

FEBRUARY 1971

15p (3s)

Pet **Fish**

monthly

The **PRACTICAL FISHKEEPING MAGAZINE**



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The Red-spotted Copeina
Getting a Hardy Goldfish Strain
Breeding Kissing Gouramis

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Editor: Anthony Evans

In This Issue

	Page
Comments and Quotes	409
Letters	410
Spawning the Most Popular Rivulin	415
Meetings and Changes of Officers	417
Guppy World	418
Building Up a Hardy Strain	419
Objectives for the Present-day Fish Breeder	420
Marine Forum	421
Diseases and Treatments	422
Personal Comment	423
Guppy Types	425
Transatlantic Topics	426
Sources of Trouble with Algae	427
Breeding Experiences with Kissing Gouramis	428
Book Review	430
Red-Spotted Copeina	431
Community Life Strains	432
Hints and Tips with Surplus Plastics	433
Tropical Marines at Liverpool	434
Club News	434
In Brief	436
Dates for Your Diary	438

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Comments and Quotes

- See it all with fresh eyes
- Jar supply beginning to dry up?

Fascination of Fishkeeping

CONFIRMED fishkeepers do not need telling how fascinating are the lives and habits of their charges. Many hobbyists will know just how much astonishment is expressed by people who have never thought about fishes, other than as possible filleted morsels, when they get a glimpse of what an aquarium can reveal. It is the unexpected patterns of behaviour that so many aquarium subjects show, and which we as aquarists sometimes come to take as commonplace, that can excite awareness in someone beholding fishy behaviour for the first time.

This is something that those of us who are concerned about publicising the hobby need to remind ourselves about. The chance to see fishes behaving naturally is what must be put before the public at shows and exhibitions designed to attract new aquarists. (Displays of competitive single fish tanks do not, of course, present such an opportunity and it is this consideration that has decided, for example, the form taken by The AQUARIUM SHOW in London each year since its initiation in 1968 by FRS and the F.B.A.S.)

It was the viewing, in the company of some non-fishkeepers, of a television programme on animal behaviour that most recently provided the reminder of the fascination of fish behaviour for us. A sequence filmed by the German nature photographer Heinz Sielmann showed the breeding procedure of the Nigerian mouthbreeder (*Haplochromis burtsoni*), and the part played by the coloured spots on the male's anal fin was interestingly demonstrated by Dr Wolfgang Wickler, who first reported this. In this species, when the female lays her eggs she at once picks them up in her mouth. The male quite deliberately turns on his side and spreads his spotted anal fin in front of her on the gravel of the

nest area. She then reacts to the fin spots as if they were further eggs to be picked up, and it is while she is mouthing at these that the sperms released by the male gain access to the eggs within her jaws and fertilisation takes place.

Such a well-filmed event of this kind was bound to impress anyone who saw it, and although these happenings do not occur to order there are less elaborate but still impressive examples of fish behaviour to be pointed out in most set-up aquaria. There are, as well, undoubtedly many more observations yet to be made about some of the less-usual species, and fishkeepers should always record anything thought to be new (in the pages of FRS, of course).

A Showing Problem

TO judge from the number of enquiries being received by FRS something like a crisis may be looming up for societies using show jars for fish exhibiting. Since these jars are apparently no longer used by confectioners, manufacture of them now takes place only to special order. It seems that no one in the aquatic trade is getting supplies, so that quite a few aquarists are unable to use these F.B.A.S.-approved containers. It is not surprising to us that the present demand is not being met. For special manufacture very large numbers of jars have to be ordered if the buying price is to be at all an economical one; breakage rates in transport are high and are uncompensated; caps and jars arrive separately and someone has to provide the labour to marry the two, which to a trader means yet further cost. Storage and handling of large numbers of jars are also further burdening items on costs. Many aquarists are unaware that purchase tax is levied on these jars when sold empty (though not if sold with

sweets in, which is why they were always cheaper to buy from sweetshops than from other suppliers). It looks as if jars will only be available in quantity in the future if someone

is prepared to organise this as a service to aquarists, and even then the price of the jars is likely to be very much greater than that at which they have been offered in the past.

If no aquatic organisation will undertake this, someone should be thinking about acceptable alternatives before the crisis stage on the show bench is reached.



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London S.W.17

Demand Exists for Colour Classes

I HAVE to take issue with Peter Unwin over his comments in Guppy World (PFM, January 1971). He has certainly hit the nail on the head when he says that often vehement arguments can develop between exhibitor and judge as to whether a certain fish was blue or green. In starting separate colour classes there might even be a case for amalgamating blue and green, although, looking at the other side of the coin, Peter Unwin himself has often told me how rarely he sees any good self-colour red guppies in this country and how he would like to see more of them.

However, surely the real argument over whether we should subdivide one or more of the popular broadtail guppy classes into colour classes is the fact that there is an undoubted demand for such fish. No doubt the F.G.A. stock controller, George Goodall, will confirm the fact that new members invariably ask for delftails and they very often tend to specify the colour required, so if somebody likes to see reds, or blue greens or cobras or golds or blacks, why not give them what they ask and arrange for separate classes?

Peter Unwin goes on to say that the number of prizes and cards now required for even just 22 classes is phenomenal; however, he knows only too well that most show organisers will add in three classes for juniors, three classes for ladies, two classes for experimental fish—all of which classes are of doubtful merit. One must also take into account a number of poorly supported classes, such as roundtail male, spear-tail and scarf-tail, which could well afford to be amalgamated to make room for 90 entry classes to be broken down into the various colour groups.

Abechurch, Birmingham

MALCOLM DELINGPOLE

Spreading the Light

I HAVE recently discovered an interesting (although perhaps obvious) fact, which I have never seen in print before and in which some of your readers may be interested. It concerns the eternal problem (for some of us) of artificial lighting for the aquarium.

Tanks fitted with three (it will also apply to five) tungsten bulbs, all of the same wattage, will experience a considerably higher quantity of algae in the region of the centre bulb(s) than beneath the outer bulbs. The reason for this is that the central regions of the tank are subject to light from not only the central bulb but also from each of the side bulbs, whereas the effect of an outer bulb on the opposite extremity of the tank is probably negligible. So instead of fitting three 25 watt bulbs to my 3 ft. tank I have fitted 25 watt bulbs on the outside and a 15 watt in

the middle. These burn for 9 hours a day in a tank situated in a dark corner of the room. This provides an even intensity of light throughout the aquarium, which is adequate to ensure both healthy plant growth and virtually no algae.

An alternative to this solution for providing an even intensity of illumination is to fix a sheet of frosted glass between the bulbs and the water surface. This has the effect of spreading the light into a continuous strip giving a similar effect to a fluorescent tube.

Stoiver, Middlesex

R. WARD

Gold Price Down, Seawater Up

PLEASE tell Jim Kelly (Transatlantic Topics, PFM, November, 1970) that gold angels are now down to \$2.75 retail. Also our saltwater aquarium growth over here is fantastic. One shop in our area that is the most progressive now has 15% of its 100 tanks in saltwater. One of the mid-west's largest quality wholesaler and retailer of strictly saltwater fish is working some days till 4.00 in the morning filling orders, and the quality of fish is also improving.

Normal, Ill. 61761, U.S.A.

C. WONERLIN

Information Requested

SOME of our members have recently acquired some young Siamese tiger fish. I wonder if I could appeal, on behalf of our club members, for any information or advice that any aquarist can give us on these fish. We would particularly appreciate knowledge obtained from personal experience in keeping these fish, which, despite their particular beauty, are far from common.

E. WYER

P.R.O. Brighton & Southern A.S.

The Capital's Show

THE recent quality of your articles has led me to write this letter to congratulate you upon it. However, there is one point that annoys me exceedingly and has cropped up in the last two of your editions.

This is the childish way in which the words Aquarium Show are printed AQUARIUM SHOW whenever they occur. This is the sort of pedanticism that one expects of American magazines and I do not like to see it creeping into our own ones of a much higher standard. Other than this I have no complaints.

Parley, Surrey

M. FURNISS

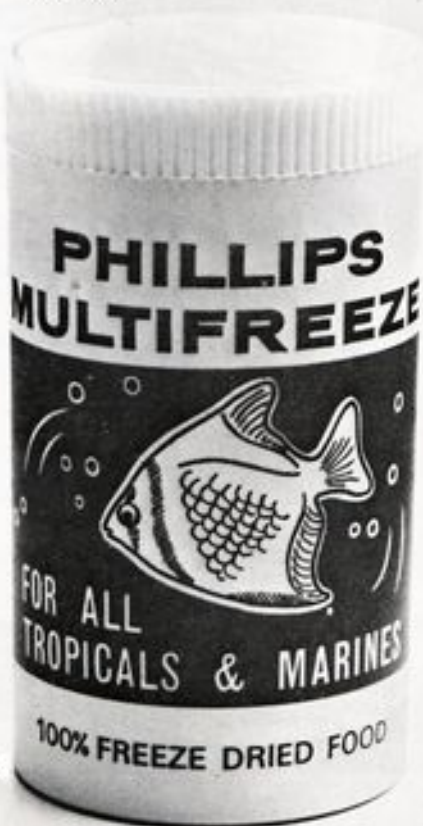
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DORKING SURREY

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24th January, 1971

My Dear John,

Further to your proposal of recent date—I went along to the tropical fish Palace in Wonderland (so aptly named!) in order to understand your apparent equal devotion to fish. On arrival I could hardly get in as their oceanic marine displays were causing such a sensation with even the outside umpteen people deep. I'm surprised they don't get knocked off for causing an obstruction!! I was even more shattered when this fabulous place did not even charge admission, but then the whole place had such a happy clubby friendly atmosphere and browsing around was a sheer joy.

Apart from the marines, they had koi, moors, malawis, sharks, piranhas, great Red Oscars, discus and lots with double Latin names (English pet names in brackets). There were pumps for this and filters for that, in fact everything—you name it they have it. I really do now understand and will marry you—all I ask is that we pay our weekly visit to the Palace.

Love

Joanna

P. S. Insist your Best Man goes too—
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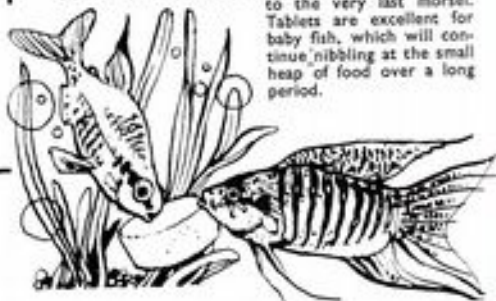
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Spawning the Most Popular Rivulin



Rivulus cylindraceus Poey

By **RUDOLPH ZUKAL**

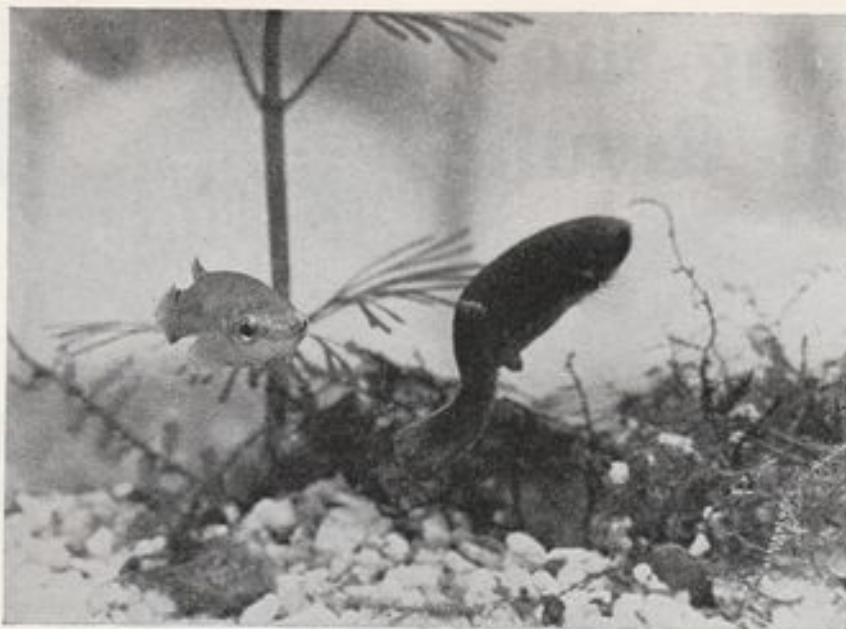
RIVULUS fishes belong to the large group of egg-laying tooth-carp— and of all the *Rivulus* available the one most popular with aquarists and the one most likely to be seen in the aquatic shops is this one from Cuba and Florida, from where it was brought to Europe for the first time in 1929.

In outline, the fish is elongated and cylindrical with a somewhat flattened effect being given by the top of its back. The dorsal fin is placed far back towards the rounded caudal. The male (up to 2 in.) has an olive-brown back, greenish brown sides and a throat and abdomen varying from yellowish to orange. A dark band stretches from the tip of the jaws, across the eye to the caudal; several rows of brownish red flecks or dots adorn the sides. Fins are yellowish to pale brown and the dorsal fin has a pale upper surround. The female is a much paler and slightly larger fish; a dark spot with a light border in the upper part of her caudal base distinguishes her.

A temperature of at least 72°F (22°C) is recommended, and a medium-sized tank. For the maximum comfort and well-being of this fish the tank should be well planted and contain plenty of floating plants. Medium hard water, not too high a water level and a well-fitting lid are also necessary. The fish mostly remain in mid-water, but they do tend to spring above the water surface and even lie on the leaves of the floating plants. They can even support themselves on the glass surface by means of their fins. They are a quiet, peace-loving species and should be kept with fish of a similar

Photographs by the author

Translation by F. MARSH



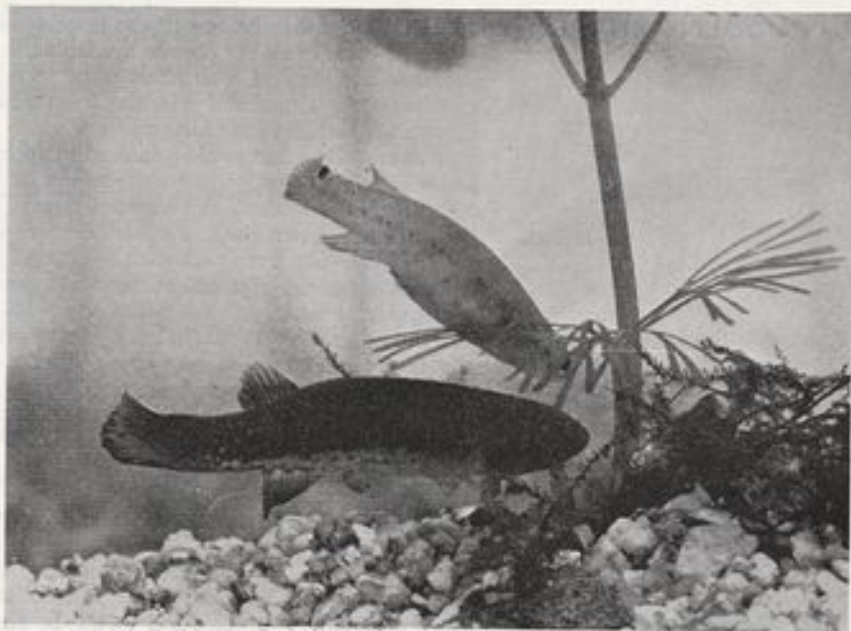
In the courtship displays of the male shown in the pictures on this page the typical folded position of the caudal (tail) fin can be seen. The male's body assumes a sinuous form (left) as he twists in front of his mate

temperament—that are not, however, too small. Live food is really the only suitable food for them.

To prepare them for breeding the temperature must be raised to 76°F (24°C). A small (2 gallons) tank planted with fine-leaved plants and containing soft, neutral water is suitable. The female lays her eggs, each one separately, in the roots of the floating plants, directly on to the vertical plants or even on the sand. Egg-laying toothcarp species are

distinguished by their method of spawning—bottom spawners, top spawners etc., and the Cuban rivulus is both a bottom and plant spawner.

