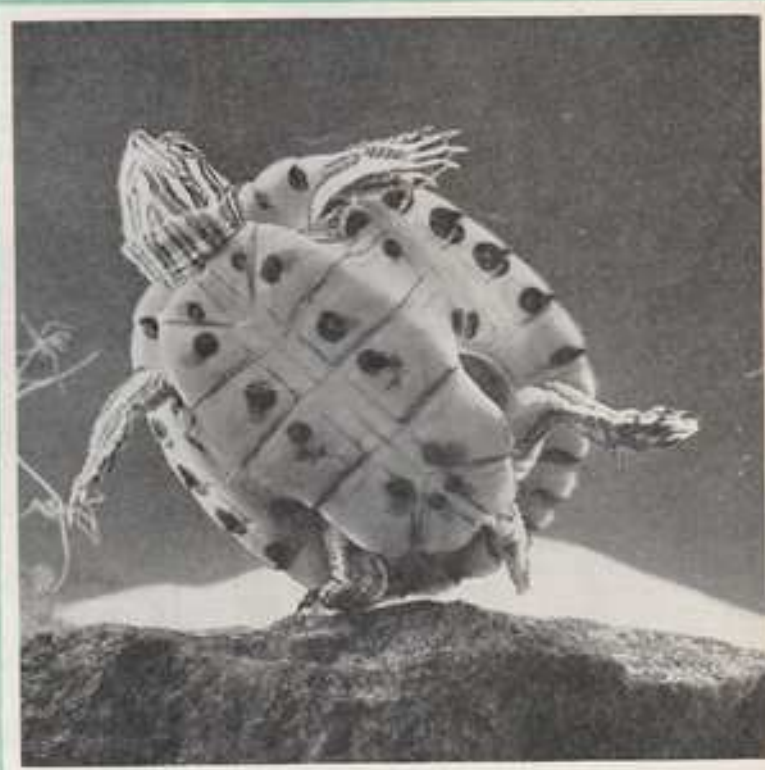


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AUGUST, 1961



MONTHLY
Vol. XXVI No. 5

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American Terrapins

by ROBERT BUSTARD, B.Sc.

FOR aquarists it is a small step to instal some terrapins in one of their tanks, and the attractively coloured American species are often selected as the first examples of sub-tropical species. Unfortunately, many must die because of lack of proper care. In this article several suitable species are selected, which are readily obtainable in Britain for as little as 7s. 6d. each. June is, in my opinion, the best month to purchase these terrapins, especially if baby specimens (which may be little larger than a half-crown) are selected.

It is advisable to state at the outset that these delightful little terrapins are not too easy to rear. Some years ago I was against recommending them because of the high mortality rate, but over the past 5 or 6 years I have imported

many of them myself and have been successful in rearing them, as have many of my friends. I have come to the conclusion that the trouble which I encountered in earlier years was partly, if not entirely, due to the quality of the stock which I purchased. It so happens that these baby terrapins are collected in thousands in the U.S.A. and are sent to wholesalers in Britain in large numbers. They suffer from gross overcrowding and it is doubtful if they are properly fed before being sent out to pet shops. I made the mistake of purchasing many of mine from the local pet store, more from compassion than intention, as the owner, who was a personal friend of mine, had no idea how to care properly for them.

The most important consideration is therefore source of supply. Choose someone who imports for quality and not in quantity. The next consideration is the best species to keep. These small terrapins grow quickly and tend to suffer from rickets and calcium deficiency in temperate regions. This can be partly remedied by keeping them under semi-tropical conditions (water temperature 70°F) and providing an electric bulb when normal sunshine is not available. Under such conditions they will eat well, and if supplied with an abundance of live food as well as raw meat they will have every chance of surviving. Many of the vitamins so essential for growth are contained in green vegetables, and only certain species will accept vegetable food. I have noted in recent years that the ease with which these baby terrapins can be reared is directly proportional to the amount of vegetable food they will consume. I provide lettuce leaves, which are floated on the surface of the water, as well as *Elodea* and other aquatic plants.

The Florida green slider (*Pseudemys floridana*) is one species which is quite commonly imported. It, and its sub-species, will eat 50-60 per cent. of lettuce in its diet, the rest being animal food, and I have found them by far the easiest species to rear. Provided that their tank is kept warm and cleaned out fairly frequently (this does depend on the number of specimens kept and the size of the tank) they can be reared without difficulty and the process is most instructive to observe. There is a definite feeling of achievement in starting with these tiny little creatures and ending up 2 years later with specimens of about 6 inches.

The tank should not be less than 12 in. by 8 in. by 8 in. and a tank of this size is suitable for two baby specimens. As they grow they will have to be transferred to a larger tank. It is best to use an aquarium about 24 in. by 12 in. by 12 in. and not to keep more than about four specimens. This arrangement will allow for considerable growth without the necessity of re-housing. The bottom of the tank



Photo 1

Robert Bustard

Red-eared terrapin (*Pseudemys scripta elegans*)



American mud terrapin (*Kinosternon bairii*), seen from beneath

can be covered with fine grit, but this must be carefully washed out when the tank is cleaned. This should be done at least once every 10 to 14 days, and more frequently if necessary. At one end of the tank stones should be built up out of the water and topped by a large flat stone, which should be dry above. The babies must be able to clamber on to this with ease, and if the light bulb is suspended above this end of the tank they will use it for basking. The water in the aquarium should be about 4 inches in depth.

Critics will say that they have successfully reared baby American terrapins without such careful attention. This is quite possible; I have kept babies outside all summer in all weather and reared them successfully. It is, however, best to treat them as semi-tropical and house them in the tropical fish house or reptile house at least during their first year.

The coloration of the "slider terrapins" is so delicate that it is difficult to describe. *Pseudemys floridana* is greenish above, some sub-species being delicately sculptured with black (*P. f. heys*). The plastron is yellow, with black and green markings. The soft parts are yellow with green, and in some sub-species black markings. The species illustrated is the red-cared terrapin (*P. scripta elegant*), so called because it has red streaks on each side of the head. This species is only slightly more difficult to rear than *P. floridana*. It will eat considerable quantities of lettuce and other vegetable food and can be recommended.

There are, of course, many other species of ornate American terrapins, including the painted terrapins proper (genus *Chrysemys*), but the above-mentioned two species are in my opinion the best for the beginner to try. When he gains experience with them he can proceed to other species.

I would stress that collectors should keep baby terrapins

only if they are prepared to spend quite some time on them while they are small. I get many letters from readers who have trouble with them, and I hope this article will go some way, at least, to guiding them along the right lines. The best "rearer" of terrapins I know is a middle-aged lady who keeps many reptiles and who feeds all her baby terrapins both night and morning. At each feed they get large quantities of scraped raw beef and lettuce leaves are floating on the water at all times. Food passes through the intestines of these animals very quickly, so, unlike most reptiles, they require very regular meals if they are to be raised successfully.

Mud terrapins

For those collectors who like something different I strongly recommend the mud terrapins (*Kinosternon bairii* and *Kinosternon subultratum hippocrepis*). These are quite frequently available and are easy to keep. The depth of water should not exceed 6 inches even for adults and 3 inches for babies. Adults seldom leave the water to bask but should have the opportunity to do so. Food is entirely animal matter and a water temperature of 70°F is recommended for babies, although I have hibernated them successfully when only little over 1 inch. These, as babies, are black above with a yellow, orange or bright red plastron. Occasionally the plastron is black. As they grow the carapace changes to olive brown and the plastron to dark brown or black. Adults seldom exceed 4 inches.

The Americas are the home of many fascinating chelonians and I hope to be able, at some future date, to write about some other members of this Order.

Cacti in the Fish House

MANY cacti will have an added attraction once they have flowered if the flowers have been pollinated and fruits have formed. Many of the fruits are highly coloured and enhance the beauty of most plants. Many *Mammillaria* species have red fruits, some of which last red and plump for a whole year. Species which oblige in this way are *M. multiceps*, *M. prolifera*, *M. castaneoides* and *M. stellaris*. Some of the night-flowering species and *Epiphyllow* species provide large red fruits which are very colourful and last some time on the plant. The flowers should be dusted with pollen with a soft brush. Some kinds are self-fertile whereas others must have the pollen from another plant. If seeds are required for sowing later it is important to wait until the seed is quite ripe before gathering. Just because a pod is red it does not mean that the seeds are ripe. The pod will either split or start to shrivel when the seeds are ready.

SOME of the small slow-growing types of cactus can be encouraged to flower by grafting pieces on to a stronger-growing stock. The plant known as *Trichocereus spachianus* makes a very good stock. It should be a young growing plant and the top can be cut off at the required height. The scion is cut at the base so that it fits the cut on the stock. Place them together quickly before any drying takes place and before too much sap is lost and secure either with a stout spine or by a piece of tape weighted at each end hanging over the top of the scion. Shade from strong sun or cover with a polythene bag and a join will soon be made. A dwarf kind may be grafted on a tall type to encourage it to flower and to make an umbrella-like display.

WHEN IT IS A QUESTION OF FISH HEALTH—

The Eyes Have It

says the AQUARIUM VET

SOMEONE once said that the big difference between elephants and fleas, is that elephants can have fleas, but fleas cannot have elephants!

The speaker was, of course, getting at the fact that elephants are not parasites, whereas fleas—essentially parasitical—can be afflicted with smaller fleas, in much the same way as they themselves afflict elephants and other unfortunate animals. Even bacteria, Protozoa and viruses, Number One harbingers of disease and death in the animal kingdom, are liable to suffer disease and death at the hands of very much smaller, but equally virulent counterparts.

Taking the question a step further, it can be stated quite categorically, that under certain circumstances, all living organisms are subject to disease, and often death from disease, a fact of which many aquarists are only too well aware!

Others, who have been lucky enough so far to escape the havoc disease can wreak in coldwater and tropical tanks, can almost certainly expect to cross swords with it in one form or another, during their careers as aquarists.

This is where the "men" are sorted from the "boys"—and the experienced hobbyists from the novices, for, knowing that it is more than likely he will have to cope with some illness or other at some time or other, the aquarist-in-the-know makes a point not only of teaching himself symptoms likely to be encountered in a diseased fish, but also whether the patient can best be tackled at home, or under expert treatment at a veterinary fish "hospital."

At the same time, and an even more fundamental point, he learns how to avoid introducing disease, or parasites for that matter, into his tanks, by teaching himself the rudiments of aquarium hygiene.

Not that anyone should take the impression from this that it is hard to keep fish in first-class health and condition! On the contrary, every fish hatched or born has an inherent resistance to disease, which is more than adequate to provide lifelong health, provided, naturally, that bodily stamina is not undermined by bad management, wrong feeding, overcrowding, unsuitable or fluctuating temperature and other factors which are detrimental to the well-being of any animal, let alone fishes!

On the other hand, it is only to be expected that disease symptoms in fishes differ not only according to species of disease, but also species of fish! Happily, from the point of view of everyday health, however, aquarists are provided with several first-class denominators which readily point to a fish's state of health, regardless of breed, type or species.

A healthy fish, for instance, will always show clear, distinct colours, and though, strictly speaking, there are one or two exceptions (notably amongst members of marine aquaria), permanent discoloration is always best taken to be a sign of distress!

The operative word is "permanent", however, for temporary discoloration can occur if, for instance, a tankful of angel fish is suddenly exposed to bright light after being in darkness for some time. Like us, some fishes tem-



porarily lose colour if frightened, others "blush," and the females of some species often lose colour during, and just after, spawning.

If the onset of discoloration is sudden, however, it comes on without obvious cause, and remains for some time, then it is a clear indication that you have an invalid on your hands, in which case the sooner you prepare a hospital tank, and isolate the sufferer, the better!

Healthy fish, at the same time, are active, with clean, slime-free skins, level bellies (except in spawning egg-layers and pregnant livebearers), show perfect co-ordination and equilibrium in the water and, above all, a healthy appetite. Otherwise, when it is a question of general fish health—the eyes have it!

When a healthy fish is grasped lightly with one hand under water, and turned on its side, the eyes will not rotate with the rest of the body, but remain in their normal position, which, being to one side, obviously makes the pupil invisible from the surface of the water.

