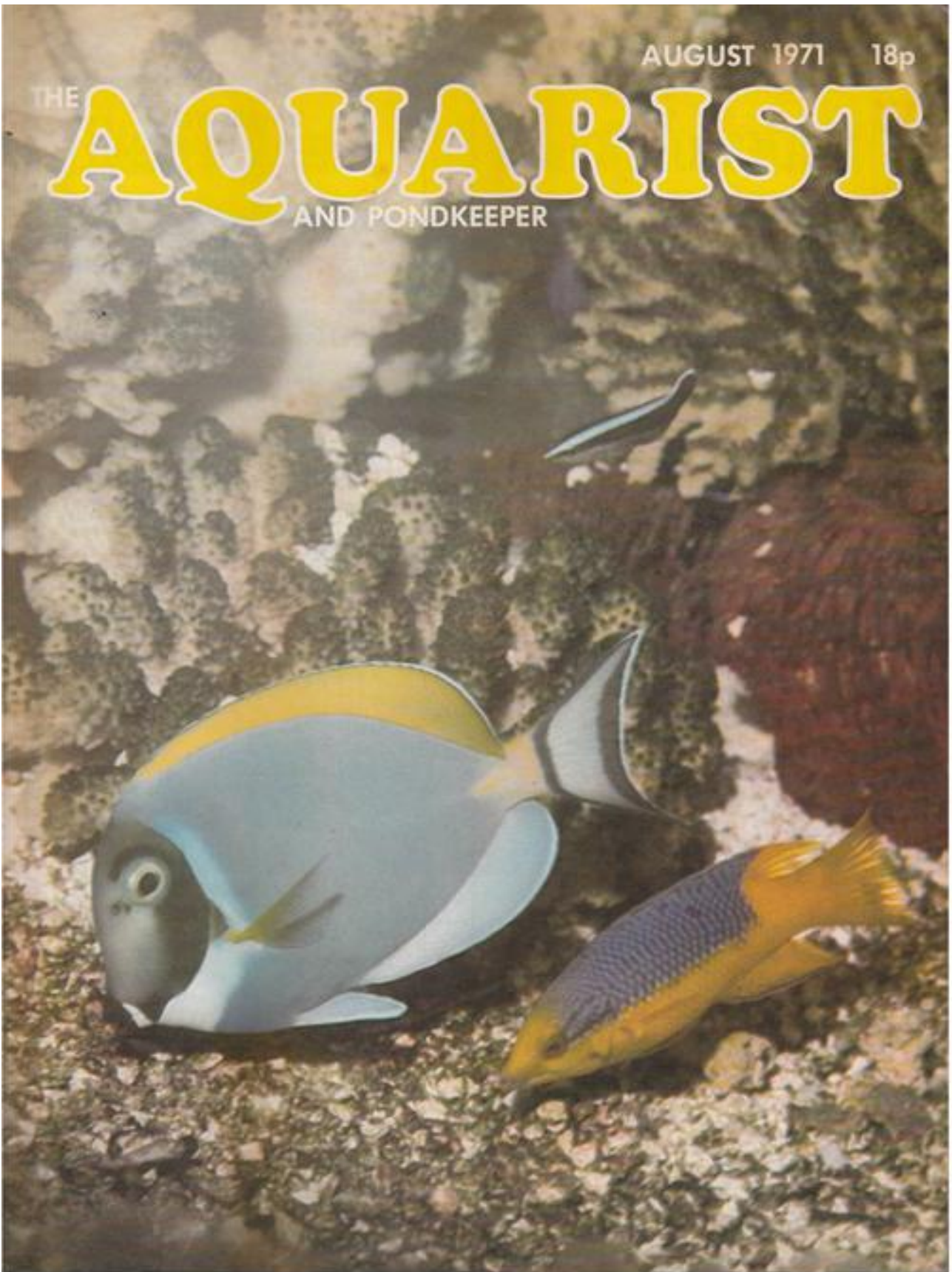


AUGUST 1971 18p

THE **AQUARIST**
AND PONDKEEPER





THE AQUARIST

AND PONDKEEPER

Published Monthly 18p

Printed by Buckley Press,
The Butts, Half Acre,
Brentford, Middlesex.
Telephone: 01-568 8441

Subscription Rates:
The Aquarist will be sent post
free for one year to any address
for £2.71. Half-yearly £1.36

MSS. or prints unaccompanied
by a stamped addressed
envelope cannot be returned
and no responsibility is accepted
for contributions submitted.

Founded 1924
as "The Amateur Aquarist"
Vol. XXXVI No. 5, 1971

Editor: Laurence E. Perkins
Advertising Manager:
J. E. Young

Our Cover

White-breasted Surgeon Fish
(*Acanthurus leucosternon*) and
Bodianus rufus

Photo:
Courtesy SeAquariums Ltd.

Contents

	PAGE
A Perspex Power Filter	140
Our Readers Write	143
What is Your Opinion?	144
Equipment Review	147
Two Pests of Water Lilies	150
Crossword Puzzle	151
Our Experts' Answers— Coldwater Queries	152
Tropical Queries	154
Coldwater Fishkeeping	157
Collared Lizards	158
Junior Aquarist— The Hermit Crab	160
<i>Phago loricatus</i>	161
Mouthbrooding in Cichlids and Anabantids	162
From a Naturalist's Notebook	165
Commonwealth's Coral Wonder	166
Crossword Puzzle Solution	167
Book Review	167

The Editor accepts no responsibility for views expressed by contributors.

August, 1971

139

A PERSPEX POWER FILTER

by R. C. Mills

WHATEVER the aquarist's views on filters and filtration, there comes a time when, for various reasons, a tank needs to be cleared—quickly; maybe it was left unattended for too long, or perhaps it received too much light and turned green. Whatever the reason, the cause has turned to effect and the aquarist must take swift action.

An obvious remedy is a complete change of water, gravel cleaned and replaced, in short—a tank refit. On the other hand, an efficient power filter will clear the water, removing the detritus in a short time.

Although not being a filtration fanatic I do, like most aquarists, suffer from laziness and consequently some of my tanks tend to be left to their own devices. When this happens and the day of reckoning arrives, I find myself with the two alternative courses of action open to me. Until recently I was forced by circumstance to adopt the former of the two—with all that it involved! The reason for this was one of the most basic—cost, as power filters are not the cheapest of aquatic items to come by.

I had been toying with the idea of a power filter for my four-foot community tank, having had little success with sub-gravel filters (apart from clear water), but again had come up against the £'s and the p's. Several months ago I had seen a home-made power filter constructed by a fellow aquarist at our Society—the design intrigued me and the cost encouraged me! The basic idea was an electric water pump mounted on a show jar; the only snag I could see was the drilling of a hole in the base of the jar and so, for the want of enough courage to attempt such a feat, the project was shelved. However, the prospect of clearing out one or two neglected tanks in a very small shed hardened my resolution, but I decided against using a glass jar (still a lack of moral fibre), and came out in favour of perspex. This is a pleasant material to use, not as brittle as glass, it can be stuck together easily and is readily obtainable.

Design

Reference to the diagram will clarify points made in the text from this stage on.

A space is left beneath the filter medium compartment (i) to allow large particles of debris to enter the

filter body and not block the inlet tube (g). The inner sleeve (e) serves two purposes, it locates the two halves of the filter body together and also prevents the top internal divider (b) from rising, allowing filter medium to block the impeller.

The space above the inner sleeve provides visual proof that the water has been cleaned and could also accommodate an ultra-violet lamp for sterilisation purposes.

Being of perspex construction, no metal parts come into contact with the water; the heads of the motor assembly securing bolts can either be covered with blobs of silicone rubber sealing compound or with small perspex 'covers' (made from scrap) cemented over them. On the pump I obtained, the end of the motor drive shaft projecting from the impeller centre was plastic-covered. This being the case, the filter is quite suitable for use in the marine tank.

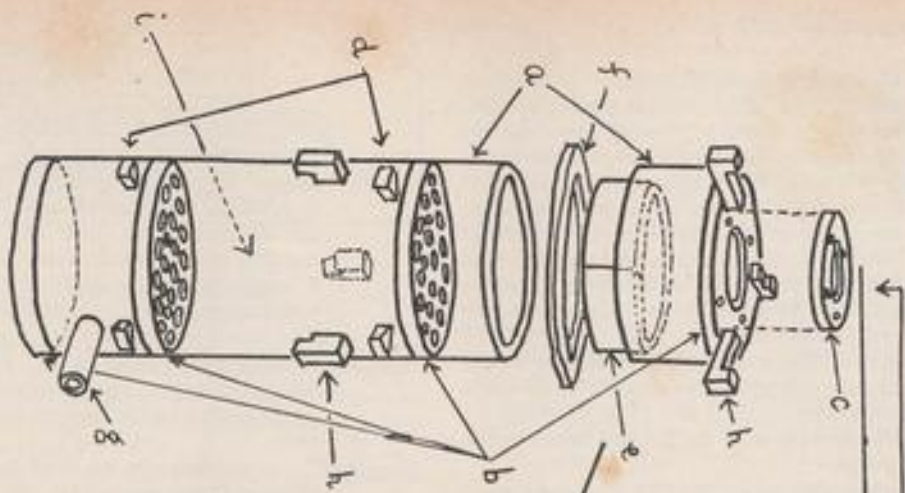
Materials required

- 15 in. length of $\frac{1}{2}$ perspex tube 4 in. diameter.
- 12 in. \times 12 in. \times $\frac{1}{4}$ in. perspex sheet, or enough 'off-cuts' for two 4 in. diam. \times $\frac{1}{4}$ in. discs, two 3 $\frac{1}{2}$ in. diam. \times $\frac{1}{4}$ in. discs.
- Short length (2 in.) of $\frac{1}{2}$ in. perspex tube.
- Small piece (4 in. \times 4 in.) of $\frac{1}{4}$ perspex sheet.
- Electric water pump (ex-washing machine).
- Rubber ring 3 $\frac{1}{2}$ in. internal diameter.
- 4 \times 4BA bolts (long enough to bolt motor through $\frac{1}{2}$ in. perspex).
- Small bottle of perspex adhesive (available from perspex merchant).
- Three large strong elastic bands.
- Tin of metal polish and cloth.
- Connecting hoses, mains plug, etc., already in the aquarist's possession.

Construction

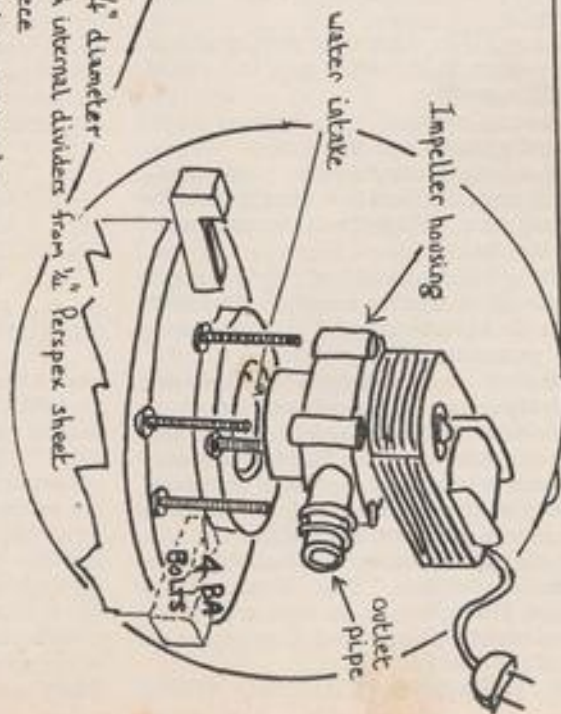
The first thing to do is to gain access to a lathe! Although this is not absolutely necessary, it does help in producing the top, bottom and internal dividers (b)—it is certainly labour-saving, avoiding having to saw out the discs by hand and filing them to a circular shape.

Failing this, a hacksaw, pair of dividers, vice, screw-



Motor Pump Assembly
fits here

- a - $\frac{1}{8}$ " Perspex $4\frac{1}{4}$ " diameter
- b - top, bottom & internal dividers from $\frac{1}{2}$ " Perspex sheet
- c - distance piece
- d - internal divider supports
- e - internal locating sleeve from $\frac{1}{8}$ " x $4\frac{1}{4}$ " diameter Perspex cut down
- f - rubber sealing ring
- g - $\frac{1}{2}$ " diameter Perspex inlet tube
- h - external securing lugs
- i - filter medium compartment



Diagrams for A Perspex Purifier for the Pesticidious

driver, handbrake and drills and a file are all the tools needed.

Step 1: Cut off approximately 2½ in. from the 4 in. diameter tube—this becomes the top section. Cut another piece 1 in. long from the remainder—this is for the internal sleeve (e).

At this stage you must decide upon how tall the filter needs to be; remember, the top of the pump must be below the water line of the tank to keep the impeller primed. This is, of course, if it is intended to stand the filter alongside the tank. If operated remotely from the tank it can be any size, but it must be below the water level just the same.

Having worked this out, cut the remainder of the 4 in. diameter tube to length—you shouldn't have much left if you're thinking in terms of a 15 in. deep tank!

Smooth all edges flat with the file and finally polish with metal polish.

Step 2: Drill a ½ in. hole (CAREFUL!—use a small drill to start with and work up to the final size in small steps) about 1 in. from one end of the longest piece of tube. Again smooth edges.

Step 3: Cut 2 (two) 4 in. diameter discs from ¼ in. sheet and smooth edges. Cut 2 (two) 3½ in. diameter discs from ¼ in. sheet and smooth edges.

In one 4 in. disc cut hole for water pump intake pipe. (Mine was 1½ in. diameter, yours may be different—CHECK IT—before cutting).

In the two 3½ in. discs drill a number of ¼ in. holes—these let the water into, and out of, the filter medium.

Step 4: From scrap pieces of ¼ in. sheet cut 6 (six) triangular pieces and file them to shape—these are the internal dividers supports (d). At this time, also from ¼ in. scrap fashion the external securing lugs for the bottom part of the filter (h).

Step 5: From the 1 in. length of 4 in. tube (see step 1) cut enough so that the remainder fits tightly inside the 2½ in. length of 4 in. tube, leaving ½ in. protruding (e).

Step 6: To the top 4 in. disc (step 3) fit the impeller assembly casing, having removed it from the motor-drive system. Mark the bolt holes and drill 4BA clear (or holes of necessary diameter to clear your particular bolt sizes). From ¼ sheet cut a disc of sufficient diameter to encompass the bolt holes in the 4 in. disc and cut corresponding bolt holes and impeller intake hole. This distance piece enables plastic hose to be connected to the pump outlet pipe without fouling against the top of the filter body (c).

N.B. THE ADHESIVE USED GIVES

OFF A HEAVY VAPOUR, IT MAY ALSO BE CHLOROFORM BASED, SO USE IN A WELL-VENTILATED PLACE, DO NOT INHALE TOO MUCH!

Step 7: Using the adhesive, cement the internal divider supports in position using three for each divider spaced equally. This allows the dividers to be tilted and removed for cleaning and renewal of the filter medium; 4 supports would NOT be preferable—you'd never get the bottom divider out again. *The dividers themselves are not cemented in.*

Step 8: Cement the bottom 4 in. disc in place, similarly the ½ in. inlet tube and the external securing lugs on the bottom half of the filter body.

Step 9: When satisfied with the fit of the motor/pump assembly (and *not* before), the top disc can be cemented on to the 2½ in. tube followed by the inner locating sleeve—remember to leave ½ in. protruding.

Step 10: Fit the distance piece (c) and motor assembly in place and tighten bolts. From ¼ in. scrap sheet fashion small 'covers' to fit over bolt heads, or cover them with silicone rubber sealer.

Step 11: From ¼ in. scrap sheet cut three top external securing lugs—it is no good doing this earlier, you won't know what size they need to be until this stage is reached.

Before cementing them in position decide on the inlet and outlet pipes' relative positions to each other—whether you want them above each other or not, for instance—turn the top part of the filter body around until this position is reached and cement the lugs in position on the top disc immediately over the lugs on the lower part.

The edges of all the external securing lugs (h) should be rounded with a file to prevent the rubber bands being cut by sharp edges.

Step 12: The moment of truth! Fit rubber sealing ring (f) over inner sleeve (e), fit the two halves of the filter together and secure with TIGHTLY wound elastic bands. (There is no need to fit the internal dividers for this first leak test). Fit suitable connecting hoses to the inlet and outlet pipes and fill filter and prime pump in the following manner:—Immerse end of inlet pipe in water. I used a bucket of water above the filter for this. Suck at outlet pipe until water enters filter. Check for leaks when filter is full. Put outlet pipe over the bucket and switch on pump. Water *should* gush out of outlet.

Continued on Page 149

OUR READERS WRITE

Declining Standards

After having read the letter written by V. V. Pedlar (Our Readers Write, June, 1971), I feel that I am inclined to agree with most of what he says. Although I have not been keeping tropical fish for as long as he has, I too have noticed a marked decline in the standard of equipment available to us.

However, all is not lost, for I can, if he wishes to write to me, supply him with the names of firms who manufacture all that he requires.

The air tubing which will never kink or stick together is made of silicone rubber. It costs about 25p per foot. Ordinary rubber tubing I will not use for it contains a percentage of zinc.

A thermostat much like the one that he described can also be purchased. I have used this type at my place of employment to control the temperatures of generators and never once in the ten years of installation have they failed to operate.

His request for metal cased heaters does puzzle me somewhat because I have carried out certain tests and the results have been favourable. However, if it's metal types that he requires, then may I suggest that he contacts his local domestic electrical shop to enquire about the type of heater as used in absorption type refrigerators.

D. SMITH,
8 Netheridge Close,
Hempsted,
Gloucester GL2 6LE.

Puffers at Fish Shows

I hope you will have room to publish this letter in *The Aquarist and Pondkeeper*.

It concerns Fish Shows. I have only attended those in this area—Bristol, Bath and Trowbridge. Without exception they have been most enjoyable, friendly affairs. But—may I plead for a "non-smoking" notice to be put up outside the halls where the shows are held? There were several folk who lit cigarettes one after another, puffing away like factory chimneys! If they wish to pollute their lungs—well, that's their affair, but there are many people who dislike the smell of smoke—I am one of them! I took a friend to one show and she remarked, "What a horrible, smokey atmosphere—those poor children, and fish, having to breathe in all that smoke—my eyes are stinging

already!" After all, it would be a simple matter to go outside for a few moments and smoke!

Second point—I have entered several fish, unsuccessfully, this year. I know the winning ones were superior to mine, but could not every entrant have a quick comment and marks on a card? I think mine were good fish, but we are given no guide whatsoever as to how near (or far), we were from gaining an award. The judges would have to be allowed an extra hour for this, I know, as at several shows the poor men were still judging with the public milling round! I go to shows to learn something, but I can't, much, if I'm never told the faults of my non-winners!

Please, Show Secretaries, do something about these points!

DORICE HUNTLEY,
Moss Delph,
Sevington,
Chippenham,
Wiltshire.

I.M.S.S. Enigma

I read with interest Mr. Gerald Jennings' letter in the May *Aquarist*. It is unfortunate that Gerald's name has become associated with the I.M.S.S., and certainly Gerald should not be blamed for the collapse (?) of that society. I wonder, though, if the General Secretary is entirely to blame either? I think not. I consider it essential, however, that the I.M.S.S. be re-organised, if only for a few months, so that either the journals due to paid-up members be distributed, or those long lost membership fees be returned. I joined the I.M.S.S. some years ago, and I would be glad to see some action taken for, without doubt, the I.M.S.S. was once a very good organisation and I have seen a number of old journals and I was very pleased and interested for the contents were of a high standard. But, there is absolutely no point in complaining about Gerald Jennings, and I do not intend to single out any individual to carry the can; I am not interested in revenge, but since I know that someone, somewhere in the I.M.S.S. has my subscription fee along with hundreds of others, presumably, I would like to see some results. I would also be interested to learn whether or not the I.M.S.S. still exists. Can we have an official statement printed in the *Aquarist*?

Finally, may I hope for good relations between the I.M.S.S. and the *British Marine Aquarists' Association*. Mr. Jennings and I have written to each other, and I believe now that we can hope for good relations; but we both seem ignorant of the existence or non-existence of the I.M.S.S. Can someone tell us something about this most baffling of aquatic enigmas?

HUW COLLINGBOURNE,
19 Tan y Bryn,
Pontygwaith,
Rhondda,
Glam.

WHAT IS YOUR OPINION?

by B. Whiteside



IT HAS HAPPENED again! I've received so many letters for this feature that, to prevent it taking over the whole magazine, I've had to cut short many of the letters, and hold others over for the next edition.

Mr. R. F. Wilson writes from 59 Shawfield Street, London, S.W.3, to say that he has a 36 in. tank lit by fluorescent lighting and an 18 in. aquarium lit by incandescent bulbs. Both tanks have cover-glasses which are stipple-painted to provide a shaft of light, with darker areas; his aim is to cultivate various plants and study their progress in varying conditions. Primary water was 50:50 tap and deionized water, one fifth of which was exchanged for deionized water every 10 days—but now it is substituted by 50:50 tap and distilled water. Most of the plants in the aquaria grew well—almost too well—except for *Vallisneria* and *Sagittaria* species. This does not worry him as he prefers *Cryptocorynes*, *Aponogetons* and Amazon swords, but he wonders why the others will not grow, and suspects pH, hardness or undergravel filtration. He has found that plants adapt themselves to their environment: long stems on two Amazon swords were soon replaced by very short stems when the plants were moved from deep water, into Mr. Wilson's tanks. He found that *A. ulvaceus* appreciated good lighting. A plant of *C. ciliata* which was failing was pulled partly out of the gravel, and the dying leaves cut back. It immediately perked up and started sprouting five new shoots. He has not had much success with three types of dwarf rush in the smaller tank but is still trying to grow them. He thinks, as I do, that the plant side of the hobby has been rather neglected, as fish are much easier to keep than some plants. He hopes that a plant postal club will soon come into operation. (Any further news from those concerned?). Mr. Wilson tried treating finrot with some of the newer antibiotics, he used Terramycin at 25 milligrams per gallon. The fish continued well but the Cryptos. in the tank lost all their leaves. A sucking loach in the tank, which ate some of the dead leaves, died 48 hours later. (I wrote of a similar experience, using Aureomycin, some time ago, in a magazine). His fish like *Tubifex*, which he keeps in a refrigerator, with daily water changes. The worms are always disinfected with Scano Diseaseolve on purchase and he has had no problems. Fresh garden worms, chopped up and washed in hot water, are also popular, and any extra ones are deep frozen for

later use. He has a red-tailed, male golden guppy which is very interested in a red female platy and thinks that the female's self-colour may be the attraction. Mr. Wilson depends a lot on his *Corydorae* for keeping his tanks clean. He lost an *aymonieri* which collided with a rock, thus killing itself.