If the fish have been well fed in advance they will not usually eat the eggs or the brood, but it is wiser to take the eggs out from the spawning tank with the aid of a glass pipe—or the plants with the eggs on them can be removed to another tank. The number of young is quite small. As the spawning



Just before spawning the pair (right, male lower fish) swim together into a mat of plants on the tank bottom



The spawning pair pressed together side by side in a mat of willow moss



Here the same pair are seen spawning between large stones on the tank bottom

lasts over many days, I leave several pairs in a common tank and extract the eggs daily, and within 14 days I have succeeded in collecting nearly 200 eggs from three females.

The eggs hatch after 12-14 days and as soon as

the fry are free-swimming they will eat live food—and not too small a live food at that, as the young are fairly large from birth. They grow reasonably quickly and are sexually mature at the age of about 5 months.

Meetings and Changes of Officers

BEDWORTH AQUARIST & POOL S. Officers: chairman, Mr K. Upton; vice chairman, Mr M. H. Carter; secretary, Mr R. Tedds (56 Joseph Luckins, Colbycroft, Bedworth); show secretary, Mr K. Edkins; assistant, Mr T. Pagett; treasurer, L. Henton; librarian, Mr L. Pratt; press officer and news letter editor, Mr M. H. Carter.

BRIGHTON & SOUTHERN A.S. New venue from 1st February 1971, Clarges Hotel, Marine Parade, Brighton; meetings fortnightly.

BRISTOL TROPICAL FISH CLUB. Life president, Mr L. Lintleton; chairman, Mr W. Holland; secretary, Mr F. Shorland (4 Fernbank Road, Redland, Bristol); assistant, Mr C. McGrath; treasurer, Mr R. Toose; reporting secretary, Mr R. Chapman; programme officer, Mr K. Gale; librarian, Mr P. Chapman. Meetings: third Thursday of month at the National Dock Labour Board Social Club, Welsh Back, Bristol, at 7.45 p.m.

BRITISH KILLIFISH ASSOCIATION: Secretary: Mr W. Devison, 2, Shaw Road, Tipton, Staffs.

FEDERATION OF BRITISH AQUATIC SOCIETIES. Chairman, Mr R. D. Esson; vice-chairman, Mr F. C. Toenkins; general secretary, Mr K. J. A. Pys (35 Steeles Road, London, N.W.3); treasurer, Mr R. Dove; assistant general secretary, Mr R. C. Sherwin; Council members: Mr B. Baker, Mr A. Blake, Mr C. A. T. Brown, Mr M.

Carter, Mr T. Glass, Mr L. Jordan, Mr R. C. Mills, Mr H. Towell.

FEDERATION OF GUPPY BREEDER'S SOCIETIES: Change of officer. New general secretary: Mr J. E. Myers (40 Charford Road, Canning Town, London, E.16, 1QQ; phone 01-476 2910).

FOUR STAR A.S. Change of secretary. New secretary: Mr Tony Wesley (9 Thomas Street, Hemsworth, Nr. Pontefract, Yorks.)

HENDON & D. A.S. Officers: chairman, Mr H. White; vice-chairman, Mr K. Purbrick; secretary, Mr R. J. Deacon (88 Cotswold Gardens, Hendon Way, London, N.W.2); treasurer, Mr H. Wants; assistant secretary, Mr D. Curl; show secretary, Mr T. Glass; assistant, Mr D. Allison. Meetings: every Thursday evening, at The Brotherhood Hall, West Hendon, London, N.W.9. New members always welcome.

LINCOLN & D. A.S. New venue: The Swiss Cottage, Newlands, Lincoln. Meetings: third Monday of month at 7.30 p.m. All correspondence to Mr F. Dobbs, 28 Wetherby Crescent, Lincoln.

SOUTH DERBYSHIRE & D. A.S. Meetings: first Wednesday of each month, at The Railway Inn, Midway Road, Swadlincote, Burton-on-Trent. New members welcome. Contact secretary: Mr T. Clarke (14 Vale Road, Midway, Burton-on-Trent).

SWILLINGTON A.S. Officers: president Mr G. Binks; treasurer, Mr R. Stringer; secretary, Mr P. D. Flint (19 Carr Manor Drive, Leeds 17); show secretary, Mr P. Reynolds.

YATE & D. A.S. Change of venue: February meeting will be held Wednesday, 10th February at Half Moon Inn, Coalpit Heath. All subsequent meetings will be held at the Half Moon Inn on the first Monday of month.

Film Show

A SHOW of films for aquarists made and presented by the Belgian filmmakers M. Carels and M. Wante has been organised by Hemel Hempstead Aquarist Society with the cooperation of Kodak Ltd. Tickets (adults, 25p, children under 16, 15p) and further information are obtainable from Mr Alan Tuffs, 22 Fir Tree Close, Hemel Hempstead, Herts. (phone 0442 2807). The Film Show is on Saturday 17th April at Kodak Ltd, Maylands Avenue, Hemel Hempstead, Herts.



GUPPY

World

UP until now I had always thought of it as the colour the Phoenicians extracted from a Mediterranean mollusc at Tyre, hence the name Tyrian Purple. It graced the shoulders of Roman officials and modern royalty alike. But now I have to regard it in a different light because the L.F.G.A. have added it to their list of colour classes for guppies.

In the past, fish displaying purple have been entered either in the blue or black classes, depending on the depth of colour. Now, with a distinct section for purple I pity the poor adjudicators who have to make the final choice!

That there are some beautiful purple-coloured guppies about I do not deny, but like so many of the 'greens' the angle at which they are viewed, even the intensity of illumination, can all affect the colour we perceive (colour-blind folk excepted).

My own experiences of breeding green and purple 'leopards' in the past only confirm my views that the best we can hope to achieve in the way of a truly purple guppy is through background effects previously mentioned.

This is one more reason for retaining our present British classification based on the guppy's shape rather than its shape and colour.



Amongst the many skills the guppy breeder must be proficient in comes the unlikely one of marksmanship! Try to get a struggling guppy through the two and a half inch neck of a show jar and you will soon appreciate that it requires the accuracy of a war-time bomb-aimer.

Trouble is that lack of skill can result in your best guppy gasping its last on the floor. Should you succeed in recovering it before it

expires the experience doesn't make for prime show specimens. Better to obtain a small plastic bowl of the kind sold to fit inside the average kitchen sink. Place about 3 in. depth of water in the bottom and then stand your show jar or container in this. Near-misses with such a set-up simply mean delay; your undamaged guppy, having missed the jar, is now swimming happily in its new 'aquarium'.

I'm sure your best fish are worth the expenditure of a few bob to buy such a bowl (Woolworth's, 3s 11d.) and it is amazing how useful it can be in between shows!

By PETER UNWIN

Obtaining his brood of young guppies, and having sexed them and placed the males and females in separate tanks, the aquarist is now faced with the question of 'culling'. If he's lucky he will have plenty of fry from which to choose but what to keep and what to discard now becomes a problem.

Many breeders look for females that are not only larger than their brood sisters but which also display darker markings in the lower abdominal region. Discard the thin ones that still resemble males at a month. I well remember that the late Pete Hutter always chose his female breeders from amongst those fish that were showing a good depth of body—a trait that gave them a somewhat chunky appearance.

Many good males tend to be very aggressive as fry, greedy at meal times and usually the fastest swimming of the brood. In the selection of adult males, particularly in the broadtail varieties, look for a long, unbroken chain pattern just behind

the eye and running to just below the start of the dorsal fin.

These few pointers are not to be regarded as the only positive indications of the best fish to select, but they are a considerable improvement on the guessing game that so many beginners indulge in.



Just how many fry can an adult female guppy give birth to at one time?

Like all good fishermen's tales the numbers claimed have tended to become a little exaggerated.

One claim from a reliable source, accurate because the person concerned is manfully employed in finding out such facts and figures under laboratory conditions, mentions 186 free-swimming fry. The same breeder also added that he had once dissected 193 babies from a dead female. Any advance on 186!



The quote from the DOOMSDAY BOOK by Gordon Rattray Taylor (Comments and Quotes, p.24, November, 1970) on the lethality of some brine shrimp should have been food for thought to many guppy breeders.

As most of us are aware these eggs are hatched in a brine solution and, because our upbringing tends to make us regard any saline mixture as having antiseptic qualities, we become careless. How many guppy breeders, so fastidious about cleanliness in their aquaria, use and re-use this hatching solution? Is it pure coincidence that the rise in the incidence of that guppy malady loosely referred to as 'white body' matches the growth of popularity in the use of brine shrimp as food? My researches and subsequent results show the two events following the same curve.

The re-use of brine shrimp mix isn't only for economic reasons. The killifish experts found that the

Continued on page 420

COLDWATER SCENE

Building Up a Hardy Strain

By FRANK W. ORME

CONTRARY to popular belief the fancy goldfish is a hardy coldwater fish. It is not a sub-tropical fish and should not be treated as such.

The goldfish is most adaptable and will withstand temperatures ranging from just below freezing up to 90°F (32°C). However, if goldfish are kept warm during the winter months, and their succeeding youngsters are subjected to the same warm treatment, the strain will become soft and tender. When given the correct cold-water conditions such fish will be more than likely to fail.

Recently I have had a number of visitors who voiced their surprise to see lionheads and veiltails swimming in my pool. People have also asked me why they experience difficulty in breeding their own fish. When I questioned them, one fact seemed common to all, which was that they kept their fish warm during cold weather.

My personal opinion, formed from experience over the past 20 years, is that all types of goldfish should be treated as Nature intended, by allowing them to have a winter rest in cold water.

Fish that have been correctly treated during autumn will come to little harm during the cold weather. With the advent of natural warmer conditions the fish will become more lively and can then be brought into breeding condition. When breeding takes place the male will drive the female vigorously, and not lose interest as too often happens.

To enlarge upon the above statements I will describe my 'set-up' and the treatment given to the two varieties of goldfish, veiltails and lionheads, which I keep and breed.

The Coldwater House

My fish house is a ridge-type cedarwood greenhouse, 12 ft. 6 in. by 8 ft. 6 in. Along two walls and the back is two-tier staging supporting tanks of 24 in. by 15 in. by 12 in.; 4 ft. by 18 in. by 12 in. and 5 ft. by 15 in. by 15 in. Beneath the staging along one side of the house and at the back, runs a sunken trough, 2 ft. wide and 18 in. deep.

There is neither compost nor plants in either the tanks or trough. During the summer, because the house gets long hours of daylight through unshaded glass, the water is usually green; this I think is good for the fish.

From May and throughout the summer all yearling fish and adults are in my outside pool, the fish house being given over to fish breeding and raising.

Early October is the time when the pool is given its annual clean out. At this time the fish are caught, placed in bowls and inspected for signs of any disease, parasite or injury. If everything is well the potential breeders are selected for the next season. These fish are placed in the

2 ft. tanks with the males and females separated. The remaining fish go into the trough.

The fish are now well fed on mash (a mixture that I cook up and which I shall be describing in 1971 in a later article), whiteworm and other available food until the water temperature drops to around 40°F (4°C). All feeding is then stopped.

During a very cold spell, a few years ago, I had the misfortune to have a number of the tanks broken by the pressure of the ice which formed in them. The fish, however, survived. As a precaution against any similar mishap I have now installed an electric fan heater in the fish house; this is thermostatically controlled to switch on just below freezing point and switch off again at a point just over freezing. Under these conditions it is quite often found that a quarter inch of ice will form in the tanks, and a somewhat thicker layer forms in the trough.

Inspection at this time reveals that the fish are lying on the bottom, in a torpid state, with hardly any movement. They are not disturbed until they become active with the natural increase in water temperature the following spring.

Procedure in Spring

During March a final selection of breeding pairs is made from those chosen the previous October. These are fed plentifully with chopped earthworm, whiteworm and my home-made mash. On this diet, and with the continued increase in temperature, the fish usually come quickly into breeding condition.

Hopefully the pairs are placed in the larger spawning tanks on a Friday evening, and if everything goes according to plan they get down to the business of spawning during the weekend.

After a spawning the breeders are removed to their original quarters and the temperature of the tank holding their eggs is artificially increased to 70°F (21°C) to promote a moderately quick hatch. Later this temperature is reduced, the water being kept at a minimum 65°F (18°C). All heat is switched off by the end of August, to allow the young to become acclimatized to cold water.

The adults and the young from the previous season, are put into the outdoor pool in May, where they remain until October. The cycle is then repeated.

My fish have been conditioned to withstand cold treatment over a period of years and it is my belief that if the goldfish fancier would forget the fallacy that they are sub-tropical fish, he will find his fish suffer less from common disorders and swim-bladder troubles will arise less often.

Goldfish are, after all, a coldwater species.

Objectives for the Present-day Fish Breeder

By F. W. COLES

HAVE you ever asked yourself why you keep tropical fish? And have you given yourself an honest answer? Put the question to a number of people and you will receive a number of answers besides the obvious one that fishes are interesting subjects.

I have found that the reasons given fall into three classes, which are broadly: (1) because the aquarist has a liking for keeping pets, and fishes are most suitable for his circumstances; (2) because he likes showing, and is keenly interested in club affairs; (3) because he likes breeding animals or is interested in genetics or both.

Under the first heading is included the aquarist who keeps a community aquarium in his house as perfectly as possible. Crystal-clear water, luxurious plant growth, and the housing of compatible fishes in variety are his objectives, and he is keenly interested in the technical side of the hobby: water conditions, filtration, aeration, etc. His one weakness is that he is usually susceptible to gadgeteering to the unnecessary depletion of his pocket money.

The second class of aquarists I find the most difficult to describe. Usually they are good club men (often unjustly called pot-hunters), who buy their fish either as adult ready-made exhibits, or as part-grown fish which they are usually adept at bringing on to exhibition size and form. They can expertly realise the potential of part-grown fishes. But also there are specialists who breed their own fishes, guppies and killies for example, and exhibit them with considerable success.

And then there are the fish breeders who can be specialists or, in larger establishments, who breed numerous varieties. The more advanced ones have a working knowledge of genetics, and the more affluent ones have large and impressive fish houses. It is really in this class that my own interest lies, and I find that quite a large proportion of the first two classes graduate (or degenerate, whichever way you prefer to describe it) to this condition.

In this article I would like to make a few general observations on breeding which can be understood by all.

Most people have no set rules for fish breeding, and usually the first pair of fish they get are what are used. Usually these are obtained either from a fish shop or a

friend. When the hobby first commenced this method was practicable, because most of the fishes available were imported wild ones, and were usually quite costly. Gradually though, more and more fishes were bred in fish houses for the trade, with the consequence that they became more and more related.

Any trio you buy from an aquarist's shop, in their stock tanks, are likely to be full brother and sister, i.e. from the same spawning or brood. I am sure that this indiscriminate breeding of full siblings without adequate selection is the main reason for the decline in size and finnage of most bred varieties—particularly in live-bearers (which, most of the older fanciers will tell you, used to be far superior to those available at the present day). Because I say this I do not wish it to be thought that I disagree with inbreeding—that is not the case. What I disagree with is indiscriminate inbreeding—which is usually disastrous.

What does the present-day breeder do? Well, for varieties that are still exhibited in their natural colours and finnage (barbs, danios, rasboras, killies etc.) it is best to obtain a trio of youngsters from widely differing sources, to ensure as little relationship as possible, and interchange the sexes so that one has unrelated males and females. This could result in an immediate increase in size in the progeny, from 'hybrid vigour' alone.

The other 'fancy' varieties (guppies, for instance) are more difficult to deal with, and I think that fanciers will have to breed for size as well as colour and finnage if progress is to be made. At the present time there seems to be a growing tendency towards sterility in some varieties (I have noticed this in platys) and parents will also have to be selected for fecundity as well as size and exhibition points.

There is a lot to be done in breeding and some of the problems confronting us at present can be very difficult to overcome. But let's try, shall we?

Next month: Planning a Breeding Programme.

Guppy World

continued from page 418

presence of certain bacteria helped in the breakdown of the egg cases and were necessary if they were to have a successful hatching. Applying this to their own use, the guppyatic claimed that a bacteria build-up in their shrimperies could also act in the same way. However, subsequent

experiments revealed no great difference in hatchings between those who used fresh brine each time and those who didn't. Except, perhaps, that the latter experienced unexplainable fish losses from time to time, the cause of which they never properly fathomed.