When a sick fish, on the other hand, is held on its side, the eye-ball rotates with the body, bringing the pupil into the handler's view from above.

There is more to the eye-test than this, too! Apart from

Continued at foot of facing page

Guppy Troubles

by PETER DENDY

THE guppy is not normally prey to many ailments when kept under good conditions, but being rather a sensitive fish can be easily upset under bad conditions. If things are not to their liking guppies will very quickly let you know about it by their mournful drooping appearance and general loss of activity. Overfeeding and lack of maintenance will more often than not be the cause and the remedy lies in your own hands.

Whilst plenty of live food in the early stages of growth is very desirable this feeding of live food, particularly white worm, can be overdone as they grow older. I have found that after about 3 to 4 months, especially with males, the guppy stomach does not seem to be able to cope with too much live food and after a feed the fish become very listless. I make it a practice to withhold all live food, except brine shrimp, from adult males so as to keep them on the top line.

It is wise to take routine precautions even though this may give you extra trouble in the fish house. New stock should be quarantined for at least 2 weeks, longer if possible, to ensure that they are not bringing disease or parasites with them. Nets should be sterilised after each use by dipping in a strong solution of disinfectant and then washing to avoid the transference of trouble from one tank to another. This may sound like overdoing it, but is well worth while. I have practised this for years but recently gave it up as being too much of a nuisance, to my regret, as I suddenly found I had a dose of flukes in one tank and signs of it in three others, transferred, I strongly suspect, by the use of the same net. Needless to say, the disinfectant routine is back in operation again for good.

Although *Daphnia* are a fine source of food your favourite *Daphnia* pond must always be regarded as a possible bringer of trouble, because whether you like it or not you are bound to import a number of undesirable aliens into your tanks. Planarians cannot be avoided and whilst they do not cause a great deal of harm, they can be a nuisance and can prey on new-born fry. Parasites may be present in a transmissible or free-swimming form and can become established in the snails or the fish themselves. Most snails are undesirable in guppy tanks as they add to the waste products in the water and can act as hosts to a variety of parasites. *Tubifex* also is, of course, another source of live food which should be treated with suspicion.

One thing which can cause a lot of bother is a general wasting away of the fish, coupled with a very hollow-bellied and humped-back look. There can be several reasons for this: tuberculosis, worm parasites, old age and too many broods in females and weakness in the strain due to inbreeding and consequent malformation of some of the internal organs. The only "cure" here is to get rid of the affected fish as soon as possible. This, of course, is a golden rule with all kinds of trouble where the reasons for it are not understood. Net out the sick fish and sterilise the net afterwards.

I mentioned flukes earlier as a source of trouble and I have experienced these more than once. Flukes is the general name for two parasites, *Gyrodactylus* and *Dactylogyrus*, the former being a livebearer and the latter an egg-layer. Both attach themselves to the fish by means of hook projections

on their heads and can infest the gills, the fins and the body. The affected fish will show signs of distress, with drooping dorsal fin and clamped caudal fin, and usually it indulges from time to time in a bout of body flicking against the compost, induced by the irritation caused by the flukes attached to the gill membranes. In a really bad case the gills may be obviously inflamed and red. Fry attacked by flukes may have their caudals so clamped that they come to a point. This flicking against the gravel is quite violent and must not be confused with what is generally known as "gill-bashing," common in guppies and due to high spirits or the build-up of bacteria in the water due to overfeeding.

There is a theory that flukes are always present in all fish, but do not cause trouble unless there is a sudden increase in their numbers, which may happen from time to time. Fluke treatment is tricky as it involves immersing the fish in a solution for a long enough period to make the flukes let go, but not so long that the fish itself is harmed. I am purposely not giving details of treatment in this article, as they are already given in all good fish text-books or cures are available as proprietary medicines from tropical fish shops.

Trouble may be experienced with fungus infection and with white spot, both of which can be fairly easily treated. If, however, you do experience either of these then you should look at your tanks with a critical eye, as the guppy is not usually troubled by them unless its resistance has been lowered by poor conditions. It is safe to say that overfeeding and decaying food will be the cause of the trouble in 99 cases out of 100.

The introduction of new fish or a catfish has been known to put guppies off their stroke so that they huddle together in one corner of the tank. This does not usually last for long and the stranger soon becomes accepted. A heavy addition of new water can cause a similar reaction for an hour or two.

The Eyes Have It

continued from page 90

its simplicity, and almost 100 per cent. accuracy in weeding the sick from the healthy—vital when replenishing tanks—the eye-test can prove a valuable key in diagnosing "tricky" troubles, where definite symptoms may be vague, misleading or even lacking!

At the same time, as we shall see later, the eye-test is a useful dodge to have up one's sleeve when making a differential diagnosis, between two diseases with all but the same symptoms!

Probably the most notable examples are seen in female fish, in which the symptoms of constipation and ovarian cysts can mislead even an expert at first glance. Only the latter condition gives a positive eye-reaction, but both conditions are such, however, that the hobbyist might well begin treatment for constipation, when in fact the root of the trouble lies in the ovaries. With such disease, more often than not, "enthusiastic" dosing with Epsom salts will only aggravate the trouble.



Dytiscid beetles pairing: the male's wing covers are smooth compared with the ridged ones of the female

Courtship of the Great Water Beetle

by LAURENCE E. PERKINS

(Photographs by the author)

I RECENTLY obtained a pair of great or margined water beetles (*Dytiscus marginalis*) with the modest intention of making some detailed photographs of their characteristics and sexual differences. Initially the female alone was acquired and subsequently housed in a 10 in. by 7 in. by 7 in. aquarium in company with three *Corixa* and a solitary *Neonecta*. A little milfoil was added for cover and a few tadpoles were introduced as a stand-by food supply. The female beetle made no attempt to conceal herself except when artificial light was allowed to play directly upon her or when a photographic exposure was made, the accompanying flash from the flashlight alarming her considerably.

A week after her arrival, and when she had completely acclimated herself to her new home, the male beetle was obtained and took up his quarters with her. His behaviour was markedly different from the start, for he immediately headed for where the milfoil was thickest and made himself as inconspicuous as he could. He appeared to be more voracious and vicious in his attacks upon chopped worms when they were introduced and could be relied upon to emerge from his hiding place on these occasions. As a photographic subject he proved most difficult and was never to be seen in an open position as was his mate, of which I had made many records with relative ease.

At length I decided to devote an afternoon to the task of

obtaining photographs of the male of comparable quality to those already secured of the female, and having placed the aquarium in such a position that the camera could be moved to cover any one of the four sides, I proceeded to coax the male beetle from his lair with a planting stick. After he had been successfully dislodged he appeared to fly into a tremendous rage, dashing around the aquarium and attacking any form of life which crossed his path. For several minutes he carried on in this fashion until the female chanced to cross his bows, whereupon he seized her and worried her like a terrier worrying a rat. Following so closely upon his similar attacks levelled at *Corixa*, tadpoles and water lice, I feel justified in my assumption at the time that his mate had also fallen a victim of his foul temper.

However, when he eventually came to rest it became apparent from the manner in which he held the female by the sides of her prothorax with the aid of his forelegs that an attempt at mating was being made. I was responsible for delaying the second act of the drama by my several attempts to photograph the pair of them, on each of which occasions, the flashlight caused the male to dash for cover, propelling the recumbent female beneath him.

When allowed to rest they floated to the surface, where both obtained a supply of air by allowing their abdomen tips to break the water surface, after which they sank an inch or two and then rested with their rears facing in my

direction. The slit-like opening beneath the rear end of the male's elytra then began to open widely and a bi-lobed, membranous organ not unlike the ears of a long-eared bat was extruded and bent under, searching for the appropriate opening in the female, which was quickly located with little difficulty. The flash accompanying the photographic exposure made of this incident caused a sudden retraction of the male organ and the pair swam quickly away together. After taking a further supply of air, however, they resumed operations and remained pairing for over an hour, the male continuing to clasp the female for a further 2 hours after actual mating had ceased.

It had been observed that when the male was first obtained he appeared to be collecting particles of compost at the bottom of the tank, but it became apparent that the stickily prehensile abilities of his enlarged foreleg tarsi were responsible for the inadvertent adhesion of the gravel. Equipped with highly competent suckers, the male's forelegs are perfectly adapted for the job of obtaining a grip upon the smooth casing of the female beetle. To implement the act of pairing, the hooks at the extremities of the central pair of the male's legs are clipped to the edges of the female elytra, she further assisting by clasping these legs with her rear pair of paddling legs.

After mating the female uses her ovipositor for making

incisions in the submerged stems of plants in which she lays her eggs. From these hatch out the predaceous larvae, which excel their parents in their savage voracity, although they are less active than the adult form, relying upon stealth coupled with sudden pounces for the capture of their prey. Once secured the victim is doomed, owing to the strength of the mandibles, which meet like calipers well within the flesh of the prey. Once the capture has been effected there appears to be little visual trace of the prey being consumed, for, unlike the adults which can be observed masticating their food, the larvae first inject, via their hollow mandibles, a fluid which pre-digests their meal. Subsequently the pumping mechanism responsible for this phenomenon reverses its action and permits the fluid portion of the prey to be sucked up and consumed.

When ready to pupate, the larva leaves the water and, burrowing into nearby damp soil, remains there for a period of a few weeks before emerging as an adult beetle.

It is only under aquarium conditions and with the assistance of a fairly high-powered magnifier that the beauty and remarkable construction of these creatures can be completely appreciated and for the smallness of space and little attention that they require the bountiful reward of their study is out of all proportion.



Rear view from underneath of the paired *Dytiscus* beetles; the extruded male organ appears as a two-lobed structure

AQUARIST'S Notebook

by

RAYMOND YATES



A RECENT copy of *Fish Fun* (U.S.A.) mentions that swordtails first came to the United States via Germany around 1910. Since that time they have proved to be the second most popular fish, second only to the guppy. The new variety, with the large dorsal or "high fin," are worth seeing, as this fin becomes up to 2 inches tall. The dorsal fin, however, is not the only high thing about them; so is the price asked!

Talking of the most popular fish, I have often wondered just how we stand in Britain in this respect. Popularity is governed to some degree by availability. Fishes which are easily available are usually easy to breed and relatively cheap. There was a time when neons would have swept the board for popularity but their price was prohibitive. Livebearers are so accommodating but I wonder if they would enjoy much popularity if they were in the "difficult" class and hard to get. I doubt it very much. The newcomer to the hobby always starts his breeding attempts with livebearers and success is much more certain than with the more difficult egg-layers. Even dealers would be hard put to in suggesting what is the most popular fish because price again comes into the question. Apart from the livebearers we have mentioned I would hazard a guess that the tiger barb and the angel would be well to the forefront, were it possible to have a popular vote. I know the guppy has many devotees but outside the out and out guppy fan, and the beginner, few more experienced aquarists bother with these little beauties.

It was a pleasure to visit the British Aquarists' Festival at Belle Vue after missing last year's show through illness. Even on this occasion I was rather under the weather but the excitement of the crowds helped me to forget how off colour I was. Fancy, 10 long years ago since our first B.A.F. and still as popular as ever! It was heart-warming to see again so many well-remembered faces, although one looked in vain for a few of the old-timers. The show was well up to standard and some fine fishes were on view, as well as tastefully got-up stands in the B.A.F. tradition. Dealers seemed more numerous than I can ever remember, both those with stalls and those who were merely visiting. I always think this is a good sign, and there is no doubt the various stalls attracted much interest and custom. All too soon came the closure and one realized how many exhibits one had just not had the time to examine in detail with so many visitors to talk to and so much of interest to see on the trade stalls. Here's to the next time.

I had a long chat recently with Mr. Tony Booth of Halifax, who took over the well-known "Michael's Aquarium" when Mr. Michaels himself left the business to run a garage at Selby 7 years ago. He mentioned that, contrary to my information, Mr. Michaels did not go to Australia and is still at Selby. Meanwhile the business he started as Michael's Aquarium is thriving and Mr. Booth has upwards of 60 tanks on view. Readers will well remember the original filter-erator which Mr. Michaels popularised. Mr. Booth has now brought out a new version which is quite interesting and most useful. This under-gravel filter consists of a cone with four diagonal arms through one of which an air pipe line takes air to the diffuser hidden inside the cone. The arms and cone are covered with gravel and the pump is started. No glass wool, carbon etc. is required and the filter can be left in

position for a year if necessary without further attention. One of these filter-erators is sufficient for a tank 36 in. x 15 in. but would fit a 24 in. x 12 in. tank with ease. This is quite unlike the usual square type of sub-gravel filter and appears to cover a wider area than most. At 5s. 6d. it is on sale at many of the major dealers or can be obtained direct from Halifax.

