on Furnished Aquaria.

THE Guest Speaker at the Gloucester A.S. March meeting, Mr. Rowbotham of the Severn River Board, Brunwick Road, Gloucester, who gave an illustrated talk on "Severn Scenes and Stories." This was an extremely entertaining talk and was very well received by all Members present, and a further invitation was extended to Mr. Rowbotham to visit the Society again in the near future. Members visited the Southern T.V. Studios at Southampton as Guests of Mr. Michael Miles for a recording of his T.V. Programme "Wheel of Fortune" Show. Among the successful contestants was the Societies Chairman, Mr. Michael Brooks who won for himself the amount of £55.

Anyone interested in joining the Society is cordially invited to come along to the Meetings held on the first Thursday in the Month at 8 p.m. at the above mentioned Venue without any obligation, or to contact the Secretary, B. Stoneham at 54 Tredworth Road, Gloucester.

THE appointments made at the Midland Aquarium and Pool Society annual general meeting held recently were as follow: Chairman: S. Green; Treasurer: A. M. Thompson; Secretary: C. W. Davies, 8 Redhill Rd., West Heath, Birmingham 31. Tel. 021-475 1788; Librarian: M. Harvey; News Letter Editor: Mrs. M. J. Witts, 120 Franklin Rd., Kings Norton, Birmingham 38. Committee Members: Mrs. F. Edden, W. Edden, G. Elvis, J. Randall.

OFFICERS elected at the annual general meeting of the Loxne A.S. were as follow: President: Mrs. R. Standen; Vice-Presidents: E. Smart, S. James; Chairman: S. Jones; Vice-Chairman: S. Tennent; Secretary: R. Holmes, 6 Kempton Rd., Lancaster. Treasurer: J. Sillis; Press Officer: J. Hambling, 4 Gardner Rd., Lancaster. Committee: Mr. Newby, P. Charton, D. Standen, Swords, First of year: 1, D. James; 2, J. Hambling; 3, R. D. Standen. Home Aquarium: 1, S. Tennent; 2, J. Whalley; 3, J. Salty. Table Shows: 1, S. R. Standen; 2, R. Hasten; 3, M. Hawarth.

The Society recently were the hosts to Members of clubs from, Kendal, Barrow, Chorley, Lakeland and Acorington when Mr. Taylor the Aquarium Director of Belle Vue Zoo gave a lecture and a film on the subject on tropical marine coral fish. The film showed the unusual event of clown fish breeding in captivity an achievement which few aquarists have achieved.

THE annual general meeting of the Independent A.S. was held in March when the following officers were elected: Chairman, S. Applin; Asst./Show Secretary, T. Beaumont; Treasurer, J. Kettle; P.R.O. Mrs. I. Applin/B. Mason; Librarian, S. Beaumont. The meeting was well attended and a very good scheme to encourage breeding was announced by the

Society's Secretary, Mike Harth. Mr. Frank Tomkins, the Club's President presented a new trophy to be called The Challenge Cup to be competed for by members. An interesting and varied programme has been produced for the next session and new members will be made most welcome. Meetings are held every Monday at the Holloway Institute, Eden Grove, Holloway, N.7. (8.00 p.m.). Please contact M. Harth, 60 Liverpool Road, N.1. Tel: 226 4631.

THE main events at the March club night of the G.K.N. Pond and Aquarium Society were a "Home Aquaria Competition," a Livebearer Show for the "Elyde Trophy" and a Newsletter Competition. All visitors are welcome and the Society meets on the fourth Tuesday in the month at the Works Restaurant, Salisbury Street, Darlington.

EARLY in March, at the meeting of the West Cumberland A.S., Les Sharpe gave a very interesting talk on community fish. There was also a Table Show of Labyrinths and Sharks. Results as follow: 1 and 2, J. Bary; 3, B. Frain; 4, J. Ward. 1 and 2, J. Parker; 3, B. Mitchell; 4, B. Frain.

At the second meeting of the month it was brought to the attention of the society that Marchion wanted the club to put on a show of fish at their annual flower show in the Civic Hall at Whitehaven and after all the other business was discussed J. Hall gave a very good display of all aquarium plants and where to position them to the best advantage. The talk and display were most beneficial to all members. The Table Show of Guppies resulted as follow: 1, J. Parker; 2 and 3, J. Bary; 4, J. Ward.

At the last meeting there was a slide show and talk on characins given by Eric Smart from Kendal which was very interesting and enlightening to all the members. The speaker is a member of the newly-formed Lakeland Aquarists' Society. The Table Show was also characins, the results being: 1, J. Satterthwaite; 2, J. Ward; 3, J. Hall; 4, B. Stephenson.

A LECTURE on Marine Fish was given by J. Hodggett at the March meeting of the Acorington and District A.S. The usual Table Show was judged by Mr. Hodggett and the results are as follow: Dwarf Cichlid: T. Allet; Livebearer: B. Yarnesall; Killifish: C. Whitney; Labyrinth: S. Taylor; Loach: G. Todd; Characin: G. Todd; Pairs: G. Todd; Breeders: T. Allet; Best in Show: G. Todd. These entries have been chosen to represent the society at an inter-club contest at Blackpool on 13th May. The winning Club, after three matches, will receive the Winston Churchill Trophy.

RECENTLY members of the Barnsley Tropical Fish Society were entertained by a film slide called "Setting Up The Home Aquarium."

The Table Show at this meeting was for Cichlids and the winners were: 1, R. Heeley; 2, R. Broughton; 3, Mrs. E. Deaves. W. Duncan won the annual cup awarded to the member gaining most points over the last twelve months at Table Shows.

At the March meeting the Table Show was for livebearers, the prizewinners being: 1, Master J. Howard; 2, B. Betton; 3, R. Absorn. The society will hold their Open Show on the 19th July at the Mappletwell and Sainscross Village Hall (formerly the Towncroft), Darton Lane, Mappletwell, Nr. Barnsley. Any further information can be obtained from J. Howard (Show Secretary), 67 Woolley Colliery, Darton, Barnsley, Yorks.

FUTURE meetings of the Plymouth A.S. will be held at the Labour Hall, Beaumont Road. Perhaps it is as well that new premises have been arranged as attendance at club meetings continues to grow. Together with the new members welcomed by Chairman W. Randle, the total number present at the March meeting was just over a hundred which is an all-time record.

For the second month in succession the Table Show (Cichlids) had to be staged in a separate room, there being insufficient space remaining in the main hall.

The main event was a film show arranged and expertly presented by T. Easterbrook. A number of films, in full colour, were shown covering marine and coldwater fish, the life cycle of the daphnia and the embryonic development of fry whilst hatching. Results of the Table Show: Premier Class: 1, D. Budd; 2, T. Easterbrook; 3, M. Leeder. Advanced Class: 1 and 2, W. Hoskins; 3, D. Horngood. Novice Class: 1, R. Syraka; 2, G. Webb; 3, D. Collins. Best Fish in the Show was D. Budd's Red Devil.

The committee appointed a panel of six judges to resolve all future club table shows and select representatives for the club at inter-club shows.

AT the March meeting of the **Burton and District A.S.**, J. Poden gave a lecture on reptiles and also brought several specimens, including an alligator, African rock python, hissing sand snake and red-eared terrapins. The results of the Table Show for Characins were as follows: 1 and 2, B. Pointon; 3 and 4, J. Sharratt.

Meetings are held on the second Thursday of each month at the Fox and Goose, Bridge Street, Burton-on-Trent, commencing 7.45 p.m.

A RECORD number of members and friends attended the March meeting, of the **Canterbury and District A.S.** held in the aftermath of one of the worst wintry spells in this area for several years.

Despite their problems, members were pleased to welcome as their speaker for the evening Mr. Ted Jessopp, Chairman of the F.R.A.S., who followed his usual policy of amusing, advising and instructing all those present. For the benefit of many newcomers to the hobby at the meeting, he spoke on the basic steps involved in setting up an aquarium in the home, the pitfalls and dangers, and finally on the choice of the fish themselves. During the interval, Mr. Jessopp judged the table show entries, and then resumed his lecture to explain the points to consider in show judging. Many questions were put to him, and he spared no effort in satisfying every questioner.

Earlier in the evening the chairman reminded members of arranged visits on hand, one of which is to the Regent's Park Zoo Aquarium, and is to be held as well as in front of the scene. Members of the Medway A.S., were also welcomed earlier in the evening, when they invited the new strong Canterbury Society to participate in the Medway's inter-club show to be held shortly. It will be the first external show for many Canterbury members for a long time, and consequently it is hoped that members support the Medway show in strength. The March table show results were as follows: Plants: 1, S. Matthews; 2, F. Stroad; 3, W. Deane. Danios: 1, Miss W. King; 2 and 3, Mr. Beasley. White Cloud Mountain Minnows: 1 and 2, J. Kellogg. Catfish: 1, T. Long; 2, M. Prynce; 3, T. King. Guppies: 1, M. Prynce; 2 and 3, F. Stroad.