MARINE FORUM



Pterois volitans

An Ideal Marine Tank Fish

By M. E. ROCHE

WITH the growing interest now being taken in the marine section of our hobby, quite a few people ask for an easy species to start with—and for my money the *Pterois volitans* has few equals. Although his beauty may not match up to that of some of the butterfly fishes and angels, he has a macabre beauty all his own and, more to the point, is a great deal easier to keep alive. What follows is the result of my own observations and experience of keeping *Pterois*.

Feeding. These fish are strictly protein-eaters and will starve rather than eat anything else; so this should be borne in mind before buying a *Pterois*. When starting to feed a new specimen, beware of feeding too much with live fish, as once *Pterois* get started on this, their favourite diet, you will find it very difficult to wean them back on to dead flesh.

Pterois will never nibble food—they size up their potential meal and if it is too big they will leave it. If it is the right size they will seize it in one gulp, so you have no problems with bits of debris sinking

down to foul up the tank. Raw fresh mussel, haddock, crab, beef, earthworms, all these are excellent foods. At times you will find that *Pterois* will fast for 4 or 5 days at a time. Do not be alarmed. Like most predatory fishes in the wild, they will gorge themselves as the opportunity arises as it may be several days before their next meal happens along.

Tank maintenance. This is simplicity itself with *Pterois* owing to their food being devoured in one gulp. All that is needed is a pair of wooden or plastic forceps so that any uneaten food may be removed. Do not plunge your hands in as these fish are, of course, dangerous. These fish exude a great deal of body mucus, which you will find will float on the surface of the water. I remove this with a plastic tea strainer once a week. I don't think this is really necessary but the scum does look unsightly.

Water condition. This is not critical. I keep my tanks at pH 8.3-8.6 at a temperature of 72-74°F (22-23°C). I have kept them in the eighties but find that these fish

go off their food more often.

Community life. This fish is a community fish up to a point. One must remember that, if fed properly, *Pterois* will treble their size and weight in one year, so the dear little spidery creature you bought, say, 2 years ago is now able to dispose of a 3 inch goldfish in one gulp. So I think they are better kept on their own. Being a rather lethargic fish, a one-foot specimen will survive quite well in a 30 in. or 36 in. tank provided that you have a good, powerful undergravel filter going all the time. I consider this a necessity in any marine tank. This is all I use and I have never tried all the expensive paraphernalia that is available. (Maybe I will one day when my ship comes home!)

This lack of dependence on complicated devices is, of course, one of the reasons for my addiction to this species. They are as tough as old boots and do not require expensive equipment or even very expert handling. They will also put up with the hurly-burly of life in a flat without going into fish-type hysterics!

One Man's Marine Aquarium—5

Diseases and Treatments

By **RON TURNBULL**

DESPITE the fact that tropical marine and tropical freshwater fishes live in entirely different habitats, diseases that the aquarist will encounter in both types show a marked similarity. While it is obvious that the amount of research into marine fish diseases is nowhere as great as that for freshwater fishes, nevertheless most diseases met with by the marine hobbyist can be cured with a little knowledge and patience.

Salt water 'ick' is perhaps the most common ailment met with. It is fatal if not treated speedily. The disease can be detected in the freshwater species.

The fishes will become restless and start to scratch themselves on coral. One such scratch against the bottom, however, need not send you rushing to the medicine chest as most fishes will occasionally scratch themselves (as do most other animals—even humans!).

The white spots of salt water ick are smaller than those of the freshwater disease but nevertheless are visible to the naked eye. Treatment is best carried out by raising the temperature to 85°F (29°C) with increased aeration. This should clear the disease but if it persists there are a number of drugs on the market and the best move is to consult your dealer.

Another of the more common complaints that confronts the keeper of marine tropicals is salt water itch. This is caused by micro-organisms in the water, usually developing as a result of overfeeding. There are no spots but otherwise the symptoms are similar to those of ick; the fish will also breathe deeply at the water surface and occasionally dash madly around the tank. Treatment is best effected with the use of copper sulphate solution. This can be bought as a proprietary cure already diluted, or it can be made up by the aquarist (as described below). It usually takes

about a week for the treatment to take effect.

External parasites and fungus will occasionally be found on marine tropicals. For the former, the fish should be placed in a weaker salt solution (down to about specific gravity 1.015 for a few hours), whereas the latter problem can be overcome by raising the temperature to 85°F (29°C), remembering to increase the aeration.

One of the first disorders that I was confronted with as a marine beginner was 'pop-eye', in a domino damselfish. This is rather a frightening experience. The eye becomes very enlarged, as the name suggests, and protrudes from its socket. It is of unknown origin although gas accumulation around the eye has been said to be responsible. I found no cure for this in the textbooks and was told by one aquarist that there was indeed no cure. I experimented by removing the fish to an airless tank and kept it in semi-darkness for about a week, after which the swelling went down and the fish seemed none the worse. Since it has been said that the supply of air in the form of very fine bubbles can cause pop-eye I regulated the size of the air bubbles in the community tank. I have not seen any more trouble from pop-eye.

One of the most common diseases to confront the marine aquarist is a disease caused by a microscopic surface parasite called *Oodinium*. The symptoms include lack of interest in food and the gathering at the surface to breathe. The parasite establishes itself on the skin and gills and is introduced into the aquarium by infested fishes. Once again copper sulphate solution can be used in the

treatment. A stock solution can be made by dissolving 1 gram of copper sulphate in a litre of distilled water; 7 millilitres of this solution should be added to the tank per gallon of seawater present and all filtration stopped. For the non-chemically minded aquarist the proprietary copper sulphate cures are adequate.

Very occasionally the marine aquarist may be confronted with a mystery disease. But there is no reason why the marine tank should be any more trouble than the freshwater tank because of fish disease, even though losses can occur from an unrecognised disease developing, provided that all the rules of cleanliness and caution about new stock are adhered to and the aquarist keeps a wary eye out for sickness and deals with it immediately.

To be continued

THE BRITISH KILLIFISH ASSOCIATION announce that a new tape and slide show covering member Mr David Blair's West African expedition will be available to societies, thus supplementing the five tape and slide shows already in service that have now been reviewed and brought up-to-date. Please contact secretary Mr W. Devison, 2 Shaw Road, Tipton, Staffs. At the Association's A.G.M. members learned the exciting news that a number of fishes as yet unidentified had been received from Mr Blair's expedition. Similar to *Aphyosemion cinnamomeum*, they are at present known as K1, K2 and K3 after the Kumba region of Ghana in which they were found. It was also announced at the A.G.M. that a General Meeting is to be held in Wellington, Somerset, at the Squirrel Hotel on the 4th April 1971. Previous ventures of this kind have been a great success and it is hoped that a good number of members and prospective new members will be able to attend.



Personal COMMENT

by
ARPEE

MOST aquarists of long standing will know what I mean when I say that one's taste in fish changes over the years. In my formative years in the hobby I certainly chopped and changed around the species in my community tank, though not drastically. I suppose I ran the gamut of the varieties favoured by most beginners and, true to form, finished with a troop of livebearers and their offspring which were most difficult, even in those days, to dispose of.

Whatever my choice of the moment happened to be, however, the constant factor was that the creature had to be fish-shaped. This meant that it had to look like a miniature herring, like a minnow or a small roach. All these were fish-shaped. Gudgeon, catfish and loaches, on the other hand, were not fish shaped and hardly came into the reckoning. It must have been my tidy mind, or perhaps even a deranged one, but these species were decidedly beyond the pale. And so it seemed to be with many other fishkeepers of the time.

An intolerance of sameness coupled with improvement in the variety and quantity of imports gradually made it easier for the hidebound aquarist to appreciate the attractions of the less conventional species and even the snake-like kubli loaches came to be accepted as legitimate members of the community tank. One thing all these newcomers had in common with the established species was that they propelled themselves more or less as you would expect them to. Certainly the loaches could put on surprising turns of speed, but they looked like snakes and moved in snakey fashion; if, perhaps, this was not very fish-like, it was a natural motion and therefore un-worrying.

The fishkeeper usually has it drummed into him from earliest beginnings that any fish which lies on its side, swims upside down, or which rolls awkwardly from side to side, is booked for an early demise. So it is in most cases, but there are some oddities here and there which exhibit the foregoing as quite normal characteristics and one should certainly be aware of the facts either before buying them or before deciding to reject them on these grounds alone. The upside-down catfish, the loaches and the 'sharks' are cases in point.

Of them all I think the sharks are the most remarkable and of the sharks I think the red-tailed black shark is the most spectacular. It is a very well-known species, its jet-black body contrasting beautifully with its blood-red tail. A white fleck on the dorsal and some barbels up forward complete the familiar picture.

I took a long time to come to terms with this fish. It never seemed very stable as it twisted and turned in the water and frequently went to ground beneath rocks, where it appeared to spend many hours, in happy contemplation

of quite what I do not know. At all events this involved it in an absolute minimum of physical exertion. Furthermore it looked to possess an independent disposition and I am not greatly fond of fish which thereby fail to exhibit their pleasure or disapproval of the food you give them. I think that indications of this sort help signally in bringing fish into good condition and those species which do not co-operate make things difficult for all concerned. Above all, the rolling, uncertain progression of this fish through the water rather revolted me at first: even if it were natural it contained a subtle suggestion that it was a difficult species to manage. This seemed to be supported by the general lack of knowledge of its life cycle, and in particular of its breeding habits.

Labes bicolor is imported from Thailand, and since this is virtually the sole source of supply the specimens most frequently available are small and expensive. They are often horribly diseased as well. They therefore need selecting carefully and in the absence of any signs of injury (split fins apart) I would normally accept any plump specimen with good body colour. I except split fins because this species is always scrapping and the resultant injuries are normally confined to this particular defect. If you can buy a half-grown specimen (about 2½ inches), so much the better. This has probably come from a private collection and may be a really good investment, as fatalities amongst the tiny specimens are all too common for comfort.

I overcame my revulsion for this species a couple of years ago when I bought a quartet of youngsters, around the 1½ inch mark. They were cheap and of poor quality but were temporarily in short supply (in which circumstances the collector swallows his scruples). One of them was disposed of by the remaining three after a couple of days and a further fatality followed shortly afterwards. Of the surviving two, one contracted what appeared to be tuberculosis and the other gathered strength ever so slowly.

The going was quite hard and they never seemed to thrive until I put the fit specimen into a tankful of adult angels. The weak one went in with some smaller angels and catfish and, if anything, declined still further. The former gradually put on body and developed into a reasonable but not very large fish and joined in terrible battle with a much larger red-finned shark that I subsequently introduced. This feud was protracted and deadly and only recently came to a close with the death of the newcomer.

The other, tuberculosis-ridden specimen somehow hung on to life and, although it is now only half the size of its 'brother', is developing nicely and is the only fish I have ever had which has so completely recovered, unaided, from that terrible wasting disease which claims so many fatalities.

The attraction of the red-tailed shark lies undoubtedly in its eventual maturity, and again it is unusual in this respect since few species improve in colour and texture with advancing age. Although it is an algae-eater it takes almost anything offered and will cavort about in the feeding line like most 'normal' fish.

I am less inclined to be charitable about its tempera-

ment than many other writers who tend to write off its aggression as bluff. This may well be so in some cases but it is a territory-guarding species and therefore naturally inclined to see off any form of intruder. It seems to be a little more aggressive to its own kind than to others, which means that conditioning of half a dozen fish can be something of a problem unless you possess six tanks. This is a fish which can reach over 5 inches in a large tank and at this size specimens are real showpieces. They also become much more individual and pernickety at this stage, and it is perhaps because of this that I recommend them with slight reservation.

If you have a collection of largish fishes, by all means keep sharks, or you can bring on small sharks with smaller fish with a view to their joining a community of bigger fishes later on. There is always a hungry look in their eyes, though, and I would keep larger specimens out of a tank containing small tetras, just in case. You can hardly blame them, either, as anyone who has lived exclusively on algae will tell you.



Whilst it may be true that one or two of the major establishments maintain reasonable stocks of aquarium plants throughout the year it is a sad fact of life that dealers in the provinces have a different attitude to one of the basic needs of the fishkeeper, and it is therefore difficult to know with any degree of certainty whether at any given time you can equip a new tank. The situation is not improved by the dealer who will fill his plant tanks with rapidly disintegrating *Cabomba* or *Myriophyllum* and who looks vaguely offended when you ask for some Amazon swords or *Cryptocoryne*. Amidst all the uncertainty one fact does rather emerge from year to year, and that is that there are seldom serious shortages around Christmas: the vagaries of the plant market seem therefore to arise from economic rather than horticultural causes.

I am convinced that to fill in gaps in understocked aquaria or to effect a complete change of scene the best buys are still the *cryptocorynes*, especially the larger leaved varieties, whose toughness will defeat most snails and some of the cichlids too. Don't always expect to get a named variety, though, for the cheap price of 3 to 4 shillings which is normally asked for them. The variegated rushes are also suitable for larger aquaria, even though they often collapse after a month or so. Left well alone they usually arise again, and grow to dimensions more fitting to their new environment. The sword plants are also really splendid acquisitions, but care should be taken that the large varieties are bought for large tanks, and that the smaller varieties are used either for small aquaria or for secondary planting in the major units.

My own insatiable appetite for anything new in the plant line drew my attention recently to a supposedly 'new' variegated rush-like plant, and at 3 shillings or so the price was not unreasonable. The dealer was not at all certain what the name was and muttered something about a 'jungle rush'. When I saw the tuberous roots I remarked that it was more like a terrestrial plant than an underwater species, and when I got it home I was quite unable to tell the difference between it and the spider plant (*Chlorophyllum*).

This plant is now becoming more common in other dealers' tanks and I have been asking them what the scientific name is. The most frequently quoted name is 'Chlorophyllum', which I cannot trace in any books on the subject and which is near enough to what I believe to be the correct one to make me think that we have had another fast one pulled on us. If I am wrong I am quite prepared to eat as much humble pie as you like, but I wonder whether any plant specialist can validate this newcomer as something other than a phoney? In the interests of the Trade Descriptions Act we ought to get it right.

Having got it right I think the odds are that someone has stumbled on a likely winner because I must express complete satisfaction with the plants I bought some 2 months ago and which are doing as well as any other new plant I have bought for some time. In no case have any leaves rotted off and floated to the surface. In all cases the tuberous roots are still intact and I suspect that I have even seen growth in one or two leaves. Algae have failed to settle on them and no fish have bitten lumps from them. Their colour is as good today as when I bought them. Snails have failed to ravage them. They look extremely nice.

If this is indeed the spider plant (and if it isn't, it is a jolly close relation) one wonders just how many other plants normally grown emerge would be equally good doers as underwater specimens. The host of grasses, sedges as well as non-grass-like plants that flourish by the pondside well illustrate the point that many will do well in either set of conditions, the only limiting factor being the qualification that there must not be complete drying out. Intelligent experiments with numerous plants known to like wet conditions may open up further possibilities to the lover of aquarium plants. I am already trying out a snippet from a known spider plant: the results should be interesting.



When I first began to try out the possibilities of egg-layers I was more than depressed by the exhortations of the experts on the subject of the need for cultures of *Infusoria* for the fry. I could never seem to make the wretched stuff properly; every time it seemed 'right' according to the book it struck me as being distinctly wrong and usually took a short cut down the drain. I lost a number of batches of fry owing to *Infusoria* failures. Either the cultures were too thin or they were too much for the fry. Careful experiments with tubed liquid foods worked wonders, but I do emphasise that a little at a time, often, is somewhere along the way to success.

I nearly made the mistake of throwing my hand in when spawning after spawning went wrong, but this is just where you should press on and extend your learning, particularly if you keep records of prevailing conditions (temperature, pH etc.). The books are wonderfully useful in getting you on to the right lines, but the authors cannot possibly know all the factors which might affect an individual spawning, so you have to do your own homework, unless you are very lucky, to attain consistent results.

Guppy Types No. 7: The Pintail

SO far in this series we have discussed the more popular varieties of fancy guppy. Now we shall turn to the less popular, in fact somewhat rarer, types. What better one to commence with than the first 'mutation' to show itself—the pintail.