Master R. Ell is 15, and lives at 65 Poole Road, Wimborne, Dorset. He set up a tank some time ago and introduced three white clouds to see if all was well. Next morning he found that the thermostat had stuck and that the temperature of the water was about 95°F. The power was switched off and the water dropped to 67°F. One male fish died and the other two looked as if they might follow—but they survived and became very tame. He asks for information on breeding white clouds. His tank is always kept clear of algae by a *Corydoras aeneus*. His plants mostly grow well in ordinary gravel, with a lot of outside light and a 40 watt bulb lit for five hours per day. Fresh water is added each week, it being on the hard side. Vallis., Sagitt., Amazon sword and hairgrass all grow well, while *Hygrophila* isn't so good, *Bacopa* is spoiled by snails, and *Cabomba* is a complete flop. He ends by asking if someone with no experience could make a 24 in. all glass tank.

Mr. J. Mosley, of 11 Moorcroft Avenue, Oakworth, Keighley, Yorkshire, hatches "Utah" brine shrimp in the glass from an outside light fitting, sitting in a home-made frame, with legs. He did use aeration but found that the hatch was as good without it. He also uses a large fitting from a road lamp. The shrimp collect in the tapered bottom and can easily be siphoned off. He feeds his whiteworms on 50 per cent brown bread crumbs and 50 per cent layers mash, mixed and damp, but not too wet.

1 Ashgate Rise, Raw Gap, Knaresborough, (Yorkshire, is the home of Mr. I. D. Taylor. He writes about the spawning of *Pelmatochromis kribensis*, as asked for by Mr. Tingley in the April issue. A tank, complete with rocks and washed gravel, was set up and a clay flower pot, with a hole knocked in the side, was placed, upside down, on the bottom. A 3 in. or larger pot is necessary. Ordinary tap-water, at 80°F was used, and *Cabomba* and *Vallis.* were planted in the tank. A pair of kribbs. were introduced and, after some time and trouble, they spawned, inside the flower pot. The parents were left with the eggs and the female

fanned them while the male dug under the rocks. The eggs hatched in three days and the mother moved the babies into one of the holes which the male had dug. The young were moved from one hole to another about twice per day. At the time of writing the young are three days old.

Mr. J. R. Blythyn's home is at 49 Albany Road, Skegness, Lincs., and he has always liked the glowlight tetra. He found the fish easy to spawn and got about 100 fry from each spawning. The babies grew well. He thinks that, in soft, acid water, a shoal of glowlights is a sight not easily forgotten, and thinks they are ideal aquarium fish. He has bred many Characins in pure rain water and in a mixture of rain and tap-water. He is a firm believer in rain water—except for livebearers and twisted Vallis. As an aquarium attendant, he knows that circulation, with filtration, can only give the highest benefit to both plants and fishes. For live food he uses both *Daphnia* and white worms. He finds

renders the food sterile; also that it does not kill bacteria, and wonders which is true. He asks if such foods might not be the source of infection in those odd instances where no new fishes or plants have been introduced into an aquarium, and yet some odd ailment breaks out. What do other readers—and manufacturers—have to say?

16 Poplar Road, Herne Hill, S.E.24 is the address of Mr. J. Ludford, who has been keeping Oscars for some time now. At the moment he has two ordinary, and two red Oscars. He feeds them on table scraps such as meat etc. When they were smaller he fed them on *Tubifex* and chopped meat. So far his fish have eaten and enjoyed lamb, beef, chicken and liver and both raw and cooked shrimps. He stopped buying *Tubifex* when he lost four young blue Acaras with bleeding fins. He did not recognise the disease but tried to treat it with a wide-spectrum medicine, but it was of no use. This came about, he says, even though he left the



Photo: B. Whiteside

that ozone is ideal for marine fish suffering from fungus, which it mostly clears in 24 hours. He finds flake foods best for livebearers and middle-water feeders, and pellets for Cichlids and bottom feeders. He finds that "personality" fishes must go to the tropical marines. He does not own any himself but has plenty at Skegness Natureland Marine Zoo, where he works. His white worms only get white bread soaked in water. He says that *Hygrophila* will grow in a bare tank, if weighted with lead strips—for how long he does not know. Methylene blue cures white spot, gill flukes and some cases of fungus. He finds guppies to be the tamest fish, as they will swim into his hands.

Mr. A. Donovan lives at 15E Carnegin Tower, Maxwelltown, Dundee. He is concerned about freeze-dried foods. He has read that the process

worms in Diseasolve for some time. His Oscars are about 4 in. long now and love raw ox liver. He recently fed his fish on live maggots and later saw a live maggot hanging from the vent of one of his fish. The maggot landed on the gravel and crawled away. He thought that it would have been dead at least, if not digested, and will use no more maggots. He finds that, when his fish are hungry, they stay at the front of the tank, wagging their tails, but when they have eaten their fill, they retire to the rear, as though frightened. He asks if readers have any information about one fish, or even a whole tank of fish, which seem to panic, even though there is nothing to be frightened of. He asks if there is an easy way to deal with it and has heard that a complete change of water will cure it. He thinks that a frightened fish releases some substance into the

water and the others respond to it. (I asked a question on the same lines, some time ago, and have had not infrequent experiences of this with tanks containing only guppies). Do you have any views on the subject?

"I have two sucking loaches and sometimes, when I am watching my fish, they seem to be fighting." Thus begins the letter from Mr. M. Woodfield and he lives at 75 Lodge Road, Knowle, Solihull, Warwickshire. He has seen his two fish with their sucker mouths joined and wonders if the fish are fighting or mating. (Any opinions?) He has lost four fish through dropsy and asks if there is any cure for this condition. He has a pair of green sailfin mollies and a pair of speckled mollies and asks if these fish were crossed would he get speckled sailfin mollies.



Photo: B. Whiteside

Master A. Crawford is 16, and his home is at 74 Dale View Crescent, Chingford, London, E.4. The plants which he finds hardest to grow are the Cryptocorynes. His water is hard and alkaline. He has tried acidifying water with peat moss but has found no improvement. He has bred a large number of livebearers and his fish all relish *Tubifex*. Fry are fed on brine shrimp. He also gives garden worms for a treat. He finds Tetra-min foods popular with his fish. Vallis are the only plants which he sells to his local dealer as he finds them easiest to grow and propagate. At the moment he has a pregnant black lyretail molly crossed with a green velifera molly and he is looking forward to seeing what the babies will be like. He asks if other readers have experimented in this field.

Mr. S. Fox writes again from 126 West Farm Avenue, Longbenton, Newcastle upon Tyne, in answer to Mr. B. C. Deanes' question in the April issue, regarding *Nomaphila stricta*. Mr. Fox considers it normal that a plant of *N. stricta* (*Giant Hygrophila*), grown in a terrestrial environment, should begin to rot if submerged suddenly in an aquarium. He considers that a change of such an environment should be done gradually—from terrestrial, to bog, and then, gradually, to aquatic conditions, the water level being slowly raised.

The change from sunlight to artificial light would also require the plant to adapt. Mr. Fox says that rough service and ordinary filament lamps give out the same light intensity—he recently used a Weston Photometer to measure the intensity of both types on

his fish tanks. After 15 minutes he found that the glass shell of the ordinary lamp was at a higher temperature but he thinks that, after a couple of hours, they would probably be the same. He considers that the quality of light emitted by the two different types of lamp would probably be the same. (Any other views on this subject?).

I'm afraid that these are all the letters for which we have room this month. Other letters and club newsletters will be kept for the next issue. Some time ago, when we first discussed rough service lamps, I switched to using these in most of my tanks. The plants have grown as well and I've not had to replace any bulb yet. In contrast, the ordinary bulbs still seem to need replacing quite frequently. I would certainly say that

one can save money by using rough service bulbs, although the original cost is a little higher, and you may have to "shop around" different electrical shops until you find one which stocks the rough service bulbs.

A pupil recently asked me about what food he should give to his tortoise. My own elderly tortoise, Tojo, likes dandelions, lupin leaves and lettuce, in that order. Some people seem to think that tortoises are dull creatures but Tojo will respond to his name, or when one clicks one's fingers to indicate that food is at hand. The common belief that tortoises are slow-moving is a myth; when Tojo wants to, he can move

I've been trying a few more aquarium photographs. I took photograph 1 with a cheap 35 mm. camera, using an ordinary light bulb in the tank's hood. It shows that reasonable shots can be taken without expensive equipment. The camera used for photograph 2 cost over £100, and two photofloods were used. The results are no better than in No. 1. The tortoise was photographed with the dearer camera—which I borrowed. I'm hoping to buy myself a reasonably good camera in the next week or so, having been saving up for some time. I'll let you know and see what the results are like.



"Tojo"

Photo: B. Whiteside

about at a surprising speed. I have also been asked how one can prevent a tortoise from wandering away and getting lost. If you look closely at Tojo's shell, just in front of his rear leg, you will see a tiny hole which was bored there many years ago. If necessary, a light cord can be tied through this hole, leaving him enough length to wander about the garden, without getting lost, or eating up the vegetable seedlings. He should have enough scope to be able to wander into the shade if it is a hot day. My animal never drinks water at all. What have been your experiences with tortoises?

For the next edition let me have your opinions on the topics raised in the text above; also: (1) How would you deal with a tank in which the water often goes green? (2) Have you ever had a "dwarf lily" bloom in a tropical aquarium? and (3) Have you any experience of battery-operated air pumps? (this question having been asked by Mr. T. Mitchell, of 38 Ballymacconnell Road North, Bangor, Co. Down, N.I.). Finally, I'll be contacting the plant firm, by letter, about which several readers have complained, and will let you know the outcome.

EQUIPMENT REVIEW

ALGARDE AQUARIUM Power Cleaner, price £1-05, Algarde Push Button Tongs, price 62½p, Algarde Tubifex Keeper, price 20p, all manufactured by Algarde, 401A Ripple Road, Barking, Essex.

A new range of aquarium accessories always interests me, especially when they are British made. I was

most impressed by each of the three pieces of equipment in this range.

The Algarde Aquarium Power Cleaner (see illustration on page xxxi of the May issue) may seem rather expensive at £1-05, but this is a sturdily built and very effective aquarium cleaner. It is operated by the air supply from any aquarium air pump. The cleaner

has three clear plastic tubes, a red plastic handle and green fittings. The original design of the cleaner prevents dirt from falling back into the aquarium when the cleaner is removed. Dirt is carried up, with water, into a special rot resistant nylon bag which traps the smallest particles of dirt while still allowing the clean water to return to the aquarium. The tubes of the cleaner will enable it to be extended to suit the depth of the aquarium. The standard tube will adjust to suit tanks from 6 in. to 12 in. The 10 in. tube will operate in water depths of from 8 in. to 16 in. The cleaner operated very efficiently for me in a 15 in. deep tank, removing the dirt whilst leaving the gravel on the aquarium's base. It worked equally well in shallower tanks. I found it very easy to handle, and when the bag was full of dirt it was very easy to remove from the cleaner, for washing, having an elasticated top: it slipped off easily, and was as easily re-fitted, yet it formed a tight seal when in position. Most of us need an aquarium "vacuum" cleaner; if you don't yet have one, I suggest that you invest in an Algarde model.

For many years I've fiddled around with various types of planting sticks—both metal and wooden, home-made and bought. I invariably get exasperated when prodding plants' roots into the gravel. I never seem to be able to manage it; two seconds after planting the plant sails up to the surface—or is pulled up with the planting stick. The new Algarde Push Button Tongs seem to be the answer to these problems. The tongs are about 1 ft. 7 in. long and can be used at any angle. The handle and base are of red plastic, the two "grabs" are of white plastic, and the gold-coloured metal rod is rustproof. The tongs are operated by depressing a red push button on the top of the handle. I liked the fact that they are operated using only one hand, leaving the other one free to hold up the aquarium hood, to place plants in the tongs, or to receive any item removed from the tank. The tongs work at any angle. They have a variety of uses—for planting plants, for removing plants from the gravel, for removing dead fish, snails, leaves, etc. The "grabs" on the tongs are only 1½ in. wide, enabling the instrument to be used for working in narrow-necked bottle gardens etc. I also found them to be of use in retrieving small objects which had rolled under low furniture etc. Another item which I would recommend for those who dislike wet arms. (Naturally the tongs cannot manage very large, or heavy, objects).

The Algarde Tubifex Keeper is an original little item for those who like to feed their fish on *Tubifex*. It's made of clear polythene and has a clear sucker with which to attach it to the aquarium glass. The whole item is about the size of an ink-well or egg cup. It is attached to the inside of the aquarium, at water level, and an air supply fitted—a very small amount of air is required, just enough to give one bubble per second. The worms are placed in the container and the gentle

flow of water helps to keep them fresh and odour-free. The feeder can be adjusted to suit the number of fishes in the aquarium—four, eight, twelve or twenty-four holes can be opened in the base, thus controlling the rate at which worms can escape from the feeder. It is adjusted so that feeding takes place over a number of days, interspersed with other types of foods, thus ensuring that fish receive a varied diet. There is a lot of controversy over the use of live *Tubifex* but for those who like using it the Algarde Tubifex Keeper/Feeder should be of interest. B.W.

PETCRAFT AIR PUMP, made in Japan for Petcraft—Thomas's Ltd., Shelf, Halifax, Yorkshire, price £1.25.

This pump has been on the market for quite some time but I only recently purchased one. The pump is constructed with a plastic body and a solid rubber snap-on base. It is impressive in that it is quiet running—necessary if the pump is to be used in, say, a living room. The diaphragm is of the moulded rubber type, and a spare one is supplied with the pump.

I was somewhat disappointed at the air output from the pump when I connected it to one of the "Miracle" range of filters, which uses an airstone water lift. The output was not sufficient to produce a continuous water flow—however, this particular filter seems to need a strong air output to operate it as several other brands of smaller pump also produced a similar effect. The Petcraft pump gave a reasonable flow of bubbles with an ordinary airstone. When connected to a "Hykro" outside Power Filter the pump gave a good water turnover, as it did with an internal, bottom, corner filter which operated on an airstone.

If you require a quiet running pump, at a reasonable price, to operate one piece of aquarium equipment, the Petcraft air pump would be a good buy. B.W.

BOOK REVIEW

THE New York Aquarium Book of the Water World. By William Bridges, Curator of Publications Emeritus, the New York Zoological Society. Published by McGraw Hill Publishing Company Limited. £2.70 or £1.10 in paperback.

This is a book which can be recommended to readers of this magazine for the sheer joy of browsing through its well-printed pages. That the author knows his subject from A to Z there is ample evidence. The book runs to some 300 pages and the clearly written text is embellished with 240 beautiful photographs more than half of which are in full colour. Under various section headings such as Fishes, Invertebrates and Reptiles, the reader is given details as to the range in nature, size, coloration, feeding habits, and so on, of a large number of aquatic creatures indigenous to the warm, temperate and cold regions of the world.

Not a few aquarists and interested laymen will

learn a lot from Dr. Bridges that they did not know before. For instance, that the smallest fishes in the world are gobies; that snakeheads can live out of water for at least a day; and that the killifish popularly called the sheepshead minnow (*Cyprinodon variegatus*), which is found from Massachusetts to Texas, has been found alive in coastal ponds four times as briny as the sea. It is interesting to note, too, that there are about 250 species of fish capable of giving out an electrical discharge. The biggest shocker of them all is the electric eel found in Brazil, which can deliver 650 volts. Of the fascinating invertebrates, Dr. Bridges tells us that the giant squid of northern seas may attain a length of fifty feet, and that a 40 lb. Pacific Ocean octopus, with an arm spread of 10 feet, has been kept alive at the

New York Aquarium. Dr. Bridges dispels the commonly held notion that the octopus is a dangerous animal always eager to wrap its arms around a diver with the horrible intent of squeezing him to death. The octopus, says Dr. Bridges, is timid and shy. Dr. Bridges notes, also, that a female octopus is one of the best of mothers. For the wealthy gad-about who, among his other activities, likes looking at fishes, the book includes a really useful list of the outstanding aquariums of the world.

It is almost impossible to produce a book that is entirely free from error, and a very minor criticism I would make is that in one or two instances Dr. Bridges has given the up-dated scientific name of a creature in the index and yet used its vacated scientific name in the body of the text. JACK HEMS.

A PERSPEX FILTER (CONTINUED FROM PAGE 142)

pipe; if not, and the motor is running, check that water has entered impeller housing—an airlock may have formed.

To avoid these airlocks forming in the top of the filter body, an alternative method of filling the filter is to fill it in the reverse manner:

Immerse the outlet pipe and turn the filter upside down so that the inlet pipe is at the top. Suck at the inlet pipe until water enters filter through impeller intake tube. When filter is full, and air has been expelled out of inlet tube, immerse inlet tube, stand filter right way up and switch on.

Leaks

An important point here—the filter will not leak when running as the pressure is inwards; when switched off the pressure is outwards and this is the time to check for leaks.

Due to the adhesive being a solvent all cemented joints are, in fact, welded so no leaks should occur here—a second coat of adhesive over all joints may be beneficial or silicone rubber can be used to overseal.

If the motor/pump inlet tube is a very tight seal leaks should not be apparent here and, if the bolt heads are covered in the manner described, seepage up the threads will not occur either.

The most likely place for a leak is the rubber sealing ring (F), but this can be cured by adding a second sealing ring, ensuring that all perspex edges are flat and TIGHTENING those rubber bands.

Cautionary Notes

The pump is too powerful to motorise the normal outside filter; I tried in on a Hykro, and it emptied the filter box faster than the siphon could refill it!

I also operated the filter without a guard over the

inlet pipe—I found half-a-dozen young swordtails in the filter next morning.

When filling the compartment with filter medium put plenty in, I thought I'd filled it but after a few hours it had been compressed to a quarter of its former volume.

Cost

New motor/water pump (from C. W. Wheelhouse, Bell Road, Hounslow, Middlesex)	£2.13
Perspex (from R. Denny & Co., Netherwood Road, W.14) including adhesive	£1.00
Rubber ring (from local ironmonger)	4p
	<hr/>
	£3.17½

The cost of the motor/pump could be cut by hunting around for a second-hand one, from an old washing machine.

The Perspex was all 'off-cuts' and having it cut from the length may be more expensive. Price quoted is for 'clear' Perspex, tinted (green—to emulate Messrs. Eheim and Nuova) would be more expensive also.

It may be possible to paint clear Perspex to suit your artistic taste, but make sure the paint does not attack the Perspex, try the paint on a scrap piece first!

Performance

Water turnover rate is approximately in excess of 80 gallons per hour. Rather than have a jet of water returning forcibly into the tank a spray-bar can be connected to distribute the filtered water over the tank's entire surface area; ½ in. Perspex tube can be used for this, with holes drilled along its length; when installing make sure that the holes point downwards otherwise you might (a) get an eyeful, or (b) the tank lights will get sprayed and might explode!

TWO PESTS OF WATER LILIES

by S. M. H. Loquens

TO SEE a garden pool containing lilies in summer time, their large handsome leaves here and there overlapping one another as they spread radially outwards, is indeed a wonderful sight. Splashes of red, yellow or white in the form of blooms, may enhance the scene even further, to complete the picture of peace and tranquillity. A suitable waterside setting for a Victorian garden party perhaps? Unfortunately, the scene may be set for a meal of a very different kind; for there are two main destructive insect pests of water lilies that the pondkeeper should be aware of.

The first of these is the Water Lily Aphis (*Rhopalosiphum nymphaeae*). The eggs of this species are generally laid on fruit trees, especially plum, and it is only the adult form that may eventually invade the lily pool. The word "may" is used, as the insect will also attack many other types of plant, both aquatic and marginal, i.e., bog plants. However, the genus *Nuphar* does rank high on the list of favourite host plants.

Plants attacked develop disfigured leaves and flowers, the stems of the latter often becoming distorted, whilst the flower itself may become badly discoloured.

The end product of an attack is generally varying degrees of rot and decay, depending upon the extent of infestation. June to September is the time to watch plants closely for at this time the wingless, greenish-coloured females, are most likely to be seen.

Water Lily Beetle (*Galerucella nymphaeae*) is probably the more destructive of the two pests. It is a close relative of the Elm Leaf Beetle (*Galerucella xanthomelaena*), an equally destructive pest of Elm trees that has left a trail of havoc across many English counties.

The mature beetle is approximately a quarter of an inch long, oblong in shape and of dark brown coloration. The adult form is most likely to be seen from June to August although in certain years several generations may be produced and adults may be found outside these months.

Sites of infection on host plants develop irregular areas of skeletonised tissue which quickly begin to rot. The overall effect is much the same as that caused by the forementioned aphid.

The yellowish, pear-shaped eggs are laid in the spring months on the upper surface of leaves. They



Above: Water-lily Aphis and
Right: Water-lily Beetle



SL

usually hatch within a week, but this period may be longer in colder weather. The grubs that emerge are quite striking, being a brownish-chocolate colour above and yellow or cream below. They spend about three weeks at the larval stage, attaining a size of about half-an-inch or so in length before finally pupating. Although single specimens may be found, they are more often than not gregarious, large numbers of them feeding together in a similar manner to certain species of caterpillar.

Due to the risk involved in using insecticides in the proximity of fish, an alternative method of eradication must be used when combating these two pests. The safest way is simply by playing a stream of water from a garden hose over infected plants. This will dislodge both adults and larvae which will be quickly snapped up by any fish present. Care should be taken, however, that the jet of water is not too powerful, otherwise damage to lily blooms or

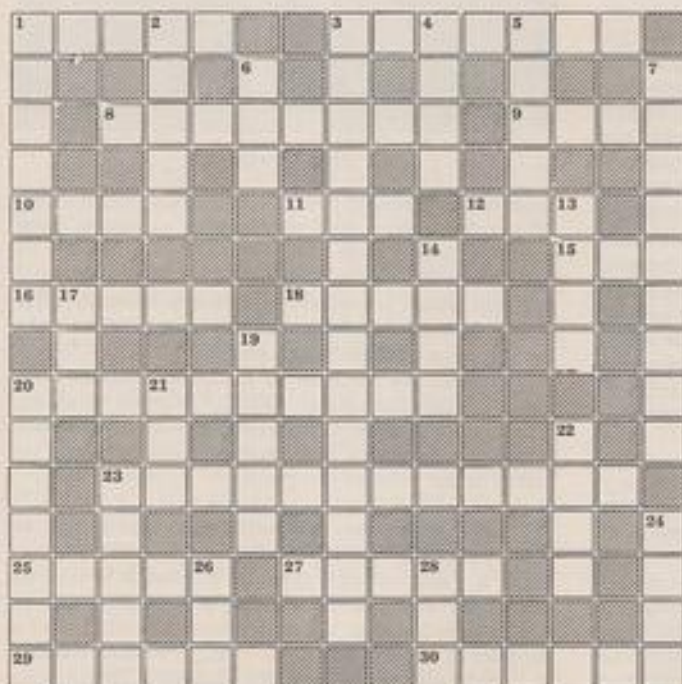
other aquatic life may result. In the event of a hose being unavailable, an equally successful method is to temporarily submerge infected plants for a few days.

It is a good policy in the autumn, because of the beetles cosmopolitan taste for aquatic plants, to dispose of unwanted dead vegetation. Particular attention should be paid to marginal plants such as Arrowhead (*Sagittaria sagittifolia*), and Sweet Flag (*Acorus calamus*); amongst the foliage of which many of the beetles would otherwise pass the winter in a state of hibernation.

Those living in the south, for climatic reasons, may find infestations more common than those living further north. During the summer it is therefore a good idea to carry out one of the above-mentioned protective measures, thereby reducing any pests before they reach epidemic proportions.

