

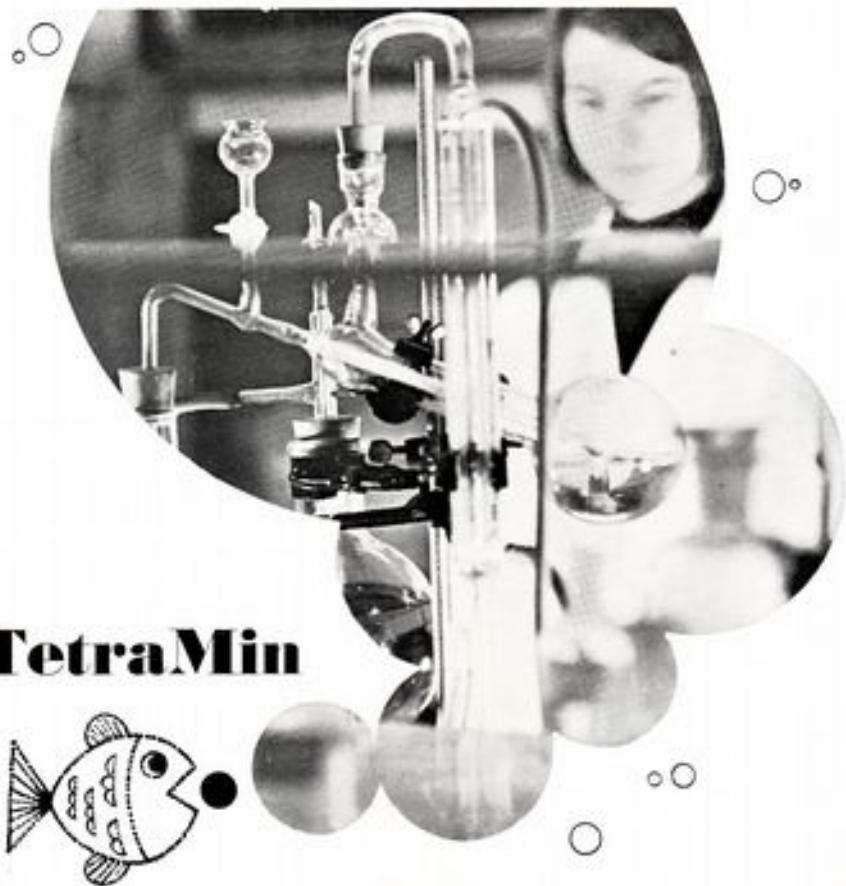
MARCH, 1968

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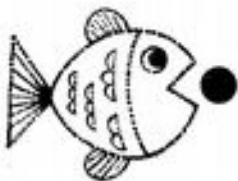
# Pet Fish

monthly





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# PetFish

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## In This Issue

	Page
Comments and Quotes	477
Letters	481
The Golden Barb	483
What's New?	484
Colour Inheritance	485
Readers' Queries	
Answered	486
Success First Time	487
Getting the Plants to Grow	489
In Memoriam	490
What are the Natural Foods of Aquarium Fishes?	491
Personal Comment	493
Transatlantic Topics	494
Practical Jottings	495
Know Your Choice	497
Guppy World	498
PetFish Photo Competition	499
What is Meant by Types	500
Our Native Fishes	500
Club News	501
Dates for Your Diary	505

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## Comments and Quotes

● 'Ideas men' forward! ● New look at fish  
fungus ● Flukes in coral fishes ● Tickling  
anemones ●

### Inventors Wanted

OUR remarks in *FFM* last month on the subject of the need for fresh developments in British aquarium equipment and a generally more progressive attitude by our manufacturers have already drawn comments in agreement from two well-known firms concerned with the hobby. Each of these firms, independently, is undergoing changes of organisation that could do much to get things moving in the right direction. One firm is nearly ready to market a number of new British-made lines, and gave *FFM* evidence that it is looking hard into the development of competitive items for hitherto imported aquarium equipment.

The second firm with whom we have had discussions is already carrying out research into requirements for certain types of special apparatus and is considering further new approaches. A suggestion has been made by this firm that aquarists who think they have something worthy of development should put forward their ideas for investigation and trial. Development and production of something that is first put up merely as an idea costs a lot of money, of course.

However, it is recognised that the originator of a good idea deserves some reward, and to encourage those who might otherwise be reticent to offer their idea for fear that its exploitation to no advantage to themselves could result, it has been mooted that *FFM* might play a part to safeguard the inventor's interest. In general we are favourably inclined to the suggestion, if it will help to achieve the progressiveness we would like to see. In any event we will be pleased to put any 'ideas men' in touch with the right quarter.

### The Fungus Mystery

FUNGI are primitive plants that are most commonly found growing on non-living organic materials, and a familiar example is the mould that grows on stale bread. Some fungi are aquatic and will also appear on the damaged flesh of fish, and this creates something of a mystery about them. Do the fungi always grow only after damage has occurred (and here damage must be taken to mean damage by fish parasites, as well as mechanical injury), just like scavengers, or are in some instances the fungi themselves the parasitic causes of tissue damage?

It used to be said that all 'fish fungus' was due to the fungus known as *Saprolegnia*, but in fact there are known to be quite a few killer fungi for fishes, although mostly these are of the fungus family *Saprolegniaceae*. It is also commonly thought that fungus attack always shows itself as cotton-like threads or fluffiness, since this is often the appearance that develops on a dead fish body, whatever the cause of death, if it is left in the aquarium. But the fact that fungus growth can appear to the naked eye as an apparently solid white excrescence, raised above the skin of an infested fish, and which can be revealed to be fungus only by microscopic examination, should also be stressed.