At the start of World War 2, with many of its members away in the armed services the Guppy Breeder's Society was kept going by a handful of enthusiasts. Good guppies were as rare as fleas on a Cruft's Champion and the male variety holding pride of place was the roundtail. It was from such roundtail parents that the first 'mutation' appeared, differing from them in that the centre three rays of the tail formed a sliver-like extension.

In the beginning they were treated as oddities and our first record of their appearance on the show bench was at an event held in a cafe off Platt Street, in Camden Town, London. The time: early 1940. The show judge, cafe owner George Evans, called for a pair of scissors when he saw the pintails, to cut off what he jocularly referred to as 'the offending extension'.

Later, when the Society moved to Wadham Church Hall their first guppy show again saw these fish in the a.o.v. class under the name spike-tail. It was obvious that they were being bred and that something must be done to give them a proper name and create a Standard.

This job was entrusted to the secretary, the late W. G. Phillips, who as well as keeping fish was also interested in birds. Seeing an illustration of the pintail duck, he professed this name to the Committee and to his amazement they accepted it.

The G.B.S. chairman, Henry White, now approached the F.B.A.S.



1967
F.G.B.S.
F.G.A.



1970



GERMAN

Pintail standard outlines drawn to emphasise the alterations in the outline of the dorsal fin that have occurred

to discuss a Standard and a Committee from the latter body consisting of Captain L. C. Betts (in the chair), Jack Carnell and Bob Mealand, met to examine the pintail guppies put forward. Though the first specimen offered died on the way to that meeting, the F.B.A.S. and G.B.S. agreed on the final details. These appeared at the end of 1940 but were overshadowed by the announcement that the first albino guppies had put in an appearance in the States.

(More about that next time.)

Though pintails had been bred with extensions of three-eighths of an inch, the variety was never popular or prolific. In fact, its scarcity saw it left out of the 1964 F.G.A. Handbook. But 12 months later it re-appeared in the revised edition.

Thanks to the enthusiasm of

contemporary breeders such as Malcolm Delingpole and Graham Fletcher of the Birmingham Section, F.G.A., plus one or two F.G.B.S. members, the variety is making a comeback. Malcolm won first prize for his 'pins' at the Seventh International Show in Vienna (July, 1968). The winner, a blue/black fish, exhibited a box-like dorsal fin and parallel caudal extensions. Graham has just spent 12 months with pintails and, judging by his successes on the bench, has been able to justify his original decision. No mean feat when you consider that the pin extension must now top five-eighths of an inch. An example to those newcomers to guppies who still insist on chasing the 'broadtail' types!

J. K.

● CHANGE-OVER to the metric system means that tanks of the old 36½ in. size are to cost more. This is because purchase tax is now to be levied on all tanks up to 110 cm. (43½ in.) in length (the previous limit was 36 in.). New tanks are

taxable by this ruling as from 1st February 1971, announce Lee, Reid & Co. (London) Ltd., the aquarium manufacturers.



● IN the article on standards for goldfish by Mr M. D. Cluse (p. 133, January) it was stated that the revised G.S.G.B. Standards booklet was to be published early in 1972. The booklet is in fact due to be published this year.

Transatlantic TOPICS

A CONSIDERABLE part of my life is spent speaking to eight inches of black plastic. The trouble with trying to answer fish queries over the telephone is that time does not permit one to search through the records for all the known facts. One such phone call requested information about the use of tetracycline hydrochloride (Terramycin) and its use in the hobby. I had to admit my knowledge was limited. Sure enough, no sooner had I replaced the receiver than the next post brought two articles on the subject.

Dan Carson (Modern Aquaria, New York), questions the possible destruction of intestinal bacteria by this antibiotic. He states that importers and wholesalers using the chemical had reported subsequent fish deaths through starvation.

On the other hand, Kenneth Lister, in an article 'On the Use of Tetracycline in the Treatment of Certain Tropical Fish Diseases', took a brighter attitude towards these so-called side-effects:

'Fish are treated with tetracycline by the addition of 100 mg. per gallon of aquarium water, or one capsule per 2½ gallons. This is repeated one more time. Larger quantities are usually no more effective and may lead to side-effects. One possible result is the destruction of intestinal bacteria, which may lead to the fish displaying a sunken belly for a time. But this effect is always almost preferable to the disease.'

* * *

The odd behaviour between parent cichlids and their young has been observed for some time but until the present hasn't received much attention. Though at first glance there does seem to be a wealth of literature available on the subject it isn't much when compared with that for other fields of fish study.

Now Dr James E. Cole, Department of Biology, Bloomsburg State College, Pa., has appealed for any information on parental care cichlid fanciers have to tell. He illustrates the kind of actions we refer to firstly by reference to the orange chromide (*Etoplus maculatus*): when disturbed, the parents will be seen flicking their dark, pelvic fins. These are

By JIM KELLY

signals to the young fish to move closer together. In this compact state the school can be more easily defended.

In the dwarf cichlids (*Nannacara taenia* and *N. anomala*) the fry become motionless when the adult female performs violent shaking movements. If she follows this up by diving downwards the fry scatter and hide until further shaking by the parent indicates the 'all clear'. A similar action by an adult mouth-breeder includes a head-down posture accompanied by the rapid opening and closing of the mouth. This allows the fry instantly to seek the safety of the parent's jaws.

* * *

A piece of information useful to those breeding the fighting fish (Betta splendens) that came out of a research paper is that the males prefer to blow their nest of bubbles under a yellow, floating object, about the size of a grapefruit. Their preference for this stems from the use of native plants found in Thailand.

* * *

Imagine my pleasure in receiving a complimentary copy of the New York Aquarium BOOK OF THE WATER WORLD. Written by the curator of publications at the Coney Island Aquarium, it is every bit what the book jacket claims it to be: 'a guide to the representative fishes, aquatic invertebrates, reptiles, birds and mammals'.

Each year approximately 17,000,000 people flock through the turnstiles of Uncle Sam's aquariums and these figures emphasise the tremendous interest in all things aquatic held by our cousins across the water.

Mr Bridge's book is a little under 300 pages, is profusely illustrated and I think it will certainly help to answer the many questions raised by both visitors and practising fishkeepers alike about what is going on in the watery world. The

author's previous books, nearly a dozen, include: 200 DOCTORS, 200 EXPEDITIONS and 200 NAMES.

* * *

Calling all killie fanciers. If you are troubled with your fish eggs going white, try keeping them in tightly sealed screw-top jars.

One Stateside killie man has done so and claims success; he thought it was the bacteria from the air that were doing most of the damage. Even if you doubt the wisdom of this statement the procedure will make a pleasant change from malachite green and those other medications used so often to prevent the eggs being attacked by fungus.

T.T. would be interested to hear results from any readers trying this out—with success or otherwise.

* * *

Just when I was about to forsake the habit, finally to become free from the clinging weed, I heard about one of my favourite animals that apparently likes nothing better than a quiet puff on a cigarette.

This unusual fish is a carp called 'Eager' (now there's a name to conjure with!) one of three owned by Mr Leon Smith, an animal psychologist from California. Where else?

Not only has he taught his fish to smoke but also to ring a bell by pulling on a cord when the parags of hunger call. The carp feed from a baby's bottle and can even select one playing card from a number by swimming in front of it.

If Mr Smith places his face near the surface of their tank, 'Eager' will pop up and give him a kiss (our psychologist's hirsute appearance being no deterrent to this show of affection).

It took Leon 6 months to train his 'fishy' trio and now he claims he has the world's only 'performing fish' act. Two of the carp are 50 years old, the third being a mere stripling of 20.

Just in case I didn't take Mr Smith's word I have a picture that shows one of the fish eagerly puffing away at a fag in a long cigarette holder. How else could he keep his 'smokes' dry?

* * *

It was a typically progressive fish club: 'Give them an inch and they always take 0.914 metre.'

Sources of Trouble with Algae

By RON FORDER

It can safely be assumed that every aquarist who uses planted tanks, and the majority who do not use plants in their tanks, suffer at some time or other from unwanted growth of algae. Our biggest enemy in this range is the blue-green. This is probably the oldest form of plant life in the world. The spores are almost everywhere, so that the blue-green rapidly appears and propagates under conditions inferior to those required by higher forms of plant life.

Strong light in conjunction with damp and plant food of any description will induce strong growths of this pest. It will grow in temperatures ranging from just above freezing to very little below boiling, and will thrive equally in hard or soft water. In fact it will accept almost any environment. We can fight it by providing conditions which are ideal for the higher forms of plant life.

These are correct temperature range, correct light intensity and duration, correct rooting medium and depth of water suited to the species of plant grown.

Top light is essential, and aquarium plants are unsuited by light from any source other than over them. One of the chief offenders under this heading can be early morning sunlight, which can strike the aquarium for an hour or two each day from an angle.

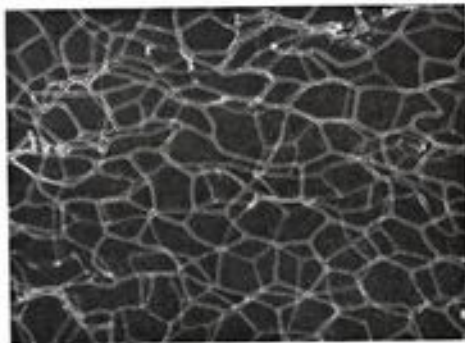
The planting medium must be open enough to allow for free circulation of water, with minimum particle size $\frac{1}{4}$ in. but preferably $\frac{1}{8}$ in. diameter. Over a period of many years in this hobby, I have yet to see a fresh-water aquarium with silver sand or other fine mixture, that is not in trouble with blue-green algae. Not only do bacteria build up rapidly in very fine sand but the roots of plants are unable to travel easily through it. Coarser sand or gravel placed below such a fine layer will only make things worse, as also will the addition of any kind of fertiliser.

Uneaten food falling on to sand or plant leaves is another encouragement for blue-green algae and will sometimes make other types of algae appear.

Blue-green is particularly troublesome in the spring, usually because our aquarium plants are partly resting, although the materials available for plant growth remain the same all the year.

A further encouragement to algae growth is the presence of catfishes or other bottom-stirring fishes. Their activities will also encourage sheet filamentous algae, as the muck deposited on the leaves of plants forms a mini-garden for these. Air-stones should not be placed so that they stir up the bottom, as sediment from this origin will settle on leaves, having the same effect as large fishes. I have also found that filters, if used, must work regularly at least 12 in every 24 hours, as algae-feeding bacteria will form very rapidly in unused filters.

Another condition that often brings on algae is residues of fish food fouling the cover glass, angle iron or any part of the tank above



A rare alga known as the 'water net' (magnified approximately five times). This was photographed by Mr C. Wright, who describes it (*Hydrodictyon*) as growing in the form of cylinders $\frac{1}{4}$ in. to $\frac{1}{2}$ in. wide. In the picture the two 'walls' of the cylindrical net are distinguishable (nearer fibres are paler)

water. Plastic hoses to and from power filters must be cleaned out regularly, the inside of these being a breeding ground. Live foods from the wild are in water that is teeming with algae spores, and this as well as possible danger from disease to our fishes, makes it essential to wash such foods and not transfer water from the wilds to our aquarium.

How often plants and fishes are obtained, taken home and put into the aquarium with no thought to quarantine. Quarantine everything is the answer to so many troubles. A newcomer to the hobby is well advised to remember the adage cleanliness is next to godliness in aquarium-keeping.

The aquarist should buy his plants from a source where they are in a growing position with no visible algae on them, and are clean; except for those which are sold as cuttings the plants should have established roots.

Even rainwater carries spores of all algae, and near large cities it can have in addition excess of impurities and is best left alone by anyone inexperienced in the hobby.

Breeding Experiences with Kissing Gouramis

ALTHOUGH the names *Helostoma temmincki* and *Helostoma rudolphi* are widely used as denoting distinct species of kissing gouramis, many aquarists have suspected that *H. rudolphi* is merely an albinistic variety of *H. temmincki*, the natural 'green' fish. Reports of the breeding of kissing gouramis in aquaria have been infrequent and those presented here of crosses between the pink and green kissing gouramis are believed to be the first to have been made. The reports could provide further support for the suggestion that kissing gouramis are a single species showing two separate varieties.

A Spawning of Pinks

MRS RONA BREWER, who has been a member of Hounslow & District A.S. of Middlesex for 6 years, had her first successful spawning of the pink kissing gourami (*Helostoma rudolphi*) last July, and most of the young fish are now in good shape and growing well.

Rona has bred many different species of tropical fishes, including some gouramis, but never the pink kissing gourami. She told me that she had been trying for a long time with two large adults, and they had been given one of the bigger tanks in her fish house to themselves—until Rona came to the conclusion that the fish were of the same sex (subsequently she has determined them both to be females).

So these adult fish were put in a 36 in. by 15 in. by 15 in. community tank, which already contained two adult and two young pink gouramis together with seven green kissing gouramis. Three weeks later the pink gouramis spawned, and the eggs hatched into healthy fry. Then Rona witnessed a further spawning, and she was then able to recognise the male fish. To date Rona's pink kissing gouramis have spawned four times, and each time she has successfully reared the fry.

The first spawning resulted in some 300 fry, which were brought on for about 4 weeks on a diet of Infusoria (for the first week), microworms, sifted dry food, cyclops and pulped earthworm.

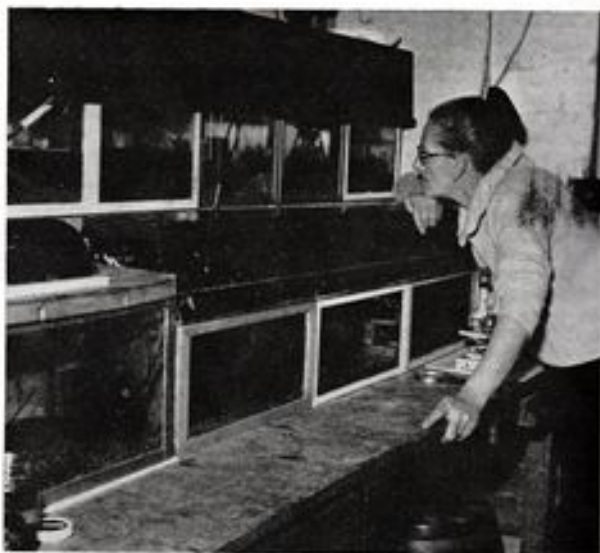
Space has always been one of the

By BILL HOWES

problems in Rona's fish house, because she keeps an interesting variety of fishes, so she gave most of the young gouramis to fellow aquarists.

Those she kept, and those given away, are all of a healthy size for their age and are all now feeding on adult foods. Some of the young gouramis from the first spawning have now reached about 2 inches in length.

An interesting point is that when the gouramis spawned it was noticeable that neither of the adults was concerned with making a bubble nest, and the eggs just floated on the surface of the water. The parents completely ignored the eggs and



Photo

W. J. HOWES

Mrs Rona Brewer in her fish house

the fry; in fact there were no signs of parental care at all, which Rona considers most unusual for gourami species.

Rona had paid no special attention to the fish to induce spawning in the community tank; the event had come as a surprise. However, the aquarium had originally been filled

with rainwater; it was kept at a steady temperature of 78°F (26°C) and was heavily planted with Amazon sword, wisteria, sagittaria and giant hygrophila; a small bubble-up filter provided aeration.

Before the spawning it had been noticed that the adults were eating a lot more, although Rona was not

aware of the significance of this at the time. Feeding of the adults utilised a varied diet: spinach (dried and crushed to powder), lettuce (fresh and rubbed down), Bemax, oatmeal, earthworm (chopped fine), plus a home-made dry food consisting of liver, oatmeal, cod's roe, halibut oil and various vegetables.