The next meeting will be held at St. Dunstan's Hall, Canterbury, on Friday, Mar 28th, at 7.30 p.m. The speaker will be Mr. R. Justen, whose subject will be "Plants in the Aquarium".

THE **Freelance A.S.** have elected the following officials for the coming year: Chairman, A. Howes; Secretary, J. Ackland, 146 Mayeswood Road, Grove Park, S.E.12; Treasurer, Mrs. E. Kenyon; Show Secretary, W. Bishop, 20 Dames House, Rodney Road, London, S.E.17.

THE annual open show of the **Nelson A.S.** attracted 362 entries for the thirty classes. Results were:—Guppies: 1, Mr. and Mrs. Burnap (Aireborough); 2, I. Heptinstall (Castleford); 3, C. Britton (Ashton). Sword-tails: 1, N. R. Gibson (Huddersfield); 2, Mr. and Mrs. Burnap (Aireborough); 3, Mr. and Mrs. Boardman (Valley). Mollies: 1, Mr. and Mrs. Hogarth (Salford, Section winner); 2, S. Haerop

(Osram); 3, Mr. and Mrs. Boardman (Valley). Platies: 1, I. Heptinstall (Castleford); 2, Mr. and Mrs. Webb (Salford); 3, Mr. Hodgkinson (Gorton and Openshaw). A.O.V. Livebearers: 1, J. Whiteley (Aireborough); 2, L. Kaye (Top Ten); 3, P. Reynolds (Swillington). Small Characins: 1, G. Todd (Accrington); 2, Mr. and Mrs. Cobb (Belle Vue); 3, M. Dwyer (Aireborough). Large Characins: 1, J. A. Whiteley (Aireborough, Section Winner); 2, D. Kennedy (Bradford); 3, R. Taylor (Aireborough). Angels: 1, W. Harley (Nelson); 2, C. Asquith (Castleford); 3, N. R. Gibson (Huddersfield). Dwarf Cichlids: 1, R. Megson (Aireborough); 2, J. A. Whiteley (Aireborough); 3, I. Heptinstall (Castleford). Large Cichlids: 1, Mr. and Mrs. Ormesher (Southport, Section Winner); 2, D. and R. Standen (Loyne); 3, Mr. Hodgkinson (Gorton and Openshaw). Catfish: 1, R. Taylor (Aireborough, Section Winner); 2, A. Baldwin (Nelson); 3, Mr. and Mrs. Beswick (Valley). Loach: 1, R. Taylor (Aireborough); 2, Mr. and Mrs. Beardman (Valley); 3, B. Megson (Aireborough). Sharks and Flying Fox: 1, Mr. and Mrs. Beswick (Valley); 2, D. and R. Standen (Loyne); 3, N. R. Gibson (Huddersfield). Minnows: 1, M. Dwyer (Aireborough); 2, J. Stafford (Oldham); 3, Mr. and Mrs. Hogarth (Salford). Rasboras: 1, Mr. and Mrs. Grimshaw (Sunnybrow, Section Winner); 2, S. and A. Irvine (Osram); 3, D. and R. Standen (Loyne). Toothcarps: 1 and 2, M. and A. Crowther (Swillington); 3, Mrs. Gear (Keighley). Danios: 1, Mr. and Mrs. Hogarth (Salford); 2, R. Illingworth (Castleford); 3, Mr. and Mrs. Cobb (Belle Vue). Small Barbs: 1, J. A. Whiteley (Aireborough, Section Winner); 2, Mr. and Mrs. Wild (Salford); 3, J. Tomlinson (Clitheroe). Large Barbs: 1, I. Heptinstall (Castleford); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, A. Baldwin (Nelson). Fighters: 1, I. Heptinstall (Castleford); 2, Mr. Davies (Heywood); 3, Mr. and Mrs. Hogarth (Salford). A.O.V. Anabantids: 1, D. Godbehere (Stocksbridge, Section Winner); 2, N. R. Gibson (Huddersfield); 3, Mr. and Mrs. Cobb (Belle Vue). A.O.V. Tropical: 1, D. Kennedy (Bradford, Section Winner); 2, Mrs. Tonge (Oldham); 3, P. Reynolds (Swillington). Pairs (Livebearers): 1, H. Gardner (Aireborough, Section Winner); 2, D. Godbehere (Stocksbridge); 3, Mr. and Mrs. Webb (Salford). Pairs (Egg-layers): 1, F. Ledger (Top Ten); 2, D. and R. Standen (Loyne); 3, M. Tonge (Oldham). Breeders (Livebearers): 1, N. R. Gibson (Huddersfield, Section Winner); 2, P. Reynolds (Swillington); 3, T. Hallet (Accrington). Breeders (Egg-layers): 1, Mrs. Gear (Keighley); 2, S. Walsh (Accrington); 3, Mrs. J. Shackleton (Belle Vue). Goldfish: 1 and 2, S. Walsh (Accrington); 3, Mr. Whitney (Accrington). A.O.V. Coldwater: 1, Mr. and Mrs. Miller (Belle Vue, Section Winner); 2, C. Asquith (Castleford); 3, S. Walsh (Accrington). Juniors Tropical: 1, Master A. Kaye (Top Ten, Section Winner); 2, R. Bone (Nelson); 3, A. Kaye (Top Ten). Juniors Coldwater: 1 and 2, Master A. Kaye (Top Ten). Best fish in Show: Mr. and Mrs. Ormesher (male vexas Cichlid).

THE winners of the Home Aquaria competition of the **New Forest A.S.** were as follows:—Tropical: 1, C. Knapp; 2 and 4, D. Harding; 3, R. Moseley. Coldwater: 1, D. Harding; 2, A. Williamson; 3, L. Menbennett. The main item on the agenda was a lecture by R. Matley of Bourne-mouth A.S. His topic was Competition Aquaria, and how to set them up. During the interval a raffle was held for club funds and some fish were auctioned on behalf of members. The results of the table show were: Mollies: 1 and 2, D. Harding; 3, D. Hare; 4, R. Moseley. Platys: 1, D. Lane; 2, 3 and 4, D. Harding.

SOME committee changes were made at the March meeting of the **Carshalton and District A.S.** T. West resigned as Chairman and J. Lacey took over this position. E. Horsley relinquished the post of General Secretary in order to devote more time to his duties of Show Secretary, and C. Lamb is now the General Secretary. It was announced that from the

15th April all meetings would take place in a room above The Sun, North Street, Carshalton. At the meeting an interesting and informative talk on keeping and breeding Cichlids was given by K. Kaurit of the F.R.A.S. About thirty people attended the meeting, a figure which gave hope that the Society has a definite appeal to local aquarists.

DESPITE the wintry weather, there was quite a good attendance of members and guests for **Grimby and Cleethorpes A.S.** annual presentation and social evening, held at the end of March. The guest speaker was I. Stones, who gave an interesting talk on the setting up and maintenance of tropical marine aquaria. The speaker assured his listeners that the maintenance of the salt water aquaria was not so difficult as was popularly believed. He advised newcomers to the hobby to start with less expensive fish until confidence and experience was acquired. Mr. Stones presented the awards for the "Aquarists of the Year" for 1969, as follows: 1, E. Parker; 2, Master Kirk; 3, C. Easton; 4, A. Metcalf. Future activities include a three-cornered contest between Thorne, Scunthorpe, and Grimby and Cleethorpes Societies at Scunthorpe in May. New members will find a warm welcome, and plenty of interesting evenings, in this up and coming Society and should contact C. Easton, 158, Rutland Street, Grimby.

AN interesting and informative talk on the faster growing Aquarium Plants and water conditions was given at the March meeting of the **Atherstone A.S.** by Mr. Harvey and Mr. Jarvis. This proved so interesting that time ran out and it is hoped to invite the speakers back at an early date to continue their lecture. The Table Show resulted as follows: A.V. Anabantid: 1, 2 and 3, Mr. Wood. Rasboras, Danios and W.C.M.M.: 1 and 3, A. L. Trotman; 2, A. W. Spencer. A.V. Cichlid: 1, and 2 Mr. Holland. Best Fish: Mr. Wood—Dwarf Gourami.

AT the annual general meeting of the **Brighton and Southern A.S.** the following officers were elected: A. Davies, Chairman; B. Shelton, Secretary; D. MacFarlane, Treasurer. The four committee members are: D. Crist, V. Alois, R. Doe, R. Browning.

The annual prize giving was as follows: Highest Aggregate Cup (six out of twelve shows): 1, E. Cox; 2, D. Soper; 3, P. Tee; 4, Mrs. M. Tee. Fish of the Year Trophy: D. Soper and M. Whittington, tie. Vic Alois Trophy (Breeders' Class): D. Soper. Ladies' Trophy: Mrs. M. Tee, Junior Class: K. Williams. Dave Harris Trophy (Best Guppy): Miss M. Scott. Inter-Club Table Show (held on 23 February), Corydoras and A.O.V. Catfish: 1, Mrs. M. Tee; 2, P. Tee; 3, V. Alois; 4, C. Hickwood. A.O.V. Catfish: 1, 2 and 4, P. Tee; 3, Mrs. M. Tee.