This topic has come to the fore again in connection with the disease 'ulcerative dermal necrosis' that has caused such trouble in salmon waters. The presence of white fungoid patches is the recognition feature for the disease, and since there is no universal agreement about the cause of ulcerative dermal necrosis the possibility that the fungus is something more than a secondary or later development is being looked into by

# PetFish

## AQUARIUM SHOW

Watch future issues of PFM for details of the Show  
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scientists at University College, Dublin. In *NATURE* Dr Mary R. Stuart and Dr H. T. Fuller have reported finding species of *Saprolegnia* not only externally on diseased salmon and trout but also within the musculature of the fishes to a depth of 1.5 centimetres.

They also point to an apparent link-up between lowered water temperature and spread of fungus. This has been shown before with eels and the Dublin workers have observed an outbreak of a fungus disease in brown trout fry exposed to a drop in temperature from 62°F (16°C) to 50°F (10°). *Saprolegnia* has been found by them to have a high tolerance to salty water, and there are other reports to suggest that this and similar fungi can parasitise fishes in brackish water.

The conclusion of Dr Stuart and Dr Fuller is that 'On the basis of existing evidence, it seems improbable that it (*Saprolegnia*) functions merely as a scavenger. It is more reasonable to suggest that the fungus is the primary parasite in ulcerative dermal necrosis or alternatively that an extremely close relationship exists between an unknown primary parasite and *Saprolegnia*'.

### Saltwater Flukes

KEEPERS of marine tropics are not any more free from bother by disease and parasites in their stock than are their freshwater friends.

There seem to be marine counterparts of all the well-known aquarium ailments. We could not help reflecting ruefully on this when we read a recent report by Dr P. C. Young, parasitologist of the University of Queensland, in the *JOURNAL OF ZOOLOGY*.

In the gills of marine teleosts caught on the Great Barrier Reef of Australia he has found no less than ten species of marine gill flukes (genus *Haliotrema*) not previously described. These flukes belong to the family Dactylogyridae, which is the group that includes our better-known pests of freshwater fishes. Although such parasites usually do little harm to fishes in natural waters, in the relatively crowded conditions of aquarium life their numbers can increase enormously and seriously affect the health of their hosts.

### Anemone on the Roof

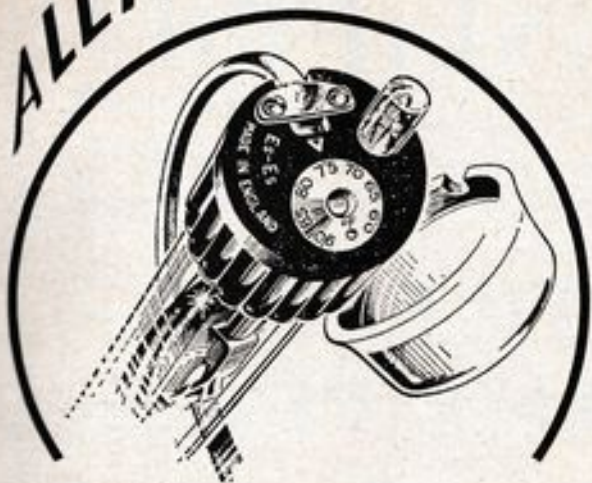
HAVE you ever tried to remove a sea anemone from its place on the rocks? If so you'll know how difficult it is to do this without causing damage to the animal. Have you ever stopped to wonder how hermit crabs, who often carry sea anemones on the shells that form their homes, come to obtain their passengers?

Although the partnership sometimes comes about by chance it is also known that the crabs are able

to encourage more actively the happy arrangement whereby the anemone gives them some camouflage and protection and, in its turn, gains the odd scrap of food from the crabs' repast. Zoologists at the University of Alberta, guessing that the crabs must have some special trick to dislodge the anemones from rocks, have been watching hermit crabs to obtain the secret. Writing in *NATURE*, Professor D. M. Ross and Mr L. Sutton have divulged what they have observed and have, as well, advice to offer on how the crab's technique can be imitated.

They observed that some hermit crabs stroke the base of the anemone with their feet and claws, whereas others give a series of small frequently repeated jabs. These procedures cause the anemone to relax and open up, whereupon the crab pulls it off the rock and puts it on its own roof. The zoologists have found that gently stroking the Hawaiian sea anemones (*Calliactis polypos*) used in their studies with pipe-cleaners also does the trick. The cleaners should be wound round the second and third fingers of each hand, if you fancy trying this technique. It should be noted, however, that English Channel anemones usually inanimate themselves into the crabs' company without invitation, and change base with it when it changes home. There's another problem here waiting to be solved. How does the anemone know the crab is removing? And so the search for truth goes on. . . .

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PET FISH  
MONTHLY

# LETTERS

## A Globe-trotter's Views

I was interested in Peter Unwin's request for news from travelling fishkeepers (PFM, January, Guppy World).

I am a globe-trotting aquarist. Friends are often surprised to discover that I earn my living as a serviceman and spend my spare time (and money!) as an aquarist, since such a mobile job and an essentially static hobby would seem to be incompatible. They are not. Occasionally I regret my choice of occupation as I dismantle a battery of established tanks prior to moving for the umpteenth time, but the satisfaction I derive from setting everything up again (and incorporating a few of those long-planned improvements that more static aquarists never seem to get around to doing) makes each move an opportunity rather than a chore.

Many prospective globe-trotters are liable to be disappointed unless they confine their trotting to northern Europe, North America and the Far East. Before an indignant Amazon Indian writes to point out that he has over one-third of the world's characins at his door, I must add that I say that only with regard to what the majority of aquarists seem to want: established public aquaria, dealers and fellow hobbyists in thriving societies. Excluding these, there must be something of interest to an aquarist in every part of the world.