The AQUARIST Crossword

Compiled by M. W. CLARKE



CLUES ACROSS

1. A fish enemy named after a mythological many-headed monster (5).
3. Tetra which is found hanging around the apex (7).
8. Sheepish snail? (6).
9. Like an ostrich we hear (4).
10. Jump a dolphin must make to get a reward (4).
11. Famous for its liver oils (3).
12. You can eat or drink it (3).
15. The line to take when going some place? (3).
16. Did *Glocheilasma nigrofasciatum* have one? (5).
18. Nitrogen has one but it's not for transport (5).
20. Genus of upsidedown catfish (10).
23. Botanically *Pisum vesicarium* (7, 5).
25. Required for a small school of fish? (5).
27. There are eight in a gallon (5).
29. A rich source of many exotic tetras (6).
30. Much branched floating plant (6).

CLUES DOWN

1. Is it best to submerge this plant under the gravel to keep peace in the tank? (7).
2. Freshwater coarse fish (5).
3. Plants do it for food, animals rely on it for oxygen (14).
4. Relative of a tuna fish? (4).
5. Spots on a gourami (3).
6. A serpent for Cleo (3).
7. Five in Harley Street, no, just one (9).
13. All seasons should be so (4).
14. It's positive (4).
17. A portion of light (3).
19. Are said to cause warts (5).
20. Tiger barb country (7).
21. It floats, it pollutes (3).
22. It has a pH of below 7 (4).
23. ——— *gladius*, the fighting fish (5).
24. Product of length and breadth (4).
26. A jet comes from there (3).
28. A very steep hill (3).

Solution on page 167.



OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE

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

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

GOLDWATER QUERIES

You have stated that Veiltails are not very good fish for the garden pond owing to their flowing finnage. Does this also apply to Nymphs? Incidentally, can you give me any information on them please?

As most Nymphs have a flowing caudal fin it is possible for them to be subject to fin troubles, such as fin-congestion, fin-rot and fungus disease in very cold weather. The Nymph is a single-tailed fish which has not been recognised by the Federation of British Aquatic Societies until a few years ago. No mention of it appeared in the 1947 standards. After pressure from the Bristol Society, a standard was made for this fish in the later standards issued. According to the sketch in these standards the fish has the body of a fantail with the dorsal and pelvic fins as for a veiltail but has a single tail, larger than that of a fantail, but not as long or drooping as a veiltail. They are recognised in scaled and shubunkin types. I have never been happy about the recognition of this fish as a distinct variety. My reason is that these types occur as throw-backs in strains of veiltails and fantails. Each year I get such fish from my long-standing strain of fantails, and to me they are just worthless throwouts. If one is to recognise as a distinct variety a fish which is a throwout from another strain then where can it end? One should then be able to recognise as a variety all the other freaks which appear in any double-tailed variety, such as tri-tails and web-tails, etc.

I have a garden pond with water plants including a Water Hawthorn. The leaves of this plant are discoloured and do not look healthy. Can you explain this please?

The plant may not be getting any nourishment from the pond as it has not been constructed long enough for waste matter from the fishes to form into food for the plant. Once the pond gets more established it is probable that your plant will thrive. By the way,

by Arthur Boarder



Water Hawthorn

most of the leaves of your plant have on them patches of purplish-brown, and you may be mistaking these markings for a disease.

I find some transparent sausage-shaped jelly-like substance floating on my pond. Can they be the eggs of Ramshorn snails?

These are not the eggs of the Ramshorn snail but those of the fresh-water Whelk, *Limnaea stagnalis*. The eggs of Ramshorn snails are not sausage shaped but in the form of a blob, and all are usually laid on leaves or the sides of the pond.

I have a number of tanks and am ready to start breeding fantails and orandas. Where can I get a good enough type of fish with which to breed and can I make a living at breeding them?

I have included in my reply to you the address of a supplier of the fish you need. As for making a living at breeding them, I have my doubts. There is no question that good quality fish of either variety will



L. stagnalis eggs on water-lily leaf

fetch high prices but you must realise that for every really good fish you raise you are likely to get dozens of inferior fish. These only fetch the same prices as common goldfish, and I cannot see anyone in this country making a living at breeding them. If you want an enthralling hobby and one which, with experience, can be made to pay for itself, carry on as you suggest, but forget all about making a living at it. The cost of fish foods today makes the hobby a rather expensive one.

I have a pond with a stream running through it which comes from iron-stone ground. I find a fuzzy brown film on the plants. Is there a filter which would remove this from the water?

Too much iron in the water could be harmful to your fish as it causes a coagulated hydroxide to form which if it settles in the gills of the fishes could be fatal in quantity. It would not be easy to filter this out of the water and I suggest that the safest course to adopt will be to stop the stream from flowing through your pond. You will find that your water lilies will do better as they prefer a still water.

I have enclosed some pieces of a water plant I have obtained. What is it please?

The plant is *Hippuris vulgaris*, and is commonly known as Mare's tail, Paddock pipe, Bottle brush or Knot weed. It is not a very good plant for oxygenating the tank as it ceases to grow during the winter and if not removed could become messy in the tank. The flowers of this plant are very simple, having only one stamen, one pistil, one seed, no calyx or corolla.

I have a new pond and stocked it with some fishes and newts. Now the fish appear to be in trouble and some have died. The water does

not look clear but the newts appear to thrive. What is the reason please?

It appears that the water in the pond has become foul and has killed the fishes. The newts do not care very much whether the water is pure or not as they have no gills and have to come to the surface to take in air. Only newts' tadpoles have gills and can breathe under water. Once they become fully developed they lose their gills and have to surface for air. The pond should be cleaned out and a fresh start made. You must realise that newts will not stay in your pond once they have finished breeding. They live on land, under stones, etc., and only go to the water to spawn.

Some of the goldfish in my pond are reverting to black. Why is this?

Some goldfish do change colour but it is usually because they have been attacked by some form of skin disease, such as fungus or a pest irritation. If any skin or flesh of a goldfish is damaged the part will make new growth. This is usually black as is the colour of a fish when it first changes colour from its original bronze. During the change the upper parts of a goldfish are quite black, but this gradually disappears. Your fish may lose the black but some fishes can remain partly black for years.

When I made my pond I stocked it with sixty-eight goldfish; the pond is 50 square feet in surface area. I put snails in and water lilies and added bone meal and hoof and horn meal. Now many fish have been attacked by fungus disease and many have died. What is the reason?

It appears that you made two main errors. Firstly, you put too many fish in the pond and so they could not thrive and keep healthy. Secondly, you over-dosed the water for the water lilies. The compost you used was quite sufficient for the good of the lilies and all the bone meal and hoof and horn only tended to pollute the water. Once the water became foul the fish would be in trouble and their mucus protective covering became weakened and was unable to protect the fish from fungus. Water lilies only need a very little compost (an old turf is best) as if they are fed too well they are not likely to do one of their main tasks of helping to keep the water clear. Their roots should spread out over the bottom of the pond and use up most of the waste matter from the fish, thus keeping the water pure. If they have too much nourishment in the form of fertilisers it is obvious that they are useless for helping to keep the water pure. A few fish in a pond with growing water plants should function with little or no trouble as long as the fish are not given too much dried foods.

I have fourteen young goldfish in one of my ponds about two inches long and they have not changed colour yet but are a brown-black. Will they change colour and, if not, why not?

You do not state the age of the fish but as they are two inches long I presume that they are last year's youngsters. Many goldfish do not change colour until they are two years old and some never change at all. This slow change can be through several factors. In the first place if they are grown on well with plenty of space and food and with warm conditions they will change quickly, in a year at the most. If they are rather backward and their water is continually cold, they will take much longer. Then there is the problem of how long it took their parents to change colour. Some strains of goldfish change colour far more quickly than others. If goldfish are left in the pond when they have not changed colour, within a couple of years they could breed with the other fish and the result would be that many more fry would never change colour. It is a great mistake to allow any goldfish to remain in the pond if it has not changed colour by the time it is two years old.

I have been trying for some time to get some Black-banded Sun fish as I had some many years ago, but have been unable to find any advertised in *The Aquarist and Pondkeeper*. Where can I get some please?

I agree with you that one does not see many of these attractive fish advertised lately. I do not know if they

are still available but if you make enquiries at one or two of the leading dealers who advertise regularly in the above magazine you should be able to find out whether it is still possible to get some.

I have been warned against using bread to feed the fish in my pond. What is the danger or will the fish refuse to eat it?

I do not see any danger in feeding bread to your goldfish in the pond as long as you do not give too much at a time. Many fishes are fond of bread including goldfish. Many fine specimens of coarse fishes have been caught with bread flake. Some of the best bream, roach, rudd and tench have been caught with bread flake. However, I suppose that few things will tend to pollute the water quicker than bread which is not eaten within a few hours. I have often given my fantails a piece of dry brown bread to see if they are hungry. A small piece thrown on the water will soon bring up the fish if they are on the feed and the bread is soon cleared up. Many dried foods for fishes are becoming so very expensive that many pondkeepers are being forced to experiment with other cheaper foods. I think that the suppliers of fish foods would do well to think carefully about this problem or they can kill the market for their wares. I have known some fish foods to have doubled in price in a year or so.

TROPICAL QUERIES

I have been given to understand that a better fish for dealing with algae in a decorative aquarium is *Otocinclus vittatus* rather than *Gyrinocheilus aymonieri*. If this is correct, please tell me the reasons for this preference.

It is correct and the reasons are as follows. In the first place, *O. vittatus* is not as boisterous in its movements as *G. aymonieri* and therefore does no damage to plants. Secondly, it does not chase after other fishes in order to suck their protective slime (a characteristic of *G. aymonieri*). Thirdly, it grows no larger than about 3 in. whereas it is not uncommon for *G. aymonieri* to reach more than twice this size. Lastly, the appetite for algae of *G. aymonieri* is no greater than that of *O. vittatus*. Clearly, then, *O. vittatus* is the better proposition of the two.

Can you tell me the name of the largest growing *Corydoras* catfish known to tropical aquarium keepers?

I imagine *C. barbatus* is the largest *Corydoras* known to hobbyists. It averages some 4 in. in length.

I have a four-foot tank in which I am keeping angels, moonlight gouramis and keyhole cichlids.

by Jack Hems

Would I create an unfriendly atmosphere in this tank if I included two young *Cichlasoma severum* in the set up?



Cichlasoma severum

Generally speaking, young *C. severum* are peaceful. Even when they reach maturity they seldom, if ever, do harm to fishes of about their own size (that is, out of the breeding season).

I bought two young oscars about five months ago. They have now reached a length of about 6 in. One of them is constantly fussing around and nudging the other. Do you think I have a pair and would they breed at this rather small size?

I should say there is every likelihood that you have a true pair and that they are ready, or about ready, for breeding. Feed them well on flesh food and worms and place a slab or two of some non-calcareous stone for spawning on in their tank.

Please give me a few reasons why I cannot keep the plant *Azolla* alive in my brightly illuminated tropical aquarium?



Azolla filiculoides

Azolla can be a difficult plant indoors. It demands a humid atmosphere, a rather soft but not poor overhead light, and not too much warmth at the roots. The best *Azolla* is always grown outdoors in a closed (glassed-over but adequately ventilated) container. Most tropical aquariums are too bright and too dry (at the surface) for it to flourish well. Moreover, too-frequent disturbance at the roots (most surface-feeding fishes are guilty of this) puts the brake on growth and leads to the plant's rather rapid decline.

I think I have a couple of young *Rasbora einthoveni*. I should appreciate some information on the care, general behaviour, and maximum size of this fish.

Plenty of plants, soft water, and a temperature of from 75°F (24°C) to 78°F (26°C) suits this species. Any sort of food is taken. The species is peaceful and attains a length of about 3½ in.

Please tell me the cultural requirements of the Madagascar Lace Plant. Also, as a point of interest, when was this aquatic first grown in this country?

The essential requirements are clear, soft water, not too much bright light and a temperature ranging from about 72°F (22°C) to 75°F (24°C). I cannot tell you

when the Madagascar Lace Plant was first grown in this country, but among my books there is a bound copy of *The Floral World* for the years 1871-1872, in which full directions are given for growing this plant and its congener, *A. bernierianus*, in the stove house.

My 36 in. by 15 in. by 12 in. aquarium went foggy green soon after I set it up. I sought the advice of my dealer and he suggested my buying a plant of Indian fern (I already had two dozen *Vallisneria* plants in this tank). I did as the dealer suggested but the Indian fern has not made any difference to the colour of the water. What can I do to clear the green away?

The addition of a single Indian fern to combat green water in a thinly planted tank is next to useless. What you need is another couple of dozen plants such as *Vallisneria* or *Hygrophila* to create more shade and compete for the food (nitrates and so on) in the water. But before you stock up with additional plants, keep the tank darkened for a few days; for lack of bright light will check the growth-rate of the microscopic plants that colour the water. If the water takes on a clayey hue and the fishes start gasping at the surface, provide oxygen via an air-pump. Alternatively, remove a gallon or two of the water and replace with fresh at exactly the same temperature. Now introduce the new plants. With a jungle of plants stretching along the rear half of the aquarium, the water should clear in the space of a week or two.

I am a beginner in tropical fishkeeping and would like to know how to connect two 100-watt heaters to the external fitting thermostat I bought secondhand for my 24 in. by 12 in. by 12 in. tank. Also, could you tell me how an external fitting thermostat controls the temperature of water isolated from the apparatus by a sheet of thick glass?

One 100-watt heater is all that is necessary for your two-foot aquarium tank. You should find one long twin-wire attached to your thermostat. This is connected to the electric supply. The shorter cable on the thermostat is connected to the heater cable. If the cables on the thermostat have been shortened or cut to the same length, then take the thermostat to a reputable dealer and seek his advice. The external fitting thermostats I know have a shiny steel plate that is forced by a spring against the glass of the aquarium. The temperature of the glass is near enough the same as the temperature of the water. Therefore as the temperature of the glass changes so it affects the mechanism of the thermostat. It is as simple as that.

I have just bought four baby piranha fish. All I have seen them eat is live *Daphnia*. Yet I was under the impression that the piranha is a bloodthirsty fish that strips the flesh from a dead



Serrasalmus species of piranha. Are they as bloodthirsty as reputed?

goldfish (which mine have refused to do) or will bite away a lump of raw steak in a matter of seconds. Are present-day piranhas going soft?

Baby piranhas need the sort of food that is given to other young fish. That is to say, live *Daphnia*, tubifex, whiteworms, and the like. But as they grow their demands are for richer and fleshier food such as plump red earthworms and lean meat. Some species of piranha (*Serrasalmus*) are more ferocious than others. All the same, none is likely to change its habits and all, irrespective of what you may hear to the contrary, should be treated with respect.

I have some large pieces of Welsh slate. Could I use these, together with a panel of plate glass, to make a framed-day aquarium for tropical freshwater fish? What sort of cement do you suggest for fixing the slate in the frame?

At one time Welsh slate was in steady use in the manufacture of tropical aquariums. It is quite safe, but adds to the weight of a tank. Any proprietary aquarium cement should prove satisfactory or you could make your own with ordinary putty, gold size, and red lead powder kneaded to a workable consistency.

I have a three-foot aquarium stocked with a dozen assorted plants, four blue gouramis, two white convict fish, and three red swordtails. A

week ago I introduced two 2 in. angel fish into this tank just to see how they would get on. Now, whenever I approach the tank the fish scatter and swim madly in all levels of the water. After a few seconds they come to rest on their sides on the bottom and behave as though they have received a great shock. Yet after about a half-hour has passed they are back to normal again. What is the matter with them?

At a guess I'd say your fish are put into a panic by the highly-strung angel reacting nervously to your sudden approach (or shadow). Nervous fish often communicate their real or imaginary fears to their companions. If you introduce a lot more plants along the back and down both ends of your aquarium, the angel fish will feel more secure and not panic so often. In fact, they may not panic at all once they have plenty of plants to shelter in.

I have just bought two flying fox fish. I should like to know the maximum size of this species and whether it will cause any trouble in my community tank?

The flying fox (*Epalzeorhynchus kallopterus*) grows to about 4 in. and will not molest other fishes in the same tank, but it can become very boisterous and when it starts to rush about it can break down and uproot delicate plants.

Coldwater Fishkeeping

by A. Boarder

DURING the summer months there may not be very much attention needed to keep the garden pond in good order. However, there are one or two points to watch for in order to keep everything running smoothly. One of the main causes for complaints I receive from the hundreds of queries I deal with concerns the green water in the pond which makes it impossible to see the fish at all. I suppose that one in ten of the letters I get ask about this problem. I feel fairly certain that most pondkeepers have had this problem at some time or other. It is usual for freshly-made ponds to turn very green soon after construction. Any water left in the open air and exposed to sunlight will soon turn green. The tiny *Algae* can be air borne and soon multiplies rapidly to fill the water with the tiny single-celled plants. These plants are not harmful but give off oxygen. The only harm they do is to cloud the water. If water is shaded from the light the *Algae* will never grow. Of course, one cannot shade a garden pond completely and so one has to compromise.

It will be noticed that any pond with a fine growth of oxygenating water plants can keep quite clear, but any newly constructed one with few plants will become green with *Algae* within a few weeks. Once the water becomes very thick with *Algae* the oxygenating plants have difficulty in growing well. Their growth can be helped by changing most of the water. This fresh water will no doubt green up in time but at least it will give the water plants a chance to get moving when they, in turn, can choke out much of the *Algae*.

Waterfalls and fountains can help, especially if a filter can be arranged in small pools through which the water returns to the pond. One of the best plants for shading out much of the sunlight is the water lily. Once many leaves are flat on the surface, the underneath water will become clear. Therefore the better surface-cover the less likely is it that green *Algae* thrives in the pond. The water lilies can, of course, take over too much of the surface area when the fishes cannot be seen. This is where the skill of the pondkeeper comes in. He has to keep a balance between the water lilies and the *Algae* by removing some of the older leaves to allow more open space. Duckweed, *Lemna*, is a good cover plant and if fairly thick on the surface will soon choke out the green *Algae*. Some pondkeepers complain that if this plant is used then it cannot be got rid of after it has done its work. I have never found this to be the case. I have, at times, had

a good covering of Duckweed but have cleared it almost completely within minutes. All that is necessary is to play the hose from one side of the pond to the other. The Duckweed can be rolled over and then pulled from the side with a rake. Any left in the pond will soon be eaten by the goldfish if no other food is given for a day or so.

Even without water lilies the water can be kept clear with plenty of oxygenating plants. If a very good growth of Canadian water weed, *Elodea canadensis*, is covering the bottom of the pond, this will usually keep the water very clear. This plant in turn must be kept under control or it can take over completely. The other good oxygenators in this class are, I think, less likely to become so rampant; they are *Elodea crista*, now known as *Lagarosiphon major*, and *Elodea densa*, now called *Egeria densa*. These are ideal plants for the pond and especially the former which is strong growing and can make shoots many feet long in good conditions. It is also capable of sending out roots from floating stems to a depth of a couple of feet.

I do not think that one need to use any other water plants as oxygenators. I use plenty of Hornwort, *Ceratophyllum demersum*, but this is as a spawning medium. It is also a good plant for the tank which has no bottom compost as it never makes a root. It gets its nourishment by attracting mulm, etc., to its lower stems which can be found to be covered with it when a bunch is pulled up from the bottom. Although I like this plant for a spawning nest I do not think that it is quite as good as the *Elodeas* mentioned for oxygenating in a pond. It will die down a lot during the winter but with a little warmth it soon grows in the spring and like most other underwater plants has to be pruned rather drastically by mid-summer.

Many pondkeepers like to breed a few goldfish in their ponds but unless there are plenty of water plants it is unlikely that many fry will reach maturity. The fish do not appear to eat many eggs at the time of spawning but once the excitement of spawning is over the fish may be seen eating the eggs. Also, if any fry hatch out they too can be eaten. To be successful at breeding goldfish in a garden pond it is necessary to have plenty of water plants in which the eggs and fry can be protected from the parent fish. The feeding of the fry in a pond can be a problem for many people but as a rule in any well established pond there will always be plenty of fine food for the fry. If very

Continued on page 159

COLLARED LIZARDS

by H. G. B. Gilpin



THE COLLARED LIZARD (*Crotophytus collaris*) is widely distributed over the south-west quarter of the United States of America. It is terrestrial in habit and found on open, barren country, particularly favouring flat, rocky areas.

These lizards are stoutly built, bulky animals, reaching about fourteen inches in total length and the colorations of the adult males during the breeding season are most striking. Their basic colour is a bright green, liberally embellished with yellow spots. The hind legs are dotted with red and the black double collar around the neck is characteristic. An orange patch extends across the throat and between the front legs. Young males and females are much duller in colour.

Collared Lizards are very active and have been

reported achieving speeds of up to seventeen miles per hour, sometimes starting their dash in an upright position on their powerful hind legs, unlike most lizards capable of bipedal motion whose tendency is to work up speed before becoming erect. These same hind legs enable them to make frog-like jumps.

My present specimen of *collaris*, almost certainly an immature male, was imported in May 1970 but did not reach my possession until November of that year. It is a heavily made lizard with a broad head attached to the body by a narrow neck. Its nose to vent length is three and threequarter inches and its six-inch tail, lighter in colour than the body and broad at the base, tapers to a fine point. Dorsally it is olive brown, covered with small, lighter brown patches. The upper surface of the neck carries a

very dark brown, almost black, band edged posteriorly with light fawn. The legs are crossed with bands, slightly darker than the body colour, and the abdomen is light brown. Deeper shaded streaks pass down the middle of the undersides of the thighs and over the vent. The eyes are prominent and the mouth wide and menacing. The orange patch beneath the throat disappears after a while but reappears when the skin is sloughed.

The hind legs give the impression of considerable strength and are twice the length of the fore limbs. The scales on the abdomen are small and hexagonal whilst those on the tail are slightly raised and have a tiny projection on one corner making it very rough to the touch. Five small, pointed scales overlap the front of the rather large ear aperture.

When at rest the skin under the mouth lies completely flat, with a deep furrow where the neck joins the body, but when the animal is disturbed by the intrusion of a hand into its vivarium or excited by its reflection in a mirror, this throat flap swells considerably.

Collaris makes an interesting and worthwhile vivarium inmate but it is a naturally pugnacious and aggressive animal and extreme caution is necessary before enclosing it with other lizards. Lizards smaller than itself will be eaten with very little delay and with those of comparable, or even larger, size there is no guarantee that trouble will not result.

My specimen lived quite amicably with adult *Agamas* but attacked a *Calotes*, somewhat larger than itself, so savagely that its immediate removal was imperative. During the three months it was kept with a large *Cnemidophorus*, however, there was never the slightest sign of disagreement.

Collared Lizards are said to bite readily when first captured but rarely after they have been kept in a vivarium for some time. I found mine perfectly safe to handle from the beginning. The first time I attempted to pick it up, in order to examine it in detail, I confess I did so with some trepidation, in view of the wide gape of its powerful-looking jaws and its particularly antagonistic behaviour. At the approach of my hand it reacted violently, facing the apparent adversary threateningly and making jerky jumps from side to side, accompanied by vigorous lateral sweeps with its tail. As soon as my hand came within touching distance the animal's opposition collapsed and it backed away, prior to dashing to the other end of the vivarium. When caught it made one strong muscular effort to escape and this proving unavailing it relaxed completely and shammed death. At this stage it could be turned over on to its back where it remained utterly still even when the hand was opened and there was nothing to prevent it from decamping. Its eyes, firmly closed to begin with, opened from time to time as if to seek out the pos-

sibility of escape. The moment it was gently rolled off the hand on to the floor of its vivarium it returned instantly to "life" and rushed away at considerable speed.