One of the worst disasters which can befall any aquarist is for one or more of his tanks to develop a leak. There is nothing worse than leaky tanks—any woman knows this! Quite apart from the actual damage the mental strain when away at business or even on retiring to bed is just not worth it. Many ideas have been put forward but all too often none of these worked when applied to your particular tank, although they probably proved most successful when used by other people. Now, all this is behind us. No need even to send the children out for chewing gum (an excellent stop gap) as I once had to do. A Dutch product is now on the market under the trade name of Aquarium-stop. This is produced to cure leaky aquaria without the necessity of having to empty the tank. The material is kneaded in the hand until it is quite soft. The external leakage is wiped dry and the material pressed firmly over the leak until a cure is obtained. This works very well indeed and will solve many problems for aquarists. At first the substance appears sticky, like treacle, but this property disappears when the material is kneaded. It is not unpleasant to the hands and it is removed without difficulty. Mr. Honeybill of Romiley, Cheshire, introduced me to this product and he is wholesaling it in the north of England. A piece the size of a large india-rubber retails at 2s. 6d.

Readers will have admired the plastic aquaria made under the trade name of "The Arbo Aquarium." The makers of these high-class aquaria have now produced a new form of rockery sold under the name of Fobrix Bricklets. These bricks are roughly 4 in. x 2 in. x 1 in. deep and are of a pinkish pearl hue. They give the impression of being made up of solidified bubbles and the surface can be carved or broken up to produce a rough, coral-like effect, the broken-off portions being globular and irregular in size. In fact they resemble nothing quite so much as the pop-corns so dear to children. The method used is to take a sheet of glass of the required size and to stick bricks of the material to this with the aid of an adhesive such as Araldite. The portion of glass that will be under the gravel will be left free, of course. The hobbyist can carve his own rockery or grotto effects with any simple tool on this feather-weight material. Loose pieces float so there is never any risk of an untidy tank. If blue-green algae should form on the "rockwork" all that is necessary is to pluck off those parts which are unsightly. There may be no connection but this material looks very like the artificial pebbles which are sometimes used in the window-dressing displays of the better shops. It only remains to add that the bricks do

not colour the water in any way and there are no toxic effects on fishes in my experience.

The Dewsbury Aquarists' Society issue a very friendly little booklet which runs to six pages, setting out in detail the various officers of the club and their addresses, meeting nights, the subscription rates for both adults and children, aims and activities, an invitation to prospective new members, an explanation for beginners of some of the important "musts" and "know how," a suggestion that the newcomer might do worse than join the club and an estimate of the £.s.d. of the hobby for those contemplating setting up a tank. This is as follows: tank (18 in. x 10 in. x 10 in.), £1 5s.; cover, lampholder and lamp, 17s. 6d.; heater, 7s. 6d.; thermostat, 12s. 6d.; thermometer, 4s.; gravel, 3s. 6d.; plants, 10s.; fishes (six to begin with), 15s.; total, £4 15s. It is a long time since I saw anything so thoughtful. Any newcomer to the hobby in the Dewsbury area must feel that these are people who are interested in the hobby and in new members. I feel sure it will bring in many keen, but otherwise shy beginners.

Looking through the preliminary announcement for the Macclesfield show I notice that a Tombola is to be held. This is a new one to me for fish shows. Although it is getting away from fish it is just as applicable as the more usual raffles and I dare say it will prove successful. I mentioned this because I felt other clubs might be interested.

The inter-society postal quiz run by the Barrow and District Aquarium Society has proved a great success and two new members are the Middlesbrough Club and also the East of Fife Society, following closely on the heels of the Merseyside Club and the Scottish Aquarium Society. However, one loss is the Lowestoft Society, which has had to disband owing to lack of support. There are now ten clubs taking part in the quiz, the others being Portsmouth, Oxford, Lancaster, Basingstoke, Middleton (Manchester) and Barrow. Other clubs interested should write to the secretary, Mr. K. Ralph, 8, Milton Crescent, Barrow, Lancs. For the benefit of others interested in quiz questions and answers I might mention an experiment which has been tried out successfully by this club. This is called "The answer to the answers." In this questions which have been asked, with their official answers, have been given to the meeting and left open to discussion. Many members are really interested in knowing more, much more, than a mere first answer and this provides the opportunity.

The Barrow club have a system of appointing a "Member of the Year," based on attendance, notice for absence, talks given by members, showing, contributions to magazine etc., attendance at social events and the like. The winner for the current season was Mr. Liversedge, with 85 points made up of 63 for attendance, 8 for club shows, 8 for two contributions to club magazine and 6 for attendance at social events run by the club. Of the 27 members only five introduced new members, none contributed to the national press, only four contributed to the club magazine, 14 did not enter for club shows, none gave a short talk at meetings, two gave a talk as a main item for the evening meeting and there were 23 occasions when members turned up at meetings more than half an hour after the start. Better late than never. This summary could very well be compared with their own figures by other clubs. How does your club fare in comparison and in relation to membership?

Did you hear about the little girl sardine who decided to marry the little boy sardine when she discovered that his family were in oil? (Fin Fun.)

The story is told of the parcel delivery man bringing a package of fish to the fish room of a large store. Having a few minutes on his hands he began peering into the various tanks. Reaching a tank full of just free-swimming bettas he commented that it was empty. The tiny fish were pointed out but he obviously did not enjoy 6/6 vision. With a wild look in his eye he looked around for a retreat, asking at the same time on what food they were fed. He was shown a container of Infusoria and told it was full of live food. At this, he clutched his cap, backing rapidly and muttering "Feeding invisible food to invisible fish." He has not been seen since. (Fin Fun.)

Workmen cleaning out a fountain in the centre of Rochdale found ice skates, a bicycle, odd tyres, a gargoyle, a ton of other rubbish and also goldfish, roach and cutfish. It seems some people have ideas other than putting only coins in the fountain.

Encouragement to Spawning

If goldfish in the garden pond show no signs of spawning when well into the summer it is possible to encourage them to do so by removing a large amount of the water and refilling with fresh. This tap water can be run in from a hose and if it can be played in the form of a small fountain the benefit will be increased. The entering fresh water, being well broken up, will increase the amount of oxygen in the water. It is well known that unless there is a good proportion of oxygen in the water the fish are not likely to spawn. They must be healthy and well fed, of course, and provided that they are, there is little likelihood of the scheme failing to start the fish chasing and spawning.



"Be careful darling—with all those bubbles he'll get air-lick"

Publicity Display

The Brockley and District Breeders' Circle is now the aquaria group of the Lewisham Natural History Society, meeting every Thursday and having one meeting each month devoted entirely to fishkeeping. Other evenings are also spent with allied subjects, as has been the custom of the natural history group in the past. The secretary of the aquaria section is Mr. Robert Dwyer, 91, Gipsy Hill, London, S.E.19, and the name Brockley and District Breeders' Circle is to be retained by the section. The combined group has just completed over one month's exhibition, commenced at the Lewisham Hobbies and Handicrafts Exhibition and continued at such places as the L.C.C. Centre in Peckham. The whole exhibit covered a length of 36 ft., of which about 16 ft. was devoted entirely to the keeping and breeding of fishes.

Live specimens ranged from 21 species of tropicals through British marine life to amphibia and reptiles. Twelve different types of rock were also shown.

Two display boards showed varying types of information to be culled from spawning fishes and how a line diagram should be drawn up, and a model fish room (one-eighth scale). A furnished tank (cardinal tetras) and show-tank stand completed the sectional exhibit. Two display cases illustrated fish-disease treatment and the examination and treatment of water. The whole exhibit was of a colourful nature, being a light matt-grey background with black and white notices picked out in red. All signs and notices were raised off the background. Alongside the aquaria section was a "dark tunnel" where colour transparencies were shown.

Part of the Brockley Circle's recent exhibit, showing the 24 in. furnished aquarium, which featured cardinal tetras, and the show-tank stand with tropical fishes, British marine creatures, coldwater fishes and reptiles and amphibians



Photo:

K. White



A display board used by the Brockley Circle, with colour photographs of tropical fishes and featuring a model fish room which was complete down to the details of the heater and miniature catfish.

Two Species of *Dascyllus*

by JOHN BOURSOT

THE far-flung genus *Dascyllus* occurs from the coast of Africa and the Red Sea across the Indian Ocean to the islands and shores of Indonesia, northern Australia and New Guinea, thence fanning out among the coral islands of Micronesia, Melanesia and Polynesia. Thus virtually all the South Seas are embraced from the Caroline, Marshall and Hawaiian islands to the north, down through the Solomon, Gilbert, Ellice and Phoenix islands in the centre and to the New Hebrides, Fiji, Samoa and the Tuamotous to the south.

The members of the genus *Dascyllus* show flamboyant colours and extravagant fins. They are smartly dressed in black and white, and their quick active movements are pert, trim and military. Owing to their woefully pugnacious disposition they should be smaller than the other inhabitants of the tank in which they are kept, though, strange to say, this pugnacity is not shown towards clown fish. They are seen to best advantage in a tank by themselves, where five or six of about the same size make a striking and most unusual display. The tank should be reasonably large, say, 20-25 gallons, with sufficient rockwork etc. for shelter. A single fish will thrive for years in a 10 gallon tank.

Feeding is no problem as all *Dascyllus* are greedy feeders. Dried food, pieces of raw shrimp, beef and heart, brine shrimp, *Tubifex* and earthworms are eagerly seized with a distinctly audible snap in a sudden dash from cover and back again. Green algae are sometimes appreciated.

The two species most likely to be offered for sale are the three-spotted *dascyllus* or domino fish (*Dascyllus trimaculatus*), and the black-and-white coral fish or striped *dascyllus* (*Dascyllus aruanus*). The markings of *D. trimaculatus* are as striking as they are simple, the younger specimens being entirely coal-black except for three small slightly irregular white spots: one on each side in the centre just below the dorsal fin, and the third on the nape. With age the black changes to brown, and the median spot on the nape is slowly lost. It is perhaps not especially noteworthy that the black in young fish should fade with fright. Excitement on the other hand causes the fish to emit cricket-like chirps.

The breeding habits of *D. trimaculatus* are somewhat cichlid-like, both in the cleansing of a chosen spot and in the fanning of the eggs by the two parents. But as far as I know all efforts to feed the fry in captivity have resulted in failure.

Dascyllus aruanus is a gleaming pearly white fish with three black bands. The first arises in front of the dorsal fin and sweeps across the head and eye to the chin. A white patch adorns the forehead. The second stripe, running slightly forward from the middle of the dorsal fin, reaches to the end of the pelvic fins. The third crosses vertically from the end of the dorsal to the end of the anal. The pectoral and caudal fins are white; the dorsal is black.

This species often spawns in captivity, the eggs being

laid on the end of little stalks. But again, the untimely death of the fry always seems to be due to incorrect or insufficient feeding or both.

Dascyllus aruanus appears to be somewhat white-spot-resistant. I have seen a perfectly healthy specimen in a heavily infested tank, feeding voraciously and enjoying life to the full from the onset of the disease to the end. Although this apparent immunity probably extends to *D. trimaculatus* I cannot vouch for it. Three years after I bought it this same specimen finally succumbed to a variety of marine tail-rot. One day it stopped feeding, never to start again. The rich black paled to an ever lighter grey as the disease progressed. About 5 days later I found it floating at the surface, dead. The caudal peduncle had been attacked. When dying from causes other than disease, *D. aruanus*, like the freshwater angel fish dying from shock, seems to intensify its colours.