The first inter-club of this year, was held with Portsmouth A.S. at Portsmouth and there were six classes of livebearers. In March the Society had a very interesting film show and lecture on Killifish, which was shown by R. Browning.

THE **Harrogate and District A.S.** meeting for March commenced with a tape slide show on Cichlids, there was also a quiz show and judging competition. At this meeting four new members enrolled.

With the Society growing so large in membership in such a short time the committee have co-opted two extra members on to the committee, in the persons of Michael Allen and

halamid A TABLET A DAY, SENDS WHITE SPOT AWAY
Hillside Aquatics London N12

Michael Slinger. Meetings are held the second Tuesday in every month at the Conservative Rooms, 15 Park View, Harrogate, and anyone will be made welcome. For further enquiries please contact the secretary, A. P. Sothard, 5 Regent Avenue, Harrogate.

THIS YEAR the Uxbridge and District A.S. has got off to a good start with two lectures, one by C. A. T. Brown on Rigg-Laying Tooth Carps and another by Mr. Colling of the Metropolitan Water Board. The talks were well attended and thoroughly enjoyed by all present.

The first table show of the year attracted thirty-two entries, including for the first time a junior class which was very well supported. An inter-club show with Roehampton, resulted in a two-points win for Roehampton. During judging the entertainment was provided by a Braz. Walker tape and slide show.

THE Basingstoke Aquarist Club was given a talk by F. C. Tomkins, vice-chairman of the Federation of British A.S. on the "Fundamentals of Breeding." He concentrated on livebearers and expressed his concern at the falling standards of many of the livebearers seen on the show bench these days. He made the point that a growing knowledge of science has wrongly substituted for the basic rules in fishkeeping so adding to the decline in standards.

The table show results for this evening were: Breeders' Teams: 1, A. Clarke; 2, M. Strange; 3, A. Marshall. A.O.V. Tropical: 1, M. Strange; 2, A. Marshall; 3, A. Clark. A.O.V. Novice: 1, M. Strange; 2, R. Weston; 3, C. Iving.

The next meeting was highlighted by a talk by Bob Easen of the F.B.A.S. on the subject of coldwater fish. This was illustrated by a selection of his slides showing how fancy goldfish should be bred and what to look for in the selection of quality.

The results of the table show were: Danios and W.C.M.M.: 1, A. Marshall; 2, A. Blake; 3, R. Weston. A.O.V. Tropical: 1, M. Strange; 2, G. Clewer; 3, A. Marshall. A.O.V. Novice: 1, M. Strange; 2, R. Iley.

Maintaining the extremely high standard of lectures recently, H. Jennings gave a talk illustrated with slides on Marine fish. His main object was to try to convince people that Marine is not difficult or expensive to set up.

The results of the table show were: Novice: 1 and 3, N. Stoad; 2, D. Punt; 3, C. Ewing. A.O.V. Tropical: 1, N. Stoad; 2 and 3, A. Clark. Siamese Fighters: 1, A. Marshall; 2, R. Cook.

MEMBERS of the Bishops Cleeve A.S. heard the results for the Home Aquarium Competition at the March meeting. The placings were: 1, N. Binding; 2, T. Duffurn; 3, N. Dooley. A slide show then followed.

The table show was a challenge by one member to the society to beat his entry, so there were two classes. The results for the first class, which was for Cichlids were: 1, N. Dooley; 2, P. Tredgold; 3, K. R. Burton. The second class was for any variety of Guppy: 1, P. Scrivins; 2, C. Surgeoner; 3, I. Scrivins.

The challenges were made by K. R. Burton for Cichlids and C. Surgeoner for Guppies.

THE Medway A.S. held their annual inter-club show when 132 fish were benched, the judges being G. D. Forrest and F. Tomkins. Mr. Forrest commended all concerned on the very high standard of entries and on the high attendance. Four films were shown during the show. The best fish in the show was a Red Sweettail benched by J. Stephens of North Kent.

Results: Livebearers (Ex. Guppies): 1, 2 and 3, J. Stephens (North Kent); 4, I. Mathieson (Tonbridge). Characins: 1, A. Harding (Erith); 2, A. N. Osher (Sittingbourne); 3, J. Marshall (Medway); 4, R. Biech (N. Kent). Catfish: 1, R. Baker (Tonbridge); 2, J. Bellingham (Tonbridge); 3, I. Mathieson (Tonbridge); 4, T. King (Canterbury). Barbs: 1, C. Hunter (N. Kent); 2, C. Ralph (Erith); 3, B. Harvey (N. Kent); 4, C. Wood (N. Kent). Danio and Rasbora: 1 and

2, J. Stephens (N. Kent); 3, C. Craft (Medway); 4, C. Elliott (Medway). Club Placings: 1, North Kent; 2, Tonbridge; 3, Medway; 4, Erith; 5, Canterbury; 6, Sittingbourne.

A VERY interesting talk was given by Stan Nelson on Tropical Marines, at the February meeting of the Llanwit Major A.S. He spoke on his method in making the all-glass aquaria and filtering same. He mentioned the types he was keeping and their diet. This proved most interesting and the chairman G. Viscombe thanked Stan for his lecture. The members were entertained at the following meeting by a show of coloured slides and taped lecture by Jim Kelly. The photography was excellent, and lecture very interesting.

Twenty-four Plaques can be won, also two Challenge Cups, at the Llanwit Major Open Fish, on Saturday, 13th June, in the Town Hall. Fish to be benched by 12.30 p.m. Schedules are available, at the show secretary's address: A. Ibbertson, Esq., 84 St. Mary's Avenue, Barry, Glam.

THE A.S.A.S. is holding a Convention on the 10th May, at Portsmouth Community Centre, Twyford Avenue, Stanishaw, Portsmouth. Speakers will be Mr. Skipper on Breeding Discus, Mr. Forder on Tropical Plants and Algae. Tickets: Adults, 3/-; Children, 2/-. Tickets and further information can be obtained from Mrs. J. Rowe, 7 Woodley Road, Woolston, Southampton, SO2 9DW. Refreshments will be available. Plenty of parking.

A RECORD number of entries, some 372 from 26 Aquarist Societies, were staged by the **Stretford and District A.S.** and ensured healthy competition for the "Best in Show" trophy. This was won by Mrs. D. R. Standen of Lloyne A.S. Lancaster, with a Silver Shark which obtained 82 points. The "Junior Best in Show" trophy was won by Master A. Kaye of Top Ten A.S., with a Goldfish which obtained 76 points. The exhibitor with most points was Mr. Whitley of Accrington who obtained 375 points from five winners.

Results: Guppies: 1, Mr. Heppinstall; 2, Mr. Lennox; 3, R. Johnson. Molies: 1, A. Stear; 2, Mr. and Mrs. Hoggarth; 3, Mr. and Mrs. Heap. Swordtails: 1, Mrs. Kaye; 2, N. R. Gibson; 3, Mr. Danielson. Flaties: 1, D. Sewell; 2, Mrs. Davies; 3, Mr. and Mrs. Webb. Dwarf Cichlids: 1, R. Davies; 2, N. R. Gibson; 3, Mr. Heppinstall. Medium Cichlids: 1, M. Roberts; 2, D. Sewell; 3, Mr. A. Seabright. Large Cichlids: 1, Mrs. D. R. Standen; 2, Mr. and Mrs. Ormisher; 3, Mr. Nicholls. Angels: 1, Mr. Williams; 2, Mr. Todd; 3, R. Antonio. Fighters: 1, Mr. and Mrs. Hoggarth; 2, Mr. Heppinstall; 3, R. Hanlan. Gouramis: 1, D. Sewell; 2, Miss L. Hindley; 3, F. Ledger. Small Barbs: 1, Mr. Stafford; 2 and 3, F. E. Gregory. Medium Barbs: 1, Mr. Heppinstall; 2, Mr. and Mrs. Gatto; 3, Mr. Tomkinson. Large Barbs: 1, Mr. and Mrs. Grimshaw; 2, Mr. Tomkinson; 3, R. Cook. Small Characins: 1, D. Sewell; 2, F. E. Gregory; 3, Mr. and Mrs. Cobb. Medium Characins: 1 and 2, A. Bebbington; 3, D. Sewell. Large Characins: 1, K. Parkes; 2, Mrs. V. Parkes; 3, Mr. Lennox. Carps and Minnows: 1, Mr. Stafford; 2, Mr. Bowman; 3, Mrs. D. R. Standen. Killifish: 1, A. Johnson; 2, D. Sewell; 3, A. Bebbington. Corydoras Catfish: 1, R. Davies; 2, S. Hunt; 3, B. Roberts. A.O.V. Catfish: 1, R. Antonio; 2, F. Muller; 3, I. Bewick. Loaches and Beels: 1, F. Muller; 2, P. Kenyon; 3, Mrs. B. Flynn. Sharks and Flying Foxes: Mrs. D. R. Standen; 2, F. Muller; 3, Mr. and Mrs. Grimshaw. Goldfish: 1, Master A. Kaye; 2, Mr. Walsh; 3, Mr. Whitley. Shubunkins: 1 and 2, Mr. Walsh; 3, Mr. Isherwood. Fancy Goldfish: 1, 2 and 3, Mr. Whitley. A.O.V. Goldwater: Mr. and Mrs. Miller; 2, Mr. Whitley; 3, Mr. Walsh. Pairs Livebearers: 1, Master D. Godbehre; 2, Mr. and Mrs. Webb; 3, Mr. Tomkinson. Pairs (Begglyers): 1, Mr. I. and K. Barlow; 2, Mrs. D. R. Standen; 3, P. Robinson. Breeders (Livebearers): 1, N. R. Gibson; 2, J. B. Dawson; 3, Mr. Danielson. Breeders