Left to themselves in the vivarium the behaviour of these lizards is most satisfactory. Although they may retire behind a rock occasionally, they do not burrow in the floor covering and are almost constantly on view. With the glass between them and their owners they show no signs of nervousness and go about their business regardless of outside activities.

Collared Lizards are voracious feeders and will eat most forms of insect life. In confinement they do well on a diet of locusts, maggots, blowflies and mealworms. Personally, in view of their rather indigestible nature, I limit the number of the latter *larvae* and tend to confine their use to such times as the supply of winged insects falls below normal.

Because of their activity and not inconsiderable size, these lizards require a fairly large container. One about three feet in length is satisfactory and the floor is best covered with a layer of dry sand with a few large stones scattered about to provide basking sites. They need heat and are best maintained at a temperature of 75°F.

Collared Lizards are oviporous, from four to twenty-four eggs being produced at a time. The laying season extends from July to August and the eggs undergo an incubation period of several weeks before hatching.

COLDWATER FISHKEEPING

Continued from page 157.

fine food is offered this can be eaten by the older fish but if a screen can be introduced to keep the larger fish from one part of the pond, some fine food can be given there each day.

Some pondkeepers take the small fish from the pond and try to raise them in tanks. This is all right as long as the fry are not overcrowded nor over-feeding takes place. Of course, the safest way to breed goldfish is to take the eggs from the pond to hatch and rear in a safe place, away from the parent fish. When any of the fancy goldfish are bred it is essential to raise the fry under separate conditions or very few good fish are likely to be reared.

During the warm weather the fish in the pond can eat more food than when the water was cold. This does not mean that too much food should be given at any time. More fish are lost by over-feeding than from any other cause. There is usually plenty of food available in a good garden pond and if too much artificial feeding takes place then the fish are not encouraged to search for food and help to act as scavengers. They can do this just as good as any Catfish or Tench. A little common sense on the part of the pondkeeper will ensure that all goes well in the pond.

THE HERMIT CRAB

by *Huw Collingbourne*

LIFE for a Hermit Crab begins in the plankton, that drifting mass of tiny life that forms the basis of the sea's food web. The larva or zoe of the Hermit is minute, and has no effective propulsive power of its own; the Hermit will go through a complete metamorphosis, however, before the adult form settles on the sea bed and looks for refuge and a means to protect itself.

sealing the shell's mouth with its massive pincer.

As the crab grows it must seek a suitably larger home, and so, in aquaria many empty whelk shells should be included. Before entering his prospective home, a Hermit Crab will check for intruders, using his nippers to probe inside the apparently empty shell. He will move from one shell to another searching, until at last he finds a shell free from pests and when he is



Being a crustacean, the Hermit Crab is closely related to the other forms of crab, lobsters and shrimps. The front half of its body is covered in tough bony plates, and one of its two pincers is very large whilst the other is considerably smaller. The crab's abdomen, however, unlike the thorax, is very soft and fleshy and attractive as food to large fish. Hence the crab protects itself by taking residence in a univalve shell such as the empty shell of a winkle or a whelk. The Hermit's coiled pink abdomen fits into the spiral of the shell so that only the armoured head and legs project from the shell opening. In an emergency the Hermit can retract right into the depths of its chosen home,

absolutely sure that it is ready for habitation the crab will seize the point of the conical shell in his legs, release hold on his old home, and with a hurdling movement, plunge his unprotected abdomen into the security of the waiting shell. Although the entire operation is over in a fraction of a second, it is the time at which the Hermit is most vulnerable and it is fortunate that the necessity arises only a few times in a lifetime. This is why a crab will frequently choose a shell five or six times too large for it; this allows plenty of room for growth. During the shell-changing procedure the blennies and gobies will suddenly appear from their hideaways in an aquarium,

but they have not come to stare in wonder at this marvellous spectacle, neither have the prawns that circle over the Hermit's head; they have come for an easy meal; the laws of nature decree that each creature has the urge to live, and often this involves normally peaceable animals preying upon one another when the opportunity arises.

In aquaria most crabs are looked upon as killers, but the Hermit is the exception. He is a scavenger. Hermits are very susceptible to attack by other crabs, though, and a Shore Crab the size of a sixpence (*pre-decimal currency*), will find no difficulty in killing a full grown Hermit Crab. Fortunately, not all other creatures are quite so vicious and it is well known that *Callinectes parasitica*, the Parasitic Anemone (a misleading name for this species is not parasitic on the Hermit) will often share a shell with a Hermit, using the upper surface as a base. To feed, the Parasitic

Anemone droops its tentacles over the side of the shell so that they hang on the sand and the anemone can then pick up small creatures and pieces of flesh that remain after the crab's meal. Other anemones situate themselves in a like manner also, although these feed in their normal manner, spreading out their tentacles to catch any small creatures that swim within their range. Some sponges grow on shells, and sometimes, certain species of sponge, such as *Dromia vulgaris* will engulf the shell and the Hermit and then will take the place of the shell and the necessity for choosing new shells in which to live will not arise for the Hermit Crab which will live instead, inside the sponge. Rag Worms, *Nereis* spp. will occasionally take residence in a Hermit-inhabited shell, only appearing to share in the crab's meals.

Finally, the most common species of British Hermit is *Eupagurus bernhardus*, which grows up to 10 cm., and is most abundant in dirty or polluted water.

Phago loricatus

by R. H. Birchall

If you collect unusual fish and you happen to want a fin-nipper then you could do worse than choose this member of the *Ichthyboridae*, because at least it is an exceptionally interesting one. Very slender, possessing large extremely hard scales, *Phago* resembles a miniaturised pike with an equally magnificent pair of long, narrow beak-like jaws. The teeth which they house can slam together so neatly that they can punch a hole like the latest piece of automation at Fords.

Phago inhabits many localities throughout West Africa, usually living at the edge of large rivers or lakes. In this natural state they are found in soft water with a temperature around the 25°C mark and water flowing at not more than three knots. A flow of water faster than this tends to sweep away from the bottom the debris which is vital for the cover it gives to the fish. The coloration (browns and blacks) and general appearance (twig like) is well designed to act as camouflage among rotting vegetation, and it is from such locations that *Phago* sallies forth, always attacking the unsuspecting from the rear. The general procedure is for it to drift about inconspicuously above and close to the vegetation (just like a drifting twig). A victim is selected and stalked from the rear, most of the successful attacks being carried out when their victim's attention is momentarily distracted, such as during breeding or when there is a boundary fight in progress; consequently in nature many of the victims are cichlids, although according to local fishermen they have even been known to attack

man. The attack itself is a lightning-like dart, launched from about a foot away and an individual was seen to successfully attack twelve different fish in five minutes, discounting the numerous abortive stalks. When *Phago* is stalled in its attempts to have dinner, it just drifts past with an air of complete innocence, that is until its dinner turns its back. Its behaviour has been strongly contrasted with the marine blenny, *Rumula rhinorhynchus*.

No account of *Phago's* breeding habits seem to be available because *Phago* appears to be strongly territorial and an observed encounter of two *Phago* exploded into a furious fight. The two contestants separated almost immediately, but lived in nearby stretches of the river for the next three days. Normally specimens were found singly, along with assorted cichlids and electric catfish, and their territories were not normally close—this observation however was made in a river. Other observers say that in relatively calm zones, such as in creeks, the fish go about in small groups keeping close to the shore.

The abundance, or lack of it, of this fascinating fish seems to be closely related to the amount of vegetation as well as to the food supply. Consequently this fish is only likely to be seen in specialist imports because of their high collection cost, but anyone who is lucky enough to obtain one should find it very, very interesting especially if the feeding problem could be overcome.

MOUTHBROODING IN Cichlids and Anabantids

by R. H. Birchall

AQUARISTS are familiar with two different types of mouthbrooder—the mouthbrooding anabantids and the mouthbrooding cichlids—and it is these which will be discussed here. However, mouthbrooding does occur in at least fifty-three different genera of fishes and not only does it occur in freshwater fish, but also in brackish and marine. Reference will therefore also be made to the sea catfish, *Galeichthys felis*. Mouthbrooding appears to be a very effective way of fish reproducing as it guards against the eggs and fry being eaten by would be predators (unless of course the parents themselves are eaten!).

A recent study by J. Oppenheimer of the behaviour of mouthbrooders suggests that mouthbrooding has come about in those species of fish which build nests and then at some time between egg-laying and the dispersal of the fry take either the eggs or the young into the mouth. Nesting in places where the nest is likely to be destroyed or attacked has hastened this.

The large masses of bubbles made by the anabantids such as the gouramis and the Siamese Fighting Fish are familiar to us, but most of the bettas do not breed in this way and are mouthbrooders. Anyone who has bred bubble-nest builders will know how easy it is to destroy the nests and some of these mouthbrooding bettas have therefore adapted to their nests being destroyed by such agents as water currents. The way in which this mouthbrooding has come about can be seen by taking a starting point in development (e.g. the bubble-nest builders) and supposing that mouthbrooding is the most sophisticated method of a fish rearing its young. Known anabantids and cichlids can then be arranged along a sort of evolutionary line even though some species may have gone off course a little and may not reach the "goal." This method is followed below.

When Siamese Fighting Fish (*Betta splendens*) are spawning the male and female embrace and the eggs fall, having been fertilized at the embrace. The male chases after them, catches them and places them in the nest. If he misses some eggs and they fall to the bottom, both male and female fighter collect them, but the female does not place them in the nest: she passes them to the male who does so. In the Malayan *Betta*, which is one of the forms of *B. pugnax* and was formerly known as *B. brederi*, the same process occurs with the same code of sexual ethics, but the nest is

imaginary. There is little use in the male spitting the eggs out again, so further along the line the male is seen to retain the eggs. In *B. anabatoides* and another form of *B. pugnax*, which are both mouthbrooders, the female spawns the eggs into the cupped anal fin of the male—thus increasing the likelihood of fertilization. The fertilised eggs are then taken up by the female who transfers them to the male's mouth. Mr. Oppenheimer therefore concludes that mouthbrooding in bettas may have arisen by the male retaining the eggs in his mouth after he was unable to place them in a nest.

The same pattern is thought to have occurred in cichlids. If we observe the *Tilapia* which breed in the gravel depressions which are common among cichlids, it will be seen that after spawning both the male and the female guard the eggs, and the Peacock Cichlid (*T. sparrmani*) is seen to fan them. At times the eggs are mouthed by the parents and after hatching this becomes frequent and is used as mass transport from the old nesting site to the new one for the almost helpless fry. The mouth can also be a place of refuge and is used for this purpose in some of the non-mouthbrooders such as the Peacock Cichlid, the Blue Cichlid (*Aequidens latifrons*) and the Brazilian High-Hat (*Geophagus brasiliensis*).

G. jurupari is half way to being a mouthbrooder as it still behaves with some of the mannerisms of those cichlids which lay their eggs on the substrate; *G. jurupari* uses a flat rock. The eggs are then covered over with a thin layer of sand and looked after. On the second day the eggs are collected by the parents and are incubated in the mouth of the mother. Although the fry hatch within three days they may be looked after for up to another ten days, during which time they are released into depressions made in the gravel. The fry remain close to the parent and the adventurous ones are soon called to rein; at a sign of danger two twitches of the parent's body are enough to make the fry seek refuge in the mouth.

Whereas *Geophagus* spawn on flat slabs of rock or other such places and then place their young in a depression, *Tilapia* prefer to spawn in a depression. The eggs are either fertilized there or in the mouth and are then held in the mouth for one or two weeks by which time they have hatched. The female *T. natalensis* cares for the young in much the same way as *G. jurupari*, but the male, who incubates the eggs of

T. melanotheron, rarely shows any form of after-care although scientists can induce it.

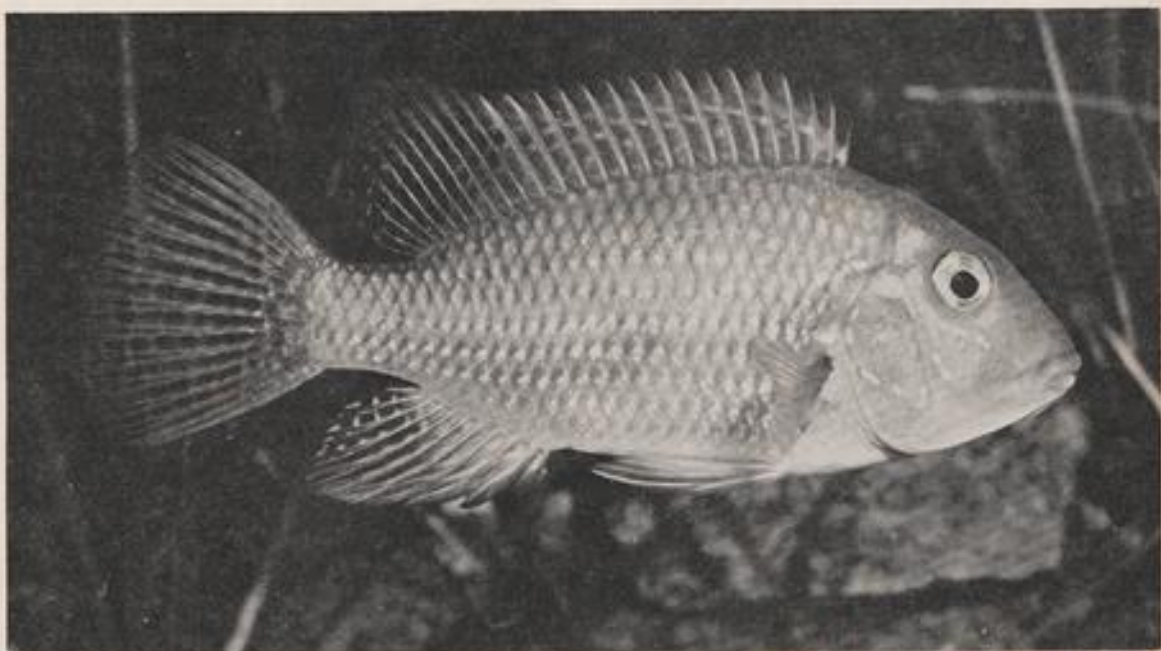
Accident may have played a large part in these changes, especially when we think along the lines of Charles Darwin whose ideas on natural selection mean that only those fish which are able to reproduce in changing or changed conditions will not become extinct. For example, if a species spawns on flat surfaces or stones and the species has been introduced to a new area where these are no longer present, it must either change its scruples or die. (Though please don't try this out on your fish that won't breed in your aquarium as you might find that they have stoic blood!!)

Besides this invasion of a new area the spawning site might not be available for very long. This is the case in many maternal mouthbrooders where males are in

bonding as in *T. melanotheron* removes this.

Fertilization by the male spraying his sperm in their direction is a rather wasteful process; however, this has been greatly improved by the mouthbrooders, especially those in which fertilization occurs in the female's mouth (e.g., *Tilapia mossambica*). In these species the males have developed colourful genital tassels, as in *Tilapia*, or striking light-coloured spots, as on the anal fin of *Haplochromis*; these act as egg dummies. The unfertilized eggs which have been laid are picked up by the female and fertilized in her mouth when she seizes the tassels or the dummy eggs. By this method it is easy to see that the sperms are confined and so there is a much greater chance of fertilization.

Those fish which lay a large number of eggs do so in order to increase the chance of some of the fry surviving, but mouthbrooding represents such an advance over



Geophagus brasiliensis

short supply and so fertilise many females which therefore use this common spawning ground (e.g., *Tilapia karoma*). Owing to the shortage of males this is of advantage and ensures the survival of the kind as it allows the female to go away on her own to find a safer place to incubate her eggs and raise her young. This is not necessarily a cause of mouthbrooding and may indeed be the result of it.

Mouthbrooding where the male holds the eggs in his mouth does occur, but leads to the male holding several spawnings of eggs in his mouth. Pair

egg scattering, or even bubble nests, that the eggs are found to become larger and less numerous the more developed the parental care becomes. However, in *T. melanotheron*, which has the largest eggs of the genus, there is no after-care of the fry once they have been released and only the fry of small eggs are allowed to seek refuge in the mouth. It seems that this mouthbrooder has developed an advanced form of Welfare whereby the amount of care given is related to the size of the egg, and scientists have been able to induce care by removing some of the yolk from the eggs.

I have always believed that mouthbrooders fasted throughout the time that they were carrying young, but Mr. Oppenheimer's paper has made me revise my ideas. Like many aquarists, I feed fish extra heavily before they spawn so that they will not eat their eggs, but it appears that *Galeichthys felis* spawns a special egg-mass of non-reproductively functional eggs just for eating. These eggs are laid in a small mass which precedes the larger mass of eggs which are destined to produce fry. This meal of eggs, and the consumption of excess body fat, tides the fish over until it can resume its normal life after releasing the fry.

While many species do not eat normally while there are young in the mouth, some of the fry may be eaten along with unfertilised eggs and dead embryos. Some male specimens of *T. melanotheron* have been seen to scrape algae off the aquarium walls, but they do not do it often, and even then they eat only in small quantities. The parents may also reduce the number of the young as the batch becomes too large for the mouth. *G. jurupari* does eat while the young are in the mouth.

Discus fry and the fry of the Orange Cichlid (*Etroplus maculatus*) are well known for the way in which they feed off the mucus covering their parent's body and it is possible that this happens in mouthbrooders—the fry feeding on the mucus lining the mouth, but work done on *B. anabatooides* shows that the

fry can survive the brooding period without eating.

While the eggs are being incubated they still need fresh water and oxygen. In those species which lay their eggs on or in the substrate, aeration is assisted by the parent(s) fanning the eggs with the pectoral fins and maybe mouthing them as well. In the mouthbrooders this fanning is replaced by the churning action of the mouth; this action brings the eggs which are at the bottom of the mouth to the top ensuring that they get their turn of aeration and are also freed of detritus. Once the fry have hatched there is no need for such vigorous churning as the fry can do it themselves to some extent.

The basic similarity in the breeding and care of fry in both mouthbrooders and evolutionarily connected non-mouthbrooders is, therefore, quite noticeable and probably means that they have common ancestors. The main change exhibited by the mouthbrooders over those which breed in the substrate, is this replacement of the fanning of the eggs by the pectoral fins in favour of the churning movements of the mouth.

Acknowledgement

The author would like to thank Balliere, Tindall & Cassell Ltd. for their kind permission in allowing me to base this article on material from "Animal Behaviour" magazine.

HERBICIDES CONTROL AQUATIC WEEDS

SOME HARMFUL aquatic weeds can be effectively controlled with herbicides without harming fish, the U.S. Department of Agriculture has reported.

Aquatic weeds obstruct water flow, cause large losses of water through transpiration, and prevent proper drainage of land. Also, the weeds may interfere with navigation, prevent fishing and recreation, depress real estate values, and present health hazards.

Though harmless to the fish, each of the chemicals provided excellent control of southern naiad, marine naiad, and widgeongrass. But neither herbicide controlled the chara growing in the ponds.

In studies spanning three years at Fort Lauderdale, Florida, two research workers evaluated $\frac{1}{2}$ and $\frac{3}{4}$ acre ponds treated with the two chemicals.

They found that ponds treated with 1 part per million by weight of diquat and paraquat once a year had no measurable effect on total fish production, and adult fish revealed no effects from the herbicides. Both herbicides initially affected the plankton and benthos organisms in the ponds, but both recovered within 30 days after treatment. Also the alkalinity nitrate, and phosphorous content in the water were affected temporarily.

Diquat is registered for use on aquatic weeds, but paraquat is not.



THE BRITISH AQUARIST FESTIVAL

will be held this year at
Belle Vue Zoological Gardens
Manchester
on Saturday 9th October and
Sunday 10th October

From a Naturalist's Notebook

by Eric Hardy

A WHITE smooth newt found by a boy in a pond at Kirkby, on the peatmoss edge of Liverpool, is probably scarcer than albinism in frogs, for white frogs and tadpoles have been recorded more often in this country and North America. A semi-albino male frog with pigmented eyes was found at Warrington in 1921. In 1931, a Yeovil schoolboy found 20 albino tadpoles. In March 1933, an albino female frog was found at Tunbridge Wells. Albino spawn found by a boy at Woodcote, Oxfordshire, in May, 1933, produced pigmented frogs. Maybe the Kirkby newt suffered a thyroid deficiency, like the albino axolotl? Unfortunately he kept it.

British freshwater fishes have no Cyprinodonts, which aren't to be confused with cyprinids, the carp family. Americans call the family killifish, but amateur fish-keepers best know members like the subtropical live-bearing toothcarps, *Cyprinodontidae viviparae*. The male's anal fin in this is adapted to bring the sperm into the genital pore of the female, who generally gives birth to two young at a time; but sometimes they are born single, the yolk-sac usually being entirely absorbed before birth. Sometimes newborn fish have rudimentary sacs, and sink to the bottom until the sac is absorbed and they swim freely to seek food.

Another relative, the Californian desert pupfish, *Cyprinodon macularius*, is now being spawned and reared as a laboratory fish for use in the studies of pollution, genetics and aging, to avoid depleting wild stocks which face extinction. It breeds in a wide range of temperature and salinity, but hatches best in half strength seawater at 27°C according to recent work by Crear and Haydock. Aquarium-reared pupfish will not only provide material for research, but for restocking lost fish-communities, for they mature

as a viviparous fish, and the aggressive male wrings its anal fin under the female's ventral fin to deposit each egg as it is extruded. She will absorb the adhesive eggs in about 2 hours. Pupfish and eggfish have to be kept separate when spawning, even from females. In the wild they breed in water ranging from 8 to 44°C, but owing to the introduction of foreign fish and destruction of their natural habitat in the Salton Sea region, they could become extinct there.

They were fed on daphnia, cyclops, brine

shrimps and tubifex. They were brought into spawning condition in 3 weeks, with 16 hours lighting with combined daylight fluorescent bulbs and mercury-vapour arc lamps, and an 8-hour dark-cycle; but there is some seasonal and individual variation. The length of light period is more important than intensity. They were spawned on green plastic or white cheese-cloth, in white plastic food containers, and good hatches were obtained by suspending these immediately afterwards in a 20-gallon tank heated to 27°C.

They were well fed before spawning, to reduce egg-eating, and the female separated from the aquarium in a quieter container, then the male was introduced to her 5—15 minutes later.

Daphnia, the primary food of plankton-feeding fish, is a widely-distributed genera of tiny freshwater crustaceans, called "water-fleas," from the common British *D. pulex*. There are at least seven British species. There are 15 species in North America. Applegate and Mullen recently published a 23-page Research Report 74 (U.S. Fish & Wildlife Service, *The Ecology of Daphnia in Bull Shoals Reservoir, in the Missouri Valley*). 10 species there have much in similarity with our British representatives. The maximum population from April to June declined as *Daphnia* became a major diet of small threadfin shad and other fish. They increased as the smaller-sized year-classes of shad changed. Some *Daphnia* produced resting eggs in summer, from which individuals appear sporadically in late winter and early spring. Others are perennial species, like *D. retrocurva*, overwintering. Parthenogenetic (sexless) reproduction occurs at all seasons, but resting eggs were also produced by all species in autumn, summer and spring, and this avoids extinction by feeding fishes.