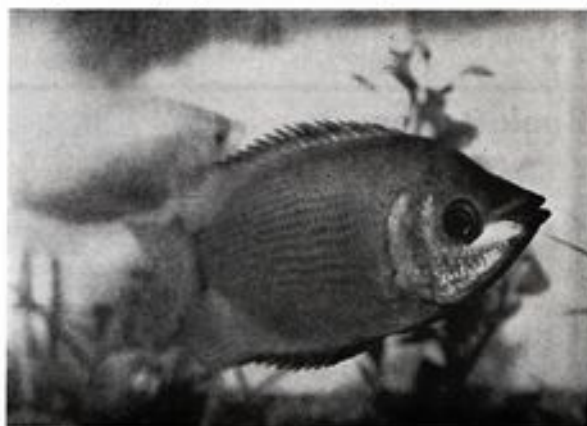
Pink x Green

MR AND MRS STEPHEN FAGAN, members of Clapham A.S., who live in south London, are a husband and wife team who have achieved remarkable successes in breeding tropicals in the relatively short time they have been following the hobby. The event that has delighted them most of all, however, has been the spawning in their fish house between a pink kissing gourami and a green kissing gourami. The green kissing gourami, which proved to be a female, is larger (4½ inches) than the pink male (3½ inches).

These gouramis were originally housed in a 48 in. community aquarium. Also present in the tank was a second pink male of about the same size, and it was the sight, last October, of the two pink gouramis on either side of the green in a spawning attitude that caused Mr and Mrs Fagan to remove all the other fishes from the tank at once.

Spawning then proceeded with one of the pink males pairing with the

green female. Mr and Mrs Fagan witnessed the spawning several times and describe it as resembling that of other gouramis except that the male kissing gourami appeared to be unable to wrap the female with his body



as fully as gourami males do typically, and no bubble nest was built.

The spawning took place at night in overall fish house lighting from fluorescent lamps. Tank temperature was 75°F (24°C) and a feature of the planting of the aquarium was that the rich growth of vallisneria had given rise to a heavy top layer of this plant's floating leaves. The eggs, which were translucent and of estimated diameter about ⅓ in., floated in amongst these leaves.

At the time of spawning the typical dark body markings and dark edges to anal and dorsal fins of the green female were greatly intensified. Mr and Mrs Fagan tried to note distinctions that could serve to identify the

Mr and Mrs S. Fagan watch their pink x green spawners in their fish house. Their green female is pictured above

sexes but none could be found. The female shows a fairly marked indentation above the upper jaw which gives her the appearance of having a 'snout'; apart from size the only other visible differences between the parents were, of course, those of colour of body, fins and iris (orange in the green gourami and yellow-green in the pink gourami).

The gouramis were removed from the tank after spawning and the eggs were left to hatch there, which they did about 3 days later. At 5 days the fry were free-swimming and at 14 days the youngsters were showing the mouth movements characteristic of the species.

At 14 days some differences could be seen in the fry, now removed to

another (unplanted) tank; some showed a dark line on their dorsal surface and others revealed the pearly sheen of the pink gourami.

Mr and Mrs Fagan thought it possible that the gouramis could have

spawned in the tank before the occasion in which they watched them. Although the parents were not seen to eat their eggs, their habit is to suck Bernax from the water surface at feeding time, and the nature of this feeding process would not discriminate between floating eggs and food or any other particles!

The spawning pair were kept on their own in a 30 inch tank and at the time of my visit to Mr and Mrs Fagan the fish were showing signs promising a repeat spawning. Both fish mouthed one another's body surfaces, the female doing this to the male more frequently and she was observed generally to play the more dominant role in the initiation of spawning. **ANTHONY EVANS**

Book Review

TROPICAL FRESHWATER AQUARIA by George Cust and Peter Bird. 160 pp., illustrated. Paul Hamlyn, London. 30p (6s).

FISHES OF THE WORLD by Allan Cooper. 160 pp., illustrated. Paul Hamlyn, London. 30p (6s).

THE series of Hamlyn All-colour Paperbacks, to which these two books belong, has produced some of the finest specialised popular works to be seen on the market. Readers with interests beyond aquaria may already be familiar with those on Snakes of the World, Prehistoric Animals and Fossil Man. If not, all those books and others can be highly recommended, for they are not only written by acknowledged specialists but embellished with the best illustrations to be found anywhere in their respective fields.

This being so, it is all the more regrettable to find that the two volumes now at hand do not come up to the standard of the others, particularly in the matter of illustrations. Indeed, the drawings in **TROPICAL FRESHWATER AQUARIA** are so appalling that one is left wondering how they could have been accepted by the firm that produced **Fossil Man**. They are not even good caricatures—just plain hopeless, or perhaps one should say coloured hopeless, for good colour printing has been wasted on them.

Drawings of plants seem to have been made by someone more competent, but no acknowledgement of this appears.

The text is by two aquarists with a good grasp of their subject and requires little comment; it is an adequate exposition of the principles of aquarium keeping with a condensed account of the 'tropics' most likely to be encountered by the beginner. Here and there a rather comical effect results from carelessness in phrasing—for example 'The Glowlight Tetra has caused a lot of confusion over its name'. Due to some impediment, or deliberately? 'The Climbing Perch is not a perch and does not really climb'; which, of course, accounts for the name. Or consider the piranha—'the so-called terror of the Amazon is reported to be capable of stripping the flesh from a cow in a few minutes. It has extremely powerful and sharp teeth.' And a capacious stomach too, by the sound of it; never keep a pet piranha on a dairy farm.

FISHES OF THE WORLD is well written by a specialist, under an assumed name, who has admirably contrived to compress a large subject into a small book. To this extent it measures up to the earlier standard of the series, but unfortunately this one also is disfigured by some ghastly illustrations.

The 'guppy' on page 87 will horrify even the veriest tyro; the only excuse for enlarging a fish about three times linear is to show structural detail, but as everything about this drawing is quite wrong it would have been better reduced to invisibility. Indeed, the general disregard for diagnostic structure, proportions and pattern evident throughout the first-mentioned book is also to be

found in this one. The head of the dorab is very characteristically shaped, with an oblique mouth and large fangs, but on page 43 it has been given a head reminiscent of certain small characins; the body is wrongly shaped, too. The eye of the whale shark (page 23) has for some reason been placed up on its forehead—and so on and so on. In this latter book a second artist has contributed some more tolerable drawings but these only contrast with the others and give a patchy effect. I do not blame the author for not wanting his real name to be associated with this sort of thing.

Please, Paul Hamlyn, maintain the standard of **Fossil Man**, **Red**, **388AV10CH** etc. They were terrific.

A.F.B.



'And I don't care if the design is anatomically correct in every detail!'

BREEDER'S NOTEBOOK

Red-Spotted Copeina

NOW and again, in every fish family, we come across an unusual one that makes it much more interesting and exciting for the aquarist when breeding time comes round. Such a fish is *Copeina guttata*, a member of the Characidae, but which differs from other characins in a number of ways. For one thing, this lovely fish from the Amazon apparently grows larger in our tanks than in the wild. (Never having seen a wild specimen I quote this observation from several good authorities.) In the aquarium it can reach 5-6 in. and is solidly built in proportion to its length, but in the wild it reaches only about 4 in.

This species is commonly called the 'red-spotted copeina' and they are, in my opinion, perfectly proportioned fish. They have a pointed mouth and a flat head and large scales. The male's back is brownish, shading to a grey to light-blue hue into white in the belly region.

temperature range, from 60°F to 90°F (16-32°C), ability to mix peacefully with a majority of species, and an appetite for any food offered to them. They are always in full view in the tank, seem quite happy to swim in any depth and even hang motionless for half-an-hour at a time, when one can study them at will. Their life span is of 5-6 years' duration.

Copeina are also unusual in their breeding habits, which resemble those of cichlids rather than characins. They are not difficult fish to spawn provided that they have been well looked after before breeding. A large spawning can arise from a good adult pair in roomy quarters. A 24 in. by 24 in. by 12 in. tank will do very well, although I used a 30 in. by 15 in. by 10 in. Water conditions are not critical. I have bred these fish in both alkaline and soft acid water and good prior conditioning is more important than the nature of the water. A good

By J. LEE



Copeina guttata

Photo

RUDOLPH ZUKAL

Along the flanks are five or more rows of red dots, which are more vivid in the male, that start near the gill plates and stretch down to the tail. The fins are yellow with warm red margins. The dorsal fin has a big black patch across the middle (the adipose fin is absent in this species). The eye is rimmed with red or gold. When the fish is motionless it is easy to see that the upper lobe of the caudal is longer than the bottom lobe. The female is, as usual, paler in colour and in most cases is the larger of the two and deeper in the body. Nor does she carry so many spots along the side as her mate, though the dark patch also shows in her dorsal fin.

Some authorities describe these fish as rather docile and not inclined to move around too much; this can be misleading, however, because when they are disturbed they are very lively and can move at a fast speed, so there should be a good glass cover on top of the aquarium—they are expert jumpers! Other characteristics of these extraordinary characins include toleration of a wide

pair of fish can produce up to a 1000 eggs; the largest batch I ever got from them was 700. Of these, because of shortage of tank space, I parted with 400 as soon as the fry were big enough to be netted.

My first attempt to breed them was in the 30 in. tank. I went through my usual routine, well scrubbing and cleaning out the tank. The water used was half rainwater and half aged water, topped up with fresh tap water to a depth of 10 in. No pH or D.H. tests were taken. On this occasion I used a 2 in. layer of well-washed deep red sand as compost, but on other occasions when spawning these fish I have used fine gravel, silver sand, peat moss and a large mat of well cleaned string. The water was kept at a temperature of 76°F (24°C) and the tank was allowed to stand empty for 3 days. I conditioned the breeding pair for some weeks in advance on large daphnia, cyclops, ghost larvae, white worms, earthworms and tubifex, and the female was full of roe.

One pair were placed in the breeding tank late at

night and allowed to settle down. The first day was spent by both fish exploring their new home in an excited fashion. A spoonful of rock salt was added and the temperature raised to 80°F (27°C); during this spawning no plants were used in the tank. On the fourth day they spawned, after chasing and nudging each other for a few hours all round the tank, picking a spot on the bottom near the centre.

The male, assisted by the female, started paddle-like movements with his fins and made a depression in the sand of about 2 in. diameter. This is a fascinating sight and it makes one think one is watching cichlids spawn rather than characins. After a lot of fussing over the spawning site, the male's body was pressed against the female's, and the eggs were deposited in the depression in the sand. Every now and then the male would get over-excited and chase the female away but she would return to carry on—more body trembling and more eggs added to the spawning.

This behaviour continues until the female is spent, after which she should be gently removed, leaving the

male to carry on fanning the eggs. This he does day and night until hatching time, which is some 4-5 days after the eggs are laid. In about 6-7 days the fry become free-swimming. Then it is as well to remove the male from his duties. By this stage the tank is swarming with fry with large appetites.

The first week I fed the fry on Infusoria, the yolk from an egg and Liquifry (green label for livebearers). Then they graduated to micro worms, brine shrimp, dried egg powder and fine sieved Bernax and crushed baby snails. With good feeding *Copeina guttata* grow rapidly and it is a great sight to see two or three hundred of them at the half-grown stage.

One appreciates owning this species because it is a curiosity in so many ways and a rarity. I have not seen any in the shops now for over 9 years—they seem to have disappeared, from my scene anyway. They reach a good breeding size after 12 months. For the aquarist who likes a hardy, reliable, peaceful and very unusual fish, with no fussing about food, temperature or companions, this is a delightful species to add to his collection.

THE BRACKISH SAGA

Community Life Strains

By ROY PINKS

WHEN one has already written a postscript (1974, September 1976) to a Saga, a PPS is almost inexcusable. I will therefore state at the outset that a month or so after drawing what I thought was a decent veil over a succession of somewhat torrid events, I introduced a further factor into the brackish community which brought with it a calculated and perhaps lunatic degree of risk. Observing that I had decided to restrict future intake to a few rhino-horn gobies—such diminutive creatures were hardly likely to affect domestic relationships very much—it was, perhaps, unwise to say the least, to contemplate adding a species said to attain 15 in. or more in natural surroundings.

The trouble was that when I saw some *Therapon jarbua* in a dealer's tank I took an instant liking to them, since in my mind's eye they had all the characteristics and markings one could wish for to provide contrast of body form and line markings with the other fishes in my semi-marine collection. Alas, the ones I saw were not for sale and as week followed week without any others appearing on the market I developed the obsession which afflicts every aquarist from time to time, namely the determination to secure the objective at almost any cost. They became more and more desirable every day and I visited every dealer I could think of to ask whether he could get me any. To my great surprise Ted Whatley came to my rescue again with an undisclosed tankful and off I went with a couple sized about 2 in.

The *Therapon* reminds one of a cross between a perch and a catfish: it is a silvery greenish fawn above with silver underparts, with body markings of black con-

centric rings which suggest a peppermint bullseye. Its other name, target fish, is quite apt artistically, though perhaps humbug fish (my own invention) is sounder from the psychological viewpoint. It also reveals under the name of zebra fish, but for obvious reasons this is a poor choice.

One or two authorities regard it as a peaceful fish common to both fresh and brackish waters in river mouths in widely separated parts of the globe. Since it has a highly suspicious look about it, I much prefer Sterba's assertion that in its larger manifestations it can turn into a predatory and fearful monster that will attack passing fish, big or small, with equal determination. This was hardly a recommendation for its introduction to my community but I took a measure of consolation that smaller specimens are said to remain comparatively harmless, and by this I assume is meant that they disagree with everything else they see without actually taking bites from it.

My two *Therapon* went straight into quarantine for 3 weeks with a little copper in the water as life insurance. They were immediately something of an anxiety because their swimming appeared unstable and they would remain in one position, shimmying, for hours on end. Swimbladder trouble, perhaps, or maybe they were just another species that cannot face water changes. The interesting thing was that as soon as any food was dropped in, it was disposed of immediately, which led me to doubt whether their unusual and disconcerting stance

was of any particular consequence. The 3 weeks passed all too slowly, as I was most interested to see how relationships would develop after they were put with the monos, the scats and the bumblebees.

When the transfer had been effected it was straight-away evident that the senior *Therapon* was going to lord it over the other one, though what determined the disparity was something I have yet to discover. They retired to the safety of sheltering coral for an hour or so and joined in the evening feeding schedule as though to the manner born. At this stage there were no skirmishes with the other inmates, even the bumblebees, so the future looked reasonably rosy. As time passed I tried them with dry food and found them as accommodating as the remainder of the fishes, though the bumblebees continued to scorn anything without a wriggle in it.

Some weeks have now passed and although the *Therapon* are undoubtedly pugnacious fish they seem more antagonistic to one another than to other species. If anything they have taken issue with the monos and have left the scats alone, but I have seen no actual fighting. What does seem to have happened is that they have introduced an element of ill-will into the tank which seemed not to exist before, so that mono now sees off mono and scat sees off scat, where before the species tended to shoal together in their more placid moments. As for dwarfing, it is a little early to say whether the growth of the *Therapon* will be slowed to the tempo of that of the others, which now seem little larger than they were several months ago: the *Therapon* have, however, grown visibly, but not at the alarming rate described to me by one dealer who imported some a year or so ago and found them a positive embarrassment.

A solitary rhino-horn goby has also been added to the collection and one bumblebee has died, the latter event being in no way, I feel sure, attributable to the *Therapon*. The rhino-horn looks a true marine fish and is a distinct

curiosity, distinguishing itself during quarantine by leaping from brackish to normal water on several occasions, with a total absence of discomfort.

With increased ill-temper in the community I attempted to hive off one part of the tank from the other with an immense sea fan, but as this was too large I cut it into two segments and thus created three zones for swimming. I had hoped that the *Therapon* would take just one of these to themselves, leaving the other two to the remaining species. To some extent this has worked, but as the *Therapon* seem to prefer one zone today and a different one tomorrow, there is something of an air of uncertainty about it all.

It is likely that more amicable conditions might prevail in a longer tank—though I must be careful to preserve the dwarfing effect by stocking to (almost) the limit. As I hope to set up a new 36 in. tank for the brackish fishes there may lie within it territorial arrangements that will help restore confidence and equilibrium. If this fails we shall have to try and evolve some way of keeping the collection intact, for, rogues though they are, the *Therapon* are here to stay, even if it means their solitary confinement!

There is just one compensation for the domination of the target fish. Even though they may give the others something of a bad time there is never an absence of movement in the tank, and since there are no signs of seriously torn fins it may be assumed that for the time being the situation is holding together.