One morning, in the shimmering haze of a hot east African day, I stood on the beach to watch some Arab fishing dhows flinging their nets into the warm blue waters of the Indian Ocean. Some distance up the beach a dhow had come to land, and was being besieged by a crowd of shouting gesticulating negroes, all pushing and shoving to be first. Business was brisk. In a short time the crowd had dispersed and the dhow had put to sea again leaving the sand strewn with the usual fisherman's waste (the hallmark of the trade, and one of shame). *D. aruanus* made up the bulk of the dead and dying fishes. They lay everywhere, still wet and glistening. But now their lovely pattern had become intensified to one of stark glaring white and deepest black.

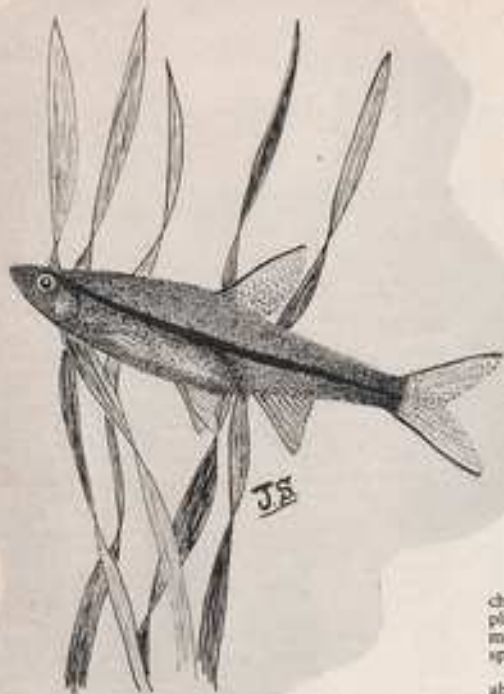
All *Dascyllus* species enjoy good aeration and a temperature of 75-80°F. They travel well, usually arriving in sprightly condition, and quickly adapt themselves to life in the aquarium where, with proper care, they will thrive for years.

Colourful Aquarium

Vancouver Public Aquarium has recently been painted, inside and out, in bright colours. The Aquarium authorities have always maintained that the building, as an environment for its visitors, is as important (or nearly so, anyway) as the displays, and that it should not be dark, dingy and depressing. In fact, one of the significant departures of the Vancouver Aquarium from other public aquariums is the relatively high amount of illumination in the public area. The new colour scheme provides differently coloured walls above the tanks of each of the four main water systems. Thus the warm saltwater system is yellow, warm freshwater peach, cool freshwater green and cool saltwater blue.

Two Attractiv

by J. STOTT



Red-striped rasbora

THE RED-STRIPED RASBORA

THERE are quite a number of attractive species in the *Rasbora* genus but the red-striped rasbora (*Rasbora pauciperforata*) is, to my mind, one of the most attractive in the medium-size range of this genus. The bright ruby-red line extending from just above the eye right through to the caudal base is especially appealing and when the fish is in first-class condition this line assumes a rich brilliance. But to achieve this the fish requires a soft, acid water, not too bright a top light and plenty of live food. It grows to 2½ to 3 inches in length and is quite peaceful in the community tank.

Although the fish will breed in the aquarium they are not easily induced to breed and to succeed calls for careful attention to certain details. A 24 in. by 12 in. by 12 in. tank is a good size for a spawning although smaller tanks can be used. The size suggested, however, offers more room for rearing the fry, which helps in their development. Rain water is recommended and if it can be made acid, to a pH of about 6, so much the better. The tank should be about half filled and, instead of using sand or gravel, leave the base of the tank bare. Put into the tank a good number of *Cryptocoryne* plants; just drop them into the water and

do not weight them in any way. The idea is to provide a thick mat of these plants through which the fish can force their way when spawning. Set the temperature at about 80°F and leave the tank exposed to natural daylight for 10 to 14 days. During this period the intended breeding pair should be brought into tip-top condition in another tank containing acid water and separated from each other by a glass partition.

Before introducing the pair to the breeding tank ascertain that the pH of the water is around 6. If any change is found to have occurred, correct it to the required pH, then put the pair into the tank, preferably in the evening. Although spawning may take place the next day it is more likely that several days may elapse before the pair settle down and the spawning occurs.

Usually the day before spawning takes place the male can be seen to spend much time following the female about just under the plants in open water. When the actual spawning happens they change their tactics and will make sudden darts into the plants, where they take up a side-by-side position with much quivering. The pair should be removed after the spawning is completed.

At the suggested temperature hatching should occur in about 3 days and Infusoria should be supplied as soon as the fry are free-swimming. Keep them on this for 8 to 10 days, then feed with newly hatched brine shrimps, followed by micro worms. Later, as growth permits, larger food should be given, such as chopped white worms and screened *Daphnia*. At this stage they can be introduced to suitable dried food, which should be given, at first, a very little at a time. On a good mixed diet steady growth should be maintained.

THE SCISSORTAIL

ALTHOUGH in its native habitat in Malaya the scissortail (*Rasbora trilobata*) will frequently reach a length of some 6 to 7 inches, rarely does it exceed 4 inches when reared under aquarium conditions. It will, however, breed at about 2 inches and at this size the 24 in. by 12 in. by 12 in. tank makes the ideal breeding aquarium for a pair.

It is not bright colouring which attracts with *R. trilobata* but the fascinating habit the fish has of opening and closing the caudal fin, which, supported by the black marks on the lobes of the tail, reminds one of scissor movement. The body is greenish grey with silvery high lights and is beautifully streamlined. This feature is accentuated by the somewhat elongated caudal base. The eye is large and bright and the head is sharply pointed in profile. There is little difference in appearance of the sexes except for the

THE AQUARIST

ive Rasboras



Scissortail

fuller curvature of the body line with the female.

The breeding tank should be filled with well-matured water and the base covered with coarse sand to a depth of about an inch. Plant fairly thickly with *Cubomba* and set the thermostat for a temperature of 80°F. Condition the pair in separate aquaria, feeding them on live foods such as earthworms, white worms and *Daphnia*, at the same temperature as the breeding tank. Introduce the pair to the breeding tank in the evening and, if properly conditioned, spawning should occur the following morning. The eggs appear to be semi-adhesive, for although some seem to stick to the plants many more fall to the bottom. Usually a large number of eggs are spawned, so preparation should be made to provide plenty of *Infusoria* for the early feeding of the fry. Remove the breeding pair from the tank after spawning is completed. Keep the temperature steady at 80°F. The fry should be free-swimming, at this temperature, in about 4 or 5 days and ready for *Infusoria*, which they should receive for the period of about 14 days after this; if all goes well, they can then be given micro worm and screened *Daphnia*.

The scissortails are excellent community fish, extremely active, as may be expected from their slim, sleek lines, and are quite happy at a temperature of 72°F. They are, however, worth a tank to themselves for they are given to shoaling. A half-dozen placed in a well-designed and planted tank makes a pleasing sight.

They will readily take dry foods, particularly dried *Daphnia* and *Bemax*, but, of course, variety is needed for keeping them in top condition.



"Sciff" from the film "Aquarium"

Making the Nature Film "Aquarium"

by IAN WOODWARD

HE who watches in "Aquarium" the small fishes swimming around undisturbed, living their natural life, would not even think of all the trouble and care needed for ensuring this "natural" compartment and environment during the filming.

Several difficulties had to be overcome before this Hungarian feature film in colour, filmed under the directorship of Agoston Kollányi, could be made.

In the great brilliance of the photofloods and arc-lights, the fishes became confused and it required a long waiting period before the subjects were accustomed to the apparatus. The unusual light conditions also caused the water of the aquaria to become considerably warmer. The queer situation arose that in the hardest winter the film-makers had to cool the aquarium of tropical fishes with ice!

The shots required great patience and plenty of time. It was difficult to tell in advance when certain phenomena, often lasting only a few seconds, would appear and it was later found necessary to keep watch night and day.

The small dimensions often created a great deal of trouble. Some shots necessitated photographing the tiny, rapidly moving fishes in a match-box sized space, and it



"Soil" from the film "Aquarium"

also happened that the cameraman had to insert the tiny "aquarium" right into the tube of the camera lens!

One whole month was devoted to experiments, until, with the assistance of Hungarian aquarists, cine-photography could be started. In the film we see continuous action. The problem of the action shots was solved by taking shots with the camera in the same position and changing the lenses as required. To ensure the special effects of some sequences, three aquaria were placed one

behind the other, and I can assure readers that this certainly creates the impression of "depth."

Said *Les Lettres Françaises* of this film: "Aquarium," a simple Hungarian documentary, relating the fights and loves of exotic fishes, contained a thousand times more beauty and poetry than the 5,000 metres of 'Steer Under the Sea.' People applauded the harmonious nuptial dances, uniting male and female belonging to species of barbarian Latin names, around a leaf or a smooth stone."

"Aquarium," wrote the film critic of *L'Humanité*, "is a small miracle of life, of daintiness, of colours, homage to the multicoloured and varied riches of Nature. The life of freshwater fishes, of tiny fishes enlarged sometimes to the size of the screen, attracted the attention of Hungarian film artists, who have presented us with half an hour's spectacle of beauty and grace."

Arts, the Paris journal, said: "Hungary entered the scene with Agoston Kellényi's film, 'Aquarium.' In every case when a director focuses the objective of his camera on Nature, in order to spy out its secrets, he triumphs, for this is one of the most obvious tasks of film art. The screening of this film, which is, up to now, the only serious rival of the French film 'Penguins,' was heartily applauded at the last International Film Festival of Cannes."

To sum up, the Bordeaux newspaper, *Nouvelles*, tells us that at Cannes "Aquarium" charmed even the most exacting spectators of the Festival. The fishes are moving in a forest of water plants like the stars of a sumptuous ballet. Ballet is the most suitable word, to which most delicate colours are added."

OUR EXPERTS' ANSWERS TO TROPICAL AQUARIUM QUERIES

The other evening I noticed some tiny, flat worms gliding in all directions over the sides of my aquarium. What are these worms called, how did they get into the aquarium and will they harm the rightful occupants of the tank?

The tiny worms you have noticed in your aquarium are known as planarians. They were probably introduced on plants. Planarians will not harm grown fishes, but they eat their eggs, and are not above attacking newly hatched fry. To keep planarians in check, tie a small piece of meat to a thread and suspend it in the aquarium overnight. The worms will congregate on the bait and can be thrown away with it first thing the following morning. To rid a tank completely of planarians, transfer the fishes to another aquarium, and then add one tablespoonful of ordinary household ammonia to every 5 gallons of water to be treated. Within the space of 5 minutes, all the planarians will be dead, and the water can be emptied away. Before setting up the aquarium anew, remove the plants and compost and give them a good wash in several changes of water. This goes for the tank, too.

I used a pad of steel wool to remove algae from the sides of my aquarium. I have since been told that the fragments of steel that broke away from the pad will dissolve in the water and most likely poison the fishes. Is this true?

The minute quantity of steel that dropped into your aquarium should not give the fishes metal poisoning, but to be on the safe side, do not repeat the performance. You see, apart from adding more metal to the water, the fragments of steel could quite easily be swallowed by the fishes with fatal results.

The dried food I use is causing a dirty white mould to grow on the compost and plants. How can I stop this growth, please?

You are feeding more food than the fishes can cope with at a time. The result is that the unaten food is decaying

where it lies and forming a mould. If you do not siphon or dip-tube it from the aquarium as quickly as possible it will pollute the water. In future, give only as much food as the fishes will clear up in a minute or so. By the way, fishes thrive best on a diet which includes plenty of live food or scraped lean meat.

The tap water in my district is hard. Would it be better to use distilled water to fill my aquarium?

Distilled water lacks salts necessary to fish and plant life. This deficiency, however, can be remedied by adding three teaspoonfuls of cooking salt, and one each of potassium sulphate and magnesium sulphate, to every 10 gallons of distilled water.

Can coal dust or slack be used as an alternative to sand for layering the bottom of an aquarium?

Certainly, but as plants do not grow well in coal dust alone it is advisable to cover the floor with an initial 1 in.-thick layer of peat or loam.

Of the opaline and dwarf gouramis, which do you consider to be the most suitable fish for a community tank measuring 24 in. by 12 in. by 12 in.?

We would favour the dwarf gourami, because it is one of the most gorgeously coloured of all tropical freshwater fishes and is gentle into the bargain. Young opaline

gouramies are attractively marked, and are inoffensive little creatures, but as they mature they are apt to become aggressive, especially towards one another. It is not unusual for a large male to worry several females to death.