Catfish are pests of many American streams, "pets"

of many catfish laboratories. At the Illinois (Urbana) fish cultural laboratory, H. K. Dupree has reported that young catfish grow well on diets with up to 8 per cent corn oil, and rather less with beef suet, which they didn't digest so well. Although commercial culture exists there's little chance of it playing any significant part in the economy there. Arthur Hammond's 16-page, illustrated presidential address to the Postal Microscopical Society in their journal for 1882, dealt in great detail with *Daphnia*.

The decomposition of dead red mangrove leaves in South Florida's estuaries result in such a high protein

content of the water that they support a very rich aquatic life, states a 28-page bulletin by Heald and Odum of Miami University's School of Marine Sciences. 700 square miles of mangrove-fringed estuaries form haven and nursery for over 30 kinds of fish and molluscs, shrimps and crabs.

This is contrary to most leaves, and especially rhododendron and laurel, falling into fish ponds in this country, where one rakes them out instead of leaving them to rot. The dead mangrove leaves are also attacked by bacteria and fungi. Protozoans feed on these. Larval crabs and amphipods ingest

these along with plant-detritus, and excrete the indigestible plant cell-walls. Microorganisms recolonise these and repeat their role as carriers of nutrients. Mangrove leaf-fall produces over 3 tons dry weight of detritus per acre annually, increasing the growing leaf's 6 per cent of protein to 22 per cent after a year's colonisation by micro-organisms in the water. The older the detritus, the richer a source of protein. 80-90 per cent of stomach-contents of crabs, worms, insect larvae and small forage-fish from catfish to striped mullet consisted of this.

Commonwealth's Coral Wonder

by D. England

"SAVE THE BARRIER REEF" is the slogan seen on tens of thousands of cars throughout Australia. The campaign is forcing state and federal governments into action. The first result is the Commonwealth Government's decision to set up a £1.5m. marine research centre in the Queensland port of Townsville.

Some say it's the most beautiful place in the world—others that it is the most evil. In truth beauty and evil are nowhere more incongruously mixed than in the Great Barrier Reef of Australia's north-east coast. Marine paradise and seas of treachery; shells of lustrous beauty and poisonous fish that cause days of blinding pain and even death—the contrasts could be indefinitely extended.

The catalogue would need to be long to convey a mental picture of this natural wonder of the world, recently visited by the royal party. But it is threatened by more than one peril; by drilling for oil (which has for the time being been suspended); by pesticides from the sugar and tobacco industries which are being washed out to sea, polluting it; by professional hunters of shells for selling; and by a starfish known as Crown of Thorns, which eats the tiny coral polyps that build up the coral. This starfish is itself attacked by the shellfish that traders and tourists have been removing. Pressure of public opinion is bringing about regulation of this activity. Last year a survey team of biologists from Australia and Japan was working on the Reef going into the possibilities of using electrocution and chemical repellents against the starfish.

A flight by plane gives no more than a bird's-eye view of the Great Barrier, so vast is its extent, so innumerable the reefs and islands that make up its mass. Its length is 1,200 miles and in extent it covers 100,000 square miles. Coral reefs are common in these seas, but the Great Barrier stands out because of the sense of majesty its vast size imparts.

Dr. C. M. Yonge, leader of a British Association Great Barrier Reef Expedition, said, indeed, that the Barrier suffers from the disadvantages of being too vast. A lifetime spent on and around its innumerable maze of reefs would still leave one ignorant of the greater part. A year of intensive investigation by his party permitted the study of only a few dozen reefs and islands.

The Great Barrier Reef makes this part of the Pacific treacherous for navigation. Many a ship, particularly in the days of sail, left her hulk to moulder with the countless myriad skeletons of the coral polyps which in the course of ages created the reef. Disaster was the fate that nearly befell the Royal Navy's greatest navigator Captain Cook by whom the reef was first explored. The bicentenary of his landing in Australia was celebrated in 1970.

After he left Botany Bay and sailed to the latitudes of what is now Queensland, the perils of the Reef were forcefully brought home to him as several times the "Endeavour" came within a few feet of doom. On one occasion she was holed, but her crew lightened and refloated her. The "Endeavour" was eventually beached at the mouth of the river named after her, Endeavour, at the port called after her commander, Cooktown. It was a month before repairs were finished.

Seventy miles from Cooktown and 30 miles from the nearest land is Lizard Island. This rocky mass rises to over a thousand feet, and it was from this summit that Cook surveyed the Barrier during his perilous pioneer voyage within it. From there he espied the opening between the reefs called today Cook's Passage, which was to take his vessel into the open waters of the Pacific.

The Reef begins a little south of the Tropic of Capricorn, whence it continues almost to the delta of the Fly river of New Guinea, whose fresh muddy waters

probably account for its termination, as coral polyps dislike such conditions. The Great Barrier Reef acts as a gigantic natural breakwater, extending in some places from 120 to 150 miles from the coast. The channel separating the inner face from the mainland varies from 10 to 70 miles in width, and provides a sea passage of extraordinary beauty studded with islands. It has become known as Australia's Grand Canal and it forms a highway for shipping between the ports of the Orient and those of Eastern Australia.

On the weather side of the reefs the corals grow in rounded solid masses upon which even the breakers of the Pacific smash in vain. It is on the sheltered side that they grow and spread in greatest splendour. Every colour and shade is seen—blue, green, yellow and brown predominating. There are graceful staghorn corals branched like delicate trees, and some as delicate as the finest porcelain.

The waters around teem with seemingly innumerable species of fish. Amongst the coral itself live some of the most fantastic of all: orange and black angel-fish; fire-fish clothed in scarlet and with trailing filaments like flames; cow-fish encased in bone and with two little horns on their heads; flat puffers which blow themselves up into distended globes when taken out of the water. In the more open waters streak grey sharks with their attendant sucker-fish; long, swiftly moving king-fish—really mackerel grown to three feet in length; red and grey snappers; eel-like garfish with

sharply pointed snouts; and gigantic rays gliding just below the surface.

Many of the shells are extremely beautiful; black-lipped pearl shells, corries—yellow, pink, purple, blue; and "sea ears" iridescent as a pearl, glowing like opal. Living among them are less attractive forms of life, among them giant clams. These monsters lie two fathoms deep on the coral a few yards from the shore. They are anything up to five feet in length, the largest bivalves of this or any other age.

If an unwary foot is placed between the gaping shell the victim is caught in a trap from which he can be rescued only if someone comes with a crowbar and drives it deep into the clam to sever the huge muscle that holds the shell together. Divers have been caught and drowned by these creatures.

Worse still is the stonefish, variously known as "devil fish," "sea devil," and "sea scorpion." It has been called the most hideous of all living things. Unable to escape from an attacker because of its feeble powers as a swimmer, it relies on a more potent means of defence. Thirteen spines, sharply pointed, and as strong as steel are, at the slightest hint of danger, erected vertically along the back. Each of these has a pair of poison sacs which discharge venom into the victim. There have been cases of people stepping on these fish in bare feet or sand-shoes and suffering agonies. Lacerating pain and (if not death) three or four months of illness follow.

Book Review

Guppy Handbook by Dr. C. W. Emmens, published by T.F.H. Publications; distributed by T.F.H. (Gt. Britain) Ltd., 13 Nutley Lane, Reigate, Surrey, price £1.25.

THIS soft covered book contains 128 pages and is written by Dr. Cliff W. Emmens of Sydney University. It contains thirty-three black and white photographs, two drawings and sixty-one coloured photographs. The reproduction of the photographs is quite good but many of the photographs have appeared in print before. Equipment and foods shown in photographs belong to the "Miracle" range.

A lot has been written about guppies before, and there are a variety of books available on the subject, but Dr. Emmens gives a comprehensive coverage of the guppy. Some of the subjects with which he deals are: maintaining guppies, water, reproduction, food, growing on youngsters, genetics, diseases, colour testing, guppy types, standards, etc. There is an interesting section which deals with guppies which have won prizes at important shows, and it surveys such winning fishes over a ten year period.

This book would certainly be of interest and use to the serious guppy breeder. B.W.

Crossword Solution

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



from AQUARISTS' SOCIETIES

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

THE Merseyside A.S. annual show attracted nearly four hundred entries from all over the North West. Open Show results: Guppies: 1, Mr. and Mrs. Cobb (Belle Vue); 2, Mrs. J. Shackleton (Belle Vue); 3, B. W. Carter (Grimshaw). Mollies: 1, Mr. and Mrs. Brierley (Belle Vue); 2, Mr. and Mrs. Wilkes (Middleton). Platies: 1, Mr. and Mrs. Wilkes (Middleton); 2, Mr. and Mrs. Ormesher (Sandgrounders); 3, A. Tweedie (Merseyside). Swords: 1, Master L. Derbyshire (Runcorn); 2, M. Roberts (Valley); 3, N. R. Gibson (Huddersfield). Section winner: Mr. and Mrs. Wilkes. Small Barbs: 1, 2 and 3, F. Gregory (Oldham). Large Barbs: 1, J. Rowbottom (Hyde); 2, K. Parkes (Merseyside); 3, N. Petersen (Merseyside). Labras, Sharks and Flying Foxes: 1, N. Petersen (Merseyside); 2, Mr. and Mrs. King (Middleton); 3, Master D. Moorcroft (Merseyside). Loaches: 1, D. Walker (Runcorn); 2, J. Cobb (Merseyside); 3, I. King (Valley). Catfish Corydoras: 1, R. Davies (Belle Vue); 2, Mr. and Mrs. Cobb (Belle Vue); 3, Mr. and Mrs. Grimshaw (Sunnybrow). A.O.V. Catfish: 1, Mr. and Mrs. Bewick (Middleton); 2, Mrs. J. Shackleton (Belle Vue); 3, J. Faulkner (Merseyside). Section Winner: R. Davies. Anabantids: 1, N. Petersen (Merseyside); 2, Mr. and Mrs. Cobb (Belle Vue); 3, B. Cooper (Merseyside). Fighters: 1, Mr. and Mrs. Cobb (Belle Vue); 2, P. Shackleton (Belle Vue); 3, J. Whitley (Aireborough). Section Winner: N. Petersen. Dwarf Cichlids: 1 and 2, N. Petersen (Merseyside); 3, P. Rogers (Stretford). Large Cichlids: 1, Mr. and Mrs. Wilkes (Middleton); 2, J. Whitley (Aireborough); 3, P. Kenyon (Belle Vue). Angels: 1, Mr. and Mrs. Jackson (Belle Vue); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, Mr. and Mrs. Brierley (Belle Vue). Section Winner: Mr. and Mrs. Wilkes. Small Characins: 1, Mr. and Mrs. Wilkes (Middleton); 2, B. Wilson (Merseyside); 3, M. Tongue (Oldham). Large Characins: 1, K. Parkes (Merseyside); 2, J. Cobb (Merseyside); 3, J. Murray (Salford). Section Winner: Mr. and Mrs. Wilkes. Tooth Carps: 1, P. Knowles (Northwich); 2, Mr. and Mrs. Wilkes (Middleton); 3, J. Burton (Huddersfield). Rasboras and Danios: 1, D. Charlton (Merseyside); 2, Mr. and Mrs. Ormesher (Sandgrounders); 3, Mr. and Mrs. Ashton (Middleton). Breeders Egglayers: 1, J. Burton (Huddersfield); 2, and 3, Mr. and Mrs. Pearson (Sunnybrow). Breeders Livebearers: 1, N. R. Gibson (Huddersfield); 2, L. Thorne (Northwich); 3, B. W. Carter (Merseyside). Pairs Egglayers: 1, K. Parkes (Merseyside); 2, Mr. and Mrs. Ashton (Middleton); 3, A. G. Jackson (Belle Vue). Pairs Livebearers: 1, H. Bowman (Northwich); 2, Mr. and Mrs. Jessop (Huddersfield); 3, Mrs. Heap (Belle Vue). Section Winner: K. Parkes. A.O.V.: 1, K. Parkes (Merseyside); 2, T. Hunt (Salford); 3, H. Jones (Valley). Juniors: 1, D. Moorcroft (Merseyside); 2, Miss A. Davies (Belle Vue); 3, M. Dean (Ellesmere Port). Ladies: 1, Mrs. A. K. Jackson (Belle Vue); 2, Mrs. M. Riley (Ashton-under-Lyne); 3, Mrs. V. Parkes (Merseyside). Fancy Goldfish: 1 and 3, S. Walsh (Accrington); 2, C. Whitley (Accrington). A.O.V. Coldwater: 1, C. Whitley (Accrington); 2, S. Walsh (Accrington); 3, Mr. and Mrs. Brierley (Belle Vue). Common Goldfish: 1, D. Charlton (Merseyside); 2, Mr. and Mrs. Cobb

(Belle Vue); 3, Mr. and Mrs. Brierley (Belle Vue). Section Winner: S. Walsh. Special Awards: Merseyside Show Shield: 1, Merseyside; 2, Belle Vue; 3, Middleton. Harry Swanson Trophy (Merseyside Member: most points overall): N. Petersen. Trophy (Visiting Society Member: most points overall): Mr. and Mrs. Wilkes (Middleton). Best Fish in Show: Mr. and Mrs. Wilkes (Middleton).

THE last meeting of the Blackpool and Fylde A.S. commenced with an American slide show entitled "Do you want to be an Aquarist?" This was supplied by Mr. Hampson of Horsforth, Leeds. In the interval the raffle was drawn and the table show judged. It was in all a very entertaining meeting. New members will be most welcome. Meetings are on every second and fourth Monday at the King's Arms Hotel, Talbot Road, Blackpool.

Mid Sussex A.S. opened with a very well supported auction. This was followed by an open forum for the members and discussion provoked a number of very interesting views and opinions varying from breeding to the general physiology of fish. This month's table show for Killifish and A.O.V. was judged by Harry Armitage (F.B.S.S.). A.O.V.: 1, D. Soper; 2, Mrs. Tee; 3, D. Emery; 4, J. Walker; 5, B. Slade. Killifish: 1, 2 and 3, G. Leach; 4, P. Tee.

THE June meeting of the G.K.N. Pond and A.S. was well attended. The evening's entertainment was presented by the President T. Lowe to whom thanks are due for an interesting quiz evening. The results of the table shows were as follows: Catfish and Loach: 1 and 2, A. Wright; 3, A. Mawby. Rasboras: 1 and 2, T. Lowe. A.O.V.: 1 and 3, A. Wright; 2, K. Hall.

FROM Yate and District A.S. the death of Mr. D. Smith is reported after years of suffering. At the early June meeting Mr. M. E. Ridge of 46 Fairlyn Drive, Kingswood, Bristol, BS15 4PU, was appointed to succeed as reporting officer and he will be pleased to receive magazines and continue correspondence.

THE Leicester A.S. had a very interesting outing in June to the Power Station at Ratcliffe-on-Soar, where a film made by the Electricity Board called "Lonely Places" was shown. This was about activities which take place at many power stations in the study of water and life in the waters around the stations. Following this the visitors were allowed to look around the laboratories at the Scientific Services Centre and to see the experiments that were being carried out. There is also a wonderful nature trail there to which the public are allowed to go over in organised parties.

At the July meeting Mr. L. Dodge, of Birmingham, spoke about the many aspects of coldwater fish keeping. The results of the table show which was for large cichlids was as follows: 1, Master T. White; 2, G. Harris; 3, C. Cartwright. On Monday and Tuesday, 30th-31st August, the Society is staging a large exhibition at the City of Leicester Show, which will be held at the Abbey Park, Leicester. There will be a large tent in which Tropical and

Coldwater Furnished Aquariums will be set up and a large number of tanks will hold broods of fish which have been bred by members of the Society. There will also be an extensive pond layout, and visitors can be assured of a very enjoyable day out.

RESULTS of the Nottingham and District A.S. pond competition were as follows: 1, W. H. Selby; 2, A. Adcock; 3, C. Hill; 4, K. Binn; 5, G. Langton.

NAMES of the prizewinners at the Bishop Cleeve A.S. open show were as follows: Class 2: 1, N. Furness; 2 and 3, Mr. Carter. Class 3: 1, C. J. Rossiter; 2, M. F. Underwood; 3, C. F. Pass. Class 4: 1, B. Whitaker; 2, R. C. Peck; 3, A. Purnford. Class 5: 1, P. Greenwood; 2, C. F. Pass. Class 6: 1, C. F. Pass; 2, A. Purnford; 3, B. Walker. Class 7: 1, K. Atwood; 2, D. R. Walsh; 3, M. Butcher. Class 8: 1, Whitaker and Minchin; 2, Mrs. W. G. Eager; 3, N. W. Dooley. Class 9: 1, N. Furness; 2, A. K. Holmes; 3, B. Underwood. Class 10: 1 and 2, R. Hoare; 3, A. Purnford. Class 11: 1, R. Hoare; 2, B. Whitaker; 3, A. L. Duffurn. Class 12: 1 and 3, R. Hoare; 2, N. Furness. Class 13: 1, R. Hoare; 2, K. Atwood; 3, Mr. and Mrs. M. Williams. Class 14: 1 and 2, R. Hoare; 3, Mr. and Mrs. M. Williams. Class 15: 1 and 3, M. Strange; 2, C. J. Rossiter. Class 16: 1, Miss C. Bull; 2, J. Bull; 3, R. Snell. Class 17: 1, R. C. Peck; 2, Mrs. W. G. Eager; 3, R. Hoare. Class 18: 1, A. Purnford; 2, Mrs. H. Strange; 3, A. K. Holmes. Class 19: 2 and 3, Mr. and Mrs. M. Williams. Class 20: 1, K. Atwood; 2, G. A. Eager; 3, D. Cleaver. Class 21: 1 and 2, Whitaker and Massey; 3, P. Johnson. Class 22: 1 and 2, Mr. and Mrs. M. Williams; 3, W. G. Eager. Class 23: 1, D. B. Embling; 2, N. B. Binding; 3, N. W. Dooley. Class 24: 1, M. Sarnolds; 2, K. Atwood; 3, Mrs. W. G. Eager. Class 25: 1 and 3, M. Strange; 2, Mr. Carter. Class 26: 1, C. J. Rossiter; 2, N. Wood; 3, R. Smith. Class 27: 1 and 2, Ann Tattersfield; 3, Master M. Eager. Best Fish in Show was won by R. Whitley and P. Massey.

THE results of the Cambridge and District A.S. Annual Show were as follows: Best Fish of the Show: R. Ott, Giant Gouramin. A.V. Barb: 1, 2 and 3, R. Ott. A.V. Characin: 1, R. Ott; 2 and 3, R. Russell. A.V. Cichlid: 1, C. Smith; 2, F. Farrington; 3, F. Mann. A.V. Labyrinth: 1, R. Ott; 2 and 3, F. Farrington. A.V. Catfish: 1, F. Farrington; 2, C. Smith; 3, L. Georgeon. Danio: 1, 2 and 3, J. McMillan. Loach: 1, P. Sanderson. A.V. Egglayer: 1, A. Ott; 2, P. Hills; 3, F. Farrington. A.V. Pairs Tropical: 1, P. Martin; 2, T. Hall; 3, R. Ott. Guppy Male: 1, 2 and 3, T. Hall. Guppy Female: 1, T. Hall; 2, P. Martin; 3, P. Ward. Swords: 1, 2 and 3, L. Georgeon. Mollies: 1, L. Georgeon; 2 and 3, J. Startup. S.T. Goldfish (Single-tail): 1, D. Hiko; 2 and 3, R. Phillips. T.T. Goldfish (Twin-tail): 1, 2 and 3, C. Smith. A.O.S. Coldwater: 1, 2 and 3, R. Russell. Tropical (Egglayer Breeder): 1 and 3, P. Martin; 2, R. Ott. Tropical Livebearers Breed: 1, 2 and 3, T. Hall. Breeders Cup: 1, R. Ott; 2, J. Startup. Junior Miniature Cup: 1, C. Smith. Inter-Club Furnished Trophy: Cambridge.

AN interesting talk on "Plants in the Aquarium" was given by Mr. Foden at the June meeting of the Kington A.S. The results of the Table Show were: Fish of the Month (Characins): 1, Mr. Barker; 2, Master D. Mosley; 3, J. Mosley. A.O.V.: 1 and 3, D. Taylor; 2, Master D. Mosley. Novice A.O.V.: 1 and 2, Mr. Hart; 3, Mr. Bottomley. Junior A.V.: 1 and 3, Master P. Cuttings; 2, Master D. Mosley.

ENTRIES for the Loughborough A.S. Open Show were well above last year's figure. Results: Anabantids: 1, M. Farnon (Ladas); 2, Mr. and Mrs. Balcom (Bedworth); 3, Master C. Pratt (Bedworth). Small Barbs: 1, B. Smith (Lucas); 2, B. C. Roberts (Solihull); 3, G. Hartwell (Nuneaton). Large Barbs: 1, A. Gregory (Haden); 2, Witfield and Massey (Robery); 3, S. Hill (Alfreton). Killies: 1 and 3, B. and F. Hirst (Coventry); 2, D. Sewell (Sherwood). A.O.V. Cats and Loaches: 1 and Best in Show, A. Gregory (Haden); 2, A.

Gregory (Haden); 3, D. Sewell (Sherwood). A.O.V. Livebearers: 1, Mr. and Mrs. Balcom (Bedworth); 2, K. Jones (Bedworth); 3, Atwood and Williams (Rugby Select). A.O.V. Freshwater and Marines: 1, Witfield and Massey (Rugby); 2, T. Parry (Ladas); 3, S. Bloxham (Nuneaton). A.V. Goldwater: 1, Master Peart (Bedworth); 2, Mr. and Mrs. Deakin (Nuneaton); 3, Mr. Giles (Leicester). Shield for Most Points: Bedworth. Shield for Most Entries: Bedworth. Danios, Rasboras, W.C.M.M.: 1, R. Holmes (Derby Regent); 2, Mr. Clarke (Sherwood); 3, Atwood and Williams (Rugby). Egglayer Pairs: 1, D. Cleaver (Rugby); 2, Mr. Clarke (Sherwood); 3, J. Dermie (Dukeries). Labros: 1, R. Harris (Derby Regent); 2, J. A. Clayton (Lucas); 3, R. Tedds (Bedworth). Guppies: 1, R. Holmes (Derby Regent); 2, Atwood and Williams (Rugby); 3, R. Harlow (Derby Regent). Corydoras: 1, D. Sewell (Sherwood); 2, A. Willis (Haden); 3, Atwood and Williams (Rugby). Livebearer (Pairs): 1, J. Igoe (Sherwood); 2, Mr. and Mrs. Paget (Bedworth); 3, Mr. and Mrs. Deakin (Nuneaton). Breeders (Livebearers): 1, Mr. and Mrs. Simpson (Bedworth); 2 and 3, K. Jones (Bedworth). Breeders (Egglayer): 1 and 3, B. and F. Hirst (Coventry); 2, J. Dermie (Dukeries). Small Characins: 1, B. and F. Hirst (Coventry); 2, B. Smith (Lucas); 3, A. Gregory (Haden). Large Characins: 1, Atwood and Williams (Rugby); 2, R. Tedds (Bedworth); 3, B. and F. Hirst (Coventry). Small Cichlids: 1, D. Sewell (Sherwood); 2, Mr. Hubert; 3, A. Thomas (Bedworth). Large Cichlids: 1, A. Gregory (Haden); 2, R. Tedds (Bedworth); 3, Mrs. M. Igoe (Sherwood).