Tourist G-Ts can collect tall stories, photographs and even specimens, which, with a few exceptions, they will be allowed to import into Britain on their return home. Fishes and their eggs may be imported on production of a private import licence, obtainable from the Ministry of Agriculture and Fisheries at a cost of 2s. 6d. Salmon and trout species and grass carp are prohibited. All plants, roots, coir etc. are, theoretically, banned. In practice, small, private collections will usually be allowed into the country provided that they do not include any items on a rather long list of totally prohibited species. When I last enquired, 4 months ago, this list did not contain any aquatic plants.

Temporary residents abroad will find their hobby even more of a challenge than it is at home, especially in countries where provision of the simplest necessities, on sale at any pet shop here, becomes the first of many problems. When enquiring about the pH and hardness of local water supplies (information which is available to anybody in Britain from local water boards) I have, on different occasions, been treated as a vintner, dairyman, doctor, lunatic and spy. Why anybody producing wine or milk should display such an interest in water supplies is, to me, a source of suspicion.

The problem Peter Unwin mentions, that of keeping tanks cool in hot climates, either does not exist, or else I have failed to recognise it as a problem, so great was my delight when I found I could forget about heaters, 'stats and electricity bills. My tanks, sited in the coolest part of

the house, certainly didn't require refrigeration. The water temperature stayed at about 85°F during the hot seasons, and at this temperature the fish thrived with regular aeration and partial changes of water. The only problem arising from high temperatures was that of keeping whiteworm cultures. This was soon solved by installing them in the crisper drawer of the refrigerator. Since I can afford only one refrigerator at a time, the family and visitors have to contend with warm beer and limp salads on alternate days. Fortunately, we are all enthusiasts!

One problem which affects us all in Britain at some time is unknown in warmer climates—the S.O.S., for shortage of space. I could extend my tank capacity as required by simply standing an old packing case in a shady spot in the garden, lining it with polythene sheet and filling it with the garden hose!

Undoubtedly, the greatest problem confronting all travellers, whether or not they are aquarists, is the language barrier. Your readers are advised to ignore that bit in the travel brochure which tells them that 99% of the population of their chosen land speak English. They have no way of either confirming or disproving it, because they will always meet the other 10%! The use of scientific names for fishes, plants and live foods is an admirable idea in theory. It never works. If you are buying, you find that foreign aquarists and dealers are just as hopeless at remembering or pronouncing them as we are. Should you decide to collect wild specimens, farmers, peasants and other non-aquarists have never heard of them. If you are neither an accomplished artist nor a proficient mimic, always carry with you the best illustrated volume from your fish-room bookshelf. A smattering of the language is always useful when dealing with quantities, relative sizes and colours; but any attempt to translate common names literally will result in your host either remaining bewildered or collapsing in hysterics.

My globe-trotting has brought me back to Britain for at least 12 months, with no possibility of escape. For this reason, I would be most grateful if any aquarists who intend to spend a hobbyist's holiday abroad this year could include in their collection when they return, for me, the following specimens: one bottle of Scotch whisky, half a pound of tobacco and 200 filter-tipped cigarettes. They would help considerably to add to my enjoyment of a fascinating hobby!

Lynton, Devon

RAY HOLMES

## Fish House Heating

As a comparative newcomer to the hobby, I have been given some considerable advice, much of it practical and most of it sensible. I was told early on never to be too dogmatic in asserting that any one course was the only right one. That I think was the most sensible piece of advice I received and I would commend it to James Webster, Leven, Fife (PFM, December Letters).

Mr Webster asserts that paraffin heating of fish houses is wrong because: (1) An oil film is formed on the water surface because of the fumes in the atmosphere, and (2) if an air pump is employed, foul air is forced into the aquarium.

Mr Don Curry tells me that he has had 'oil' films form on water surfaces of his tanks when he was using electrical heating; I have had oil films form on my tanks, which are heated by means of paraffin convector heaters—never

on all tanks, only on one or two (out of 20 in the fish house). Neither Mr Curry nor I has lost fish as a result of that filming.

To test Mr Webster's theory, I placed 25 healthy female guppies in a tank that had not been in use for about 3 weeks and which had developed a film over its entire surface. The greyish, milky film broke as the fish were dropped in—no effort was made to remove any of the film. Those 25 fish have developed normally over the past 6 weeks and there have been no fatalities. The tank is lightly planted and is filtered by means of a normal corner charcoal filter.

With regard to Mr Webster's second point, I would say that my fish house is heated solely by two paraffin heaters: one is a modern convector-type, the other is a greenhouse heater. I have used this system of ambient heat for 15 months with no apparent ill-effects on the fish. Surely, if the air were so foul as to affect the fish, the heaters would go out; they too need oxygen. And I would defy anyone to build a fish house so well insulated that the ingress of air is prevented.

Enfield, Middlesex

HENRY VINALL

### Glass Sealants

IN connection with the correspondence on a suitable sealant for all-glass tanks, may I mention the following. I used Araldite to make a water softener, using a float carrier with plastic body and aluminium caps, with siphon tubing for running the water in and out. The softening agent is Zeo-Karb 224 (The Permutit Co. Ltd.). At the out-end, the Araldite has broken down. The permissible conclusion would seem to be that it cannot stand soft water. Perhaps other readers have further observations about this.

London, W.13

LAURENCE SANDFIELD

### Society Programmes

PROVIDED the response is sufficient I hope to produce a booklet listing speakers and programme aids to help secretaries facing the recurring problem of trying to provide an attractive club programme. If secretaries can let me have details of speakers, film shows etc. which they have found useful, I will contact the speakers direct and seek permission to include them in the booklet. It would be extremely helpful if lecturers and owners of film shows for hire etc. will contact me direct enclosing all relevant details.

255 Manchester Road,  
Warrington

RON TENCH  
(former secretary, Warrington A.S.)