Although earthworms make one of the best all-round foods for fishes, it is not always easy to find them in the garden. Is there anything I can do to attract earthworms to one spot?

A compost heap would provide the answer to your problem. A properly made heap of lawn mowings, weeds, bonfire ash and vegetable refuse from the kitchen would soon become tenanted by countless earthworms. The heap should be kept covered with sacking or boards during the winter to lessen heat loss and to exclude rain. Tea leaves, shredded newspaper and cooked potato dug into the top layer of garden soil will also encourage earthworms. But here again, the area treated must be kept covered to prevent heavy frosts sending the worms several feet down into hiding.

Would it be all right to use a sheet of perspex to cover the top of my aquarium?

Perspex of suitable thickness for the area to be covered is satisfactory for the top of an aquarium. But wash it well under running water before placing it in position.

I have not kept cichlids before but have just acquired a pair of jewel fish. Is this cichlid easy to keep and breed?

The jewel fish (*Hemichromis bimaculatus*) is not at all difficult to keep or breed. It thrives at a temperature range of 68° to 85°F, and prefers a diet of meat or live food. It will, however, accept coarse-grained dried food. Specimens above 1½ in. in length should not be placed in a community tank because as they increase in size they develop nasty tempers. A full-grown pair need a tank measuring not less than 24 in. by 12 in. by 12 in. It should be furnished with rocks and a flower pot turned on its side. It is not unlikely that they will spawn several times within the space of a few months. The eggs are usually laid beneath an overhanging ledge of rock or inside the flower pot. When a male is wearing his courtship colours it is necessary to keep an eye on his behaviour, because if the female is not ready to raise a family he will treat her most cruelly.

I should like to breed angelfish. What do you consider is a suitably sized tank for spawning? Furthermore, what are the best furnishings, temperature and pH value of the water to encourage breeding?

The tank should measure about 36 in. by 15 in. by 15 in.



Black widow fish (*Gymnochromis ternetti*)



Photo: L. E. Perkins
For breeding the angel fish a large aquarium planted with broad-leaved plants is recommended

It should be furnished with broad-leaved plants such as giant *Sagittaria*. Bamboo canes or glass tubes pushed vertically into the compost can be used as an alternative to plants. The temperature should average about 80°F. It used to be considered essential to place the fish in acid water, but experience has shown that acid water is not all that important. Successful spawnings have been made in alkaline water. What is important is to see that the fish are feeding well on plenty of live food.

I set up my first aquarium a few weeks ago. Out of my initial purchase of 12 pairs of fish, I have only five pairs left alive. The others lost their balance in the water and died after a few days. I complained about my losses to the dealer, but he told me that they must have died of a chill. I don't believe this because if a chill killed some of the fish, why didn't it kill the lot? What is your opinion, please?

Some fishes are more susceptible to cold than others. Next time you buy fishes, wrap the carrying can in plenty of newspaper or woollen fabric to maintain the warmth and hurry home. Take the temperature of the water in the can, and compare it with the temperature of your aquarium. If a difference of 3 or 4 degrees exists between them, empty the fishes and water in the can into a warm jar and float it in the aquarium for about 1 hr. By this time the temperatures will be identical. If fishes are to be safeguarded against chills, these precautionary measures are worth the trouble involved.

I have a pair of black widow fish and would like to have a shot at breeding them. Are the fry easy to raise, and what food is best for them?

There is nothing very difficult about raising black widow fry to maturity. Give them green water (free-swimming algae) and Infusoria for the first week or so, and then follow on with brine shrimps, tiny *Daphnia* and the regular fine dried foods.

I set up my first tropical aquarium a fortnight ago. It holds 12 gallons of water and is well stocked with plants, some pieces of stone from the garden, and two dozen medium-sized fishes. For the first few days the water stayed crystal clear, then it became slightly misty and now looks milky white. Several of the

Fishes have died, and those that are left keep swimming at the surface. Can you tell me what has gone wrong?

We fancy you have been feeding them too generously. Uneaten dried food soon decays and fouls the water. Your best plan would be to siphon the bottom to get rid of uneaten food and other debris, then replace the water thrown away with fresh boiled water allowed to cool down to the normal aquarium temperature. If you can supply artificial aeration it will help the remaining fishes to get over their unhappy experience. You should also be careful what sort of stones you place in your aquarium. Lumps of crumbly paving stone, old bricks, clinker, concrete, alabaster, marble and the like will soon result in cloudy water and ailing fish. Among the reliable "rocks" to use are pieces of granite, slate, scrubbed coal, quartz, flint or large, rounded iron-hard pebbles from a stream bed.

I have been told that Vallisneria and Cryptocoryne will not live together in the same aquarium. Is this true?

Both plants will do equally well in the same aquarium if conditions are to their liking. It must be remembered, however, that Vallisneria needs a brighter light than Cryptocoryne, and should be planted immediately under artificial top light, or on the sunniest side of an aquarium placed close to a window.

Can you tell me whether the meat maggots used by anglers would make a suitable live food for tropicals?

Meat maggots or gentles are quite suitable for feeding to any fishes with mouths large enough to swallow them. The larger cichlids and anabantids take meat maggots greedily, and grow fat on them.

Will flakes of rust falling into the water from the underside of an iron-framed aquarium prove harmful to the fishes?

A small quantity of rust in the water does not appear to harm fishes, but it does tend to produce a brownish-red scum on the plants and glass sides. We strongly advise you to scrape the loose rust from the frame on to a sheet of cardboard held just above the water and, as soon as you can get down to it, empty the tank and give the scoured frame two or three coats of paint. If only a small portion of the

frame is affected, it is possible to dab a quick-drying paint on the cleaned areas while the fishes are still in the tank. But make sure that no paint falls into the water.

Can the moisture-loving house plant called Tradescantia be used to decorate the interior of a tropical aquarium and, if so, should it be planted direct in the compost?

Most species and forms of Tradescantia will grow in an inch or two of water, but some of them take better to an aquatic life than others. Two or three cuttings of the chosen kind should be planted in a pot of loam stood on a piece of rockwork or another pot to bring it close to the surface of the water. The tips of the plants should be pinched out to encourage a branching growth.

I have a pair of Barbodes schwaneri in a tank by themselves, but they eat up all the plant life and thus completely spoil the appearance of the set-up. I would be glad to know the name of a plant tough enough to resist their nibbling.

The best plant we can think of is the rather costly Anubias lanceolata, better known as the water aspidistra because of its leathery-textured, aspidistra-shaped leaves. A. lanceolata is a long-lasting plant and its foliage stays green for more than a year before new leaf-stems are slowly pushed up from the rhizome.

Some time ago I used some angle aluminium I had by me to make a small aquarium. A friend has now told me that aluminium cannot stand up to constant moisture and soon disintegrates. Is this correct?

Aluminium is not such a durable metal as, say, iron or steel, but if you gave the frame the usual two or three coats of good-quality paint before it was glazed it should give you excellent service for several years.

After feeding white worms to my paradise fish the other evening, I noticed a worm working through one of the gill openings. Do you think the gill has been damaged?

Not necessarily, because small worms often wriggle through the gill apertures of a fish without appearing to upset it in any way, or cause permanent damage. It is not unlikely, however, that a large and vigorous white worm could tear the tissues.



Photo

Species of Anubias: the centre plant is Anubias lanceolata

Shirley Annetts Ltd.

Can you please give me some information about *Barbus fasciatus*?

The striped or banded barb (*B. fasciatus*) is native to the Malay Peninsula and the (Dutch) East Indies. Under aquarium conditions it reaches a length of about 4 inches, but specimens in the wild attain a larger size. It has a temperature range of roughly 68° to 90°F, and was first introduced to aquarists in the 1930's. Any live or dried food is taken, and it is said to breed in typical barb fashion.

I have an aquarium placed fairly close to a window. After dark, I illuminate the interior of the tank by means of a 60 watt strip light. The tank is furnished with rockwork and a few

clumps of dwarf rush. My problem is that I can hardly see the fishes for a persistent green "fog." I have changed the water several times, but the green fog always reappears within a day or two. What can I do to maintain clear water?

You need additional aquatic greenery in your aquarium to soften the overhead and side light, and compete with the swimming algae (green water) in the struggle for food (nutrients in the water). We suggest that you plant with *Sagittaria*, *Egeria densa* and *Hydrophilla*. Do not change the water unless the fishes start gasping at the surface. In due course, the swimming algae will die down and leave the water clear.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER



Photo:

Golden orfe, a species particularly sensitive to water oxygen content

L. E. Perkins

I would like to keep a small pike in an aquarium 24 in. by 12 in. by 12 in. and would like to know particulars about feeding etc.

You could keep a small pike in your tank but it would have to be very small; a this year's youngster would be best. Remember that pike can grow very large, up to 35 lb. and more, although they are fairly aged when at that weight unless they have had a very generous food supply. You could feed the fish on very small fish, garden worms, gentles, mealworms and scraps of meat. Pike are carnivorous and so no other fishes should be kept with the fish unless they are too large for it to eat.

I have a fairly large pond in which I keep golden orfe and goldfish. Recently, within a week of each other, four of my biggest fish have died. These fish were found in the morning floating upside down on the surface, and completely unmarked; fins were extended and undamaged. All appeared perfectly healthy with no signs of fungus or any other disease. Can you give any explanation?

I consider that the cause of death was that the water had turned foul and the lack of oxygen or heavy concentration of poisonous gases killed the fish. It may have been when the weather was rather warm or thundery. You did not say which fishes died but I would be prepared to say that it was the golden orfe and not all of the goldfish. Orfe will soon be in trouble in any water which is too warm and lacks oxygen. If fresh water could have been poured into your pond when the fishes were moulting at the surface, probably early in the morning, the fishes could have been saved. When found in this condition they look dead but recover in a matter of minutes if fresh water is added, and

can be swimming about as if nothing had happened very soon after. When fishes die from lack of oxygen they appear in perfect condition, with fins extended and eyes bright. If the fish had died from any disease they would have showed signs of it and have been off colour for some time before.

It is generally assumed that roach are hard fish to keep in a pond or tank as they are said to get fungus disease more than most British coarse fishes. I have kept some roach in a tank for about 1 year and they are quite healthy. Can you comment on this?

The reason why many roach contract fungus disease in a pond is that they have been caught on rod and line and when they are handled to remove the hook much of their slime is removed too. This slime or mucus is the protecting substance which prevents diseases from getting a hold on the fish, and so when a quantity is missing the fish is liable to become prey to any disease that may be about. Like the germs of the common cold, being found almost everywhere, the fungus seem to be always present in most open waters. Your fish were caught with a net when young and so they were probably undamaged when introduced to the tank. Provided that they are quite undamaged I do not see why they should get fungus disease any more than other fish.

Will sunfish breed in England in an outdoor pool?

Sunfish will breed in an outdoor pool in your southern district very well as your ponds are large and you do not get very cold winters. I see no reason why they should not thrive.

Can wood or branches be used in an aquarium and if so how should it be treated?

It is possible to use branches in an aquarium but I do not see the need. It has been used in set-up tanks for exhibition purposes usually to try to be original. However, wood cannot do any good to fishes and might do harm, as some kinds of wood could be poisonous if allowed to rot in water.

Can chalk be used in an aquarium?

I do not see why you need to use chalk. It would tend to make the water very alkaline and this might upset some of the inhabitants of the tank. My advice is to leave it out.

I have been trying for some time to obtain some fine-free grit for my tanks but have been unable to get it. Can you please tell me where I can get this material?

The type of compost I think you require is known as river-washed grit. I use this myself both for tanks and also for horticultural purposes. I buy mine from E. J. Woodman & Sons, High Street, Pinner, Middlesex.

I have some water plants in my tank which have developed small holes in the leaves. I would like to know what has caused them. I have snails in the tank.

It is probable that the snails are the culprits. They eat the softer top surface of the leaves and then the lower part decays and holes are formed. I know of very few aquarists who keep any snails in their tanks where they have good water plants, especially if they need the plants for setting up tanks for exhibition purposes.