(Begglyers): 1, Mr. Healey; 2, F. E. Gregory; 3, M. Roberts. A.O.V. Tropical: 1, C. G. Britain; 2, Mr. and Mrs. Heap; 3, L. Kaye. Junior (Livebearers): 1, Miss B. Kaye; 2, Miss C. Pedley. Junior (Begglyers): 1, Miss B. Seabright; 2, Miss B. Kaye; 3, Master P. Cobb. Mini-furnished jars: 1, Mr. and Mrs. Cobb; 2, Master P. Cobb; 3, Mr. and Mrs. Heap.

THE Ealing and District A.S. began the 1970 season with a three-way match with Runnymede A.S. and Riverside A.S. The match ended with Ealing second-best with Runnymede. The final points being Ealing 21, Runnymede 21, Riverside 18. Ealing winners Barbs: 3, J. Healey, W.C.M.M. and Danios: 3, J. Healey. Characins: 2, J. Irvine. Tropical Catfish: 1, J. Batta. Dwarf Cichlids: 2, Cruickshank; 1, A. Agassini (Best Fish in Show); 4, R. Sellers; Corydoras: 1 and 4, Mrs. D. Cruickshank. The second leg of these matches will be at Runnymede on the 13th October and the third leg will take place on a date yet to be arranged at Ealing at the Northfield Community Centre, Northcroft Road, W.13. This venue is the regular meeting place of the Society, and new members will always be welcome on the first and third Tuesdays of each month.

NEARLY fifty people were entertained with a 16 mm film show at the April meeting of the **Gloucester A.S.** The programme included "Aquarium Wonderland," "Oliver Kites' Fewley" and "Salmon's Struggle for Survival" together with a film "Birth of a Rainbow." All these films were in colour and they undoubtedly provided the most entertaining programme that the Society has yet presented. Forthcoming guest speakers include: 4th June, Barry James (Prop., Cheltenham Aquatics); 2nd July, W. Harold Cotton; 6th August, R. Smith (Stroud A.S.); and a representative of the British Killifish Association on the 1st October.

Any one interested in joining the Society is cordially invited to attend the Meetings which are held at the above venue on the first Thursday of each month commencing at 8 p.m. New membership commences in June, 1970. Further information is available on the Society's activities from the Secretary, Brian H. Stoneham, 54 Tredworth Road, Gloucester.

MARCH was the best month yet for **Vauxhall Aquarists**, when the Club won the EMAAS Trophy (The East Midland Amateur Aquatic Societies). At the beginning of the month Kettering were played in the semi-final. Classes were Livebearers and Catfish. Results: Livebearers: 1, J. Biggs (Vauxhall); 2 and 4, J. Baines (Vauxhall); 3, E. Martin (Vauxhall). Catfish: 1, J. Springham (Kettering); 2, J. Biggs (Vauxhall); 4, B. Webb (Vauxhall). Vauxhall won by 9004 points to Kettering's 893.

On the 15th March the final was played against Dunstable Club and the classes chosen were Labyrinth and Rooted Plants. Results were: 1, D. Oakley (Dunstable); 2 and 3, R. Goodrum (Vauxhall); 4, T. Philp (Vauxhall). So Vauxhall were winners with 901 points to 866 and won the Shield. This is the club's major achievement so far, as it has been formed only for a year, and it is hoped to maintain the good progress next year.

THE Binks-Bullows A.S. met at Binks-Bullows Carzen, Pelsall Road, Brownhills, Staffs. recently. The chairman, Mr. Westman-coat, expressed the thanks of the committee for the splendid response shown toward the show bench by the membership. The lecture for the evening was "Keeping and Breeding Killie Fishes," given by Bob Heap. The Table Show for the evening was Barbs, with a secondary

BE PREPARED
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Hillside Aquatics London N12

show of Miniature Furnished Aquaria, both being judged by Alan Nicholson, the results being as follows: Barbs: 1, Mr. Westmancoot; 2, Mrs. Westmancoot; 3, Master Gough. The entries of Miniature Furnished Aquaria were judged to a points scheme of 100 points and the result was: 1, Mrs. Westmancoot; 2, Mr. Roberts; 3, Mr. Westmancoot.

At the next meeting of the society there was again a good turn out for the evening in spite of the cold weather. Albert Skinner lectured on the better ways of Keeping and Breeding Barbs, while Paul Skinner busied himself judging the 31 entries of Anabantids for the Table Show. The result was: 1, Mr. Allen; 2, Master Gough; 3, Mrs. Allen. The society has vacancies for more aquarists in the Brownhills area and details can be obtained from Ray Roberts, General Secretary, Birks-Bullions A.S., 42 Sycamore Road, Great Barr, Birmingham, 22A.

FORTNIGHTLY meetings of the **Priory A.S.** are now held in the "Sportman", Preston Village, North Shields, on alternate Mondays, commencing at 8 p.m. The new Secretary is M. Atkinson of 89 Millview Drive, Tyne-mouth—to whom all correspondence should be addressed. The Second Annual Open Show will be held in the Boys' Club, Mariners Lane, Tyne-mouth, on Sunday, 7th June. Bunching 11 a.m.—1.30 p.m. Open to public 2.30 p.m.

The **Bracknell A.S.** has a two-class Table Show each meeting. Points are awarded and the members who gain most points in each class will be awarded cups in December. The cups are being presented by Brian Johnson, the Vice-Chairman, and Jack Berryman. The show this year is on 36th September at the Prestwood Community Centre as last year. It is a good hall with playing space for children outside.

A VERY high attendance was present at the March meeting of the **Yate and District A.S.** and the society is gaining strength in numbers as more and more people become interested in keeping tropical fish. The venue of the meetings is the Horseshoe Inn, Dowernd, Bristol, at 7.45 p.m. on the first Monday of every month.

A talk was given by M. Arney of the Bristol and Avon River Board. The talk was illustrated and was on "Some aspects of River Weed and included the care and breeding of British freshwater fish.

The Table Show was for Anabantids and Siamese Fighting Fish. The results were: Open Class: 1, P. Wright; 2 and 3, J. Powell. Novice Class: 1, B. Watson; 2, D. Bates; 3, R. A. Bennett.

FAIR weather favoured the first Open Show of the **Rotherham and District A.S.**, and 637 entries from thirty societies were entered, making an outstanding success. The results were as follows: Livebearers—Platics: 1, W. Downing (Rotherham); 2, Mr. and Mrs. Webb (Salford); 3, J. Blizard (Sheffield). Mollies: 1, Mr. and Mrs. Hogarth (Salford, section winner); 2, D. Warriner (Rainworth); 3, J. Egoe (Rainworth). Swordtails: 1, Mr. Cohen (Castleford); 2, A. D. B. Ward (Rotherham); 3, R. Wheeler (Four Star). A.O.V. Livebearer: 1 and 2, L. Kaye (Top Ten); 3, J. Monk (Aireborough). Guppies: 1 and 2, Mr. and Mrs. Ormisher (Southport); 3, R. D. Shanks (Gateshead). Barbs (Small): 1, A. J. Whitley (Aireborough); section winner; 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. Rhodes (Four Star). Barbs (Large): 1, Mr. Allison (York); 2, Mr. Crowther (Wakefield); 3, Mr. Carey (York). Characins (Small): 1, B. Eyre (Workshop); 2, Mr. Hubbard (Workshop); 3, D. Sewell (Rainworth). Characins (Large): 1 and 2, D. Bennell (Dukeries, section winner); 3, B. Eyre (Workshop). Toothcarps: 1 and 2, W. Batley (B.K.A.), section winner; 3, Mr. and Mrs. Buxton (Harnsley). Sharks and Foxes: 1, Mrs. Moore (Wombwell), section winner; 2, A. Stevens (Stockton-on-Tees); 3, A. Hudson (Wakefield). Ruboras Minnow and Danios: 1, S. Ivine (Ostram); 2, S. Harrop (Ostram); 3, Mr. and Mrs. Hogarth (Salford). Corydoras: 1, Mr. and Mrs. Ormisher (Southport, section winner); 2, D. Ellis (Ind.); 3, S. Fever (Grantham). Catfish A.O.V.: 1, Mr.