### Water and Fish Breeding

HAVING been thumbing through chapters on water hardness, pH etc., in many of our aquarium books I have been struck by the lack of any quantitative or qualitative information on the effect of chemicals in solution on fishes.

For instance, is the 'hard' water that we try to soften for breeding characins hard because of the calcium and magnesium content, as it is in the chemical sense, or is it the total concentration of all dissolved solids that affects the fishes, perhaps by its osmotic pressure on their membranes? The article in the PetFish Diary seems to indicate that the latter is the case. Which is correct is

important because those of us who use ion-exchange resins to soften our water (e.g. 'Zeo-Karb 225 Na form') are not altering the total amounts of dissolved solids but merely replacing the calcium and magnesium with sodium.

It is known that the addition of calcium salts to the water in which trout are kept makes them more tolerant of high temperatures, but I cannot find any information about our tropical friends. Perhaps we could have an article in 1971 by someone who knows?

I am starting some investigations into this myself and would welcome any information from any aquarist or researcher who has worked in this field or is interested.

Brentwood, Essex

N. P. LATHAM

By definition the 'hardness' of water refers to its content of calcium and magnesium salts. The content of dissolved materials regardless of their chemical nature is referred to as the 'total dissolved solids (t.d.s.)' of a water sample. Our own view is that water for tropical fish breeding should have as low a value for t.d.s. as possible to avoid all possible chemical effects (and osmotic effects) on the egg membrane. However, it is likely that calcium is the real villain, because it is known to affect cell properties, and therefore water with this ion removed, even with sodium salts remaining (provided that the concentration of these is not excessive), would be preferable to hard water as supplied.—EDITOR.

IN his letter published in your January issue Mr W. B. Pearson appears to derive the wrong results from his equations (1) and (2). I think equations (3) and (4) should read

$$DH = \frac{17.8}{14.3} \times \text{British degrees}$$

$$\text{British degrees} = \frac{14.3}{17.8} \times DH$$

Bangor, Co. Down

S. CARLO

### Bradford's Show

FIRST may I say well done to Bradford for putting on the National Furnished Open Show and wish them every success.

Now for the small but: I can understand the entry fee, but, please—only 24 in. by 12 in. by 12 in.? This does not do justice to fish (angels in particular), plants (Amazon swords, Vallisneria—to name but two) and layout. Surely your entries would be better with 24 in. by 12 in. by 15 in. tanks and also give the general public a better insight to our growing hobby?

Secondly, wake up you Londoners and southern clubs—pipped to the post again by our northern friends! What about getting together and putting something on, on the lines of the old Water Life show? Those who remember this, still talk about the furnished tanks displayed at this show, and with all the trade and clubs in and around London, plus the special societies like the F.G.A., B.K.A., F.G.A. and F.G.B.S. and F.B.A.S. on the doorstep, and at least one member from clubs in the London area to form a committee, who knows what we could do.

F. CAIRA

Secretary, Runnymede A.S.

We hope that our announcement on page 478 of this issue will meet your plea, Mr Cairns!—EDITOR.



# The Golden Barb

*Barbus schuberti* (?)



Golden barb pair (male, lower fish)



Half-banded barb pair (male, top fish)

**Cross-breed or  
Distinct  
Species?**

By H. E. R. THOMPSON

THERE has always been some controversy regarding the true identity of this fish. Some authorities claim that the name *schuberti* is not valid in scientific classification and that the golden barb is a hybrid which appeared in America and is most probably closely related to *Barbus semifasciolatus* or *Barbus sachi*, whereas others claim that it is, in fact, *Barbus sachi*, which comes from the Malay Peninsula.

It certainly resembles *sachi* and has a similar shape to *semifasciolatus*, but differs greatly in colour from the latter. It is to be hoped that one day someone will clarify the position and tell us definitely if this attractive fish is a hybrid or whether it is, in fact, *Barbus sachi*. Breeding is certainly true and the writer has never heard of any throw-backs, as there may well be if it were the result of cross-breeding.

The name of golden barb is very appropriate: a rich golden yellow is the basic colour of the entire body, slightly darker on the back and lightening towards silver in the belly area. A number of dark-green indistinct markings appear on and just below the lateral line and these are much more pronounced in the male; there is also another more distinct dark area at the root of the caudal fin. Fins are of a deep-red shade and when the fish is in congenial surroundings a red flush is to be seen in the area of the snout. There are no barbels.

This is an excellent community fish, being colourful, lively and peaceful. All foods are readily taken from all levels and rooting about the tank bottom after feeding is indulged in, which is the usual barb practice.

For those who are interested in the breeding and rearing of tropicals, the *schuberti* barb has another point in its favour, for it is reasonably easy to induce to spawn, far more so than the *semifasciolatus*. pH and water hardness are not important, but, as always, best results are obtained with chlorine-free water. Matured tank water or carefully filtered rain water may be used: fine-leaf plants such as *Myriophyllum* or hornwort serve as suitable spawning media, or alternatively coconut fibre or willow root can be used with equal success, but these must be boiled before use.

A plump one-year-old female should be used with a brightly

Photographs  
by G. E. WOODWARD

## The Golden Barb

(Continued)

coloured male of the same age. Spawning usually occurs within 2 to 3 days of placing them in the breeding tank; parents should be removed as soon after spawning as possible. The young hatch in 24 to 36 hours at a temperature of 76°F (25°C) and are easily raised in the usual manner, i.e. Infusoria for the first 3 days, then graduating to brine shrimp, followed by micro-worm and finely sifted dry foods, weaning later to sifted daphnia, if available, or finely chopped worms. This is an excellent subject with which success may be expected, but not too easy to make the attempt uninteresting.