I will not be so dogmatic as to state, after this experience, that even this PPS is all that needs saying about my experiments with brackish water tanks. I will now undertake, though, to keep things under review and to report on the collection again in the future. If sceptics can read of none of my customary disasters then, it would be cowardly indeed if they failed to take on at least part of the challenge.

Hints and Tips with Surplus Plastics Part 2

By H. J. GILBERT

FROM the domain of the handyman's wife, the kitchen, come our next aquatic aids. The empty containers that have held washing-up liquid will be found to be very handy by the aquarist who has a fish house or workshop. A quick inspection of the containers available will enable you to decide what uses the size and shapes are most appropriate for (bearing in mind that those which have held any form of bleach or strong detergent should not be used inside fish tanks). It is always wise to test before use any appliance made from scrap material in a tank containing either daphnia or easily replaceable fish. Having sorted the containers out it will be an easy job with a pair of old scissors to make conveniently shaped terrestrial or aquatic plant pots, as well as

receptacles for a host of appliances from planting sticks and scrapers to spare airstones and clamps.

Also very useful as plant pots are the plastic containers that have held yoghurt, cream, crystallised fruits or the various salad dressings from your local delicatessen. Having held foods etc. for human consumption most of these are safe in your tanks, but should you have any qualms about the printing on them, this can usually be removed by rubbing with wire wool or scraping with a penknife. If one of these containers is cut down to about $\frac{1}{2}$ in. depth and the bottom

pierced with a number of holes before inserting it into a suitable sized feeding ring a very useful floating worm-feeder can be made. Any of these useful items that cannot be rendered non-toxic by careful cleansing can be used in the workshop for holding files, small drills, nails, screws etc. They should be cut to shape with a lug on one side to allow for attachment to the wall by screw or nail.

Those plastic bags from your dealers, thoroughly dried out and fitted with one of the many patent closures available, may be used to store such things as feeding rings, spare rubber suckers etc., either hanging up or lying on a shelf; the contents of these can be easily seen and identified. Larger sizes containing a certain amount of water and

hung in a warm light position make good propagating clothes for terrestrial or aquatic plants, which may be sealed in them. This idea, with variations, has been used by horticulturists for many years for striking cuttings. Cryptocoryne rootstocks soon become covered with small plantlets if enclosed in this way.

Even larger bags are also useful for enclosing Grindal or whiteworm cultures to prevent loss of moisture and retard the ingress of pests. There is no need to buy the smaller bags as those which originally contained frozen vegetables, if opened carefully, washed and dried, can be used

for many of the purposes mentioned above.

Quite a useful water-filtering device can be made with a plastic bag of a suitable size and a funnel. Cut the corners off the bag, stuff the bottom with nylon staple or glass wool and then put in one or more layers of whatever filter medium you wish to use. Having fitted a short piece of plastic tubing lightly on to the stem of the funnel, secure the bag to it by tying above and below the tubing. The whole gadget may be suspended over a container before pouring the water to be filtered slowly through the funnel.

To be continued



AIREBOROUGH & D.A.S.'s ninth Open Show, held at the end of November last, was very successful, with a total of 866 entries benched by 228 exhibitors from 44 participating societies. Judges, Mr C. Walker, Mr M. Jones, Mr E. Smart, Mr K. Cotton, Mr F. Cherry and Mr F. G. Sibson presented the best fish in the show award to the orange chromide entered by Mr I. Heptinstall of Castleford & D.A.S., which also received a gold pin, A.Y.A.S., diploma, A.D.A.S. special award and the trophy for the highest pointed 'advanced exhibit' (84 points). Other special awards were as follows: Peate's Challenge shield for furnished aquaria, Mr D. Shields of Halifax (79 points); Councillor Alderman W. Hudson Cup for highest pointed novice exhibit (a.v. catfish or loach), Mr G. M. Smith of Blakborough (82 points); K. J. Bateman Cup for best breeders live-bearer (mollies), Mr J. Igoe of Sherwood (75 points), who also received the G. E. and K. Walker Trophy for highest pointed live-bearer exhibit, with his mollie (79 points); A. D. Lawson Cup for highest pointed breeders egg-layer (winners of carps and minnows class), Mrs S. Gear of Keighley (78 points); Whitehouse trophy for highest pointed pairs exhibit (live-bearers and egg-layers), Mr H. O. Stottard of Sunnybrow (78 points); J. and R. Robinson trophy, awarded to the star exhibitor, the one gaining most points, Mr I. Heptinstall of Castleford (17 points).

Society with the highest number of points was Castleford, 471; Aireborough, 44; 1. Sherwood, 23. Detailed results were as follows: Individual furnished aquaria (4 entries): 1, Mr D. Shields (Halifax, 79); 2, Mr Feyer (Halifax, 69); 3, Mr R. Johnson (Aireborough, 58). Novice classes, A.V. live-bearer (24): 1, Mr and Mrs Overall (York, 70); 2, Mr Pell (Horsforth, 74); 3, Mr Bissley (Aston, 71). A.V. barb (12): 1, Mr G. Gillespie (Castleford, 78); 2, N. and W. Ewe (Castleford, 74); 3, Master Munday (Keighley, 71). A.V. characin (24): 1, Mr A. Sharp (Castleford, 77); 2, Mr M. Bowden (Aireborough, 74); 3, Mr R. Sharp (Aireborough, 69). A.V. cichlid (24): 1, Mr G. Gillespie (Castleford, 79); 2, Mr F. Mann (Alfredton, 78); 3, Master Booth (Leeds, 71). A.V. snailhead (26): 1, Mr and Mrs Overall (75); 2, Mrs L. King (Doncaster, 71); 3, Master P. Dwyer (Aireborough, 71). A.V. carps and minnows (18): 1, Master P. Taylor (Aireborough, 73); 2, Mr N. Jackson (Worksop, 70); 3, Mrs Pell (Horsforth, 71). A.V. catfish and loach (22): 1, Mr G. Smith (Blakborough, 82); 2, Mr A. Illingworth (Keighley, 80); 3, Mr D. Casey (Aireborough, 75). A.V. single fish (6): 1, Mr Taylor (Keighley, 80); 2, Mr R. B. Longley (Independent, 78); 3, Mr J. Horsley (Harrogate, 71).

Tropical Marines at Liverpool



Glaziers fit a 6 cwt. glass panel into one of Liverpool Museum's new fibreglass tanks, helped by Keeper Denis Murphy (left)

VISITORS to the Liverpool Museum's Aquarium this summer will for the first time be able to see a display of tropical marine tanks. Six 4 ft. by 4 ft. by 4 ft. (400 gallons) and one 7 ft. by 4 ft. by 4 ft. (700 gallons) fibreglass tanks are now being installed as part of a new phase in the Aquarium's development. Aquarium Keeper Mr Dennis Murphy tells us that the installation will include seawater reserve tanks and a filtration and circulation system involving a total volume of 5000 gallons. He is planning to use

the new tanks, which were made to his design, for a display of British marine life that will be collected by Mr Murphy and his assistant Mr Ken Stringer, until the tropical marines they are ordering have been quarantined and are ready to be put on view. Fishes from Far Eastern Caribbean and Mediterranean waters will be kept. The Liverpool firm of Northern Plastics were makers of the special tanks, the largest of which has a glass panel 1½ in. thick and weighing 6 cwt.

Breeders, livebearers (18). Guppies (12): 1, Mr G. Andrews (Hull, 74); 2, Mr M. Booth (Leeds, 70); 3, Mr H. Gardner (Aireborough, 66), Platys (1): 1, Mr C. Ward (Doncaster, 71); 2, Mr J. Rhoades (Scunthorpe, 74); 3, Mr A. Cuchta (Independent, 62), Swordtails (11): 1, Mr P. Reynolds (Swillington, 71); 2, Mr D. H. Hartley (Scarborough, 71); 3, Mr and Mrs D. Cohen (Castleford, 70), Mollies (5): 1, Mr J. Igoe (Sherwood, 71); 2, Mr H. Gardner (71); 3, Mr B. Magson (Aireborough, 66), A.o.v. livebearer (1): 1, Mr D. Kirkbeck (Sherwood, 70); 2, Mr G. Monk (Aireborough, 66); 3, Mr D. Shields (Halifax, 68).

Breeders, egglayers (13). Barbs (7): 1, Mr J. Hartley (Aireborough, 71); 2, Mr and Mrs F. Buxton (Aireborough, 71); 3, Mr B. Tate (Aireborough, 71), Characins (3): 1, Mr and Mrs F. Buxton (71); 2, Mr N. R. Gibson (Huddersfield, 74); 3, Mr H. Kahn (Lincoln, 71), Cichlids (6): 1, Miss M. Lindley (Aireton, 74); 2, Mr Robertson (Mount Pleasant, 71); 3, Mr D. Norris (Oldham, 74), Anabantids (4): 1, Mr and Mrs D. Cohen (74); 2, Mr J. R. Rhoades (Scunthorpe, 71); 3, Mr C. Easton (Grimsby and Clew, 71), Carps and minnows (6): 1, Mrs S. Gear (Keighley, 74); 2, Mr J. Igoe (71); 3, Mr J. Burton (Huddersfield, 74), Catfish, loach and a.o.v. egglayer (1): 1, Mr Cliff (Lincoln, 74); 2, Mr Wells (Doncaster, 71); 3, Mr S. Hall (Aireborough, 66).

Advanced classes, Guppies (27): 1, Mr E. Carrwright (Gorton & Open, 75); 2, Mr Boothwood (Leigh, 74); 3, Mrs J. Stephens (Aston, 74); 2, Mr B. Magson (71); 3, Mr S. Senior (Sheffield, 70), Swordtails (14): 1 and 2, Mr N. R. Gibson (Huddersfield, 74 and 71); 3, Mr D. Kirkbeck (71), Mollies (14): 1, Mr J. Igoe (71); 2, Mr J. Hartley (71); 3, Mr H. Stainer (Hull, 74), A.o.v. livebearer, female (1): 1, Mr Elliott (Bishop Auckland, 74); 2, Mr L. Heptinstall (Castleford, 70); 3, Mr J. A. Whitley (Aireborough, 74), A.o.v. livebearer (1): 1, Mr L. Easton (Grimsby & Clew, 74); 2, Mr F. Reynolds (Swillington, 71); 3, Mr D. Sharp (Castleford, 69), Siamese fighting (1): 1, Mr S. Robinson (Sunnybrow, 74); 2, Mr S. Pagon (Scunthorpe, 70); 3, Mr J. R. Rhodes (Scunthorpe, 69), A.o.v. embryo (1): 1, Mr I. Heptinstall (York, 80); 2, Mr I. Heptinstall (78); 3, Mr F. Clarkson (Barrowclough, 77), Dwarf cichlids (1): 1, Mr I. Heptinstall (84); 2, Mr R. Senior (Sheffield, 74); 3, Mr H. Kahn (Lincoln, 78), Angelfish (1): 1, Mrs M. Igoe (Sherwood, 70); 2, Mr Sewell (Sherwood, 70); 3, Mr J. Burton (Huddersfield, 74), A.o.v. cichlid (1): 1, and 2, Mr and Mrs Wilkes (Middleton, 80 and 70); 3, Master J. Thompson (Aireborough, 71), Small barbs (1): 1, Miss B. Kaye (Top Ten, 81); 2, Master A. Kaye (Top Ten, 74); 3, Mr K. Stafford (Oldham, 71), A.o.v. barb (1): 1, Mr J. Bizard (Sheffield, 81); 2, Mr K. Frew (Castleford, 80); 3, Mr H. Ellingworth (Nelson, 75), Small characins (1): 1, Mr R. Taylor (Aireborough, 70); 2, Mr L. Heptinstall (78); 3, Master S. Deakin (Cresswell, 74), A.o.v. characin (1): 1, Mr D. Kennedy (Bradford, 81); 2, Mr I. Heptinstall (70); 3, Mr Sewell (Sherwood, 69).

Toothcarps (3): 1, Mr Elliott (Bishop Auckland, 80); 2, Mr A. Lofthouse (Huddersfield, 77); 3, M. and A. Crowther (Swillington, 75), Flying fishes and sharks (16): 1, Mr and Mrs Ashton (Middleton, 81); 2, Mr D. Norris (Oldham, 70); 3, Mr G. Hodgkinson (Gorton & Open, 78), Barbos, danios and minnows (2): 1, Mr D. Kennedy (Bradford, 70); 2, Mr J. Tongue (Oldham, 78); 3, Mr G. Senior (Sheffield, 77), Corydoras catfish (1): 1, Mr R. Taylor (Aireborough, 77); 2, Mr Sewell (71); 3, Mr and Mrs D. Cohen (74), A.o.v. catfish (1): 1, Mr G. Goodson (Middleton, 78); 2, Mr F. Gates (Castleford, 73); 3, Mr H. Ellingworth (Nelson, 74), Loaches (1): 1, Mr L. Heptinstall (79); 2, Mr Turner (York, 77); 3, Mr G. Hodgkinson (70), A.o.v. egglayer, female (1): 1, Mr G. Thickbroom (Castleford, 76); 2, Mr and Mrs D. Cohen (75); 3, Mr and Mrs J. A. Whitley (Aireborough, 71), A.o.v. egglayer (1): 1, Mr D. Kennedy (Bradford, 78); 2, Mr and Mrs Carey (York, 77); 3, Mr I. Heptinstall (74).

HEMEL HEMPSTEAD A.S. have now distributed the first edition of their club magazine. Any other society interested in exchanging magazines is asked to contact Mrs J. V. Collins, 63 Palley Lane, Hemel Hempstead, Herts.

Details of a Film Show of aquatic interest arranged by the Society for April are given on page 417 of this issue.

Pair of livebearers (12): 1, Mr H. O. Stansud (Sunnybrow, 78); 2, Mr J. Igoe (76); 3, Mr D. Kennedy (75), Pair of egglayers (1): 1, Mr D. Wright (Aireton, 71); 2, Mr J. A. Whitley (74); 3, Mr J. Tongue (Oldham, 71).

Common goldfish (7): 1, Mr S. Hall (Aireborough, 74); 2, Master A. Kaye (Top Ten, 81); 3, J. and J. Moorhouse (Bradford, 69), Fancy goldfish (7): 1, Mr G. Thickbroom (Castleford, 77); 2, Mr S. Hall (76); 3, Mr Williamson (Middleton, 73), A.o.v. cold-water fish (5): 1, J. and J. Moorhouse (70); 2, Mr L. Heptinstall (69); 3, Mr B. Johnson (Independent, 65), Furbished viv-paras (7): 1, 2, and 3, Mr D. Shields (Halifax, 74, 73, and 74).

If the following societies will send their secretary's addresses to Mr G. E. Walker (secretary and show organiser, 28 West End Terrace, Guncley, Nr. Leeds, LS20 8LX), a copy of show results will be forwarded: Middleton & D.A.S., Bishop Auckland A.S., B.K.A. and Newton-Aycliffe A.S.

MR H. LEIGHTON, secretary of HOUGHTON & D.A.S., writes to us:

'In November Houghton & D.A.S. invited TYNEMOUTH PRIORY FISH CLUB to an inter-club fish show and supper. As an idea to keep the interest alive during the dark cold months, this friendly and social evening was a tremendous success. 85 entries were benched, in 22 classes, and the judges, Mr G. Fraser of Priory, and Mr I. Wrighton of Houghton faced a most difficult task. Each club was awarded success in 11 classes! So it was decided to give the honours to the best fish in the show and two more judges were chosen. Another difficult task, as there were two outstanding fishes, a red-eyed tetra entered by Houghton, and the upside-down catfish entered by Mr G. Lothian of Priory, which was eventually declared the winner.'

AT the second Open Show of HORSFORTH A.S., Castleford was the highest pointed society, with 39 points. Mr Malpas of Independent A.S. entered the best exhibit, and the best ladies' exhibit was entered by Mrs Gear of Keighley. Results of the show were as follows:

A.o.v. livebearers: 1, Mr F. Reynolds (Swillington); 2, Mr S. Hall (Aireborough);

3, Mr D. Sharp (Castleford), Guppies: 1, Mr M. Sullivan (Four Star); 2, Mr D. Sharp; 3, Mr F. Cobb (Bellevue), Mollies: 1, Mrs Heap (Bellevue); 2, Mrs D. Pell (Horsforth); 3, Mr J. Hartley (Aireborough), Swordtails: 1, Mr R. Gibson (Huddersfield); 2, Mr M. Dwyer (Aireborough); 3, Mr G. Thickbroom (Castleford), Platys: 1, Mr I. Heptinstall (Castleford); 2, Mr R. Clark (Sherwood); 3, Mrs M. Cobb (Bellevue).