Carey (York); 2, A. and S. Allison (York); 3, Mrs. and Mrs. Gates (Castleford). Loaches: 1, G. Hopkinson (Ind.); 2, S. Watson (Sheffield); 3, G. Hopkinson (Ind.). Cichlids (Dwarf): 1, J. A. Whitley (Aireborough); 2, J. Grundy (Halifax); 3, B. Eyre (Workshop). Cichlids (Large): Mr. and Mrs. Ormisher (Southport); section winner; 2, Mr. Carey (York); 3, Mr. and Mrs. Howard (Harnsley). Angels: 1, R. Fever (Grantham); 2, A. Hudson (Wakefield); 3, A. Hargreaves (York). Pighners: 1 and 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. McQuade (Beta Congress, Canada). Anabantids: 1, B. Brailford (Sheffield, section winner); 2, K. Blagdon (Sheffield); 3, D. Sewell (Rainworth). A.O.V. Tropical: 1, A. and S. Allison (York, section winner); 2, L. Kaye (Top Ten); 3, C. J. Andrews (Halifax). Breeders' Six: Livebearers: 1, R. Smitler (Sheffield, section winner); 2, Mr. and Mrs. Buxton (Harnsley); 3, A. Webster (Rainworth). Egglayers: 1, Mr. and Mrs. Buxton (Harnsley); 2, Mr. and Mrs. Healey (Barnsley); 3, S. Gear (Keighley). Pairs: Livebearers: 1, G. Godbehere (Stocksbridge); 2, Mr. Derrin (Dukeries); 3, A. J. Whitley (Aireborough). Egglayers: 1, J. Hopkinson (Ind., section winner); 2, Mr. Derrin (Dukeries); 3, Master A. Kaye (Ind.). Coldwater: Goldfish and Comets: 1, Master A. Kaye (Ind.); 2, J. S. Hall (Aireborough); 3, J. S. Hall (Aireborough). Shubunkins and Fancy: 1, Mr. Fearnough (Chapelton, section winner); 2, Mr. Asquith (Castleford); 3, P. Smith (Ind.). A.O.V. Coldwater: 1 and 2, Mr. Asquith (Castleford); 3, J. B. Dawson (Ostram). Plants and Mini Jar: 1, J. Robertson (Gateshead, section winner); 2, J. Cummings (Rotherham); 3, C. Turner (Rotherham). Plants: 1, A. D. B. Ward (Rotherham); 2, D. Jones (Rotherham). Best Fish in Show was owned by A. S. and J. M. Allison (York).

The results of the **Swillington A.S.** fifth Annual Inter-Society Table Show were as follows: Guppies: 1, P. Shipley (Selby); 2, L. Longfellow (Swillington); 3, P. Reynolds (SW). Livebearers: 1, Mr. Monk (A); 2, Mr. and Mrs. Cohen (C); 3, J. K. Pottin (SE). Barbs: 1, M. J. Allison (Y); 2, J. A. Whitley (A); 3, Mr. and Mrs. Cohen (C). Characins: 1, A. S. Allison (Y); 2, G. Thickboom (C); 3, Mr. Monk (A). Cichlids: 1, B. Megson (A); 2, D. W. Smith (T); 3, Mr. Pickles (K). Cats and Loach: 1, Mr. and Mrs. Gates (C); 2, A. S. Allison (Y); 3, P. Reynolds (SW). Carps and Minnows: 1 and 2, J. Scarr (SE); 3, M. J. Allison (Y). Fighters: 1 and 2, Mr. and Mrs. Cohen (C); 3, Mr. Whittlock (T). A.O.V. Anabantids: 1, J. Scarr (SE); 2, Mr. Corne (H); 3, Mr. Condon (SE). Toothcarps: 1, M. M. and A. Crowther (SW); 2, J. W. Holmes (T); 3, R. Taylor (A). A.O.V. Tropical: 1, A. S. and M. J. Allison (Y); 2, Mr. Whittlock (T); 3, Asquith (C). Breeders (Livebearers): 1, P. Reynolds (SW); 2, Mr. and Mrs. Cohen (C); 3, H. Gardner (A). Breeders (Egglayers): 1, Mr. and Mrs. Cohen (C); 2, D. W. Smith (T); 3, Mr. Monk (A). Pairs (Livebearers): 1, A. Jones (C); 2, L. Longfellow (SW); 3, J. A. Whitley (A). Pairs (Egglayers): 1, Mr. and Mrs. Stringer (SW); 2, L. Hepinstall (C); 3, Master Taylor (A). Furnished Jars: 1, B. Megson (A); 2, Mr. and Mrs. Stringer (SW); 3, R. Lister (A). (A)—Aireborough; (C)—Castleford; (H)—Horsforth; (K)—Keighley; (SE)—Selby; (SW)—Swillington; (T)—Tadcaster; (Y)—York. "Best in Show" went to A. S. and M. J. Allison of York, with a Black Knifefish which gained 85 points. Top Society was Castleford with 23 points, with Swillington and Aireborough at joint second with 17 points each.

The **Horsforth A.S.** Members' Show was held recently. The results being as follows: Barbs: 1 and 2, J. Gridham; 3, S. Greaves. Cichlids: 1, Miss J. Helm; 2 and 3, J. Gridham. Catfish and Loach: 1 and 3, Miss J. Helm; 2, M. Barker. Livebearers: 1, Master J. Dugdale; 2, Mrs. J. Dickinson; 3, J. Gridham. Pairs: 1, C. Corne; 2 and 3, Miss J. Helm. A.O.V.: 1, Miss J. Helm; 2 and 3, Mrs. P. Dell. Anabantids: 1, A. Woods; 2, S. Greaves; 3, M. Barker. Characins: 1, Master G. Thick-

broom; 2, M. Barker; 3, Miss J. Helm. Best in Show: Miss J. Helm with an Oscar.

Junior A.O.V.: 1, Jimmy Dugdale; 2 and 3, David Shaw.

The date of the 2nd Open Show is 14th December.

AT the March meeting of the **Coventry Pool and A.S.**, a speaker was unavailable, so a discussion on Cichlids was organised. The Table Show for the evening was the M.A.L. Preliminary for Breeders Egglayers. Here are the results: Breeders (Egglayers): 1 and 3, D. Basingwood; 2, B. and P. Hirst. Characins: 1, B. Hirst; 2 and 4, T. Sheehy; 3, T. Grant. Corydoras Cats: 1, 2 and 4, T. Grant; 3, T. Sheehy. Killies: 1, M. Lewis; 2, B. and P. Hirst; 3 and 4, T. Close.

The **Yeovil and District A.S.** recently held the society's Single Fish Knockout Competition with a record of thirty entries which were allocated numbers and drawn out in pairs. Judging was done by the members with the winning fish of each pair going through to the next round. Messrs. Hulbert, Nicholls, Colling, Rendell, Sealey, Mrs. Rendell and Miss Burwood go forward to the second round. This was followed by a taped slide show on Salt Water Aquaria. The Show Manager, D. Philon, reported that plans for the Society's Open Show on 22nd August were now complete with schedules at hand.

The Chairman said that arrangements were in hand for the forthcoming inter-club shows with Weymouth, Taunton and Weston-super-Mare Societies, and that the new venue at the Park Lodge Youth Centre, Yeovil, had resulted in an increased membership.

The March meeting of the **Weymouth and District A.S.** included a slide, and tape recording Lecture of Jim Kelly's tours of the U.S.A.

The Society are holding their first Open Show on 6th September at the small Sidney Hall. For more details and schedule, please contact T. Haron (Show Secretary), 53 Brownlow Street, Weymouth.

SEVERAL new members have been welcomed already this year to the **Thurrock A.S.**

The Table Show for Platics resulted as follows: 1, J. Ferber; 2, S. Hendle; 3, K. Appleyard. Recently Thurrock A.S. was host for the first leg of the inter-club competition between Thurrock, East London, Southend and Billericay who were welcomed into the competition for the first time. While A. Jessop judged the 71 fish entered, members of the four clubs were entertained with three short, but interesting films.

The three classes were Platics, Barbs and Fighters, and results were: Platics: 1, S. Hendle (Thurrock); 2, K. Appleyard (Thurrock); 3, G. Easton (Thurrock); 4, K. Baker (East London). Barbs: 1, J. Edwards (Southend); 2, D. Edwards (Southend); 3, K. Baker (East London); 4, N. Latham (Billericay).

Fighters: 1, W. Cooby (East London); 2, D. Durrant (Thurrock); 3, P. Capon (Southend); 4, D. Durrant (Thurrock).