To sum up, the golden barb is a perfect little fish, having no vices, being exceptionally hardy if given the correct treatment, of good colour and interest.

## What's New?

### Air-powered Dip-Tube

FOR removing aquarium detritus with the minimum loss of water the dip tube must be one of the oldest members on the aquarium accessories list. With the arrival of the Halvin Power Dip Tube the device is lifted right into the modern range of labour-saving aids for the aquarist. This device, made entirely of clear



The Halvin Power Dip Tube (without extension tube)

plastic, is operated by connecting it to your air-line tubing, the air from your pump being forced through a diffuser stone mounted in the circular chamber of about 2 in. diameter at the bottom end of a vertical tube.

The wide open end of this chamber is held over the sediment which is lifted with the water ascending with the stream of bubbles through the vertical tube into another cylindrical chamber that is packed with filter wool (glass or nylon wool). This top chamber has a removable cover plate, and the water plus sediment is delivered above the filter wool, the filtered water returning to the tank through holes in the chamber's base. Provision is made for the vertical distance between the two chambers to be varied, to suit tanks of different depths, by the insertion of a connector tube that is supplied to be cut to the required length.

The Power Dip Tube is held in the hand and moved over the tank bottom to pick up the sediment, but it could also form a useful temporary filter for a small tank if allowed to hang in one corner with the air flow on for a few hours. Price is 10s.

### Steady as a Rock

ALSO new to the Halvin range is a triangular bottom filter that fits into the corner of the aquarium. Its unique feature is that the base is raised on short stilts above a base plate that serves to anchor the entire filter in the gravel so that it will not easily move or be tilted over by any disturbance of the air line. Three sizes are available for use with standard filter media: small (Halvin no. 35), price 8s. 6d.; medium (no.



Bottom corner filter with anchor plate

36), 10s. 6d.; large (no. 37), 17s. 6d. (Halvin products are distributed in Britain by South Coast Aquatic Nurseries Ltd.)

### Super Vivarium

FOR the keeper of reptiles and amphibians a new design of vivarium has been introduced by Lee Reid Co. (London) Ltd. The construction is of pressed steel angle in which glass panels are set, the main front glass (which can be removed) forming a sloping surface above a sheet vertical front glass at the bottom. The bottom part of the vivarium can be filled with water if required. Ventilation is provided in the flat top section. Three sizes of the vivarium are available (finished in cream or gold): 12 in. by 8 in.; 18 in. by 10 in.; 24 in. by 12 in. Each is 12 in. high.

THE COLDWATER SCENE

# Colour Inheritance



Single-tail  
(shubunkin)  
goldfish

Photo  
W. J. HOWES

By CAPT. L. C. BETTS

Three types of goldfish are recognised from the appearance of the skin and colour.

**Metallic:** the group with the normal amount of skin guanine, which is responsible for the apparent shine of the scales.

**Nacreous:** the intermediate hybrid group with plenty of blue showing (called nacreous because of the appearance of mother of pearl)

**Matt:** the group entirely lacking guanine, and without scale shine.

LOOKING back over the years, it can be said that most of the unknown factors in goldfish breeding have been mastered and a reasonable explanation found. At least, for all except colour inheritance. Unless someone is hiding his light under a bushel, no one yet can forecast what colour patterns can be expected from any given mating. The following observations from my experience with recent spawnings may have gone some way to clarify the position.

First, the metallic group. The age of colour change is an inherited factor, which means that fish who are slow to change will throw young who are slower still, or who may not change at all. Quick changing therefore is of paramount importance. Now, what of the change? The most valuable of the fry are those which show the colour change at 6 weeks old. From a single-tail spawning I had 12 from a total of 92—or roughly 10%.

Next, the nacreous group. The only way to obtain a high percentage of the blue and black colouring is to get the nacreous fish by a first crossing, i.e., metallic to matt. It should be borne in mind that overlaying tissue can obscure the coloured pigment and the dull metallic shine of the nacreous group, whether it appears in the layers of the scale or elsewhere, will hide any underlying colour pigment present in the fish.

I use directly imported Japanese single-tails, which are

remarkable for the quantity and density of the red and blue pigment. The intensity of the blue colouring is no coincidence, for they are matt groups and a matt scale is transparent. It therefore follows that any colour present in a matt fish must be seen, whether it be in the epidermis, the scale or the dermis. I have no doubt whatever now that if I want brilliant colouring my matt fish are the key to the strain.

Since the colouring is also present in the nacreous group, I shall obtain my nacreous fish in future years by a direct crossing of well-pigmented matts and quick-colouring metallics, all of which are directly related to the original Japanese parents. Thus I shall gradually dispose of the nacreous group altogether as stock fish and concentrate on my quick-colouring metallics and well-pigmented matts.

The reason there are so few 'calico' fishes that are well coloured in the hobby generally, I suggest, is attributable to (a) the exclusive mating of nacreous to nacreous and (b) the neglect of the metallic and matt groups. The reason the matt group has been neglected is because they have appeared to be weak and sickly, but this is not so. The well-coloured ones are as strong as the nacreous—it

In the spring and summer issues of PFM features of special interest to coldwater fishkeepers will appear regularly.

#### Next month: Hand-spawning technique

is the colourless ones that are the weaklings. In this country, with its cold winters, one cannot afford to neglect the vigour and vitality of the metallic, and since metallic crossed with matt gives 100% nacreous, the only serious way to breed nacreous fishes is by first-cross metallic with matt.

Another thing that has been brought home to me with my Japanese singletail spawnings is that it is necessary to persevere for a generation or two to eliminate stock fish showing any small areas of nacreous until a pure matt-throwing strain is obtained.