Anabantids (overall): 1, Mr H. Lees (Oldham); 2, Mr H. Wood (Four Star); 3, Mr A. S. Allison (York), Anabantids (guppy): 1 and 2, Mr A. E. Heap (Bellevue); 3, Mr C. Curra (Horsforth), Fighters (self): 1 and 2, Mr J. Rhodes (Scunthorpe); 3, Mr and Mrs Cohen (Castleford), Fighters (mixed): 1, Mr S. Pagon (Scunthorpe); 2, Mr and Mrs Cohen; 3, Mr J. Rhodes.

Corydoras catfish: 1, Mr A. Baldwin (Nelson); 2, Mr R. Davies (Bellevue); 3, Mr Cohen, A.o.v. catfish: 1, Miss J. Helm (Horsforth); 2, Mr Shillam (Keighley); 3, Mr A. S. Allison (York), A.o.v. loach: 1, Mr I. Heptinstall (Castleford); 2, Mr and Mrs Zanotias (Bradford); 3, Mr D. Casary (Aireborough), Barbs (up to row): 1, Mr and Mrs Zanotias; 2, Mr G. Thickbroom (Castleford); 3, Mrs Cohen, Barbs (large): 1, Mrs Cohen; 2, Mr Wade (Aireborough); 3, Mr K. Frew (Castleford), Characins (up to breeding tank): 1, Mr Bowles (Aireborough); 2, Master Johnson (Aireborough); 3, Mr Tongue (Oldham), Characins (large): 1, Mr G. Thickbroom; 2, Mr D. Kennedy (Bradford); 3, Mr T. Walton (Wakefield).

Breeders, egglayers: 1, Mrs Gear (Keighley); 2, Mrs Wells (Doncaster); 3, Mr S. Pagon (Scunthorpe), Breeders, livebearers: 1, Mr and Mrs Cohen; 2, Mr J. Bready (Bellevue); 3, Mr C. Ward (Doncaster), Cichlids (dwarf): 1, Mr I. Heptinstall; 2, Mr A. Hudson (Huddersfield); 3, Mr McKenna (Nelson), Cichlids (large): 1, Mrs M. Davis (Bellevue); 2, Mr T. Walton (Wakefield); 3, Mr S. Harrison (Huddersfield), Angels: 1, Mr A. Hudson; 2, Mr R. Gibson (Huddersfield); 3, H. and R. McKenna (Nelson), Pair egglayers: 1, Mrs Heap; 2, Mrs Cobb (Bellevue); 3, Miss J. Helm (Horsforth), Pair livebearers: 1, Mr R. Gibson; 2, Mr B. Magson (Aireborough); 3, Mr H. Kahn (Lincoln), A.o.v.: 1, Mr D. Kennedy (Bradford); 2, Mr I. Heptinstall; 3, Mr E. Whitlock (Tadcaster).

Sharks and flying fishes: 1, Mr and Mrs Ashton (Middleton); 2, Mr A. Hudson (Huddersfield); 3, Mr D. Kennedy, Barbos and danios: 1, Mr D. Kennedy; 2, Mr I. Heptinstall; 3, Mr R. Clark (Sherwood).

Toothcarps: 1, Mr Malpas (Independent); 2, Mrs Gear; 3, M. and A. Crowther (Swillington), Carps and minnows: 1, Mr M. Tongue (Oldham); 2, Mr M. Stevenson (York); 3, Mr R. Senior (Sheffield).

A.o.v. fancy goldfish: 1, Mr G. Thickbroom; 2, Mr S. Hall (Aireborough); 3, Master A. Kaye (Top Ten), A.o.v. coldwater: 1, Mrs Miller (Bellevue); 2, Mrs Cobb; 3, Mr Miller (Bellevue), Goldfish: 1, Mrs M. Cobb; 2, Mr J. L. Sullivan (Four Star); 3, Mr S. Hall, A.o.v. tropical (janos): 1, Master F. Cobb (Bellevue); 2, Master G. Thickbroom (Castleford); 3, Master A. Kaye, Coldwater (janos): 1 and 2, Master A. Kaye; Master F. Ashton (Middleton).

HOUNSLAW & D.A.S. is one of the largest societies in the west London area and the Society's annual dinner-dance and prize presentation was very well attended by 178 members and guests. Retiring chairman, Mr Barry Abbott, spoke of the Society's successes during 1970 before the presentations were made and club members who had achieved cards at the annual Shield Event received their awards from the splendid array of 39 trophies, cups and plaques.

Results of the Shield Event had been:

Livebearers: 1, Mr D. Love; 2, Mr K. Brookes; 3, Mr D. Brookes. **Pairs:** 1, Mr D. Love; 2, Mr H. Pratt; 3, Mr C. Walker. **A.O.S.:** 1 and 2, Mr D. Brookes; 3, Mr K. Brookes. **Labyrinth:** 1 and 2, Mr H. Pratt; 3, Mrs C. Woodward. **Coldwater:** 1, Mr H. Pratt; 2, Mrs R. Brewer; 3, Mr G. Johnson. **Corydoras:** 1, Mr H. Pratt; 2 and 3, Mrs R. Brewer. **Characins:** 1, Mr K. Brookes; 2, Mr H. Pratt; 3, Mr W. Johnson. **Catfish and loaches:** 1 and 2, Mrs R. Brewer; 3, Mr H. Alexander. **Cichlids:** 1, Mr H. Pratt; 2 and 3, Mr J. Hanson. **Barbs:** 1 and 2, Mrs C. Woodward; 3, Mr D. Brookes. **Brooders livebearers:** Mr C. Walker. **Brooders egglayers:** 1, Mr D. Brookes; 2 and 3, Mrs R. Brewer. **Home furnished aquaria:** Mr D. Love. **Breeder of the Year award:** Mr L. Mathews. **Best fish of the year award:** Mrs C. Woodward. **Points shield:** Mr H. Pratt. **Junior points shield:** Master K. Brookes. **Furnished jars:** Mrs R. Brewer.

Plans for 1971 are now well in hand. This is the Society's twenty-first year. Mr F. Taylor, a founder member and the second chairman of the Society, is still an active member and vice-presidents Mr R. Luff and Mr H. Pratt as well as secretary Mr D. J. Woodward have been with the Society from its early days. Table shows have been rearranged to accommodate an extra class, that for danios, rasboras and minnows, which will mean an extra trophy at the end of the year in the Shield Event. Speakers have been booked for lectures and slide shows on a wide range of topics (at the last meeting Mr H. Pratt, the Society's P.R.O. and a very experienced aquarist, gave a most enjoyable talk on fishes and their classes). Visitors are very welcome to attend meetings held on alternate Wednesdays at the Public Hall, Isleworth, at 8.0 p.m.

AT THE 'FUR, FEATHER & AQUARIA' Show, held on 28th November, 1970, at the Kings Hall (Hackney Baths), the aquaria section of the show was organised by the ESSEX, NORTH & EAST LONDON A.S. (who are already looking toward the larger Kings Hall Show at the end of March, 1971). More than 350 fishes were benched, and the judges were Mr D. Ellis, Mr F. Tomkins, Mr H. Towell (tropical) and Mr R. Eason (coldwater). They gave the award for the best fish in the show to a *Ctenopoma longipinna* (labyrinth class), entered by Mr S. G. Cowell of Bethnal Green & D.A.S., and Mr D. Goodbody of Walthamstow won the award for the best coldwater fish in the show, with a shubunkin. Bethnal Green & D.A.S. gained 67 points and the Inter-Club trophy, while WALTHAMSTOW & D.A.S. ran a close second, with 65 points. Detailed results of the show are as follows:

Inter-club furnished aquaria (tropical): 1, 2 and 3, Walthamstow. **Inter-club furnished aquaria (coldwater):** 1 and 2, Tottenham; 3, Walthamstow. **Individual furnished aquaria:** 1, Mr K. Appleby (Thorrock); 2, Mr A. Fennel (Chingford). **Barbs:** 1, Mr S. G. Cowell (Bethnal

Green); 2, Mr R. Bown (Independent); 3, Mr P. Arnold (Bethnal Green). **Characins:** 1, Mr G. Martin (Bethnal Green); 2, Mr B. Perry (Bethnal Green); 3, Mr A. J. Smith (Croydon). **Hypheis, Hems, Chirodon:** 1, Mr S. Cowell; 2, Mr R. Bown; 3, Mr F. Brindley (Bethnal Green). **Cichlids:** 1, Mr J. Wilson (Cotford); 2, Mr V. Bayford (Bethnal Green); 3, Mr P. Arnold. **Aequidennas, Pimatochromis, Nannacara:** 1, Mr A. Blake (Basingstoke); 2, Mr P. Harle (Bethnal Green); 3, Mr R. Bown. **Labyrinth:** 1, Mr S. Cowell; 2, Mr E. Iddip (Independent); 3, Mr R. Bown. **Fighters:** Mrs Appleby (Independent); 2, Mr J. Gower (Bethnal Green); 3, Mr R. Appleby.

Egg-layering toothbrush: 1, Mr F. Kendrick (E. Dulwich); 2, Mr T. Casack (Hampstead); 3, Mr A. Blake. **Tropical catfish:** 1, Mr J. Home (Arson); 2, Mr F. Kendrick; 3, Mr R. Wright (E. Dulwich). **Corydoras and Biotas:** 1, Mr D. Armour (Riverside); 2, Mr A. J. Smith (Croydon); 3, Mr R. Wright. **Rasboras:** 1, Mr P. Arnold; 2, Mr A. Chandler (Walthamstow); 3, Mr A. J. Smith. **Danio and minnows:** 1, Mr R. Bown; 2, Mr P. Brindley; 3, Mr K. Appleby.

Tropical pairs: 1, Mr J. Wilson (Cotford); 2, Mr S. Gooding (Epsford); 3, Mr D. Durant (Thorrock). **Guppy, male:** 1, Mrs Northwell (Riverside); 2, Mr P. Coyle (Walthamstow); 3, Mr A. J. Smith. **Guppy, female:** 1, Mr A. J. Smith; 2, Mr R. Bown; 3, Mr R. Green (Hampstead). **Shubunkin:** 1, Mr S. Cowell; 2, Mr T. and Mr J. Twiss (Walthamstow); 3, Mr B. Mather (Walthamstow). **Platy:** 1, Mr R. Bown; 2, Mr C. Scott (Walthamstow); 3, Mr H. Johnson (Chingford). **Mollus:** 1, Mr J. Home; 2, Mr J. Wilson; 3, Mrs Appleby (Independent). **A.O.S. tropical livebearers:** 1, 2 and 3, Mr A. Blake (Basingstoke).

Brooders tropical egglayers: 1, Mr A. Chandler (Walthamstow); 2, Mr M. Savage (Basingstoke); 3, Mrs Harrison (Chingford). **Brooders tropical livebearers:** 1, Mr D. Durant; 2, Mr C. Scott; 3, Mr F. Fenn (Chingford).

Coldwater goldfish: 1 and 2, Mrs Hodges; 3, Mr J. Hase (Thorrock). **Shubunkin:** 1 and 2, Mr D. Goodbody (Walthamstow); 3, Mr J. Wilson. **Comets:** 1, Mr K. Appleby; 2, Mr and Mrs Woodward; 3, Mr M. Carter (Bethnal Green). **Twintails:** 1 and 2, Mr H. Johnson; 3, Mr F. Barry (Tottenham). **A.O.S. coldwater:** 1, Mrs Hodges; 2, Mr and Mrs E. Lough; 3, Mr M. Carter. **A.V. plant:** 1, Mr B. Mather; 2, Mr C. Scott; 3, Mr H. Johnson.

BRIGHTON & SOUTHERN A.S. met twice in December, and on the second of these meetings the Fish of the Year Show was held. Entries were high, 43 in all, and the standard of fishes well above average. The show was judged by Mr B. Baker and the winner was Mr Frank Aylward. Mr C. West of Mid-Sussex gave an interesting lecture on rasboras at this meeting.

From 1st February the club has a new meeting place at Clarges Hotel, Marine Parade, Brighton, with the use of three fully carpeted rooms, giving far more space and comfort and the capacity for enlarging its membership still further. The first meeting at the new venue will be on 1st February and then fortnightly. Plans for the coming year include the fuller participation by junior members in the club's activities, and secretary Mr B. Shelton (phone Brighton 506842) will be especially pleased to hear from any junior who is interested in joining the Society.

In Brief

... **ROEHAMPTON A.S.** held their 'Champion of Champions' contest in December, judged by Mr Harry Towell of the F.B.A.S. Results were 1, Mr John Hughes (combtail); 2, Mr and Mrs Hudson (*Ametomas trifasciatus*); 3, Mr and Mrs Lambourne (pike cichlid). At the final meeting in 1970 Mr John Hughes was presented with the 'Champion of Champions' shield, the gold medal and the award for winning in the labyrinth class, as well as the award for the highest total points in the R.I.L.K.R. league. Silver and bronze medallions were presented to Mr and Mrs Hudson and Mr and Mrs Lambourne respectively. Junior member Steve Mason received the John Hughes Trophy for the club member with highest total points in the 1970 club table shows.

... **A DECISION** by **KINGS LYNN & D. A.S.** to hold a monthly show followed a talk on marines given by Mr Mike Burch. In December, show secretary Mr B. Capper was congratulated on a fine first effort, when he made the taped commentary to an enjoyable slide show on killifish. The show at this meeting was for two classes: loaches and large cichlids. It was won by Mr S. McCann's oscar, and the kuhli loach entered by Mr A. Ford. The club has set up temporary quarters at The Eagle, Norfolk Street.

... **EALING & D. A.S.** look forward to the coming season of shows and activities, the remaining fixture in the fish year being the Presentation Dance on the 17th February, when the 'metalwork' will be handed out to the winners of the year's competitions. Mr R. C. Mills also tells us: 'In keeping with the policy of trying new classes at its Shows, a class for Lake Malawi cichlids was included at the Society's third closed show; this proved to be a really colourful class for the public to see. New members are very welcome (it may encourage newcomers to know that the last two "new faces" won four out of five of the prizes at the Christmas raffle) and the Society meets every first and third Tuesday at 8.0 p.m. at The Northfields Community Centre, Northcroft Road, W.13.'

... IN December **SOUTH DERRYSHIRE & D. A.S.** members were entertained by Mr J. T. Jolland, assisted by his son, to a film show,

consisting of five very interesting films, taken and edited mostly by himself. New members will be most welcome at meetings, held on the first Wednesday of each month at The Railway Inn, Midway Road, Swadlincote, Burton-on-Trent.

... MEMBERS of **BETHNAL GREEN A.S.** have been enjoying great success in open shows recently. At The AQUARIUM show Mr P. Arnould received two firsts and one third; Mr S. Cowell received the best fish in the show award, a second and a fourth; Mr J. Gosver received a second and a fourth; Mr P. Brindley, a second and a third. Details of places gained at the Fur, Fin & Feather Show: Mr Cowell, four firsts (including the best in the show), and one fourth; Mr Arnould, three firsts, a second and two thirds; Mr Carter, two thirds and a fourth; Mr Martin, a first and a fourth; Mr Brindley, a second and third; Mr Davis, a third; Mr Williams, a third; Mr Adams, a fourth; Mr Gosver, a second; Mrs Hands, a second; Mr Perry, a second; Mr Beyford, a second. A warm welcome awaits all the Society's friends at their annual dinner and dance to be held on 30th January. Please contact Mr P. Arnould, 24 Rawson House, Kipworth Road, Hackney, London, E.9.

... EVOLUTION and development of fishes was the subject of the talk and slide show given at the November meeting of **TONBRIDGE & D. A.S.** by Mr Bryon Harvey of North Kent A.S. Table show winners were: angels, Mr J. Regan; dwarf cichlids, Mr D. Mathieson; cichlids, Mrs I. Bellingham.