I am having trouble with my shubunkin fry, which are about an inch long. I have kept rather too many in a tank with the result that they have developed red patches in places, especially at the base of the dorsal fin. They swim in an agitated manner and rub themselves on the bottom of the tank. What is the trouble?

The description you have given leads me to the conclusion that the fry are affected by flukes. The over-crowding can make the fry very weak but this could not of itself be the reason why the flukes have appeared. They are very tiny and could enter the tank with water plants or even in water. The best method to eradicate the flukes is to give the fry the Dettol bath. Opinions vary on the strength to be used. Some say a quarter teaspoonful to a gallon of water and leave the fry in for 15 minutes. I have used it as strong as the same amount of Dettol to a quart of water but have left the fish in for only 5 minutes. It may be safer to use the weaker solution for the longer period if the fry are very small. The chief point to remember is that the fry must not be left in the solution without a careful watch to see that they are removed to fresh water as soon as they turn over.

Although I have been keeping native coldwater fishes for three and a half years I have only recently found out that the F.B.A.S. has no standards for this side of our hobby. Why is this?

I suppose that the reason why no standards for British coldwater fishes have been made is that generally speaking these fishes conform to a fairly regular pattern and so there is no need at all for standards. In my time I have seen thousands of roach, rudd, perch, bream, pike, dace, chub, carp, tench, trout etc., and have yet to find any which are not according to shape for the species. As long as the fishes are not abnormal they are all likely to be the same except, of course, in size and condition. I do not include colour as I know that it is the condition of the fish which regulates the colour in most cases. When judging coldwater British fishes the judge has to consider size for species, and a good stickleback of maximum size could beat an average sized tench which was not in such good condition. It is, of course, difficult to assess the value of some of the larger types, as they can reach huge dimensions. Then a judge will look for any damage, and many an otherwise good fish will be passed by because it has a broken or

split fin, or a few scales missing. The colour is most important but I have yet to see a British coldwater fish with a good colour if it is in bad condition. There are standards for several varieties of goldfish as these are so different in shape and colour from the original goldfish that standards are necessary and serve a very useful purpose.

I wish to build a concrete pond in the garden and wonder if there was any particular month for this task?

It does not matter when the pond is made as long as no concreting is done when there are frosts about. It is often far better to dig out the pond in the winter, as the job does not seem as tiring as when the weather is hot. Also the concrete will set better in cold weather; it should not dry out too quickly. If a sudden frost should occur as soon as the concrete is laid it can be protected with sacks or brown paper. Once it has set a little frost would not do any harm. If made in the winter the pond would be matured by the time that planting and stocking could be undertaken in the spring.

We have just installed a 40 in. coldwater tank, aerated and filtered. How many goldfish and water snails should we have in a tank this size?

The tank is probably 12 in. wide and this allows for 24 inches of fish, not counting the tails. I know that it is quite possible, especially with the aid of aerators, to have more fish than that but what is the object? The fish will be far healthier if they are not crowded in any way; they will have space to grow and they will certainly look better than if they were crowded in an unnatural manner. As for snails, you must please yourself about their inclusion. They do little good and can do some harm; they eat the fish food and some of the water plant leaves. They are not essential to the well-being of the fish.

Filmy Ferns and Selaginellas

THE filmy ferns superficially resemble mosses and leafy liverworts, their wiry creeping rhizomes forming mats over the surface of acidic rocks and producing enormous numbers of small, translucent fronds, densely packed like the pile of a carpet. All our native filmy ferns are rare species inhabiting the shaded, rocky sides of mountain streams in the western counties. *Hymenophyllum nobiligranum* and *H. peltatum* are two similar, native species with erect prostrate or pendulous fronds growing to 4 inches in length and differing only in the detailed characters of the fronds and in the colour, which varies from dark green to olive-brown. *Trichomanes speciosum*, the Killarney bristle fern, is a larger and even rarer species with broadly ovate, finely dissected fronds of a deep, rich green. All these native filmy ferns are at home in the aquarium if rooted in a very little loam and allowed to scramble over stones and rocks at the water's edge; they quickly form carpets and curtains of foliage, glistening with condensation, and they require little attention.

Similarly suited to filling rocky clefts with fine foliage are the many species of *Selaginella*, allies of the true ferns. Like the filmy ferns they will thrive in unheated or tropical aquateraria, provided that the atmosphere is humid and draught-free. They are all easily propagated by cuttings, some forming disordered masses of foliage, and others growing in a more organised fashion to yield symmetrical rosettes. Some species seem to grow spontaneously in the moist shade of greenhouses, and the more exotic species are available commercially at low prices.

C. D. Sculthorpe

THE AQUARIST

our readers

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.



write

Address letters to The Editor, *The Aquarist*,
The Butts, Half Acre, Brentford, Middlesex

British Aquarists' Festival

AS a yearly and very interested visitor to the British Aquarists' Festival I consider a great deal of hard work and thought is put into this yearly effort and congratulation is most certainly due to all those who take part. There are, however, certain things that can be irritating to the visitor and with a little consideration could be got over.

When looking at the various fishes I had been asked many times by visitors what kind of fish it was and reference to the catalogue just showed it to be in the class for Characins, Cichlids etc. It told the visitors nothing more. Surely a label could be put on the tank?

At one time the prize-giving was handed out in a hall where all those interested could sit down and hear what was said in comfort. At the last Festival it was hopeless trying to hear what the lady announcing the prize-winners said for several other listeners mentioned the same thing. Finally, as the show closes at 7 p.m., could not exhibitors refrain from dismantling their tanks before the closing time as, of course, the public pay to see the display up to 7 p.m. I trust that the foregoing will be taken as constructive criticism.

J. CORDEN HERWORTH,
Grindelford, Derbyshire.

Brighton Aquarium

HAVING already arranged to go to Brighton for the day when I read your June Editorial we were rather disappointed to hear that the "Aquarium" contained no exhibition of fishes. However, in order to get out of the heat outside, we paid 2s. to get in and see what they did have on show. Admittedly the Aquarium authorities have embarked on a full-scale re-decoration of the tanks but there still is no excuse for the filthy, cloudy tanks we saw everywhere, which were badly lit and most unimaginative in display. My father-in-law and I have been tropical enthusiasts for about 2 years, having three tanks between us, and are by no means experts, but we were shocked to see that this Aquarium could not better any of the types of fishes that we keep and that to not one of the remainder would we give house-room.

This fact, coupled with the extortionate entry fee for this grade of exhibition, does not do the hobby any good from the aspect of attracting the general public. You have our full support for giving these aquariums the "big stick" in your magazine—more power to your arm!

D. J. SOONS,
London, N.15.

Under-gravel Filtration

WITH regard to the discussion in the June issue of *The Aquarist* about the possible effects of under-gravel filtration on fish, especially guppies, for the past 14 months one of my 24 in. tanks has had sub-gravel filtration in use. This tank contains two dozen small community fishes which include two male and one female guppy. All of the fish are in perfect colour and health and the guppies have reproduced on several occasions. I don't consider under-gravel filtration to be detrimental in any way to tropical fishes although certain plants, such as Amazon sword and water wistaria, seem to do better with other forms of filtration.

R. J. BOYCE,
Glasgow, N.2.

I NOTICE in the June issue of *The Aquarist* that some doubt still exists as to the suitability of sub-gravel filtration in tanks occupied by guppies. I have used this method of filtration since it first came on to the market some years ago with no apparent ill-effect.

My water is always bright and clear and my fishes are in excellent health, not even being affected by being placed in the standard 40 oz. show jars sometimes for days on end while they travel up and down the country.

I think that the main trouble with this type of filter is perhaps a lazy aquarist, who because his water looks crystal-clear and there is no evidence of accumulated muck overlooks the regular weekly siphoning and cleaning of his tanks, therefore causing a heavy build up of toxic material dissolved in the water, which over a period of time may seriously affect the health of his fishes.

I feel sure that the best way to avoid any trouble when using sub-gravel filters is to look after the aquarium as if they weren't there; give it the full treatment with the siphon as before and top up with fresh water. Under these conditions the filter really does a good job and keeps the water sparkling clear and bright, not the dull brown colour of acid water often seen where sub-gravel filters are used, and totally unsuited to the requirements of our friend the show guppy, who likes hard, bright water.

J. E. WOOTTON,
F.G.A. Judge.

Zebra Adventure

AFTER having a batch of young zebras, I put two females into the tank which I first bred them in. Next morning I could see only one, and that was curled up under

one of the marbles. I finally found the other one, half way up the tube of my air-rejector, but the mains weren't switched on so it must have gone up out of curiosity. When I lifted it out the rebra swam right up into the bag. I hastened to get a mug, into which I emptied both fish and sediment. When I returned it to the tank, it had a slight cut on its head, but it lived.

P. SZA,
London, W.3.

Egg-laying Guppy?

I HAVE been very interested in the articles by Mr. Peter Dendy and the correspondence from other aquarists regarding fancy guppies.

So much so, that all my common guppies were transferred to my 3 ft. community tank, and my only other tank (24 in. by 12 in.) was devoted to a beautiful pair of veiltails. This pair of fish were of good size, firmage and coloration, though the female was rather flat, and appeared to have recently dropped her young.

About a month after buying these fish I left for a week's holiday, leaving them both in the tank thickly planted with *Valisneria* and floating *Najas*. On my return the female was much thinner, but there were no youngsters to be seen. I naturally concluded that she'd had a brood and had hunted them down, to the last one! (Though they had been well fed, and even left with a large amount of *Daphnia*!) Last week, when she was again due to deliver, I decided to keep careful watch and rescue the young as soon as possible. It had been a very "sticky" day, and the tank temperature (normally 75 F) had shot up to 80 F. Whilst I was watching the tank, she suddenly arched her back and five "eggs" left her body; after a few moments this happened again, and the "eggs" kept falling in threes, fours and fives for the rest of the evening.

I couldn't make this out at all, and on closer examination the eggs all seemed alike, about the size of medium *Daphnia*, and almost transparent in appearance.

I have seen dead and partly-formed young delivered by livebearers, but this is definitely a case of a guppy delivering eggs, and it is possible that it has happened twice! I can only wait to see what happens when her next brood is due.

L. JONES,
London, E.2.

Scout-Aquarists

IN Raymond Yates's "Notebook" (*The Aquarist*, July) he refers to the Boy Scouts' badge for Birds. I should be happy if it were made known through your pages that this very same badge, the woodcraftman, is also awarded to the aquarists in our ranks, but very few people are aware of it. The corresponding badge for the over-15 year-olds is the Naturalist. Admittedly these badges also cover plants, animals etc., but all of these are optional alternatives.

I applaud Mr. Hooton's "Consumer's survey" and would like to see his results "passed on". Far too many dealers are bad in their methods and I regret that I often advise people not to visit certain dealers lest they be sold the pricey rants and bad equipment that lose so many hobbyists only too quickly. Some dealers would also be well advised not to buy the throw-outs of unscrupulous breeders.

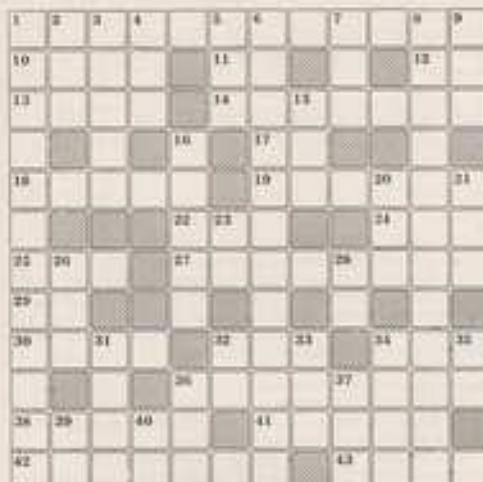
R. L. BARNETT-CROSS,
Badge Secretary, Boy Scouts, Wallington, Surrey.

Proposed Aquarium

MORECAMBE'S Publicity Committee have approved in principle the idea for a new "plant" aquarium in the town. It is claimed that the building would be the largest aquarium in Britain, with separate halls for freshwater, marine and tropical fishes and an open-air pool to accommodate seals and dolphins.