After the first leg, the placings are: 1, Thurrock 14 pts.; 2, Southend, 9 pts.; 3, East London, 7 pts.; 4, Billericay, 1 pt. Southend are hosts for the second leg of the Competition on 5th May.

THERE was a good attendance, including nine new members, for the March meeting of the **Lincoln & District A.S.** The main feature of the evening consisted of black and

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white, and colour film, dealing with marine life, animals and reptiles, and tropical fish. These films were the last in our winter series of films and slides, all hired from Mr. W. L. Wittern of Yorkshire. The results of the table show were as follows: "The Remshaw Trophy" Cichlids: 1 and 3, H. Bunnage; 2, Mr. Clayton; 4, A. Stiff. This month's points competition, Catfish: 1, Mr. Smith; 2 and 4, H. Bunnage; 3, Miss Fisher. Anabantids: 1, H. Bunnage; 2, A. Stiff; 3, Miss Fisher. Pairs: 1, B. Hateman; 2, Miss Fisher; 3, Mr. Kirby; 4, A. Stiff. Meetings are held on the third Monday of each month in the Liberal Club, St. Swithuns Square, Lincoln, at 7.30 p.m.

THE results of the Huddersfield Tropical Fish Society Open Show were as follows: Best fish in show: D. Kennedy, Bradford. Best pairs trophy: Mrs. Cobb (Belle Vue). Cichlids: Roberts Trophy, Mr. and Mrs. Howarth (Barnsley). Guppies: 1, Mr. and Mrs. Cobb (Belle Vue); 2, Mr. and Mrs. Milnes (Huddersfield); 3, Mr. Liddmore (Keighley). Molias: 1, Mr. and Mrs. Hoggarth (Salford); 2, A. Jones (Castleford); 3, L. Taylor (Pirbrighters). Swordtails: 1, Mrs. C. Kaye (Top Ten); 2, R. Wheaton (Four Star); 3, A. Hudson (Wakefield). Plaies: 1, W. Burton (Privatcers); 2, D. Norris (Oldham); 3, D. Sewell (Rainworth). A.O.V.: 1 and 3, L. Kaye (Top Ten); 2, J. Whiteley (Aireboro). Small Barb: 1, J. Whiteley (Aireboro); 2 and 3, P. Gregory (Otram). Large Barb: 1, Mr. and Mrs. Grimshaw (Sunnybrow); 2 and 3, Master D. Black (Merseyside). Small Characins: 1, J. Scarril (Selby); 2, Master R. Johnson (Aireboro); 3, T. Walton (Stockbridge). Large Characins: 1, K. Parkes (Merseyside); 2, M. Lennox (Salford); 3, Mrs. Deaves (Barnsley). Carps and Minnows: 1, K. Stafford (Oldham); 2, Mrs. Deaves (Barnsley); 3, Mr. and Mrs. Hoggarth (Salford). Danios and Rasbora: 1, P. Gregory (Otram); 2, Mr. and Mrs. Hoggarth (Salford); 3, Master D. Black (Merseyside). Sharks and Foxes: 1 and 3, J. Scarril (Selby); 2, P. Mulla (Merseyside). Fighters (Self Coloured): 1, Mr. and Mrs. Cohen (Castleford); 2, A. Whitlock (Tadcaster); 3, Master Heptenstall (Castleford). Fighters (Multi-Coloured): 1, Master Hall (Aireboro); 2, B. Eyre (Wolkeop); 3, R. Bycroft (Independent). Dwarf and Thick Lips: 1, N. Gibson (Huddersfield); 2, Mr. and Mrs. Cobb (Belle Vue); 3, J. Whiteley (Aireboro). A.O.V. Anabantids: 1 and 2, D. Sewell (Rainworth); 3, K. Parkes (Merseyside). Dwarf Cichlids: 1, J. Brook (Wakefield); 2, L. Taylor (Privatcers); 3, B. Eyre (Wolkeop). Large Cichlids: 1, Mr. and Mrs. Howard (Barnsley); 2, Mr. and Mrs. Ormesher (Southport); 3, B. Pickles (Keighley). Angels: 1, B. R. Williams (Independent); 2, P. Stephenson (Ellensmere Port); 3, A. Hudson (Wakefield). Toothcarps: 1 and 2, W. Batley (B.K.A.); 3, Mr. and Mrs. F. Buxton (Barnsley). Corydoras, Catfish: 1, R. Davis (Belle Vue); 2, R. Wilkinson (Halifax); 3, Mr. and Mrs. Ormesher (Southport). A.O.V. Catfish: 1, K. Kaye (Top Ten); 2, Master F. Cobb (Belle Vue); 3, Mr. and Mrs. Gares (Castleford). Loaches: 1, B. Pickles (Keighley); 2, R. Carrick (Ellensmere Port); 3, P. Kenyon (Belle Vue). Breeders Livebearers: 1, H. Gardiner (Aireboro); 2, Mr. and Mrs. Cobb (Belle Vue); 3, Mr. and Mrs. F. Buxton (Barnsley). Egg-layers Breeders: 1, Mr. and Mrs. Cohen (Castleford); 2, Mr. and Mrs. F. Buxton (Barnsley); 3, W. Batley (B.K.A.). Pairs (Livebearers): 1, A. Jones (Castleford); 2, L. Longfellow (Swillington); 3, D. Godbehere (Stockbridge). Pairs (Egg-layers): 1, Mr. and Mrs. Cobb (Belle Vue); 2, P. Lodge (Top Ten); 3, Mrs. H. Heap (Belle Vue). Females Egg-layers: 1, J. Whiteley (Aireboro); 2, P. Booth (Wakefield); 3, J. Sullivan (Four Star). Female Livebearers: 1, A. Hudson (Wakefield); 2, G. Monk (Aireboro); 3, Miss R. Kaye (Top Ten). A.O.V.: 1, D. Kennedy (Bradford); 2, R. Carrick (Ellensmere Port); 3, A. Whitlock (Tadcaster). Common Goldfish: 1, Miss E. Bone (Huddersfield); 2, Master A. Kaye (Top Ten); 3, Master Hall (Aireboro). Fancy Goldfish: 1, P. Moorhouse (Bradford); 2 and 3,

C. Asquith (Castleford). A.O.V. Goldwater: 1, J. Hooper (Bradford); 2, C. Asquith (Castleford). Goldwater: 1, Miss B. Bone (Huddersfield); 2, Master J. Moorhouse (Bradford); 3, G. Thickbroom (Castleford). Tropical: 1 and 3, R. Kaye (Top Ten); 2, G. Thickbroom (Castleford). Ladies A.V.: 1, Mrs. A. Gregory (Otram); 2, Mrs. I. Moorhouse (Bradford); 3, Mrs. H. Heap (Belle Vue).

THE following officials were elected at the annual general meeting of the Woking and District A.S. Chairman, A. Stacey (re-elected); secretary, F. Reid; treasurer, Diana Morton; news letter editor, Sue Reid; publicity, R. Lane. Correspondence regarding all Club activities, please contact secretary, 19 Kent Road, Marbury, Woking, Surrey. Phone: Woking 65400. Meeting nights in private room first and third Tuesday of every month at 8 p.m.

THE officers unanimously elected at the annual general meeting of the East Midlands Section of the Federation of Guppy Breeders' Societies were as follows: Chairman: H. Esterbrook. Treasurer: W. France. Secretary: J. Carter. Show Secretary: A. Baker.

The table show of A/V. Female was quite well supported, the result being: Superb Females (Judge: H. Esterbrook); 1, 2, 3 and 4, Tom Pils. Wedgetail Females (Judge: A. Baker); 1 and 2, Tom Pils. The meetings are held on the last Thursday of the month, St. Paul's Rooms, Kirby Road, Leicester.

RECENTLY Hounslow A.S. held their social, which was well supported by over forty members. At the last novice table show held, the class was for labyrinth, the winners for this event were as follows: 1, Mrs. C. A. Woodward; 2, M. Dear; 2 and 4, A. Pratt; 3, Mrs. R. Brewer. On the 6th May the speaker is Mr. Katriitzky, an expert and devoted hobbyist on aquarium and house plants, and on the 20th May, Dick Armstrong. Anyone wishing to join the club is welcome to come along to Hounslow on the above-mentioned dates, to Hounslow Youth Centre (Annex), Clifton Road, Isleworth. Club meetings are held on alternate Wednesdays at 8 p.m.

MARCH was the month for the East London Aquarist and P.A. to hold their first Club Table Show for the 1970 season, comprising of three classes which were well supported with over fifty entries. Results were: Barb: 1, K. Baker; 2, Mrs. P. Harris; 3, J. Ross; 4, M. Pearson. Platy: 1, 2 and 4, L. Baker; 3, B. Corby. Fighters: 1 and 3, B. Corby; 2, J. Ross; 4, Mrs. J. Arrow. The winners of each class were presented with a Teak Carving of an angel fish. The Society holds its meetings on the first and third Friday of every month at the Ripple Road School, Barking at 8 p.m.