... **BRACKNELL A.S.** were hosts to member clubs of the **THREE COUNTIES GROUP** for the final round of the Quiz League. Eventual winners were Reading A.S. (59 pts); second (tied), Bracknell and Basingstoke (53); fourth, High Wycombe (46). The Society has also enjoyed an interesting talk on meteorology by Mr Jim Allen, from the local met. office. Table show League results for two new trophies, kindly donated by chairman Mr Brian Johnson and Mr Jack Berryman, were: Specialist class: 1, Mr Maurice Carter (23 pts); 2, Mr Jack Berryman (14); 3, Mr Richard Armstrong (8). A.O.V.: 1, Mr Len Little (31 pts); 2, Mr Maurice Carter (29); 3, Mr Jack Berryman (16).

... MR I. STEVENSON heads the League list after the November table show in the **YORK & D. A.S.** members' competition, with 75 points. Second, Mr A. S. Allison (54 pts); third, Mr M. Allison (49). November

table show results: *Corydoras* catfish: 1 and 2, Mr A. S. Allison; 3, Mr I. Stevenson. A.O.V. catfish and loach: 1 and 3, Mr A. S. Allison; 2, Mr P. Carey. Mr A. S. Allison's 'hoplo' cat was judged fish of the night.

... RESULTS of the fourth quarterly members' show of **SWILLINGTON A.S.** were: furnished jars: 1, 2 and 3, Mr Peter Reynolds. Pairs egg-layers: 1, Mr C. Gascoigne; 2 and 3, M. M. and A. Crowther. Pairs live-bearers: 1, M. M. and A. Crowther; 2, Mr H. Wimble; 3, Mrs E. Reynolds. Carps and minnows: 1 and 2, Mr L. Longfellow. A.O.V.: 1 and 3, Mr Paul Reynolds; 2, Mr R. Halop.

... MR DAVE FENSHAM covered a wide variety of fishes, from killifish to characins, in his recent talk to **HEMEL HEMPSTEAD A.S.** about breeding. At the last meeting, Mr Jeffs gave an interesting lecture on angel fish, afterwards answering many questions from members.

... **YEOVIL & D. A.S.** December meeting consisted of a characin table show, followed by a lecture and episcopes given by the Society's judge, Mr S. Langdon. Many varieties of the large characin family were shown and discussed. Table show results were: 1, Mr K. Forward (pencil fish); 2 and 3, Mrs Wright (copper tetra, pencil fish). The Christmas social skittle evening was a great success with Mrs Collins and Mrs Bushell winning the competition.

... THE breeders' section of **NOTTINGHAM & D. A.S.** report on an interesting experiment for the new year. It is proposed that all members should try to breed the butterfly barb, *B. halstaerti*, information about the breeding of which is as yet limited. The Society's home aquaria competition has been won by Mr Ross, who gained 11 points over his nearest rival, Mrs Bulleyment. Mr Husk was third.

... THE December meeting of **COVENTRY POOL & A.S.** coincided with a power cut so the intended entertainment, slides of the tanks entered in the home aquaria competition, came to an abrupt halt. The raffle, however, was held by candle light.

... WHEN **BOREHAM WOOD A.S.** held an inter-club table show with **HEMEL HEMPSTEAD A.S.** in the Chiltern League they were the victors in the competition and member Mr R. Biggerstaff won the best fish in the show award with a *P. kribia*. Members and visitors had been entertained and enlightened by a

lecture and slide show presented by Mr C. Withers of Mid-Herts. New members are very welcome at meetings on the second and fourth Mondays of the month, 8.0 p.m. at the Community Centre, Alum Lane, Boreham Wood (phone 01-953 8302).

... **BRISTOL T.F.C.'s** Open Show last year proved so popular that a committee is already formed and planning details for this year's Show. Club members greatly enjoyed the lecture by Mr Arney of the Bristol Avon River Board on pollution and its effects on fish life and found the short slide show on the reading of fish scales of particular interest.

... VICE-CHAIRMAN Mr David Soper lectured on general fish breeding to fellow members of **MID-SUSSEX A.S.** in December and gave much helpful advice. He particularly emphasised the necessity for feeding with nutritious foods both for the adults before breeding and for the newly hatched fry. Cleanliness was also stressed as an essential in successful breeding. Both Mr Soper and Mr C. West, the Society's treasurer, have now been accepted as F.B.A.S. Class B judges.

... TABLE Show prizes for 1970 were awarded to members of **YATE & D. A.S.** at their December meeting, which was a purely social occasion well in keeping with the seasonal activities. Winners were: Open class: 1, Mr S. Green; 2, Mr J. Powell; 3, Mr A. Snell. Novice: 1, Mr B. Waters; 2, Mr R. Bennett; 3, Mr C. Webber. Juniors: 1, B. Waters; 2, S. Green; 3, R. Adams. Champion junior: B. Waters. Champion exhibitor: Mr D. Noble. The club hold their own closed show in March.

... **TONBRIDGE & D. A.S.** members enjoyed obtaining quite a few bargains at their December bring and buy sale. Mr I. Mathieson, club chairman, was very successful in the table show that followed. He was awarded first and second place in the swordtail class, first and third for Siamese fighters (2, Mr R. Baker). Mrs I. Bellingham won in the a.o.s. labyrinth class (2, Mr R. Taylor; 3, Mrs A. Calvert).

... MEMBERS of **WOLVERHAMPTON A.S.** had a varied programme last year, including talks, accompanied by slide and film shows, and given by both members and visiting speakers, on killifish, live foods and tropical plants. New members are always welcome at their monthly meetings at St Peter and Paul's School, Redcross Street.

Dates for Your Diary

28th February. **ROTHERHAM & D.A.S.** Open Show.

6th March. **F.R.A.S. Assembly.** Conway Hall, Red Lion Square, London, W.C.1. 2.30 p.m.

14th March. **BELLE VUE A.S.** Open Show. Openshaw Boys Club, Crossley House, Ashton Old Road, Openshaw, Manchester 11.

21st March 1971. **TOP TEN A.S.** Open Show, Huddersfield Town Hall.

3rd April. **THURROCK A.S.** Open Show. Thameside School, Arthur Street, Geays, Essex. Schedules: Mr D. C. M. Durrant, 24 Kingsman Road, Stansted-le-Hope, Essex.

4th April. **BRITISH KILLFISH ASSOCIATION** General Meeting. Squirrels Hotel, Wellington, Somerset. Details from Mr W. Davison, 2 Shaw Road, Tipton, Staffs.

4th April. **HOUGHTON & D. A.S.** Open Show. Schedules available in February 1971 from Mr H. Leighton, 202 Abbey Drive, Houghton-La-Spring, Durham.

4th April. **NELSON A.S.** Open Show. Civic Centre, Stanley Street, Nelson. Schedules from Mr B. Tate, 12 Priory Close, Bingley, Yorks. HD16 4JU.

17th April. **G.S.G.B.** Quarterly meeting. Furzdown School, Tooting, London.

17th April. **AQUARISTS' FILM SHOW** organised by **HEMEL HEMPSTEAD A.S.** and Kodak Ltd. Kodak Ltd., Maylands Avenue, Hemel Hempstead, Herts. Tickets from Mr A. Turf, 22 Fir Tree Close, Hemel Hempstead.

18th April. **M.A.L. League Show.** The Sports Centre, Granby Street, Loughborough, Leics. Details from Mr M. L. Farrdon, 11 Silverton Road, Loughborough, Leics.

18th April. **SHEFFIELD & D. A.S.** Open Show. Meersbrook Ventry Hall, Meersbrook Park Road, Sheffield 8.

14th April. **INDEPENDENT A.S.** first Open Show. Islington Town Hall, Details from Mr R. Isip, 82A Colneybatch Lane, London, N.16.

19th April 1971. **BURY & D. A.S.** Open Show. Church House, The Wyldes, Bury.

19th April. **FREELANCE A.S.** Open Show. All Saint's Church Hall, Surrey Square, Walworth, London, S.E.17. Details: Mr J. E. Stamp, 72 Redman House, Lant Street, London, S.E.1. Phone 01-407 4066.

19th April. **YORK & D. A.S.** Open Show.

1st May. **TROWBRIDGE & D. A. & P.S.** Open Show. Nelson Haden Girls School, Trowbridge. Show schedules mid-February from Mr C. Penoy, 122 Trowbridge Road, Bradford-on-Avon, Wilts.

2nd May. **CHOYDON A.S.** Open Show. Stanley Halls, South Norwood Hill, S.E.25. Schedules from Mr A. J. H. Smith, 3 Hindhead Way, Wallington, Surrey.

2nd May. **DURHERS A.S.** third Open Show. Winifred Portland Technical Grammar School, Sparken Hill, Worksop, Notts. Show secretary, Mr M. Woodley, 26 Silverdale, Dinnington, Nr Sheffield.

9th May. **WORKSOP A. & Z.S.** Open Show. North Notts College of Further Education, Carlton Road, Worksop. Schedules shortly from Mr J. G. Sison, 27 Clifton Street, Worksop, Notts. Free car park; refreshments available.

9th May. **DERBY REGENT A.S.** Open Show. Sherwood Foresters Recreation Centre (Normanton Barracks), Normanton Park Road, Derby (follow R.A.C. signal). Schedules from Mr R. T. Bull, 26 Queens Drive, Littleover, Derby.

15th May. **UXBRIDGE & D. A.S.** Open Show. Meadow School, Royal Lane, Hillingdon, Uxbridge. Schedules: Mr N. V. Lee, 46 Alstead Road, Ealing, London, W.5.

16th May. **MERSEYSIDE A.S.** Open Show.

12nd May. **SOUTHEND, LESH & D. A.S.** Open Show. Liberal Hall, Clarence Road, Southend (proceed towards sea front from Southend Central Station, first right, first left). Details: Mr R. D. Deled, 8 Benham Chase, Leigh-on-Sea, Essex.

12nd May. **CORBY & D.A.S.** Open Show. Schedules from show secretary Mr D. A. Page, 28 Crispin Street, Rothwell, Northants.

13rd May. **COVENTRY POOL & AQUARIUM SOCIETY** Open Show. Foleshill Community Association, 717 Foleshill Road, Coventry.

13rd May. **LOYNE A.S.** first Open Show. Gregson Institute, Moor Lane, Lancaster. Schedules from Mrs M. Norris, 20 Wyresdale Road, Lancaster.

14th May. **CATFORD A.S.** Open Show.

29-30th May. **Sixth INTERNATIONAL GUPPY SHOW (FANCY GUPPY ASSOCIATION)**, Gabe Farm Community Centre, Stochford, Birmingham. Open to non-F.G.A. members.

30th May. **COVENTRY P. & A.S.** Open Show. Foleshill Road Community Centre, Coventry.

5th June. **F.R.A.S. Assembly.** Conway Hall, Red Lion Square, London, W.C.1.

6th June. **LINCOLN & D.A.S.** Open Show. Dril Hall, Broadgate, Lincoln.

6th June. **ACCREINGTON A.S.** Open Show.

6th June. **BOURNEMOUTH A.S.** Open Show. Kinson Community Centre, Pelham Park, Kinson. Schedules from Mr J. Jeffery, 20 Brasmar Avenue, Southbourne, Bournemouth. BH6 4JF, after 1st April.

OFFICERS of the FEDERATION OF BRITISH AQUATIC SOCIETIES for 1971 are as follows: *chairman, Mr R. D. Eason; vice-chairman, Mr F. C. Tomkins; general secretary, Mr K. J. A. Pye (35 Steeles Road, London, N.W.3); treasurer, Mr R. Dove; assistant general secretary, Mr R. G. Sherwin; Council members: Mr B. Baker, Mr A. Blaker, Mr C. A. T. Brown, Mr M. Carter, Mr T. Glass, Mr L. Jordan, Mr R. C. Miles, Mr H. Towell.*

6th June. **BISHOPS CLEEVE A.S.** Open Show. The Tythe Barn, Bishops Cleeve (on the A421, Cheltenham to Evesham Road). Schedules from Mrs C. F. Scrvin, 27 Warden Hill Road, Cheltenham, Glos.

12th June. **LLANTWIT MAJOR A.S.** Open Show. Town Hall, Llancwit Major. Details from Mr A. Ibberton, 84 St Marys Avenue, Barry, Glam.

17th June. **LOUGHBOROUGH & D.A.S.** Open Show. The Sports Centre, Granby Street, Loughborough, Leics. Show secretary, Mr M. L. Farrdon, 11 Silverton Road, Loughborough, Leics.

17th June. **HIGH WYCOMBE A.S.** Open Show. Details from Mr B. Leslie, 20 Meadow Walk, Tylers Green, Penn, Bucks.

20th June. **GLOSSOP A.S.** Open Show. Glossop Adult Educational Centre, Talbot Street, Glossop (A.M.D.A.S. Show).

20th June. **SWILLINGTON A.S.** Open Show.

24th-26th June. **BRISTOL TROPICAL FISH CLUB** Open Show. Congregational Church Hall, Newton Street (Stapleton Road), Bristol 2. Details from Mr E. Newman, 71 Somerdale Avenue, Knowle, Bristol 4.

27th June. **WEDNESBURY & D. A.S.** Open Show. Boys High School, St Paul's Road, Wednesbury B3 106. off M.6. Schedules from Mr T. Shipton, 9 Gloucester Road, Wednesbury.

27th June. **ALFRETON & D. A.S.** Open Show. Adult Education Centre, Alfreton Hall, Alfreton. Details from Mr B. Hickling, 14 Meadow Close, Eastwood, Nottingham NG16 3BQ.

4th July. **LYTHAM A.S.** Open Show. Lowther Gardens, Lytham, Lancs.

10th July. **BASINGSTOKE & D. A.S.** Open Show. Details from Mr M. Strazak, 20 Loddon Court, Neville Close, Basingstoke, Hants.

10th July. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London.

17th August. **NORTH STAFFS A.S.** Open Show.

4th September. **F.R.A.S. Assembly.** Conway Hall, Red Lion Square, London, W.C.1. 2.30 p.m.

4th September. **YATE & D. A.S.** Open Show. Details awaited.

19th September. **HOUNSLOW & D. A.S.** Open Show. The Youth Centre, Cecil Road, Hounslow (venue to be confirmed).

26th September. **WEST CUMBERLAND A.C.** Open Show. New Civic Hall, Whitehaven.

9th-12th October. **BRITISH AQUARIST FESTIVAL** at Belle Vue, Manchester.

17th October. **SHERWOOD A.S.** Open Show. Details awaited.

28th-31st October. **THE AQUARIUM SHOW '71.** Royal Horticultural Society Old Hall, Vincent Square, London S.W.1.

6th November. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London.

4th December. **F.R.A.S. Assembly.** Conway Hall, Red Lion Square, London, W.C.1. 2.30 p.m.



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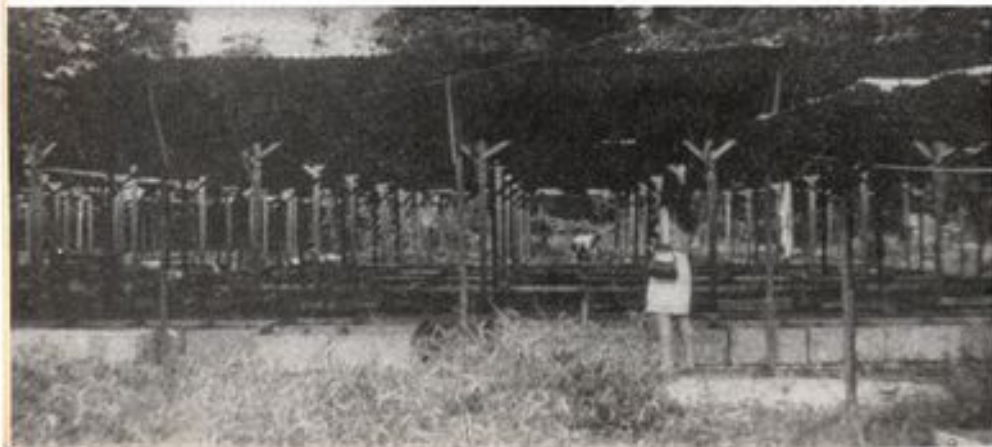
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Below: two views of the
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