The AQUARIST Crossword

Compiled by J. LAUGHLAND



CLUES ACROSS

- Latin fly home for the insect whose larva feeds fishes (9, 3)
- Breed or stage of river or tide (4)
- The late Mr. Capone (2)
- As Grace Field says (2)
- Bring forth young in the good old English way (4)
- Water this is an attractive water beetle (7)
- Little hamster. Was she an angle? (2)
- Turn to ads. section for these bright-eyed crustaceans (3)
- It follows the spot for (6)
- Rat in a way or drink (3)
- Noon is spent on losing tail (3)
- This is usually after fish, but fish after this for tank scavenger (3)
- Barter, common in aquatic societies (8)
- Great honour in home (1, 1)
- They brook not big enough for bill (4)
- 'Tis returning for a rest (7)
- Short tank, some brown (3)
- One of the most attractive features of aquatic clubs (8)
- Mother o' pearl (5)
- Short weight in plankton may be poor deal (5)
- Careful for work of *Barisides* and of *Siphonides* (7)
- Lowest kind of fish? (8)

CLUES DOWN

- Physical training after call gives you half the aquarium plant (12)
- Scots who — have this (3)
- Car in the motoring body for tropical tank pet (5)
- Mule human adults (3)
- Colloquially the place for poor mortars and rocks (3)
- Favourite old aquatic plant (4, 6)
- Slimy head of mollusks (3)
- Aquaria that fail to hold water (7, 3)
- Limping (3)
- Nipken (3)
- Michaelmas dairy starts on way to being starfish (3)
- Ready the beginnings of copper eels (3)
- Race for golf ball (3)
- Latin prefix of 27 Across (2)
- My French friend has the surname by the tail (3)
- Take vehicle from aqua for the organisation (1, 1)
- Madagascar — plant, a tropical beauty (4)
- Yes, verve (2)
- Worry about this until it comes more briefly (3)
- In thanks for her (4)
- Short conclusion (1, 1)
- Animals' doings (3)
- Label for squirrel hat? (3)
- See 11 Across (2)
- One of the great religious orders (1, 1)

(Solution on page 106)



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.

AT the last meeting of the North Warwickshire Aquarists' Society, the speaker was the well known Midlands aquarist Mr. Barry Hall, and his subject for the evening was the breeding and rearing of fish. Recently the Society put on a display of tropical and coldwater fish in aid of funds for the benefit of Highcroft Hospital, Birmingham, at the hospital's annual Open Day and Garden Fete, which proved to be most successful.

OVER the past few weeks the members of the Gouls and District A.S. have enjoyed quite an amount of activity. An attractive stand run at the R.A.F. was placed and Mr. A. Reed also took third place in the tropical fish show. Sheffield table show was supported and Mr. J. Holroyd won a first place in the Tooth Carps. At Skipton Show Mr. B. Hunt gained a first with a blue fighter. Recent table show results are as follows: Livebearers: 1, K. Coakley; 2, F. Denby; 3, R. Hunt. Cypripods: 1, F. Mackrell; 2, P. Denby; 3, J. N. Banks. Breeders Livebearers: 1, P. Denby; 2, F. Mackrell; 3, R. Hunt. Chameaux: 1, J. N. Banks; 2, R. Hunt; 3, P. Denby. Livebearers: 1, J. N. Banks; 2, P. Atkinson; 3, R. Hunt. Breeders Egg-layers: 1, P. Denby; 2, K. Coakley; 3, R. Hunt. The secretary of this enterprising club is Mr. J. M. Banks, 169, Dunhill Road, Gouls.

THE annual table show of the Yeovil and District A.S. attracted a good entry and the results were as follows: Best Tropical Fish: N. Stainer (Bredling Harry Tota). Best Coldwater Fish: V. Collins (Furzell). Highest coldwater aggregate points, D. S. Langdon. Highest aggregate points of the show, G. Aston. Best Livebearer in show, D. Silver. Goldfish: 1, M. Ercott; 2, G. Aston; 3, N. Stainer. Bredling Showdown: 1, N. Stainer; 2, W. Barrett; 3, D. S. Langdon. A.V. Fancy Goldfish: 1 and 2, V. Collins; 3, A. Donley. A.V. Food or River Fish: 1, G. Aston. 1960 Breeders Goldwater: 1 and 2, D. S. Langdon; 3, W. Barrett. Simons Fishers: 1, G. Aston. Bait: 1, R. Peckard; 2, V. Perry; 3, M. Ercott. Chameaux: 1 and 3, N. Stainer; 2, G. Aston. Goldfish: 1, T. Perry; 2, D. Silver; 3, G. Aston. A.O.V. Egg-layers: 1, N. Stainer; 2, T. Perry; 3, G. Aston. Catfish: 1, M. Ercott; 2, W. Dodd; 3, T. Perry. Mollies: 1, G. Aston. Guppies (male): 1, D. Silver; 2, G. Aston; 3, C. W. Angel. Guppy (female): 1, G. Aston; 2, D. Silver; 3, C. W. Angel. Swordtails and Parry: 1, W. Dodd; 2, G. Aston; 3, C. W. Angel. 1961 Tropical Breeders: 1, C. W. Angel; 2 and 3, G. Aston.

THE speaker at the last meeting of the Aireborough and District A.S. was Mr. Taylor of Bradford. Mr. Taylor's subject was the setting up of a furnished aquaria for competition. He explained the planning of the tank, the water tank and travel van should be used, the water plants and fish. He also judged the table show, an A.O.V. class, and the placings were: 1, Mr. B. Wade (Blue Azara); 2, Mr. Norfolk (Black Mollie); 3, Master Lawson (Platy). A special award was made to Mr. B. Wade for his Blue Azara.

THE tenth and latest meeting of the Dundee Aquarium Society was held recently. The table show was Scott Trophy—A.O.S. and six fish was entered by five members. The results were: 1, Geo. M. Gibson (Lake loche); 2, Alex. Cross (Alphaphorus holbrooki); 3, Chas. D. Smith (Mollusca sp.); 4, Alex. Cross (Alphaphorus holbrooki).

This table show ended the competition for the Scott Trophy for the season and the results were as follows: 1, Alex. Robertson, 19 points; 2, Wallace S. Russell, 10 points; 3, Alex. Cross, 7 points; 4, Alan D. Christie, 6 points.

The season's trophies and plaques were presented to the winners by the president, Scott Trophy, Alex. Robertson. Month Trophy, Alan D. Christie. Budge Trophy (Breeders-Egg-layers), P. N. Greening. Dudge Trophy (Breeders-Livebearers), Alex. Robertson. Special Breeders Class (Platy), W. Cockburn. A talk by J. H. K. Rieck covered the programme, the subject being "Breeding Brine Shrimps," and was found to be most instructive and interesting. The lecturer had taken a great deal of time and trouble to produce specimens of brine shrimp at all stages of development up to adult breeding size.

The Society's first venture in the Open Show field took place recently, and drew no fewer than 222 entries from all over Scotland, both from individuals and from societies. Areas represented were Allow, Glasgow, Kilmacduy, East of Fife, Perth, Dumfries, Inverurie, Inverness, and, of course, Dundee. Financially also, the show was a success, and for a "first show" it must be agreed that it was most encouraging. There were 19 classes, including one for Cold Water, and the local successes were: Best Fish in Show, Alex. Robertson (Bredling); Coldwater, J. Dr. A. Coswell; Guppies, J. A. Robertson (F.G.R.S. Pin Point Mollie); 2, A. Fluke. Platies, J. P. N. Greening; Swordtails, I. G. M. Gibson; 2, A. Cross; Mollies, 1 and 3, A. Robertson; 2, Miss S. Clark; Bristles, Damsel, W.C.M.M., 1 and 2, A. Robertson; Egg-laying Tooth Carps, 2, G. B. Kirkland; 3, W. Lewden; A.O.S. Egg-layers, 2, A. Robertson.

The Society extends its hearty congratulations to fellow-members Bill Cockburn and Alex. Robertson on attaining the official status of judge in the Federation of Guppy Breeders Societies.

AT the annual show of the Orans A.S., which was held in July, the following were the results: Furnished Aquaria: 1 and 3, H. Penhall, Orans; 2, R. Collins (Orans). Amphisbaena: 1, F. Davies, Middleton; 2, A. Worwick, Oldham; 3, K. Wilkerson, Rochdale. Fighters: 1 and 3, A. Poston, Sheffield; 2, S. Abdy, Sheffield. Female Parry: 1, H. Smith, Ashton; 2, K. Wilkerson, Rochdale; 3, J. Turner, Ashton. Large Parry: 1 and 2, R. Collins, Orans; 3, D. Grundy, Orans. Labors and Sharks: 1, C. Walker, Oldham. Small Chameaux: 1, F. Davies, Middleton; 2, F. Hill, Ashton; 3, J. E. Shore, Orans. Mollies: Chameaux: 1, R. Collins, Orans; 2, J. E. Shore, Orans; 3, J. A. Preston, Burnley. Large Chameaux: 1 and 2, R. Collins, Orans; 3, L. Lewis, Burnley. Bristles: 1, J. Preston, Burnley; 2, K. Whittaker, Orans; 3, J. E. Shore, Orans. Damsel: 1 and 2, H. Smith, Ashton; 3, J. E. Shore, Orans. Dwarf Goldfish: Ashton; 3, J. E. Shore, Orans. Dwarf Goldfish:

1 and 3, K. Whittaker, Orans. Angels: 1 and 2, F. Paragon, Middleton; 3, H. Stockton, Orans. A.O.V. Catfish: 1, H. Law, Middleton; 2, F. Procter, Burnley; 3, C. Walker, Oldham. Tooth Carps: 1, F. Paragon, Middleton; 2, W. Tandy, Sheffield; 3, R. Collins, Orans. Loaches: 1, C. Walker, Oldham; 2, J. Ashworth, Oldham; 3, J. E. Shore, Orans. Catfish: 1, A. Worwick, Oldham; 2, R. Collins, Orans; 3, J. Ashworth, Oldham. Swordtails: 1 and 2, D. Grundy, Orans; 3, J. Whitmore, Orans. Mollies: 1, C. Whiner, Blackburn; 2, J. E. Shore, Orans; 3, J. Heath, Sheffield. Platies: 1, 2 and 3, R. Collins, Orans. Guppies: 1, R. Hinesley, Ashton; 2, Mrs. C. Kelly, Belle Vue; 3, C. Walker, Oldham. Breeders Egg-layers: 1 and 2, A. Poston, Sheffield; 3, K. Wilkerson, Rochdale. Breeders Livebearers: 1, J. Preston, Burnley; 2, J. Kelly, Belle Vue; 3, C. Walker, Oldham. Pair Egg-layers: 1, F. Davies, Middleton; 2, R. Bingham, Middleton; 3, D. Grundy, Orans. Pair Livebearers: 1, S. Abdy, Sheffield; 2, C. Walker, Oldham; 3, L. Lewis, Burnley. A.O.V. Tropical: 1, J. E. Shore, Orans. Coldwater Goldfish: 1, L. and R. Baxter, N.G.P.S.; 2, H. Penhall, Orans; 3, S. Taylor, N.G.P.S. Showdown: 1, J. A. and R. Baxter, N.G.P.S.; 2, Miss F. Eason, N.G.P.S.; 3, J. Eason, N.G.P.S. Veiltails: 1 and 2, W. Hamden, N.G.P.S.; 3, S. Taylor, N.G.P.S. Orandas and Lionheads: 1, L. and R. Baxter, N.G.P.S.; 2 and 3, H. Penhall, Orans. A.O.V.: 1, 2 and 3, H. Penhall, Orans.

The Best Fish in the Show was a magnificent Silver shark, owned by Mr. C. Walker of the Oldham Society, who is to be congratulated on rearing such a beautiful fish. P.N.A.S. diplomas were awarded to Mr. C. Walker of Oldham and Messrs. L. and R. Baxter of the Northern Goldfish and Pond Society.

The presentation of awards was made by Dr. J. F. Wilkinson, M.Sc., Ph.D., F.R.C.P., F.R.L.C., president of the Federation of Northern Aquarist Societies, who paid tribute to the exhibitors, and to the Orans Society for the excellent show they had organized.