THE inter-society contest between Alfreton A.S. and Sherwood A.S. proved most enjoyable. A. Deakin judged five classes and the best in the show was Miss M. Lindley (Dwarf Cichlids). 69 fish were bench by members of both societies. Results: Characins: 1, M. Allsop; 2, B. Hickling; 3, D. Wright. Barbs: 1, S. Hill; 2, D. Sewell; 3, J. Wright. Cichlids: 1 and 2, Miss M. Lindley; 3, D. Sewell. Killifish: 1, S. Hill; 2, J. Igoe; 3, S. Dooley. Sharks: 1, D. Sewell; 2, M. Shill; 3, K. Faulkes. Points were: Alfreton 22, Sherwood 8. Alfreton hold their meetings on the first and fourth Friday in the month when film shows and talks of interest to fishkeepers are held. All newcomers are made most welcome. Please contact B. Hickling, 15 Meadow Close, Eastwood, Nottingham.

THE winners at the Thorne A.S. annual show were as follows: Livebearers: 1, B. Stabler (Hull); 2, K. Ellis (Swillington); 3, J. Jones (Grantham). Characins: 1, Mr. Sullivan (Four Star); 2 and 3, Mr. Goodridge (Grantham). Barbs: 1, Mr. Batch (Hull); 2, Mr. Carey (York); 3, M. E. Donaldson (York). Catfish and Loach: 1, P. Shipley (Selby); 2, Mr. Booth (York); 3, B. Stabler (Hull). Anabantids: 1, N. Jackson (Workop); 2, Mr. Whitlock (Tadcaster); 3, Mr. Scarr (Selby). Fighters: 1, T. R. Rhodes (Scunthorpe); 2, Mr. Hunsar (Castleford); 3, Mr. Whitlock (Tadcaster). Cichlids: 1, F. Martin (Alfreton); 2, H. Kuhn (Lincoln); 3, D. Jones (Rotherham). Egglayer Tooth Carps: 1 and 3, Mrs. Greenhall (Tadcaster); 2, Mr. and Mrs. Lofthouse (Huddersfield). Rasbora, Danios, Minnows: 1, Mr. Bach (Hull); 2, M. Allsop (Alfreton); 3, T. Douglas (Hull). A.O.V.: 1, Mr. Sullivan (Four Star); 2, Mr. Scarr (Selby); 3, Mr. Turner (Hull). Pairs (Livebearers): 1, B. Stabler (Hull); 2, S. Podgson (Scunthorpe); 3, Mr. Andrews (Hull). Pairs (Egglayers): 1, Mr. and Mrs. Dearden (Grimsby); 2, Mr. Carey (York); 3, F. Martin (Alfreton). Breeders (Livebearers): 1, M. Andrews (Hull); 2, Mr. Moore (Doncaster); 3, Mr. and Mrs. Dearden (Alfreton). Breeders (Egglayers): 1, Mr. and Mrs. Wells (Doncaster); 2, A. Cochran (Swillington); 3, M. Allsop (Alfreton). Coldwater: 1, Mr. Asquith (Castleford); 2, Mr. and Mrs. Toyn (Sheffield); 3, John and Stella (Sheffield). Best Fish in Show: F. Martin (Alfreton).

THE Coventry Pool and A.S. Open Show attracted 452 entries. The quality of the fish on the bench was very high with 5 M.A.A.S. Gold Pins (80 points and over) being awarded. The club with the most entries and also the club gaining the most points was Rugby Select A.S. and the individual with the most entries and also the most points were Messrs. Atwood and Williams from Rugby S.A.S. Results: Male Veiltail Guppy: 1, 2 and 4, S. Arkwell (Nuneaton); 3, N. Furness (Rugby). A.O.V. Male Guppy: 1, 2 and 4, T. Fox; 3, D. Easingwood (Coventry). A.V. Female Guppy: 1, Atwood and Williams (Rugby); 2, S. Dean (T.K.A.G.); 3, Mr. and Mrs. Deakin (Nuneaton); 4, G. Arkwell (Nuneaton). Mollies: 1, Mr. and Mrs. Deakin (Nuneaton); 2, A. Cashmore (Staffs.); 3, Mr. and Mrs. Balcombe (Bedworth); 4, T. Scott (Coventry). A.O.V. Livebearer: 1, Atwood and Williams (Rugby); 2, Mr. Street (Loughborough); 3, Mr. and Mrs. Balcombe (Bedworth); 4, Mr. and Mrs. S. Hall (Nuneaton). Danios and W.C.M.M.: 1, L. J. Hooper (T.P.A.S.); 2, Mrs. I. Whitfield (Rugby); 3, R. Tedds (Bedworth); 4, G. Turner (Bink Bullows). Rasboras: 1, Mrs. S. Leigh (Nuneaton); 2, Mrs. I. Whitfield (Rugby); 3, D. Cleaver (Rugby); 4, Mr. Parry (Loughborough). Small Barbs: 1, B. Smith; 2, Atwood and Williams (Rugby); 3, D. Easingwood (Coventry); 4, Mr. and Mrs. Roberts (Lucas). Large Barbs: 1 and 3, Mr. and Mrs. Bird (Leamington); 2 and 4, Whitfield and Massey (Rugby). Dwarf Cichlids: 1, R. Woodward (Rugby); 2, Mr. Gault (Nuneaton); 3, K. L. Brown (M.T.A.S.); 4, R. Trippas (M.T.A.S.). Angelfish: 1, S. Dean (T.K.A.G.); 2, Mr. and Mrs. Carter (Bedworth); 3, F. Underwood (Leamington); 4, M. Porter (Nuneaton). A.O.V. Cichlids: 1, S. Dean (T.K.A.G.); 2 and 3, R. Hough (M.T.A.S.); 4, Atwood and Williams (Rugby). Small Characins: 1, L. W. Hooper; 2, Mr. Parry (Loughborough); 3, Mr. Delaney (Loughborough); 4, G. Turner (Bink Bullows). Large Characins: 1, F. and J. Pearson; 2, Atwood and Williams (Rugby); 3, Mrs. P. Roberts; 4, Mr. Delaney (Loughborough). Killifish: 1 and 4, A. Cashmore (Staffs.); 2, Mr. Dowall; 3, N. Highfield and Devison (B.K.A.). Siamese Fighters: 1, D. Beard (Leamington); 2, 3 and 4, B. and F. Hirst (Coventry). A.O.V. Anabantid: 1, S. Bloxham (Nuneaton); 2, J. A. Clayton; 3 and 4, E. Sheehy (Coventry). Corydoras and Brochis: 1, Atwood and Williams (Rugby); 2, R. Shakespeare (Bedworth); 3, R. Cairns (Deventry); 4, Mr. and Mrs. Kemp (Nuneaton). A.O.V. Catfish: 1, Mrs. J. Woodward (Rugby); 2, Mr. Delaney (Loughborough); 3, T. Scott (Coventry); 4, D. Beard (Leamington). Loaches: 1, Mr. and Mrs. Aucott (Nuneaton); 2, G. Turner (Bink Bullows); 3 and 4, Mr. and Mrs. G. H. Roberts (Lucas). Pairs (Livebearers): 1, Miss S. Bird (Leamington); 2, Mr. and Mrs. S. Hall (Nuneaton); 3, Master P. Bird (Leamington); 4, K. L. Brown (M.T.A.S.). Pairs (Egglayers): 1, D. Cleaver (Rugby); 2, R. Shakespeare (Bedworth); 3, Mr. and Mrs. R. Mellor (Coventry); 4, R. J. Hough (M.T.A.S.). Livebearer (Breeds): 1, D. Easingwood (Coventry); 2, Mr. and Mrs. Carter (Bedworth); 3, B. and F. Hirst (Coventry); 4, Master Dawes (Wednesbury). Labros: 1, Mr. and Mrs. R. Muller (Coventry); 2, K. L. Brown (M.T.A.S.); 3, B. and F. Hirst (Coventry); 4, R. Jeffries (Coventry). A.O.V. Tropical: 1, Whitfield and Massey (Rugby); 2, S. Bloxham (Nuneaton); 3, R. Woodward (Rugby); 4, Atwood and Williams (Rugby). Shubunkins: 1, C. C. Cartwright (Leicester); 2, 3 and 4, B. Beonfield (Coventry). Common Goldfish: 1 and 2, M. Shilton (Atherstone); 3, E. Wilkins (Coventry); 4, B. Bromfield (Coventry). A.O.V. Fancy Goldfish: 1 and 3, Mr. and Mrs. Deakin (Nuneaton); 2, P. Harlow (Coventry); 4, J. Wyleman (Coventry). British Native: 1, R. Woodward (Rugby); 2, D. Beard (Leamington); 3, B. Bromfield (Coventry); 4, C. Shilton (Atherstone). Miniature Furnished Jar: 1, Mr. and Mrs. R. Muller (Coventry); 2, A. Hardy-King (Coventry); 3, D. W. Harding (Leicester); 4, C. J. Grant (Coventry). Best Fish in Show: Winner of the Society Rose Bowl and Aquarist Gold Pin was a Lemon-finned

Barb owned by Mr. and Mrs. Bird of Leamington and D.A.S. Best Egglayer Brood: Winner of Rosedale Plaque was D. Easingwood of Coventry P. & A.S. Best Siamese Fighter: Winner of S. O. Memorial Trophy was D. Beard of Leamington.

AT the monthly meeting of the Central Sussex Section of the Fancy Guppy Association members were shown, by the chairman, D. Soper and the secretary, R. Elmes, how to judge their fish and what shape class to enter them in at the monthly table shows. In this month's table show the first prize winners were: Mr. and Mrs. Elmes (Breeder Pairs); A. Temple (Top Sword, Superb, Female); Mrs. Stringer (Long Dorsal Veil); D. Soper (Delis, Fan, Wedge Female and Natural Tail); D. Ransom (Experimental Male); Mrs. Stringer (Short Dorsal Veil, Colour Female, Roundtail Female, Colour Male); Miss J. McNab (Junior Male); Miss B. Soper (Junior Female); Mr. and Mrs. Elmes (Breeder Females); R. Elmes (Junior Breeders). Any further information on the Section may be obtained from the secretary, R. Elmes, 24 Sunview Avenue, Peacehaven 2534.

THERE were 367 entries at the Mount Pleasant A.S. Open Show, which was a great success. Results: Guppies: 1, L. and N. Stobbard (M.P.A.S.); 2, M. Gray (M.P.A.S.); 3, T. Unsworth (Stockton). Mollies: 1, D. Home (M.P.A.S.); 2, T. Unsworth (Stockton); 3, Mr. and Mrs. Lofthouse (Huddersfield). Swordtails: 1, Mr. and Mrs. Lofthouse (Huddersfield); 2, K. Shaw (Huddersfield); 3, B. Pickard (M.P.A.S.). Platies: 1, Mr. Laidlaw (Newcastle Guppy and Livebearer Ass.); 2, J. Wood (M.P.A.S.); 3, Mr. Tait (Peterlee). Small Barbs: 1, Mr. and Mrs. Atwell (Billingham); 2, Mr. Newsome (Cleveland); 3, J. E. Whiteley (Aireborough). Large Barbs: 1, N. R. Gibson (Huddersfield); 2, Mr. and Mrs. Pattinson (Independent); 3, Mr. Caring (Peterlee). Small Characins: 1, H. Greenacre (M.P.A.S.); 2, Mr. and Mrs. Pattinson (Independent); 3, Mr. Cutting (Peterlee). Large Characins: 1, A. Duncanson (Priory); 2, J. A. Whiteley (Aireborough); 3, Mr. Davison (Independent). Dwarf Cichlids: 1, D. Home (M.P.A.S.); 2, C. Simpson (Independent); 3, R. Atherton (M.P.A.S.). Large Cichlids: 1, Mr. Neworthy (Peterlee); 2, J. A. Whiteley (Aireborough); 3, Mr. Burton (Borner). A.V. Fighter: 1, Mr. and Mrs. Low (Cleveland); 2, Mr. and Mrs. Leighton (Houghton); 3, R. Atherton (M.P.A.S.). A.V. Labyrinth: 1, Mr. and Mrs. Pattinson (Independent); 2, Mr. Tait (Peterlee); 3, A. Atkinson (M.P.A.S.). Sharks, Labros, Flying Foxes: 1, L. Drummond (Washington); 2, R. Clark (Independent); 3, J. A. Whiteley (Aireborough). Rasbora and Danio: 1 and 3, Mr. and Mrs. Atwell (Billingham); 2, Mr. and Mrs. Brown (Billingham). E.L.T.C.: 1, 2 and 3, Mr. and Mrs. Lofthouse (Huddersfield). Catfish, Loach: 1, Mr. Sams (Washington); 2, Mr. Burds (M.P.A.S.); 3, Mr. and Mrs. Low (Cleveland). A.V. Goldwater: 1, C. W. Gregory (Jarrow); 2 and 3, Miss M. Greenacre (M.P.A.S.). Breeders Class (Livebearer): 1, C. Thomas (Independent); N. R. Gibson (Huddersfield); 3, G. Reid (Edinburgh). Breeders Class (Egglayer): 1, Mr. Tait (Peterlee); 2, W. A. Jackson (M.P.A.S.); 3, A. Scott (Edinburgh). Breeding Pairs (Livebearer): 1, I. and N. Stobbard (Edinburgh); 2, C. Thomas (Independent); 3, N. R. Gibson (Huddersfield). Breeding Pairs (Egglayer): 1, J. A. Whiteley (Aireborough); 2, Mr. Neworthy (Peterlee); 3, Mr. Burton (Borner). Furnished Jar: 1, R. Shanks (M.P.A.S.); 2, J. G. Robertson

BE SAFE BE SURE  **Hillside Aquatics London N12**

(M.P.A.S.) 3, Mr. Apperley (Houghton). A.O.V. Tropical: 1, Mr. Burton (Borlase); 2, Mr. Neworthy (Peterslee); 3, L. Gardner (Houghton). Junior Class Any Variety: 1 and 2, E. Sowerby (Newcastle Guppy Club); 3, S. Atkinson (M.P.A.S.). Best Fish in Show: A. Duncanson (Priory).

RESULTS of the Spring Assembly of The Federation of Guppy Breeders Societies, held in Leicester, were as follows: Cofer Tails: 1, 2 and 3, A. Wilkinson (Three Counties); Spear Tail: 1, R. Cox (Three Counties); Bottom Swords: 1, M. Scott (East Midlands); Dove Tail: 1, A. Baker (East Midlands); Long Dorsal Veil: 1 and 2, C. Pike (Three Counties); Metropolitan Female: 1, T. Erry (Three Counties); Grey Female: 1, A. Wilkinson (Three Counties); Scarf Tails: 1 and 2, A. Baker (East Midlands); Original Veils: 1 and 2, C. Pike (Three Counties); Double Swords: 1 and 3, A. Wilkinson (Three Counties); 2, M. Scott (East Midlands); Lyre Tail: 1, 2 and 3, A. Wilkinson (Three Counties); Short Dorsal Veil: 1, T. Pitt (East Midlands); 2, J. Carter (East Midlands); Superba Female: 1 and 2, C. Pike (Three Counties); Gold Female: 1 and 2, A. Baker (East Midlands); Breeders (Males): 1, A. Wilkinson (Three Counties); 2 and 3, T. Erry (Three Counties); Breeders (Females): 1, A. Baker (East Midlands); 2, N. Scott (East Midlands); Best Fish in Show: A. Wilkinson, Cofer Tail. Best Opposite Sex: A. Wilkinson, Grey Female. The Inter-Section Shield was won by the Three Counties section with 285 points.

THE results of the Priory A.S. Open Show were as follows: Guppies: 1, Mr. Grey; 2, Mr. Stobart; 3, Mr. Jones. Molliés: 1, Mr. Worrall; 2, Mr. Hunt; 3, Mr. Reid. Swordtails: 1, Mr. Southern; 2, Mr. Duncanson; 3, Mr. Pee. Platies: 1, Mr. Tait; 2, Mr. Worrall; 3, Mr. Walker. Barbs (Small): 1 and 2, Mr. Atwell; 3, Mr. Robertson. Barbs (Large): 1, Mr. Ambrass; 2 and 3, Mr. Ford. Characins (Small): 1 and 2, Mr. Greenacre; 3, Mr. Tait. Characins (Large): 1, 2 and 3, Mr. Duncanson. Dwarf Cichlids: 1, Mr. Locke; 2 and 3, Mr. McCrystal. A.O.V. Cichlid: 1, Mr. Donnelly; 2, Mr. Tompson; 3, Mr. Varty. A.V. Fighters: 1 and 3, Mr. Leighton; 2, Mr. Turnbull. A.V. Sharks: 1, Mr. Stewart; 2, Mr. Varty; 3, Mr. Hellens. Rasbora and Danio: 1 and 2, Mr. Atwell; 3, Mr. Varty. B.L.T.C.: 1 and 2, Mr. Johnson; 3, Mr. Hollis. Corydoras: 1, Mr. Ford; 2, Mr. Tait; 3, Mr. Atwell. Catfish and Loach: 1, Mr. Pee; 2, Mr. Lisle; 3, Mr. Lothian. A.V. Coldwater: 1, 2 and 3, Mr. Anderson. Breeding Pairs (Egglayers): 1, Mr. Neworthy; 2, Mr. Ford; 3, Mr. Tait. Breeding Pairs (Livebearer): 1, Mr. Tait; 2 and 3, Mr. Stobart. Breeders Class (Egglayers): 1, Mrs. Johnston; 2, Mr. Southern; 3, Mr. Ford. Breeders Class (Livebearers): 1, Mr. Turnbull; 2, Mr. Southern; 3, Mr. Locke. A.O.V.: 1 and 2, Mr. Drummond; 3, Mrs. Johnston. Children's Tropical: 1, Mr. Milson; 2 and 3, Mr. Stobart. Children's Coldwater: 1, Miss L. Anderson; 2, Mr. Greenacre; 3, Miss J. Simpson. Furnished Aquarium: 1, Mr. Fraser. Furnished Jars: 1, Mr. Robertson; 2, Mr. Duncanson; 3, Mr. Bailey. Labyrinths: 1, Mr. Milson; 2 and 3, Mr. Tait. Best Fish in Show was won by L. Drummond with a Flying Fox.

MEMBERS of the Ealing and District A.S. recently heard an excellent talk on Characins by Peter Bird of Mid-Herts A.S. Early in July the Chairman, Dick Mills, gave a talk on fish he had bred, and a later meeting was devoted

to Club Activity—making all glass tanks, experimenting with perspex and the Club badge to try and make some trophies. All this was geared to the preparations for the Society's Open Show which is to be held on the 3rd October. Schedules for the Show will soon be available from the Show Secretary, R. Sellers, 3a Lady Margaret Road, Southall, Middlesex. A feature of this year's Show will be a special class for Rift Valley Cichlids. A talk not to be missed in the near future is one on Fish Photography, by two exponents of the art in the Society, including a description of a specially designed all-glass photographing tank.

THE membership of the recently formed Mid-Kent A.S. is steadily increasing with a present membership of over forty, and with a full and interesting programme it is hoped to gain many more members. The June meetings were very successful with a lecture on breeding Beta splendens by club secretary, D. Simpson, who has a good reputation on breeding and showing this species. A slide show on identification and location of tropical fishes was included in the second meeting.

THE Hull A.S. entertained York in yet another round for the Inganells Cup. The final score was Hull 42, York 59. The results were as follows: Livebearers: 1, B. Stabler (Hull); 2, P. Booth (York); 3, T. Douglas (Hull). Barbs: 1 and 2, Mr. Carey (York); 3, Mr. Donaldson (York). Characins: 1, Mr. Leadley (York); 2, Mr. Carey (York); 3, A. S. Allison (York). Rasbora, Danio and Minnow: 1, T. Douglas (Hull); 2 and 3, Mr. Swallow (York). Fighters: 1, Mr. Anthony (York); 2 and 3, A. Douglas (Hull). Cichlids: 1, A. S. Allison (York); 2, Mr. Carey (York); 3, Mr. Stevenson (York). Anabantids: 1, Mr. Collingwood (York); 2, Mr. Harris (York); 3, Mr. Singlewood (York). Cats and Loaches: 1, Master Nichols (Hull); 2, Mr. Sykes (Hull); 3, Mr. Stevenson (York). Egg-laying Toothcarps: 1, Mr. Carey (York); 2, Mr. T. Douglas (Hull); 3, Mr. Turner (York). A.O.V. Sharks and Foxes: 1 and 3, Mr. Leadley (York); 2, Mr. Turner (Hull). Breeders (Egglayers): 1, A. Douglas (Hull); 2, Mrs. Carey (York); 3, Mr. Simpson (York). Breeders Livebearers: 1, T. Douglas (Hull); 2, Mr. Simpson (York); 3, Mr. Donaldson (York). Pairs (Egglayers): 1, Mr. Leadley (York); 2, Mr. Allison (York); 3, Mr. Hollingsworth (Hull). Pairs (Livebearers): 1, B. Stabler (Hull); 2, Mr. Turner (Hull); 3, Mr. Nichols (Hull). Coldwater: 1 and 3, Mr. Collingwood (Hull); 2, Mr. Booth (York). Best Fish in Show: Mr. Leadley (York).

RECENTLY the Gloucester Fishkeeping and Social Club members received a talk by Mr. and Mrs. Churchill of Frampton Cotterell, who are active members of the British Killifish Association. Their talk which was illustrated by colour slides showed an interesting insight into this specialised aspect of fishkeeping. Mr. Churchill also brought with him some Killifish eggs which were distributed to members. Members and their friends also participated in a coach trip to Beaulieu Manor in Hampshire and Bournemouth, which included a visit to Compton Acres Tropical Gardens. The guest speaker at the June meeting was C. Partridge of Redditch, who gave a talk on "Plans for the Aquarium." The chairman, R. E. H. Moulder thanked Mr. Partridge for one of the most interesting talks he had heard and remarked how well he had obtained the participation of the audience during his lecture. Mr. Partridge brought along several varieties of tropical and coldwater plants which he used in conjunction with his address and these were then disposed of to the members present. He kindly consented to judge the Fish on Show and this resulted in Messrs. J. Adlam, L. Hopton and P. Tandy taking away prize cards for the Best Fish on Show.

The Secretary reported to the meeting that this would be the last meeting of the Club to be held on a Monday as circumstances had warranted a change. Commencing in July, meetings of the club would still be held at the

Longleaves Pavilion but on the last Wednesday of every month. Anyone interested in the activities of the Club is cordially invited to attend any of the club's meetings and a welcome is extended to all at the club's stand in the exhibition tent at the forthcoming Gloucester Carnival when aquariums of coldwater, tropical and Exotic marine fish will be on display.