## Readers' Queries Answered



### Tropicals Outdoors

*I should very much like to try to keep a few tropicals in a small pond in the garden next year. Is there anything to be particularly careful about?*

It is extremely difficult to forecast the likelihood of success in keeping 'hardy' tropicals in outside ponds in this country. The chances of success vary enormously in different parts of the country and in different years. Tropicals in a small pond in Devon or Cornwall during a warm summer might well thrive from late May to early September; further north, in a chilly summer, it would be useless to try. We have recently read an item in the junior page of the Aireborough & D. A.S. club bulletin in which is reported a breeding of White Cloud Mountain minnows in the garden by a friend of the writer. Zebras and the minnows were kept under a cold frame mainly to fertilise the growth

of the aquarium plants that was the object of the exercise. Most of the zebras have survived and one spawning of minnows. We have known of swordtails being kept and bred out-of-doors during a warm summer.

### Tank Temperatures

*My tank is 18 in. deep and I find that there is a wide range in the temperature between the water at the surface and that at the bottom of the tank. Will this harm the fishes?*

Since the temperature range has not been given it is not possible to give a categorical 'no', but provided that the water at the bottom of the tank is not below 70°F (21°C) and that at the top not above, say, 82°F (28°C), the fish will come to no harm. The water at the highest temperature is probably in only a small layer at the top of the tank, the overheating being caused partly by the tank lights. This condition

could be improved by the use of fluorescent lighting. The use of an air pump would help to keep the water moving and to equalise the temperature layers. Fishes are used to a similar range of temperature in their natural habitat (in addition to that they experience between day and night temperatures) and can withstand a reasonable fluctuation, at which they are not either boiled or frozen, provided that the change is gradual. It is as well to remember, however, that unless the bulb of the thermometer is placed at mid-water a very false impression of the overall tank heating may be obtained. This is particularly true if an outside thermostat is being used. These tend to be placed near the top of a tank and operate in accordance with the higher upper water temperature. To turn the thermostat off, under these circumstances, because a thermometer placed near the surface, gives a high reading, could lead to overheating of the lower levels.

### Pond Leak

*The water level in my small pond has fallen by about 8 inches. As the concrete sides are covered with algae, I cannot see where the crack is, but as there is enough water left to cover*

*Continued on page 488*

# Success First Time

By R. S. B. PINKS

**Fishkeepers have their individual choices of egglayers in the 'easy to breed' class, so that their recommendations of species for beginners to try first are not always the same. The author plumps for the White Cloud Mountain minnow as the fish promising a good chance of success in a first breeding attempt**

**T**HE newcomer to the hobby is generally attracted to the livebearers because they are easy to breed; because the young are usually quite large they are equally trouble-free to rear. As colourful occupants of any aquarium they more than hold their own—there are few fishes which can match a good red platy, for my money at any rate.

Yet sooner or later the budding aquarist turns to the egglayers. They present a greater challenge: if this is the attraction, an aquarist is certainly in the making. Their progeny are easier to dispose of than are those of the livebearers: if this is the attraction, there are many disappointments ahead. But whatever the reason for making a change, the egglayers should be kept and encouraged to breed, as delights are there in plenty.

For the young aquarist I consider the White Cloud Mountain minnow to be an ideal fish. It only costs a couple of shillings a time, and as it is quite happy with

the thermometer in the sixties it endears itself to parents or wives (to say nothing of husbands) who have one eye on the rate of climb of the electricity bill. The range 65-74°F (18-23°C) suits it rather well, since it lives happily at the lower end of this scale and breeds (presumably, equally happily) at the other end of it. Higher temperatures do not suit it, and are reputed to render it more prone to disease, notably velvet. Although this never attacked any of mine in a community tank, the higher temperatures appeared to make them listless, and there were far too many 'unaccountable' deaths.

The fish thrives in alkaline and neutral water; I should be interested to know how aquarists have fared with it in the peaty areas, as I have no doubt that they try as assiduously to breed the White Cloud as we in the limestone areas attempt to proliferate the neon.

It comes from the White Cloud Mountains in China, hence its liking for clear, oxygen-charged water similar to the streams frequented by its forebears. Whether it prefers gravel to sand on the bottom of its tank, I cannot say, but it looks better to me over gravel, and the interstices between the pebbles do seem to have some value in protecting eggs from over-hungry parents.

With most egglayers one has to make fairly elaborate plans for breeding, and more than one tank is needed for even modest success. With the White Cloud, however, one tank will get you a long way, as you can use it for living, breeding and limited rearing. We are always being told that, to get the best out of this or that fish, we should keep a shoal of them in one tank, to the exclusion of everything else. The White Cloud is the only egglayer I can think of which so readily pays off under these conditions and provides you with a family of its young as well.

Planting of the tank should avoid the heavier-leaved plants, as the minnow is all too delicate to need much more than *Myriophyllum* or hornwort. If you are purely concerned with breeding, and appearance counts for little, nylon mops can be used with benefit, as they can be boiled, to cleanse them, after each breeding cycle. An absolute necessity is a layer of *Riccia* floating at the surface. The young fish take shelter in it and it is also used as a spawning medium—an egg will often tumble from it when you are in pursuit of young fry.

It is often claimed that the White Cloud does not eat its young or its eggs. This is not quite true, as individual rogues will, even if well-fed, browse around picking up either, whichever turns up first. In my experience the eggs are more likely to get disposed of than the fry; I therefore provide a really close thicket of plants or mops



for spawning, and rely on the *Riccia* and the good nature of the parents to give the fry a fighting chance. I have seen adult fish picking off fry in mid-water, as well as from the sides of the tank, and then ejecting them. I have also witnessed them not ejecting them, though I must admit that attack is less usual than tolerant indifference.