AT the Blackpool and Fylde A.S. recent meeting the table show results were as follows: Singleton Trophy: 1, Mr. J. Taylor; 2, Mr. B. Simons; 3, Mr. B. Dore. Robinson Trophy: 1, Mr. J. Taylor; 2, Mr. B. Dore; 3, Mr. J. Worth. Juntas: Single Fish: 1, Tyrone Harvey; 2, Neil O'Haver; 3, Alan Parkinson. January Pair of Fish: 1, John Kilgour; 2, Bryan Crowther. Quarterly Competition: 1, Mr. B. Simons; 2, Mr. B. Dore; 3, Mr. B. Pearson.

Last in the month when members of Accrington A.S. visited the Blackpool and Fylde A.S. for an inter-club table show, they were entertained by a film show given by publicity officer, Mr. E. N. Twemlow. Announcing the results of the table show Mr. O. Gosset, vice-chairman, said that although the competition had resulted in a draw, the best fish in the show, a large Pelmatostromus, belonged to Accrington. Mrs. V. Fletcher thanked all the members for making the evening a success. Results: Coldwater Oranda (Blackpool), Mollie, Black Saffier (Blackpool), Guppies: Veiltail (Accrington), Labyrinth (Thick-spined Gourami (Accrington), Catfish: Large Paludicola (Accrington), Blue Chameaux (Blackpool), Best in Show: Large Pelmatostromus (Accrington).

The date of this year's annual open show has now been fixed for Sunday, 1st October, and will take the form of a beetle show. Tanks will, however, be provided for the furnished aquaria and runner classes (individual and school furnished aquaria). This Blackpool show represents one of the last opportunities for aquarists to win a prize this year and, of course, see the famous Blackpool illuminations.

AN advance notice of two shows in the near future has been issued by the Macclesfield A.S. The first is the 19th Annual Society Show and there will be an exhibition by the Macclesfield Aquarium and Club Societies, in connection with Tropical Animals, Reptiles, etc., by Mr. Robert Jackson. The dates are as follows: Friday, 22nd September, 9.30 a.m.—10.0 p.m.; Saturday, 23rd September, 9.30 a.m.—6.00 p.m.

at Stanley Hall, Castle Street, Macclesfield.
 An Open Table Show for all members of the Northern Federation will be held on Sunday, 14th October, 2.30 to 4.00, indoors, at Stanley Hall, Castle Street, Macclesfield.
 The classes are as follows: Livebearers except Fancy Guppies, Fancy Guppies, Barbs, Labyrinth except Fighters, Fighters, Cherrins, Carp Danios, Dwarf Cichlids, Cichlids other than Dwarf Cichlids, Catfish and any other variety.

THE Dewsbury and District A.S. have been extremely busy recently. The activities started with the preparations for the R.A.F., at which the Society's Furnished Aquarium brought them the first prize plus the Gainers' Trophy. This was followed two weeks later by the Society's own Furnished Aquaria Competition at Batley Show. This one-day effort was considered well worth the trouble and hard work involved, as it attracted a lot of attention from the public. Mr. J. Thompson was first prizewinner this year. (For the second time in succession), Mr. L. Elliott was second, and Mr. D. Dunsford third. The establishment of Mr. H. Peden (Huddersfield) was visited for an informal discussion on the hobby recently. Briggington was the venue of the annual 'family' and 'friendly' trip. Future plans include a visit in September to the fish house, etc., of Mr. Farmer (Beverly).

PARTICULARS are available of the newly formed **Bracknell and District A.S.**, of whom the officers are: Chairman, Mr. H. Bowley; secretary, Mr. P. Detrey, 5 Haversham Drive, Beaconsfield, Bucks; treasurer, Mrs. P. Franks; librarian, Mr. J. Norris. The meetings are held in the Red Lion Hotel Hall, High Street, Bracknell, every other Thursday, and new members are always welcome.

AT the annual general meeting of the Bradford and District Aquarists' and Pondkeepers' Society, the chairman was able to report on a successful year and an increase in membership. Officers elected for the year 1961/62 were as follows: President, Mr. E. Atkins; vice-presidents, Mr. J. Charley, Mr. L. Jarvis and Mr. J. Nott; chairman, Mr. A. Franks; secretary, Mr. V. Price; treasurer, Mr. D. Poulter; vice-chairman and press secretary, Mr. L. Smith; show secretary, Mr. G. Parsons; librarian, Mr. E. Ellis; committee members, Mr. and Mrs. Ruth and Mr. Hartley; auditors, Messrs. Moore and Gillingbery.
 The Society meets on the second Monday evening of each month, commencing at 8.30 p.m. At the last meeting the main subject was a "Visual Quiz" in which members competed in identifying plants, rocks, fish on coloured slides, etc. The Table Show was for plants, soft-water and tropical.

THE results at the Dagenham Town Open Show held last month were as follows: Characin A.V.: 1, R. Castle; 2, B. G. Bagg; 3, C. H. Berkeley. Furnished Aquaria (Cichlids): 1 and 2, Widdowson A.S.; 3, Bostford A.S. Furnished Aquaria (Individual): 1, L. Land; 2, A. Welsh; 3, H. G. Birge. Livebearers (Breeders): 1 and 2, R. Castle; 3, A. Smith. Egg-layers (Breeders Tropical): 1 and 2, R. Castle; 3, P. Sagotti. Egg-layers (Breeders Coldwater): 1, 2 and 3, P. Ahrens. Goldfish A.V.: 1, D. W. Ellis; 2 and 3, P. Ahrens. Swordtails and Platies: 1 and 3, R. Castle; 2, A. L. Stebbing. Molliers: 1, A. W. Welsh; 2, D. Ellis; 3, D. Biggs. Fighters: 1, 2 and 3, P. Sagotti. Cichlids (Salt): 1 and 3, C. Berkeley; 2, E. C. Bennett. Dwarf Cichlids: 1, A. G. Jessop; 2, P. Sagotti; 3, R. G. Biggs. Barbs A.V.: 1 and 2, C. Berkeley; 3, A. G. Jessop. Danio, Mountain Minnow, Harbora: 1, 2 and 3, R. G. Biggs. Tropical Catfish: 1, S. Dyer; 2 and 3, R. G. Biggs. A.O.V. Labyrinth: 1 and 3, A. Harrison; 2, W. Patrick. A.O.V. Tropical: 1, W. Patrick; 2, C. E. Berkeley; 3, D. W. Ellis. Planes: 1, W. Patrick; 2, R. Castle; 3, A. L. Stebbing. Janitor Coldwater Fish: 1, A. Land; 2, N. Ashman.
 F.G.B.S. results: Double Sword and Labyrinth Males: 1, 2 and 3, W. Howe. Top and Bottom

Sword Males: 1, B. Ashman; 2, E. Yarrow; 3, W. Howe. Veil Tail and Scorpion Males: 1, R. Alley; 2, B. Ashman; 3, G. Baker. Comet Tail males: 1, B. Allen; 2 and 3, T. Wignall. Spear and Pistol Males: 1, P. Jenkinson; 2, W. Howe. Coloured Females: 1 and 2, T. Wignall; 3, T. Thomas. Gray, Gold, Albino and Goldfish Platies: 1, 2 and 3, T. Thomas. Breeders Males: 1, T. Wignall; 2, R. Alley. Breeders Females: 1, B. Allen; A.V. Male (Non-Members): 1, 2 and 3, A. Stebbing. A.V. Female (Non-Members): 1, A. Henderson; 2 and 3, A. Stebbing. Best Fish in Show: B. Ashman (Bottom Sword Male).

THE first Goldwater Table Show of the year at the Bristol A.S. resulted as follows: Pond and River: 1, Mr. S. Davis; 2, Miss Morgan; 3, Mr. S. Davis; 4, Mr. Jago. Parnali: 1, Mr. G. Harper; 2, 3 and 4, Mr. V. Capaldi.
 After the show members discussed the recent outing to London which was enjoyed by all who participated. The rest of the evening was devoted to a "Fishy Feast" during which members discussed this year's spawning and also advice on feeding young fry given by the president, Mr. G. Harper.

A TALK was given recently to the members of the Nottingham and District A.S. by Mr. B. Jones. The subject was "Friends and Foes in the Fish World," and this created a number of questions and plenty of discussion. An outing has been planned to Chester Zoo on 15th August, following the last outing to Belle Vue, for the F.N.A.S. show which was very successful. The secretary is Mr. T. W. Eatch, 47, Mansfield Drive, Bestwood Park, Nottingham.

A TALK was given to members of the Coventry Pool and Aquarium Society by Miss B. Ferson, B.Sc., the subject being Invertebrates and Crustacea. With the aid of her own coloured illustrations Miss Ferson handled her knowledge of biology with her practical experience as an aquarist to give a very interesting and informative lecture. In September there will be a Society show with the Tamworth and Atherton Societies to be held at Whetley Street, Coventry. The secretary of the Coventry Pool and Aquarium Society is Mr. V. Workman, 204, Norman Place Road, Coventry.

THE speaker at the Bradford and District

A.S. last meeting was Dr. Elliott of Leeds and he gave an illustrated talk on "Rhodesia and Nyasaland". The table show was for Anabantids. The Society will be visiting Chester shortly for a trip to the zoo and aquarium. At the Third Open Table Show at Skipton, Bradford was once again among the awards. Mr. Booth with a first, Mr. Little two seconds, Mr. Taylor a second, Mr. Norris a second, Mr. Horsey second and third, Mr. Wilson two thirds and Mr. Winterburn a first and second.

AN aquarium has been presented by the Filby Rotary Club to the Grey Coat School, York.

AN aquarium and an aviary have been suggested as methods which might attract young readers to the Mosley Library, Leeds. The general sub-committee is now investigating.

SECRETARY CHANGE

A CHANGE has been reported from Nottingham and District Aquarists' Society. The new secretary is T. W. Eatch, 47, Mansfield Drive, Bestwood Park, Nottingham.

Crossword Solution

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

AQUARISTS' CALENDAR

18th-19th August: Three Counties Aquarists' Show at Basingstoke. Details can be obtained from the show secretary Mr. R. Percival, 5, Park Lane, Old Basing, Basingstoke, Hants.
23rd-26th August: Midland Aquarium & Pool Society Open Show to be held at Bingley Hall, Birmingham. Show Schedules from Mr. J. Edwards, 6, Acton Terrace, Oster Street, Leamwood, Birmingham 18.
1st-2nd September: Bristol Tropical Fish Club open show and exhibition of tropical fishes at the Temple Colston School, Victoria Street, Bristol. Schedules are available from the show secretary Mr. J. D. Brown, 16, Pearl Street, Bristol, 3.
2nd September: High Wycombe and District A.S. Open Show, held at The Rye, High Wycombe, Bucks. Schedules and information from Show Secretary, Mr. R. F. Baynton, 249, High Wycombe Road, High Wycombe, Bucks.
2nd September: Federation of British Aquatic Societies general assembly.
2nd-3rd September: Acornington and District A.S. elevenh annual open show at the Town Hall, Acornington, Lancs.
3rd September: Fancy Guppy Association (Herts. Society). First Annual show at the Garden Club, City Centre, St. Albans. F.G.A.

and F.G.B.S. members apply for schedules to Mr. C. B. Chen, 73 Birchwood Way, Park Street, St. Albans, Herts.
8th September: A.S.L.A.S. meeting of delegates, 8 p.m., Sutton Adult School, Sutton, Surrey.
9th-10th September: Wiltshire Open Show, Roundwood Park, London, N.W.10. 21 Classes. Details from Mr. J. R. Hooper, 24, St. John's Avenue, Harlesden, N.W.10.
12th-14th September: Leeds and District A.S.
23rd September: Kingston & District A.S. Open Table Show to be held at St. Luke's Social Centre, 100, Road, Kingston-on-Thames. Details from Mr. N. Towell, 11 Belmont Terrace, Chislewick, W.4.
24th September: Oldham and District A.S. Open Show, to be held at 133 Yorkshire Street, Oldham. Entry forms available from Mr. C. Walker, 4 Jersey Street, Holton, Oldham, Lancs. 21 classes. Single, Breeding pairs and teams. Medals for first.
26th-30th September: Bristol Aquarist Society. Open Show to be held at Bishopscote Parish Hall, Gloucester Road, Bristol. Schedules available from Mr. V. Capaldi, 18, Glen Park, St. George, Bristol (Closing date 15th September).

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