RESULTS of the Llantwit Major A.S. (F.B.A.S.) open show which attracted 384 entries were as follows: Furnished Aquarium: 1, S. Nelson; 2, R. Bishop; 3, J. Thomson; 4, R. Gordon. Junior Furnished Aquarium: 1, J. Edwards. Barbs: 1, C. Russell; 2, T. Fowler; 3, G. Eager; 4, D. James. Characins: 1, Mr. and Mrs. Williams; 2, A. Pumford; 3, D. Noble; 4, C. Box. H. & H.C.: 1, K. Williams; 2, C. Webb; 3, C. Harding; 4, A. Ibbertson. Cichlids: 1, P. Player; 2, D. Noble; 3, D. Richards; 4, R. Dawes. Angels: First and Best Fish, S. Ireland; 2, Mr. Price; 3, J. Edwards; 4, A. Llewellyn. A.O.V. Cichlids: 1, S. Daniels; 2, Mr. and Mrs. Williams; 3, D. Jones. Labyrinths: 1, A. Ibbertson; 2, J. J. Edwards; 3, W. Sargent; 4, R. Young. Siamese Fighters: 1, G. Eager; 2, R. Eager; 3, S. Daniels; 4, C. King. Egg-laying Toothcarps: 1, J. Church; 2, Mrs. G. Eager; 3, R. Eager. Tropical Catfish: 1, Mr. Rice; 2 and 3, D. Phippen; 4, S. Daniels. Corydoras and Brochis: 1, S. Daniels; 2, Mr. and Mrs. Williams; 3, Helen Jones; 4, Mrs. Hurro. Junior Tropical Egglayers: 1, 3 and 4, K. Williams; 2, D. Player. Junior Tropical Livebearers: 1, T. Hayward; 2, D. Player; 3, Miss D. Pass; 4, J. Edwards. Rasbora: 1, C. Harding; 2, A. Ibbertson; 3, C. Harding; 4, R. S. Wigg. Danio and W.C.M.M.: 1, A. Pumford; 2, A. Buckley; 3, A. Ibbertson; 4, W. Lambrook. Loach: 1, C. Box; 2, G. Eager; 3, K. Williams; 4, D. Jones. A.O.V. Tropical Egglayers: 1, P. Player; 2, A. Llewellyn; 3 and 4, J. Thomson. Pairs of fish: 1 and 2, Mr. and Mrs. Williams; 3, A. Ibbertson; 4, G. Eager. Male Guppy: 1, J. Gill; 2, P. Player; 3, R. S. Wigg; 4, J. Thomson. Female Guppy: 1 and 3, C. Pass; 2, R. S. Wigg; 4, J. Edwards. Swordtail: 1, C. Russell; 2, C. Pass; 3, A. C. Pass; 4, C. King. Platy: 1, W. Short; 2, J. Thomson; 3, S. Daniels; 4, W. Llewellyn. Molly: 1, D. Sullivan; 2, M. John; 3, J. Derrick; 4, C. Croft. Breeders (Egglayers): 1, C. Russell; 2, D. Noble; 3, C. King; 4, A. Trotman. Breeders (Livebearers): 1 and 2, P. Player; 3 and 4, R. S. Wigg.

THE Glossop A.S. show results were as follows: Guppy: 1, D. Harvey (Independent); 2, A. Bull (Derby); 3, J. Faulker (Merseyside). Swordtails: 1 and 3, R. Gibson (Huddersfield); 2, K. Shaw (Huddersfield). Molliés: 1, M. Whitlam (Sunderthorpe); 2, R. Tomkinson (Glossop); 3, Mrs. Grimshaw (Sunnybrow). Platies: 1, K. Callow (Belle Vue); 2, F. Mulla (Merseyside); 3, Mr. and Mrs. Ross (Belle Vue). Small Gouramis: 1, E. Birchwood (Oldham); 2, J. W. and A. K. Jackson (Belle Vue); 3, Mrs. Grimshaw (Sunnybrow). A.O.V. Gouramis: 1, L. Lindley (Salford); 2, F. Mulla (Merseyside); 3, Mr. and Mrs. Cobb (Belle Vue). Fighters: 1, J. R. Rhoades (Sunderthorpe); 2, M. Manson (Worksop); 3, J. S. Booth (North Staffs). Small Barbs: 1, K. and A. Johnson (Aston); 2, J. and B. Dawson (Oswam); 3, Mr. Crockett (Glossop). Large Barbs: 1, A. Bowling (Sunnybrow); 2, J. Dawson (Oswam); 3, L. Rowbottom (Hyde). Dwarf Cichlids: 1, Mrs. Grimshaw (Sunnybrow); 2, I. Higginbottom (Sheffield); 3, H. Williams (Oldham). A.O.V. Cichlid: 1 and 3, Mr. and Mrs. Wills (Middleton); 2, Mr. and Mrs. Cobb (Belle Vue). Angels: 1, J. W. and A. K. Jackson (Belle Vue); 2, Mr. and Mrs. J. Breasley (Belle Vue); 3, Mrs. M. Igoe (Sherwood). Small Characins: 1 and 3, J. W. and A. K. Jackson (Belle Vue); 2, K. Callow (Belle Vue). Large Characins: 1, K. Parkes (Merseyside); 2, Mr. and Mrs. Lomas (Merseyside); 3, D. Harvey (Independent). Killifish: 1 and 2, Mr. Forrester (B.K.A.); 3, Mr. and Mrs. A. Johnson (Salford). Corydoras Catfish: 1, R. Davies (Belle Vue); 2, Mrs. Grimshaw (Sunnybrow); 3, A. Bowling (Sunnybrow). A.O.V. Catfish: 1, L. Kaye

holamid Proved
for twelve Years
Hillside Aquatics London N12

(Top Ten); 2 and 3, R. Antonid (Northwich).
 Loaches: 1, G. Stewart (Hyde); 2, P. Mulla
 (Merseyside); 3, Master M. Igoe (Sherwood).
 Sharks and Flying Foxes: 1, M. Whitlam
 (Scunthorpe); 2, R. and A. Johnson (Ashton);
 3, Mr. and Mrs. Ashton (Middleton).
 Rasboras, Minnows: 1, J. and R. Dawson
 (Oram); 2, Mr. and Mrs. Heap (Belle Vue);
 3, Mr. and Mrs. Lomas (Merseyside).
 A.O.V. Tropical: 1, Mr. and Mrs. Heap (Belle Vue); 2,
 K. Parkes (Merseyside); 3, Mr. and Mrs. Lewis
 (Merseyside). Fancy Goldfish: 1, Master A.
 Kaye (Top Ten); 2, J. S. Hall (Aireborough);
 3, P. and J. Taylor (Heywood). A.O.V.
 Goldfish: 1, Mr. and Mrs. Toyne (Sheffield);
 2, Mr. and Mrs. Breatley (Belle Vue); 3, Mr.
 and Mrs. Carr (Sheffield). A.O.V. Goldwater:
 1 and 2, J. S. Hall (Aireborough); 3, Mr. and
 Mrs. Cobb (Belle Vue). Mini Jars: 1, 2 and 3,
 Mr. and Mrs. Cobb (Belle Vue). Pairs Egg-
 layers: 1, J. R. Rhodes (Scunthorpe); 2, Mrs.
 Grimshaw (Sunnybrow); 3, I. Rowbottom
 (Hyde). Pairs Livebearers: 1, J. Igoe (Sher-
 wood); 2, G. Stewart (Hyde); 3, N. R. Gibson
 (Huddersfield). Breeders Egg-layers: 1, J.
 Higgins (Oldham); 2 and 3, J. Burton (Hudders-
 field). Breeders Livebearers: 1, J. and B.
 Dawson (Oram); 2, J. Igoe (Sherwood); 3, A.
 Bowling (Sunnybrow). Best Fish in Show:
 K. Parkes (Merseyside).

FOLLOWING the recent annual general meeting the office bearers of the Clyde A.C. are as follows: President: C. Murray; Vice-President: D. Fowler; Secretary: W. Logan, 51 Glenside Drive, Rutherglen, Glasgow. Phone: 041-641 4159. Treasurer: R. Thomson; Show Manager: W. Mann.

Meetings: First Monday of each month, in the Town Hall, Rutherglen, Glasgow. All newcomers, novice or otherwise, and visitors especially welcome.

AT the first annual open show of the Billingham A.S. 296 entries were received. The Best Fish in Show award went to Mr. Drummond with a Flying Fox, and the Best Exhibitor Shield was won by Mr. and Mrs. Atwell of Billingham Society.

Details of results as follows: Guppies: 1, Mr. Milner (S.T.A.S.); 2, Mr. Doig (N.A.A.S.); 3, Mr. Wood (M.P.A.S.). Platies: 1, Mr. Cook (Ind.); 2, Mr. Cuyll (B.A.S.); 3, Mr. Wood (M.P.A.S.). Mollies: 1, Mr. Steel (H.P.A.S.); 2, Mr. Nesworthy (P.A.S.); 3, Mr. Unsworth (S.T.A.S.). Swordtails: 1, Mr. Pickard (M.P.A.S.); 2, Mr. Hickford (S.T.A.S.); 3, Mr. Welford (C.A.S.). Characins (large): 1, Mr. Frank (H.P.A.S.); 2, Mr. Young (B.A.S.); 3, Mr. Walker (H.A.S.). Characins (small): 1 and 2, Mr. Cook (Ind.); 3, Mr. and Mrs. Patinson (Ind.). Cichlids (large): 1, Mr. and Mrs. Binright (H.A.S.); 2, Mr. Pascock (S.T.A.S.); 3, Mr. Scotheron (H.A.S.). Cichlids (small): 1, Mr. Simpson (Ind.); 2, Mr. Hoag (M.P.A.S.); 3, Mr. Brown (M.P.A.S.). Angels: 1, Mr. Frank (H.P.A.S.); 2, Mr. and Mrs. Binright (H.A.S.); 3, Mr. Marshall (B.A.S.). Barbs (large): 1, 2 and 3, Mr. Patterson (B.A.S.). Barbs (small): 1, 2 and 3, Mr. and Mrs. Atwell (B.A.S.). E.L.T.C. Rasboras, Danios and Minnows: 1, Mr. and Mrs. Atwell (B.A.S.); 2, Mr. Stevens (S.T.A.S.); 3, Mr. and Mrs. Brown (B.A.S.). Anabantids: 1 and 2, Mr. and Mrs. Patinson (Ind.); 3, Mr. Nesworthy (P.A.S.). Fighters: 1 and 2, Mr. and Mrs. Low (C.A.S.); 3, Mr. and Mrs. Leighton (H.A.S.). Catfish: 1 and 3, Mr. and Mrs. Low (C.A.S.); 2, Mr. Cuyll (B.A.S.). A.O.V.: 1, Mr. Drummond (W.A.S.); 2, Mr. and Mrs. Patinson (Ind.); 3, Mr. Nesworthy (P.A.S.). Sharks and Botias: 1, Mr. Greenfield (S.T.A.S.); 2, Mr. Adam (H.A.S.); 3, Mr. Hillons (H.A.S.). Goldwater: 1 and 2, Mr. Hickford (S.T.A.S.); 3, Mr. Welford (C.A.S.). Furnished Jars: 1, Mr. Shanks (M.P.A.S.); 2, Mr. Ardman (C.A.S.); 3, Mr. Patterson (B.A.S.). Breeders: 1 and 3, Mr. Walker (S.T.A.S.); 2, Mr. Scotheron (P.A.S.). Breeding Pairs (livebearers): 1, Mr. Thomas (Ind.); 2, Miss Hutton (B.A.S.); 3, Mr. Cook (P.A.S.). Breeders (egg-layers): 1, Mr. Nesworthy

(P.A.S.); 2, Mr. Hickford (S.T.A.S.); 3, Mr. Walker (S.T.A.S.). Breeders (livebearers): 1, Mr. Thomas (Ind.); 2, Mr. Walker (S.T.A.S.); 3, Mr. Wood (M.P.A.S.).

THE reputation that Boston A.S. has so proudly earned of having one of the best open shows in the East Midlands was enhanced at the third open show recently when 373 exhibits were benched. Judges were Mr. Lindley (Alfreton) and Mr. Inman (Nottingham).

Best Fish in Show trophy and the Aquarist Gold Pin was awarded to David Sewell, of Sherwood A.S. whose fine Flag Tailed Characin also won the Best Tropical Fish award. In the coldwater section J. S. Hall of Aireborough A.S. won every award except one, including the trophy for Best Coldwater Fish in Show. Full results were: Guppies: 1, J. Jones (Grantham); 2, G. Kilvington (Doncaster); 3, Miss Hardie (Scunthorpe). Mollies: 1, J. Igoe (Sherwood); 2, Mr. Dainty (Broughston); 3, J. Lyall (Skogness). Swordtails: 1, Mr. and Mrs. Dearden (Grimsby); 2, Mr. Whitlam (Scunthorpe); 3, B. Kirk and Son (Courtauld, Grimsby). Platies: 1 and 2, M. Allsopp (Alfreton); 3, Mr. and Mrs. Dearden. Barbs (small): 1 and 2, P. Jenson (Grimsby); 3, H. Kuhn (Lincoln). Barbs (large): 1, Mr. Rawling (Lincoln); 2, Mr. and Mrs. Jermamy (Courtauld); 3, D. Sewell (Sherwood). Characins (small): 1 and 2, J. Goodridge (Grantham); 3, J. Wright (Alfreton). Large Characin: 1, D. Sewell; 2, A. Duffin (Boston); 3, A. Sands (Boston). Killifish: 1, N. Smedley (Alfreton); 2, S. Noble (Boston); 3, D. Sewell (Minnows and Danios: 1, J. R. Rhodes (Scunthorpe); 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. Wells (Doncaster). Sharks and Foxes: Mr. Whitlam (Scunthorpe). Platies (Grantham): 1, G. Hollingsworth (Grantham). Rasboras: 1, H. Blades (Workop); 2, E. Parker; 3, B. Kirk and Son. Dwarf Cichlid: 1 and 2, F. Martin (Alfreton); 3, H. Kuhn (Lincoln). Cichlid (large): 1, Mr. Tite (Kettering); 2, D. Sewell; 3, J. A. Stiff (Lincoln). Angels: 1, D. Sewell; 2, J. Rawling; 3, Mr. Svendsen (Grimsby). Catfish: 1, D. Sewell; 2, A. Duffin; 3, Mr. Whitlam. Loaches: 1, D. Sewell; 2 and 3, J. Lyall. Fighters: 1, J. R. Rhodes; 2, E. Kirk and Son; 3, Mr. Tite. A.O.V. Anabantids: 1, E. Kirk and Son; 2, A. Sands; 3, D. Sewell. A.O.V. Tropical: 1, G. Kilvington; 2, Mr. Woods (Doncaster); 3, J. R. Rhodes. Breeders (egg-layers): 1, Mr. and Mrs. Wells; 2, M. Allsopp; 3, H. Kuhn. Breeders (livebearers): 1, H. Kuhn; 2, J. Igoe; 3, L. Evans (Grimsby). Pairs (egg-layers): 1, Mr. and Mrs. Wells; 2, F. Martin; 3, A. Sands. Pairs (livebearers): 1, J. Igoe; 2, H. Kuhn; 3, J. S. Hall. Goldfish and Cornies: 1, 2 and 3, J. S. Hall. Shubunkins and Fancy Goldfish: 1 and 3, J. S. Hall; 2, C. Parker. A.O.V. Goldwater: 1, 2 and 3, J. S. Hall.

NEWS from the Border A.S. mentions a champion of champions night to come when Mr. Smart from Kendal will judge those fish which have come first in the last six months jar shows. Also during August a trip has been organised to the Blackpool open show where several of the members intend to compete. During the past months some of the members have competed in various open shows and have been quite successful.

Future plans include inviting more speakers from outside the club as well as more film shows in an attempt to make the club more interesting for the members. The Society is fortunate in having a large junior membership.

IN June Chelmsford A.S. were given a very interesting lecture on plants for the aquarium, by Mr. Pye of Brentwood A.S. Diagrams and drawings of various plants were shown and plants were handed round for examination by members. Much was learned and enjoyed by this lecture. The table show was well entered and prize winners in the plant class were: 1, J. Henderson; 2, Mrs. J. Henderson. The characin class was won by T. Heath; second

being K. Turner and third R. Horne. The fish were judged by Mr. Gee and the plants by Mr. Pye.

RESULTS of the Chingford and District A.S. were as follows: Class Aa: 1 and 3, Walthamstow; 2 and 4, Tottenham. Class Ab: 1, Walthamstow; 2, Chingford. Class Ad: 1, A. Pannell; 2, Mrs. L. B. Pannell. Class B: 1, S. G. Cowell; 2, Mrs. B. L. Cowell; 3, G. Gibbs; 4, Mrs. Gosling. Class C: 1, S. G. Cowell; 2, T. R. Hine; 3, Mrs. B. L. Cowell; 4, Mr. and Mrs. Twine. Class Db: 1, R. Bowes; 2, R. Kerridge; 3, D. Bundy; 4, L. Curry. Class D: 1, A. Kinsey; 2 and 4, Mrs. M. Netherell; 3, R. J. Baker. Class Ea: 1, R. Bowes; 2, R. Kerridge; 3, P. Watson; 4, W. Terris. Class Eb: 1, 2 and 3, S. Cowell; 4, E. W. Bartlett. Class F: 1, J. Bellingham; 2, G. Ledgett; 3 and 4, A. Pannell. Class G: 1 and 4, G. Greenhalf; 2, Mrs. M. Netherell; 3, J. Bellingham. Class H: 1, Mrs. S. Hedges; 2, Mrs. M. Netherell; 3 and 4, R. Wright. Class I: 1, R. Bowes; 2, D. Bundy; 3, W. Terris; 4, P. Coyle. Class K: 1, R. Bowes; 2, G. Gibbs; 3, R. Lugmayer; 4, A. Kinsey. Class M: 1, Mrs. S. Hedges; 2, D. Bundy; 3, A. Kinsey; 4, T. Tockey. Class O: 1 and 2, Mr. and Mrs. S. Fagan; 3, Mrs. M. Quennell; 4, Miss T. Hedges. Class Q: 1 and 2, E. W. Bartlett; 3, Mr. and Mrs. Twine; 4, K. G. Quennell. Class R: 1, K. G. Quennell; 2, D. King; 3, S. Cowell; 4, Mrs. C. Bowes. Class S: 1, Mrs. M. Netherell; 2, T. Tockey; 3, R. Kerridge; 4, Mrs. M. Tucker. Class Ua: 1, 2, 3 and 4, Mrs. S. Hedges. Class Nb-M: 1, A. Chandler; 2, E. W. Bartlett; 3 and 4, Mr. and Mrs. S. Fagan. Class Xo-T: 1, E. W. Bartlett; 2 and 3, Mr. and Mrs. Twine; 4, Miss B. Quennell. Class Z: 1, A. Chandler; 2, A. Pannell. Special Awards: Aquarist Gold Pin Best Fish in Show Cup: S. G. Cowell. F.B.A.S. Trophy A.O.V. Catfish: G. Greenhalf. Marshall Trophy E.L.T.C.: J. Bellingham. Len Beemley Trophy Best Team Breeders: E. W. Bartlett. Furnished Aquarist Challenge Trophy: Walthamstow A.S.

THIS has been a busy time for the Didcot and District A.S. Early in May they were hosts to the other four clubs in the three counties association for the third leg of the Quiz League where they finished the evening in second place. The second meeting in May was a slide and tape show, namely Introduction to Marines. The Table Show was for Labyrinthia: Result: 1, J. Davidson; 2, F. Ritson; 3, J. Trinder. At the beginning of June the three counties visited the South again for the second leg of the bottle league which was judged by B. Baker. The individual results were as follows: 1 and 2, M. Strange (Basingstoke); 3, R. Leslie (High Wycombe); 4, C. Pike (High Wycombe). Club results: 1, High Wycombe (137 pts.); 2, Basingstoke (131½ pts.); 3, Didcot (78 pts.); 4, Bracknell (74 pts.); 5, Reading (61½ pts.). The meeting held later in June was a slide and tape show on Cichlids which was rather spoiled by the fact that no projector was available owing to the bulb going at the last moment so a hand viewer was the best that could be arranged. The Table Show was for A.O.V.: 1, J. Davidson; 2, A. J. Davidson, Jr.; 3, I. Tarrant, Jr. It was pleasing to see two junior members placed in the first three. At the end of June Bracknell were visited for the fourth leg of the Quiz League which the Society won. The final result after the fourth leg was: 1, Reading (100 pts.); 2, Didcot (87 pts.); 3, High Wycombe (80 pts.); 4, Basingstoke (75 pts.); 5, Bracknell (63 pts.). New members or visitors are welcome at the meetings at 8 p.m. on the first and third Fridays of the month at the Bico Research Centre on the A.34 near Abingdon.

THE SAFE CURE FOR WHITE SPOT IS  **Hillside Aquatics London N12**

WE understand from the Clyde A.S. that Mr. T. Boyle, who was the Secretary from its formation, has left to take up an appointment in Uganda. We and the Society are sure that every club in the West of Scotland to whom he gave lectures and slide shows will wish him the very best of luck in his new venture.