AT the Mid-Sussex A.S. monthly meeting, the chairman, R. Johnson, welcomed eight new members who had joined since the previous meeting. The Society has more than 100 members and is growing rapidly. They were over 70 at the meeting. Graham Cox, former director of Brighton Aquarium and a leading authority on tropical marines in this country, was warmly thanked by the members after a most enlightening talk on tropical marine fish. The talk was accompanied by colourful slides showing attractive arrangements of aquariums containing tropical marine fish, invertebrates and living corals.

The table show was for male and female guppies. There were 31 entries, the awards being made as follows: Male: 1, 2 and 3, D. Soper; 4, N. Short. Females: 1, 2 and 3, D. Soper; 4, E. Speck; 5, A. Temple. Further information about the Society may be obtained from the secretary, Mr. John Reeves, 36 Rumbolds Lane, Haywards Heath.

THE following officers were elected at the annual meeting of the Nottingham and District A.S. President, C. Hill; chairman, A. Sexton; vice-chairman, N. Goodliffe; secretary, K. Green; treasurer, K. Binn.

AT the last March meeting of the Leamington and District A.S. Mr. Billington gave the society members a talk on his travels through America with the Caravan Club of Great Britain. His talk was illustrated with slides and film. The Table Show of 31 entries in two classes showed an increase in exhibitors, mainly from the ladies of the society, who had turned up in force with their entries for the qualifying event for the proposed challenge match with the men on 19th May. The classes—Catfish and Loach and A.V. Tropical, were judged by Bob Deacon of Rugby, assisted by Eric Bennett. Results: Catfish and Loach: 1, Mrs. L. Clarke; 2, Mrs. J. K. Smith; 3, B. Clarke; 4, J. Beard. A.V. Tropical (Ladies Only): 1 and 4, Mrs. L. Clarke; 2, Mrs. R. Taggart; 3, Mrs. C. Beard.

ONCE again excellent progress is reported by the Merseyside A.S. Not only was there the usual good attendance at the March meeting but an astounding number of visitors came along and nearly twenty of these joined the society the same evening. The annual Open Show is being held on the 17th May at the new venue, British Legion Club, Cranwood Avenue, Smith-down Road, Liverpool, 15.

NEW SOCIETIES

THE Havant A.S. has been formed and meets at the Prince of Wales, Bedhampton, every second and fourth Thursday at 8 p.m. The committee is as follows: Chairman, H. Armitage; Treasurer, N. Davies; Show Secretary, P. Sparshatt; Secretary, J. M. Barber, 129 Hart Plain Avenue, Cowplain, Hants.

A programme of slide shows, lectures and table shows has been arranged and new members are assured of a warm welcome.

THE Holyhead and District A.S. was formed in January of this year and fortnightly meetings are held on the first and third Wednesday of each month at the Labour Rooms, William Street, Holyhead, commencing at 8 p.m. The committee is as follows: Ian Parlow, chairman; R. Burnell, vice-chairman; members of the committee: E. Joseph, J. Evans, P. Lunn, D. Roberts. The secretary is Mrs. Brenda Parlow, 12 Trafalgar Road, Caerfellon, Holyhead, Anglesey.

SECRETARY CHANGES

Priory A.S.: M. Atkinson, 89 Millview Drive, Tynemouth.
Romford and Becontree A.S.: R. C. Smith, 256a Leashbridge, Barking.
Ealing and District A.S.: T. Cooper, 7 Nemours Road, Acton, London, W.3.
Harrow A.S.: D. Young, 2 Benedict Court, Devonshire Road, Hatch End, Pinner, Midds.
Privatcers A.S.: L. Taylor, 6 Keatral Drive, Bolton, Bradford 2, Yorks. Telephone Bradford 639757.
Wombwell and District A.S.: I. Wigglesworth, 51 Blythe Street, Wombwell, nr. Barnsley, Yorks.

CHANGE OF DATE

THE Convention of the Midland Association of Aquarists will not be held on the 17th May but on the 5th July and will be held at the premises of Guest, Keen and Nettelfolds. The host Society is Guest, Keen and Nettelfolds with the Secretary, A. Horse, of 223 Wolverhampton Road, West Bentley, Nr. Walsall.

An additional item to the M.A.A.S. range will be an inter-affiliated society show at Drayton Manor Park, Nr. Tamworth on 17th May. Host Society is North Warwick A.S. with the Secretary as K. Wells, of 5 Tudor Road, Sutton Coldfield.

AQUARIST CALENDAR

2nd May: Trowbridge and District A. & P.S. Open Show at Trowbridge, Nelson Haden Girls' School. Show schedules available from C. Penny (Show Secretary), 122 Trowbridge Road, Bradford-on-Avon, Wilts.
3rd May: Derby Regent A.S. Open Show. Sherwood Foresters Recreation Centre (Normanton Barracks) Osmaston Park Road, Derby (Follow R.A.C. Signs). Show schedules from E. Hazeldine, 57 Tewksbury Crescent, Chaddesden, Derby.

3rd May: Bury and District A.S. Open Show. The Church House (behind Parish Church), The Wyde, Bury.

3rd May: Dukeries A.S. Second Annual Open Show at the Windford Portland Technical Grammar School, Sparken Hill, Worksop.

3rd May: Newcastle Guppy and Livebearer Society First Open Show at St. Joseph's School, Atkinson Road, Benwell, Newcastle-on-Tyne. Schedules from R. Skyles, Secretary, 189, Fossway, Walkergate, Newcastle-on-Tyne 6.

8th May: Uxbridge and District A.S. Annual Open Show at The Meadow School, Royal Lane, Hillingdon, Uxbridge. Show schedules available from N. V. Lee, 46, Airedale Road, Baling, W.5.

10th May: Association of Yorkshire Aquarist Societies Annual Open Show. Full details later.

10th May: Worksop A and Z.S. Annual Open Show, North Notts College of Further Education, 117th Road, Worksop. Schedules available shortly from J. W. Booker, Secretary, 30, Rufford Street, Worksop, Notts. Tel: 5009.

10th May: Hyde A.S. Open Show. Queens Hotel, Hyde, Cheshire. Secretary, B. Riley, 133, Manor Park Road, Glossop, Derbyshire.

10th May: North Warwickshire A.S. Open Show, Kingstanding Settlement, Kingstanding Road (next to VIP garage), Birmingham, 22C. Show schedules from Show Secretary, T. Sanders, 101 Gorae Farm Road, Great Barr, Birmingham, 22A.

10th May: Oram A.S. Annual Open Show, Recreations Hall, Refuge Street, Shaw, Oldham. Hon. Secretary, J. E. Shore, 53, Refuge Street, Shaw, Oldham.

10th May: Southend, Leigh and District A.S. Open Show, St. Andrew's Hall, Electric Avenue, Westcliff. All enquiries to Show Secretary, Malcolm Upton, 12, Merrivale, Bradlee, Essex.

16th May: Cardiff A.S. Fourth Open Show, "St. Margaret's" Church Hall, South Park, Cardiff. Details and schedules from Mr. and Mrs. C. Haydon, 168 Pearl Street, Cardiff.

16th May: Hendon and District A.S. Show Secretary, W. R. Sherwin, 43, The Highlands, Edgware, Middx.

17th May: Hull A.S. Third Open Show. The Railway Institute, Anlaby Road, Hull. Details from R. Holt, 102 Westcott Street, Holderness Road, Hull.

17th May: Merseyside A.S. Open Table Show. British Legion Club, Holyoake Hall, Crammond Avenue, Liverpool, 18.

24th May: Accrington and District A.S. Annual Show will be held in St. John Ambulance Hall, Bull Bridge, Accrington. All enquiries to K. W. Taylor, Show Secretary, 66 Pasturelands Drive, Billington, nr. Whalley.

30th May: Harehatch A.S. Second Annual Open Show, Galsals Junior School, Colwill Road, Cardiff. Details from the Show Secretary, A. J. Payne, 56 St. Pagan's Rise, Fairwater, Cardiff (Telephone 565352).

30th May: Tottenham and District A.S. Annual Open Show, Friern Barnet Hospital. Show schedules from S. Mooney, 44 Conington Road, Munwell Hill, London, N.10 (Telephone 01-883 3099).

31st May: Coventry Pool and Aquarium Society. Open Show, Foleshill Road Community Centre. Show schedules (S.A.E.) from Show Secretary, S. Woodbridge, 32 Ridgeway Avenue, Coventry, CV3 5BP.

31st May: Hoylake A.S. first Open Show at Macdonna Hall, Salisbury Avenue, West Kirby, Wirral, Cheshire. Show Secretary, T. Wayles, 31 Newton Park Road, West Kirby, Cheshire, LA8 9XE (051-625 7820).

31st May: Boston A.S. Open Show, Blackfriars, Boston. Details from D. Moody, 56 Kingsway, Boston, Lincs.