Spawning seems to be a rather erratic process. On one occasion I moved a dozen fish into a spawning tank and they scattered eggs within minutes of taking up their new quarters, but more usually a number are laid each day over a period of about 10 days, and then there is a gap of 2 or 3 weeks. A lot seems to depend on the age of the fish and the temperature of the water. Young mature fish seem to spawn more frequently than the older ones, and the gaps widen as the temperature drops below 74°F (23°C).

Although the White Cloud is not fussy about food, it prefers chopped earthworm to anything else (and what sensible fish doesn't?). It also seems to prefer whiteworm to *Tubifex*, though a little of this goes a long way, and should only be given a couple of times a week. Almost any dry food will be taken, but remember that White Clouds have small mouths and prefer crumbled flake or the finer versions of non-flake foods. Micro worm is also taken very willingly, even by old fish.

Put an aerator stone in the tank, together with half a dozen fish (a dozen is not too many), and then just keep watching. You will certainly get a lot of pleasure just observing the minnow going about its daily business. It loses some of the brilliance of its near-neon blue-green streak as it ages, but its overall daintiness and vivacity never allow it to become an uninteresting creature. It always strikes me as an unusually sane and civilised sort of animal, with none of the nasty habits which the latter epithet usually suggests. If they are kept on their own they seem remarkably disease-free, though odd specimens do get a form of wasting disease similar to that met in half-grown zebras.

It is very easy to miss the spawning process, and the surest sign that it has taken place is often the sudden slimness of an erstwhile plump female. Within a couple of days minute blackish splinters may be seen clinging to the glass of the tank, but these, too, are easy to miss. If you keep only one tank light switched on, you will soon see

tiny fish swimming about in the water immediately below it, as they are attracted by the light. They are still not very easy to see at first glance, and you often have to sit very still and peer into the water, looking at nothing in particular. If you suddenly see a minute blob of gold and black jerkily proceeding across the surface, you are in business.

It is not too difficult to scoop out these tiny fry, and to transfer them to safer surroundings. They take *Liquifry* no. 1 in very small doses for a few days, after which they will take the larger particles contained in the no. 2 mixture. Brine shrimp and micro worm are splendid follow-ups, when the young fish are large enough to take them. They do not seem to grow very quickly, taking 4-5 months to reach a bit over an inch. During this period the 'blue flash' is seen at its best, and a tankful compares favourably with one containing a similar number of neons. The comparative time and trouble taken to get this far, however, puts the White Cloud right out in front. Possibly your achievement is not as great as that in rearing neons, but if you have a nasty commercial streak in you, and have a few to dispose of, you will find that this is a fish which holds its price quite well.

An indication of the toughness of this little fish is illustrated by the first spawning I had. I was taken unaware by the appearance of several little fish just before I went on summer holiday. I mentally wrote them off, since although a friend had offered to feed all my adult fish, he could hardly be expected to take on the fry without adequate training, and there was no time for this. I duly tipped some green water into a small tank, added the fry, and placed the lot in my (unheated) greenhouse, in which the temperature variations in a normal early June can be really alarming. True, the weather during the next 2 weeks was not as erratic as it usually is; it remained grim for most of the month. I was delighted to see several survivors on my return, not much bigger than when I had left them, but they soon responded to a little extra warmth and regular meals.

Beginners, then, who want to try the egglayers have a respectable fish in the White Cloud. There are those who will tell you to try the zebra, but don't have any of it; in my opinion he should wait for a rather later stage in your education.

## Readers' Queries Answered

*Continued from page 486*

*the fish and plants I intend to leave it until the spring. What is the best way of repairing it then?*

The pond should be emptied and scrubbed so that the source of the leak can be traced. The crack can then be grouted out and repacked with a quick-drying cement. The new cement should then be covered with a cement sealer when it is dry. If the pond is quite a small one, however, do remember that in the meantime the fishes require not

only enough water to 'cover them' but enough to winter in—that is an area containing a depth of water of about 15 inches—to enable them to survive freezing conditions.

### Catfish in Trouble

*Amongst my collection of community fishes, I have three Caeneus. One of them has developed a reddish patch on its side and this condition seems to be worsening. He is still*

*eating well and there is no other sign of disease.*

It is possible that the damage that the catfish is showing has been caused by contact with the heater. It is not unknown for these fish to rest against or on a heater and to become burnt. If the fish continues to eat well, and the other fish in the tank show no signs of abnormality, it need not be assumed that the fish is diseased. Such surface damage should heal well in a healthy fish kept in clean surroundings. Only if fungus attacks the wound need the fish be isolated and the appropriate proprietary remedy used.

# Getting the Plants to Grow

By W. ALEXANDER



*Echinodorus radicans* forming a centerpiece in a 36 in. by 15 in. by 15 in. aquarium

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## How do Your Aquarium Plants Grow?

Check with this list to see if you have done all you can to give your plants the best conditions:

Good top light on for sufficient hours daily

Water not excessively hard

Temperature even throughout the aquarium

Small population under control and no excessively vegetarian fishes present

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**S**PEAK to a group of aquarists and you are bound to find amongst their number some who do not seem to be able to grow aquarium plants. Considering that many plants cost at least as much as the lower-priced fishes, and that these plants can be found flourishing as weeds in other countries, it is worth spending a little cash, time and trouble on providing an environment in which at least some of the plants will flourish.

I have tried various methods of growing plants over the years and the following one is that which I have found to be the most successful for a wide range of plants. Before going on any further I would like to point out that I have found this method to have little success with *Cryptocoryne* species, with the exception of *C. affinis* and *C. verticillata*, and even these plants are disappointing under the conditions which I am

about to discuss. However, accepting that *Cryptocoryne* may not do too well, I still consider that this method is excellent.