THE Northwich and District A.S. open show results were as follows: Guppies: 1 and 3, Mr. and Mrs. Cobb (Belle Vue); 2, P. Hall (Runcorn); Swordtails: 1, Mr. and Mrs. Wells (Doncaster); 2, Mr. and Mrs. Cobb (Belle Vue); 3, N. R. Gibson (Huddersfield); Mollies: 1 and 3, Mr. and Mrs. Grimshaw (Sunnybrow); 2, B. Lewis (Merseyside); Platies: 1, Mr. and Mrs. Cobb (Belle Vue); 2, P. Mullis (Merseyside); 3, Mr. and Mrs. Pearson (Sunnybrow); Barbs (up to 3 1/2 in.): 1, J. Leese (Stone); 2, Mr. and Mrs. Wells (Doncaster); 3, R. and A. Johnson (Ashton); Barbs (over 3 1/2 in.): 1 and 2, B. Pearson (Northwich); 3, B. Lewis (Merseyside); Characins (up to 3 in.): 1, H. Williams; 2, J. Thorne (Northwich); 3, G. K. and A. K. Jackson (Belle Vue); Characins (over 3 in.): 1, K. Parkes (Merseyside); 2, A. Lomas (Merseyside); 3, F. Mullis (Merseyside); Anabantids (up to 3 in.): 1, J. S. Booth (North Staffs.); 2, P. M. J. Lunt; 3, Mr. Gascyne (Derby); Fighters: 1, Mr. and Mrs. Cobb (Belle Vue); 2, R. T. Bull (Derby); 3, P. Shackleton (Belle Vue); A.O.V. (Anabantids): 1, A. Lomas (Merseyside); 2, Mrs. J. Shackleton (Belle Vue); 3, M. Clark (North Staffs.); Angels: 1, P. Danielson (Huddersfield); 2, G. K. and A. K. Jackson (Belle Vue); 3, Mr. and Mrs. Brearley (Belle Vue); Dwarf Cichlids: 1, Mr. and Mrs. Jessop (Huddersfield); 2, Master Higginbottom (Sheffield); 3, K. Ankers (North Staffs.); Cichlids (large): 1 and 2, K. Parkes (Merseyside); 3, P. Kenyon (Belle Vue); Minnows: 1, J. S. Booth (North Staffs.); 2, R. Knowles (Northwich); Danios: 1, Mr. and Mrs. Ross (Belle Vue); 2, Master Higginbottom (Sheffield); 3, J. S. Booth (North Staffs.); Rasbora: 1 and 3, Mr. and Mrs. Ashton (Middleton); 2, Mr. and Mrs. Heap (Belle Vue); Sharks and Flying Foxes: 1, Mr. and Mrs. Ashton (Middleton); 2, H. Buckley (Northwich); 3, B. Bewick (Warrington); Catfish (small): 1, R. Davies (Belle Vue); 2, Mr. and Mrs. Cobb (Belle Vue); 3, K. Ankers (North Staffs.); Catfish (large): 1, Mrs. J. Shackleton (Belle Vue); 2, R. Antonas (Northwich); 3, J. Hall (Runcorn); Loaches: 1, B. Pearson (Northwich); 2, F. Mullis (Merseyside); 3, Mr. and Mrs. Higginbottom (Sheffield); A.O.V.: 1, K. Parkes (Merseyside); 2, Mr. and Mrs. Heap (Belle Vue); 3, K. Ankers (North Staffs.); Toothpicks: 1, R. Knowles (Northwich); 2, Mr. and Mrs. Wells (Doncaster); 3, L. Kaye (Top Ten); Marines: 1, Mr. and Mrs. Grimshaw (Sunnybrow); Pairs (livebearers): 1, N. R. Gibson (Huddersfield); 2, H. Bowman (Northwich); 3, Miss Higham (Warrington); Pairs (egg-layers): 1, J. Faulkner (Merseyside); 2, Mr. and Mrs. Wells (Doncaster); 3, H. Williams; Breeders (livebearers): 1, N. R. Gibson (Huddersfield); 2 and 3, P. Danielson (Huddersfield); Breeders (egg-layers): 1 and 3, Mr. and Mrs. Pearson (Sunnybrow); 2, Mr. and Mrs. Wells (Doncaster); Common Goldfish: 1, Mr. and Mrs. Brearley (Belle Vue); 2, Mr. and Mrs. Toyne (Sheffield); 3, Mr. and Mrs. Cobb (Belle Vue); Fancy Goldfish: 1, Mr. and Mrs. Cobb (Belle Vue); 2, Master A. Thorne (Northwich); 3, R. and I. Anonico (Northwich); A.O.V. Coldwater: 1, Mr. and Mrs. Cobb (Belle Vue); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, Mr. and Mrs. Higginbottom (Sheffield); Junior Egg-layers: 1, A. Davies (Belle Vue); 2, Master A. Bull (Derby); Joint 3, Master T. Dean (Ellesmere Port) and Master P. Ashton (Middleton); Junior Livebearers: 1, Master F. Bates (Belle Vue); 2, Master N. Cook (Doncaster); 3, Master A. Bull (Derby); Belle Vue Society won the Interpet Trophy for the society with most awards. Mr. Parkes won the Thorne Trophy for Best Fish in Show and the Aquarists' Gold Pin. Mr. Pearson won the Hyland Trophy and Benoy Trophy for Best Fish by Northwich entrant and for Northwich member gaining most awards. Mr. and

Mrs. Grimshaw won the Russell-Allen Trophy for the Best Livebearer. Entries: 375 from 20 different societies.

THE June meeting of the South Western Group British Marine A.A. was held at the home of Mr. James. The meeting was well attended there being ten members present. Deep Sea "Seafar" a date was fixed for the Sentari Sunday the 1st August. Two mackerel boats plus Mr. Farr's diving boat will be provisionally booked. Mr. Farr undertook to supply two divers plus himself to collect specimens.

An appeal from the Parent Body was discussed re Native Marines for a tank display stand at the Wednesday Open Show. The response to this appeal was very gratifying, all members present donating several fish.

The Torbay Aquarist Society asked their marine enthusiasts to support their Open Show in September with a high entry of marines as the F.B.A.S. had awarded the marines trophy for this event. All pledged at least five entries each.

THE results of the Hyde A.S. were as follows: A.O.V.: 1, P. Ashton (Middleton); 2, Miss H. Johnson (Ashton); 3, A. K. Jackson (Belle Vue); Breeders (livebearers): 1, N. R. Gibson (Huddersfield); 2 and 3, P. Danielson (Huddersfield); Breeders (egg-layers): 1 and 3, J. Burton (Huddersfield); 2, Mr. and Mrs. Bewick (Middleton); Guppies: 1, D. Harvey (Ind.); 2, Mr. and Mrs. Cobb (Belle Vue); 3, Mr. and Mrs. Ashton (Middleton); Platies: 1, D. Davies (Privatere); 2, Mr. and Mrs. Pearson (Sunnybrow); 3, Mr. and Mrs. Cobb (Belle Vue); Swordtails: 1 and 3, P. Danielson (Huddersfield); 2 and 3, Mr. and Mrs. Loft-house (Huddersfield); Mollies: 1, Mr. and Mrs. Grimshaw (Sunnybrow); 2, P. Bailey (Hyde); 3, Mr. and Mrs. McRiseley (Ashton); A.O.V. Livebearers: 1, Mrs. D. Davies (Privatere); 2, Mr. and Mrs. Cobb (Belle Vue); 3, Mrs. D. Davies (Privatere); A.O.V. Anabantids: 1, P. Rogers (Stretford); 2, Mrs. D. Davies (Privatere); 3, Mr. and Mrs. Cobb (Belle Vue); Dwarf Cichlids: 1, P. Rogers (Stretford); 2, Mr. and Mrs. Ashton (Middleton); 3, Mr. and Mrs. Loft-house (Huddersfield); Angel Fish: 1, G. W. and A. K. Jackson (Belle Vue); 2, J. Burton (Huddersfield); 3, S. Robinson (Sunnybrow); A.O.V. Cichlid: 1, S. and A. Cass (Macclesfield); 2, K. Ankers (North Staffs.); 3, Mr. and Mrs. Wilkes (Middleton); Barbs (small): 1, R. and A. Johnson (Ashton); 2 and 3, J. and B. Dawson (Darnley); A.O.V. Barbs: 1, L. Rousbottom (Hyde); 2, R. Bowling (Sunnybrow); 3, N. R. Gibson (Huddersfield); Characins (small): 1 and 2, B. W. and A. K. Jackson (Belle Vue); 3, Mr. and Mrs. Pearson (Sunnybrow); A.O.V. Characins: 1, Mr. and Mrs. McRiseley (Ashton); 2, D. Harvey (Ind.); 3, P. Bailey (Hyde); Killifish: 1 and 2, Mr. and Mrs. Loft-house (Huddersfield); 3, Mr. Hutchinson (H.K.A.); Sharks and Flying Foxes: 1 and 2, Mr. and Mrs. Norris (Loyne); 3, Mr. and Mrs. Ashton (Middleton); Rasbora, Danios and Minnows: 1, Mr. and Mrs. Thoms (Middleton); 2, Mr. and Mrs. Ross (Belle Vue); 3, Mr. and Mrs. Ashton (Middleton); Corydoras Catfish: 1, Mr. and Mrs. Cobb (Belle Vue); 2, K. Ankers (North Staffs.); 3, J. S. Booth (North Staffs.); A.O.V. Catfish: 1, Mr. and Mrs. Bewick (Middleton); 2, P. Rogers (Stretford); 3, W. J. Hope (Middleton); Loaches: 1, P. Danielson (Huddersfield); 2, G. Stewart (Hyde); 3, N. R. Gibson (Huddersfield); A.O.V.: 1, M. Clark (North Staffs.); 2, T. Hunt (Stretford); 3, Mr. and Mrs. Norris (Loyne); Pairs (livebearers): 1, G. Stewart (Hyde); 2, Mr. and Mrs. Loft-house (Huddersfield); 3, Mr. and Mrs. Brearley (Glossop); Pairs (egg-layers): 1, S. and A. Cass (Macclesfield); 2, C. Greenough (Ind.); 3, P. Robinson (Sunnybrow); Common Goldfish: 1, Mr. and Mrs. Cobb (Belle Vue); 2, Master P. Pollastre (Sunnybrow); Fancy Goldfish: 1, Mr. and Mrs. Cobb (Belle Vue); Furnished Mimi-Jars: 1, Mr. and Mrs. Cobb (Belle Vue); 2, J. S. Booth (North Staffs.); Marine A.O.V.: 1, D. Chambers (Hyde); 2, Mr. and Mrs. Grimshaw (Sunnybrow); Best Fish in Show: D. Chambers (Hyde).

IN June Vauxhall Motors A.S. again staged a display under canvas in conjunction with the recreation club sports day. A tableau was presented incorporating three furnished aquaria, a garden pool and waterfall, plus a selection of specimen fish in show jars. During the afternoon a large number of people visited the marquee and a number of enquiries were received from newcomers to the hobby. At the June meeting B. Sargent of the Bletchley Club addressed members on the breeding of Glowlight tetras and numerous other species with which he has been successful.

THE Tonbridge and District A.S. recently held their Club Champions evening at which Ron Taylor, the reigning champion, gave a very interesting talk. He brought several examples of his favourite group, the small Characins, and gave a comprehensive description of his method of keeping them. Two of the club's prospective judges did the table shows. Mark Golding judged the Male Guppies, F.B.A.S. class N, and gave Iain Mathieson 1 and 2, K. Shoebridge 3. Iain judged the other two classes and in classes BA gave John Bellingham 1, 2 and 3. Class L, Loaches, had a better distribution of award cards with Mrs. I. Bellingham 1, A. Carr 2, and R. Baker 3. Three new members were enrolled at the meeting. Visitors and prospective members are always welcome at the meetings and these are held on the second Wednesday of each month in the Gardeners Arms, St. Stephen Street, Tonbridge, at 8 p.m.

MEMBERS and visitors of the New Forest A.S. were entertained at the June meeting by George Danby who showed a very interesting film called "Game in the Rough". This showed how to collect "native" fishes for the home aquaria in America, and the various nets and attachments used and the type of fish and wild life one can collect there. The table show was judged by Dennis Harding. Results: Guppies: 1 and 2, B. Higginson. Shubunkins: 1 and 2, L. Menhennet.

THE Bristol Aero A.S. first open show attracted not only local Bristol aquarists but many from the West Country as far afield as Trowbridge. An excellent response to the club's first venture. Twenty-one classes of fish were entered and the Society members, although outnumbered managed to gain three firsts, two seconds, three thirds and four fourths, and nearly swept the board in the two coldwater sections. Best Fish in Show was won by D. Pumphord and the Highest Points Award by D. Hodge, both members of Bristol Tropicals, a club of long standing in Bristol.

THE Ilford and District Aquarist and Pondkeepers' Society met in June when the elected members of the committee were decided as follows: president, H. Berger; vice-president, L. Smith; chairman, J. Sanders; vice-chairman, L. Smith; treasurer, M. Brill; assistant treasurer, G. Irish; secretary, R. Ruth; assistant secretary, J. Hartman; show secretary (tropical), D. Seaman; show secretary (coldwater), H. Berger; press secretary, M. Perry; art council representative, L. Smith; librarian, K. Ellis; auditors, Mrs. Rowe and Mrs. Ruth; committee members, N. Reade and Mr. Strickett. The results of the monthly Table Show held at this meeting were: A.V. Breeders Pairs: 1, D. Seaman; 2, C. Ollie; 3 and 4, Mrs. Rowe. A.V. Coldwater Fish: 1 and 3, H. Berger; 2, Mr. Grounds; 4, Mrs. Rowe.

AT the first meeting of the Slough and District A.S., a very interesting lecture on fish keeping in general was given by B. Baker. At the same time, club officers were elected as follows: E. Honey, Chairman; J. Jordan, vice-chairman; B. Wither, treasurer; A. Allen, assistant treasurer; E. Knight, secretary; R. Knight, show secretary; G. Evans, publicity; D. Roberts. All meetings will be held on the third Wednesday of each month, at The Friends Meeting House, Ragstone Road, Slough, commencing 7.30 p.m. The next meeting will be on 18th August, when there will be a film show. Every-one welcome.

NEW SOCIETIES

A new society, **The Rushden Fishkeepers' Association** has been formed in Rushden, Northants. Meetings are held the third Wednesday of each month at 8 p.m. in the Wheat-sheaf Hotel, High Street South. The Hon. Secretary, Mr. C. M. Evans, 81 Trafford Road, Rushden, Northants, NN10 6JP, would be pleased to hear from speakers and new members.

The Torpoint and District A.S., a recently formed club is now holding fortnightly meetings at the local Council Committee Rooms. The following people were chosen to serve as officials. Chairman: B. Selly, 25 Roseclare Ave., Torpoint, tel. 702; Treasurer: B. Slez, 90 Maker Road, Torpoint; Secretary: D. Medway, 20 Harvey Street, Torpoint; also a committee of six were elected.

CHANGE OF VENUE

THE Mid-Kent A.S. have moved to St. Phillips, Community Centre, located at the top of Kingsley Road, Maidstone. Meeting nights have also been changed to every first and third Thursday in each month. New members and visitors always welcome.

THE Mid-Herts A.S. now meet at Church Parlour, Falkner Hall, Victoria Street, on the second and fourth Friday of the month at 8 p.m.

THE Hyde A.S. now meet at the Sportsman Hotel, Mottram Road, Hyde, every other Wednesday at 8.30 p.m.

NOTICE

THE new Cymru National A.S. will hold its first General Assembly on Sunday, 12th September at 2.30 p.m. at the Angel Hotel, Cardiff. Will all Welsh clubs please send two delegates. You will note that we are an Associated Member of the F.B.A.S. Inquiries please! Dick Richards, 3 Sherwood Llwynypia, Rhondda, Glam.

CANCELLATION

The third open show of the **Horsforth A.S.** which was to be held on the 14th November has unfortunately had to be cancelled due to difficulty in obtaining a hall on that day.

NEW SECRETARIES

Hull A.S.: G. Rooms, 105 Maybury Road, Holderness Road, Hull.

Bishops Cleeve A.S.: P. Stone, "Waverley," 54 Ashchurch Road, Newtown, Tewkesbury.

Clyde A.S.: W. Logan, 15 Glenside Drive, Rutherglen, Glasgow.

Association of Yorkshire A.S.: C. Cerm, 15 Thornleigh Grove, Leeds, LS9 8QR.

Mid-Herts A.S.: D. V. Larder, 42 Old Park Road, Hitchin, Herts.

AQUARIST CALENDAR 1971

14th August: Weston-super-Mare and District T.F.C. Second Open Show, St. John's Hall, Oxford Street, Weston-super-Mare. Show Secretary, J. Clark, St. Jude's, North Street, Cheddar, Somerset.

14th August: Harlow A.S. Open Show at Moor Hall, The Stow, Harlow. Schedules from P. Murdoch, 21 Brooklane Field, Harlow.

15th August: Falkirk and District A.S. Open Show at Falkirk Ice Rink, Falkirk. Schedules and further details from the secretary, W. Reid, 41 Barchill Road, Rosebank, Kirkintilloch, Glasgow. Tel: Kirk 4545.

15th August: Heywood and District A.S. Open Show, to be held at St. John Ambulance Hall, Bamford Road, Heywood.

15th August: North Staffs A.S. Third Open Show at New Community Centre, M.A.A.S. Rules. Schedules available from Secretary, K. Balch, 78 Courtyard Drive, Stoke-on-Trent.

15th August: Oldham and District A.S. Annual Open Show at Werneth Park, Oldham. Further information and show schedules from E. Birchwood, 30 Inverness Avenue, Blackley, Manchester, 9.

21st August: Riverside A.S. Open Show at St. Etheldredas Church Hall, Fulham Palace Road, Fulham, S.W.6. Show schedules from show secretary, M. Goss, 3 Boulton Court, Park Palace, Plantation Road, Amersham, Bucks.

22nd August: Bedworth A. and P.S., Nicholas Chamberlain School, Bulkington Lane, Bedworth. Schedules from K. Edkins, 72 Lister St., Atherborough, Nuneaton.

22nd August: Scarborough and District A.S. Second Open Show at Roscoe Rooms, Roscoe Street, Scarborough. Booking from 12.30-2.15 p.m. Schedules and all further information available on request from the Secretary, Ness Cottage, North Street, Flinton, Nr. Scarborough. Tel.: Hunmanby 549.

28th August: Anson Aquatic Club Open Show, at St. Andrew Church Hall, Willesden High Road, Willesden, London, N.W.10. Schedules from Dave Thomas, 13 Cornall Gardens, Willesden, London, N.W.10.

29th August: Salford A.S. Open Show will be held at the Lancaster Hall, Swinton. Show secretary, Paul F. Kelly, 9 Sandycote Close, Swinton, Lancs.

4th September: Bethnal Green A.S. Open Show, Bethnal Green Institute, 229 Bethnal Green Rd., London, E.2. Schedules from S. G. Cowell, 26 Dunton Rd., Leyton, London, E10 7AP.

4th September: Rhondda A.S. Third Annual Open Show to be held at the Rhondda Transport Club, Porth. Please contact the show secretary, M. Williams, 122 Top Trebanog, Trebanog, Porth, Rhondda.

4th September: Yate and District A.S. Annual Open Show. Christ Church Hall, North Street, Doversand, Bristol. Details from Show Secretary, C. B. Suckland, 20 Bursage Close, Chipping Sodbury, Bristol BS17 6EL.

4th-5th September: Mid-Herts A.S. International Open Show. Schedules from C. S. A. Withers, 15 Charnmouth Road, St. Albans, Herts. Tel: St. Albans 58346. Major trophies for all classes.

5th September: Coventry P. and A.S. M.A.I. Show, Foleshill Road Community Centre (A444), Coventry. Open classes: Characins and Cichlids. Details from S. Woodridge, 32 Ridgeway Avenue, Coventry.

5th September: Wellingborough and District A.S., Drill Hall, High St. Wellingborough. Schedules from Show Secretary, Mr. J. Phillips, 19 Barnwell Drive, Rushden, Northants.

5th September: Huddersfield Tropical Fish Society. Open Show at the Town Hall, Huddersfield.

5th September: Weymouth and District A.S. Open Show, Small Sydney Hall, Weymouth. Details from Mr. Hanton, 53, Brownlow Street, Weymouth.

5th September: Lucas Aquarium Pool Society First Open Show at J. Lucas Ltd., Gate No. 4, Spring Road, off Shaftmoor Lane, Hall Green, Birmingham, 28. Show Secretary, G. H. Roberts, 30 Charles Road, Solihull, Warks.

10th-11th September: Bristol A.S. Open Show, St. Michaels Parish Hall, Bishopston. Show Secretary, S. Lloyd, 4 Caslew Close, Frenchay Park, Bristol. Tel: 656532.

11th September: North Kent Open Show, Sweeney School, Swanscombe, Kent. Details from A. Cox, 35 Bridge Road, Slade Green.

11th September: Penarth A.S. Second Open Show, St. Augustine's Church Hall, Albert Road, Penarth, S. Wales. Schedules available from A. Trotman, show secretary, 56 Highview Road, Penarth, S. Wales.

11th September: Harwich and District A.S. Annual Exhibition of Tropical Fishes to be held at the Queens Hotel, Dovercourt, from 10 a.m. to 6 p.m.

12th September: B.S.A.S. Eighth Annual Open Show at the Marmion Centre, Marmion Road, Hove. Full details from Roy Browning, 34 Rowan Close, Portside, Sussex.

12th September: British Killifish Collingham Group. Third Annual Open Killifish Show at

the Collingham Memorial Hall, Collingham, Nr. Wetherby. Classes—Killifish only.

12th September: Nottingham and District A.S. Annual Show to be held at a new venue at The Parish Hall, 27-28 Mansfield Road, Selston, nr. Alfreton. Turn off the M1. Change of address of the show secretary to N. B. Kenney, Sherwood Aquatics, 486 Mansfield Road, Sherwood, Nottingham.

12th September: Peterlee and District A.S. Annual Open Show at Edenhill Community Centre, Peterlee, Co. Durham. Show schedules available from W. Weirall, 47 Yoden Road, Peterlee, Co. Durham.

12th September: Barnsley T.F.S. Open Show at the Mappedwell and Staincross Village Hall, Staincross, Barnsley.

18th September: Havant and District A.S. First Open Show at the Deverall Hall, London Road, Purbrooke, Havant. Details from Show Secretary, V. B. Hunt, "Caeleis," 120 London Road, Witley, Nr. Portsmouth.

19th September: Featherstone A.S. Fourth Open Show. Held in British Legion Hall, West Gate, Quisborough, Yorkshire. Show secretary, Mr. Todd, 24 Fenland Ave., Kirkstatham East, Redcar, Teesside.

19th September: Stone A.S. Open Show, Walton Community Centre, Stone, Staffs. Schedules can be obtained from N. W. Plant, 18a High Street, Stone, Staffs.

20th September: Four Star A.S. Third Open Show, Hemsworth. Further details later.

25th September: Becknell A.S. Open Show, Priestwood Community Centre, Becknell, Berks. Schedules available from Les Jordan, 62 Fernbank Place, Ascot, Berks. Tel. Winkfield Row 3400.

25th September: Hounslow and District A.S. Open Show at Youth Centre, Cecil Road, Hounslow (awaiting confirmation).

26th September: Hucknall and Bulwell A.S. Open Show, Bulwell Youth Club, Coventry Road, Bulwell, Nottingham. Schedules obtainable from E. Smith, 111 Longmead Drive, Daybrook, Nottingham.

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

26th September: Torbay A.S. Open Show, Town Hall, Torquay, Devon. Show secretary, Mr. J. Bragg, 26 Jordan Street, Backfastleigh.

26th September: West Cumberland A.S. First Open Show, Civic Hall, Whitehaven, Cumberland. Secretary J. Parker, 2 Southey Avenue, Oseggill, Egremont, Cumberland.

26th September: 25th Annual Open Breeders' Show, East London. Aquarist and P.A. Judges: C. A. T. Brown, B. Baker, F. Tomkins. Schedules available F. Vicker, 13 Irons Way, Romford, Essex.

3rd October: Ealing A.S. Open Show at Northfields Community Centre, Northcroft Road, London, W.13.

5th October: North Kent A.S. Inter-Club Show at the Sweeney School, Swanscombe, Kent. Details from A. Cox, 35 Bridge Road, Slade Green.

9th-10th October: British Aquarists' Festival, Zoological Gardens, Belle Vue, Manchester.

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

17th October: Sherwood A.S. Second Open Show. Venue—Thoresby Miners' Welfare Hall, Edwinstowe, Nr. Olorton, Mansfield, Notts. Schedules available from Show Secretary, J. Ipoe, 25 Marple Avenue, Mansfield Woodhouse, Notts.

16th October: Kingston and District A.S. and S.P.A.S.S. annual open show at Territorial Army Centre, Farringdon House, Stonecote Hill, Morden, Surrey. Schedules from G. Greenhalf, 39 Garth Close, Morden, Surrey.

23rd October: Catford Open Show. Schedules from show secretary, J. D. Wilson, 130 Paston Crescent, Lee, London, S.E.12.

24th October: Doncaster and District A.S. Second Open Show to be held at the T.A. Barracks, Sandford Rd., Babby.