7th June: Lincoln and District A.S. Drill Hall, Lincoln. Schedules from A. Clarke, 8 Lime Crescent, Braint Road, Lincoln.

7th June: Hyde A.S. Open Show, Queens Hotel, Hyde.

7th June: Nuneaton A.S. Open Show. Details from S. Blosham, The Shop, Beaumont Road, Nuneaton.

7th June: Thorne A.S. Open Show.

7th June: Bishop Auckland A.S. Open Show at Y.M.C.A. Hall, Woodhouse Close Estate.

7th June: Priory A.S. Second Annual Open Show at Boys Club, Mariners Lane, Tynemouth. Open to public 2.30 p.m.

13th June: Llanrwit Major A.S. Open Show, Town Hall, Llanrwit, Major.

14th June: Bournemouth Aquarists Club Annual Open Show. Schedules available from J. Jeffrey, 30 Brammar Avenue, Southbourne, Bournemouth, BH6 4JF, Hants.

14th June: Loughborough and District A.S. Open Show. Town Hall, Loughborough. Show Secretary, I. Purdy, 61 Poplar Road, Shelthorpe, Loughborough, Leics.

21st June: Cambridge and District A.S., St. Matthews Hall, Norfolk Street, Cambridge.

21st June: Swillington A.S. Fifth Annual Open Table Show at Swillington School.

21st June: Atherton A.S. fourth Open Show at the Memorial Hall. Particulars from Show Secretary, A. L. Troeman, 15 Meadow Street, Atherton.

25th-27th June: Bristol Tropical Fish Club Open Show at Congregational Church Hall, Newton Street (nr. Stapleton Road), Bristol 5. Details from H. Newman (Show Sec.), 71 Somerdale Avenue, Knowle, Bristol, 4.

29th June: Alfreton and District A.S. Annual Open Show, to be held at the Adult Education Centre, Alfreton Hall, Alfreton. Details from the Show Secretary, S. Hill, 35 South Street, Riddings, Derbyshire.

28th June: Bishop Cleeve A.S. First Open Show at the Tythe Barn, Bishop Cleeve on the Cheltenham to Ivesham Road A435. Schedules from Show Secretary, N. W. Dooley, 57 Welch Road, Cheltenham, Glos.

28th June: Tyneside A.S. Open Show in Central Hall, Gosforth, Newcastle upon Tyne. 3. Schedules available from W. Tait, 52 Martello Gardens, Newcastle upon Tyne, NE7 7LE.

28th June: Bradford and District A.S. Show, Unity Hall, Rawson Square, Bradford.

28th June: Northwich and District A.S. Open Show at the Scout Hall, Norley Road, Cuddington, Nr. Northwich. Further details from Show Secretary, C. Davies, 70 Hayhurst Avenue, Middlewich, Cheshire.

5th July: High Wycombe A.S. Open Show, West Wycombe Hall, West Wycombe, Bucks. Schedules now available from B. Cook, 28a Oak Tree Road, Marlow, Bucks.

5th July: Lytham A.S. Open Show at Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

5th July: Peterlee A.S. 9th Annual Open Show to be held at Edenhill Community Centre, Peterlee. Secretary, R. Davison, 7 Palmer Street, South Hetton, Co. Durham.

5th July: Gosport and District A.S. Annual Open Show at Bridgeman Community Association, Brewers Lane, Bridgeman, Gosport. Show Secretary, K. Clough, 16 Newport Road, Gosport.

5th July: Glossop A.S. Open Show, Glossop Centre, Talbot Street, Glossop, Derbyshire. Schedules from Miss M. D. Smith, 3 Chapel Lane, Hadfield, Via Hyde, Cheshire.

10th-12th July: Aquarist and Pondkeeper Fishkeeping Exhibition, Alexandra Palace, Wood Green, London, N.22.

11th July: Basingstoke and District A.S. Open Show. Details from A. Blake, 50 Bouny Road, Basingstoke.

11th-12th July: Dagenham Town Show. Schedules from J. M. H. Fyne, 3 Ashvale Drive, Cranham, Upminster, Essex. (Tel. Upminster 28435.)

12th July: Grantham and District A.S. First Open Show, Guildhall, St. Peter's Hill, Grantham. Schedules available mid-February from Show Secretary, S. Paver, 59 Alexander Avenue, Newark, Notts.

12th July: Tadcaster and District A.S. Open Show at Collingham Memorial Hall, Collingham, Wetherby, Yorks. Schedules from J. W. Holmes, Newsagent, Collingham, Wetherby, Yorks.

18th July: North Kent A.S. First Open Show. Show Secretary, J. Parker, 6 Moore Road, Swanscombe, Kent.

19th July: Barnsley Tropical Fish Society Open Show. Details available from the Show Secretary, J. Howard, 67 Woolley Colliery, Darton, Nr. Barnsley, Yorkshire.

25th July: Plymouth A.S. Open Show, Sherwell Hall, Sherwell, Plymouth. Details from Show Secretary, R. Gartrell, 53 Biggin Hill, Erncliffe, Plymouth, Devon.

25th July: A joint venture by Stockton and Cleveland Aquarist Societies. Incorporated into the Teesside Agricultural and Horticultural Show, a new Aquarist Section. First Open Show. Schedules available from K. Low, 2 Farnbank Road, Ormesby, Middlesbrough, Teesside, TS7 9EG or K. Clennett, 26 Thames Avenue, Thornaby, Teesside.

25th July: Teesside Show Aquarist Section, First Open Show. To be held in Stewart Park, Teesside. Schedules from K. Low, 2 Farnbank Road, Middlesbrough, Teesside, TS7 9EG.

1st August: Stroud and District A.S. Third Open Show, Archway School, Pagenhill, Stroud, Glos. Schedules and information from Show Secretary, P. L. K. Treadgold, 15 King's Road, Rodborough, nr. Stroud.

1st August: Chingford and District A.S. Open Show, New Road Methodist Church Hall, New Road, London, E.4. Schedules from Show Secretary, A. Pannell, 9 Pembur Avenue, London, E.17.

2nd August: Blackpool and Fylde A.S. New Venue, Arnold Boys' School, Lytham Road, Blackpool. Schedules from G. Howard, 56 Stamford Avenue, Blackpool from mid-June.

8/15th August: Portsmouth Open Show. Show Schedules from J. Howard, 51 Kingscote Avenue, Cowplain, Hants.

16th August: Bedworth Aquarist and Pool Society Open Show to be held at Nicholas Chamberlain Comp. Scho61, Bulkington Road, Bedworth. Show schedules available from K. Edkins, 72 Lister Street, Artleborough, Nuneaton.

22nd August: Yeovil and District A.S. Open Show at Grass Royal Secondary School, Yeovil. Details from D. M. Phipps, 5 Hill Terrace, Bower Hinton, Martock, Somerset.

23rd August: Scarborough and District A.S. First Open Show, St. Saviour's Church Hall, Scarborough. Details from Mrs. B. A. Moore, 44 Dale Edge, Eastfield, Scarborough.

5th September: Rhondda A.S. Second Open Show at the Rhondda Transport Club, Porth. Details from P. Jenkins, 22 East Road, Tylers-town, Rhondda.

5th September: Yate and District A.S. Open Show at Christchurch Hall, North Street, Dowend, Bristol. Details available from Show Secretary, C. E. Stickland, 20 Burgage Close, Chipping Sodbury, Glos.

12th September: Hounslow and District A.S. Open Show at Hounslow Youth Centre, Cecil Road, Hounslow, Middx. Schedules from D. J. Woodward, 34 Uxbridge Road, Hanworth, Middx.

13th September: Ealing and District Second Open Show.

20th September: Four Star A.S. Second Annual Show. Further details available later.

20th September: Bracknell A.S. Open Show.

27th September: Torbay A.S. Annual Open Show. Venue details later.

27th September: Hucknall and Bulwell A.S. Third Open Show. Further details later.

3rd October: East London Aquarists and Pondkeepers Association Annual Open Show, Ripple Road School, Barking.

4th October: Castleford and District A.S. Open Show at the Boys' Modern School, Pontefract Road, Castleford. Further details from R. Illingworth, 67 Dawrio Street, Ferry Fryston, Castleford, Yorks.

4th October: Ealing and District A.S. Second Open Show.

10th-11th October: British Aquarist Festival, Belle Vue, Manchester.

24th October: Kingston and District A.S. Open Show. Schedules available from G. Greenhalf, 39 Garth Close, Morden, Surrey. Tel: 01-337 4042.

25th October: Doncaster and District A.S. First Open Show. Details available later.

6th November: Hartlepool A.S. Twelfth Annual Show, Longcur Hall, Seaton Carew. Schedules available September from J. D. Watson, 42 Sydenham Road, Hartlepool.

20th November: Aireborough and District A.S. Annual Open Show, Greenacre Hall, Rawdon. Details and schedules later.