Amongst the main things which plants require to grow successfully are light of a certain intensity and quality, for a certain period, food at the roots and possibly dissolved in the water round the leaves, water of a certain pH and hardness, a certain level of heat and certain amounts of oxygen and carbon dioxide at certain times during each day. Given appropriate amounts of each, plants should flourish. It would be possible to take one plant, find out exactly what it requires, and supply it, but to supply a variety of plants in a small environment such as an aquarium requires some compromise to be made. One must try and provide general conditions in which the majority of plants can grow, if not at their best, then at a

level which is acceptable to the aquarist. Such a level I outline below.

Starting at the base of the tank, I obtain a piece of nylon net, preferably white in colour, and fold this along a centre line which will provide a double layer of cloth to cover about three-quarters of the breadth of the floor of the aquarium (i.e. an 18 in. wide piece of nylon will be suitable, when doubled, for the base of a 12 in. wide tank). The nylon is cut to a length which is about 1 in. short of the length of the aquarium. It is then sewn up along its length and across one end, with white nylon thread, to form a bag.

### Peat

Well-soaked horticultural peat has most of the water squeezed out of it and it is inserted into the nylon bag to a depth of about  $\frac{1}{2}$  in. The open end of the bag is then sewn up and the peat shaken evenly over the inside of the bag. The whole is then placed on the floor of the aquarium to supply a rooting medium for the plants. Next, some well-washed and drained calcium carbonate-free gravel is tipped over the bag of peat and spread out over the base of the aquarium to the desired depth and pattern. The above precautions prevent small particles of peat and brown-coloured water from the peat from dirtying the aquarium water when it is added.

Appropriate rocks, which should also be free from calcium carbonate, are then arranged on the bed of peat and gravel. The tank can now have most of the water added. Fairly soft water seems to be best and a mixture of about two-thirds rain water and one-third tap water seems to be

ideal for most plants and many fishes. (As water evaporation occurs the loss should be made good with fresh rain water to keep the hardness low). The peat should render the water slightly brown and slightly on the acid side of neutral. Both of these conditions suit many plants and fishes, but tend to discourage the growth of algae. Snails, which have a lot of calcium carbonate in their shells, should be discouraged, although, again, soft acid water does not suit them as it tends to dissolve their shells; this also tends to increase the pH and hardness of the water.

When the tank has been filled to about three-quarters of its depth, the plants may be planted, if the water is at about the correct temperature. I prefer a temperature of 78°F. (25°C) as this seems to suit the plants best. I will consider suitable plants later on.

We have now dealt with temperature, food, water pH and hardness, and we are left with the problems of supplying carbon dioxide, oxygen and light. Fortunately the two gases do not offer any problem as the fishes will, in conjunction with the plants, produce if not a balance of these gases then a tolerable condition in which both can survive.

### Lighting

We thus have to deal with lighting. Of several combinations which I have tried, I have found that a Gro-lux tube gives good results if combined with normal tungsten bulbs. On its own, the Gro-lux tube which I use seems to produce rather distorted plant growth and the light which it produces is not bright enough to illuminate the

contents of the aquarium as brightly as I would want for normal viewing. However, combined with a bulb of appropriate intensity, the contents of the aquarium can easily be seen and the plants grow like weeds. Although a Gro-lux tube and its electrical fittings is rather expensive, the results which I have had since using it have certainly justified its cost.

### Results

Some of the plants which I have found to grow well under these conditions include *Aponogon* species (some of which have flowered, produced seed and seedlings), *Bacopa*, *Cabomba* (has done very well), *Ceratophyllum* (hornwort), *Ceratopteris* (Indian fern), *Echinodorus* species, *Elodea*, *Hydrocotyle*, *Hygrophila*, *Lobelia*, *Ludwigia*, *Myriophyllum*, *Nomophila*, *Nymphaea stellata*, *Sagittaria*, *Samoëra*, *Synserra*, *Utricularia*, and *Cryptocoryne affinis* and *C. secullii* (not too well).

There are many ways in which good plants can be grown, and many of them are as good, if not better, than my way, but the above method seems to give consistently good results for quite a wide spectrum of plants, and the little extra trouble and money spent seems to me, judging by the results, to be well worth while. With no other method have I been able to fully stock an empty tank with plants taken from a community tank run on the above lines, inside a few weeks.

It's a pleasing job to have to prune one's plants weekly so that the fish in the aquarium may be seen and so that the overhead light may be able to penetrate the thick foliage and light the interior of the aquarium. It's a method worth trying.

## In Memoriam

TWO deaths that occurred in January should not pass unnoticed by aquarists. The first was that of Professor J. L. B. Smith, aged 70, South African ichthyologist who will be remembered mainly for his persistent search for living specimens of the coelacanth, a fish long believed to be extinct. It is not generally known that it was as a spare-time ichthyologist that he first identified, in 1939, a trawled

coelacanth. Ten years later he became Professor of Ichthyology at Rhodes University.

Mr Maxwell Knight, well known as a naturalist, writer and broadcaster, died aged 67 on 24th January. He was interested in all animals, vivarium subjects perhaps receiving his greater attention than aquarium subjects, and for a time he was a frequent lecturer at society meetings.



## What are the Natural Foods of Aquarium Fishes?

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The author shows why the question posed in the title is less easily answered than might be imagined. Only recently has it been found that some fishes eat flatworms, for example

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**H**AVE you ever wondered as you sprinkled flakes into an aquarium about the natural foods of the fish you are feeding? What would your fish be eating if they were not dependent on your choice, but could choose for themselves between the various edible animals and plants in their natural habitats? If you asked me, I could probably make a guess, but I would probably have to admit that I wasn't sure.

Remarkably little is known about the natural feeding habits of even the commonest aquarium fishes. As far as I can discover, no one has ever studied the feeding habits of swordtails or angel fishes. No proper study has been

By **R. McN. ALEXANDER**  
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made of the feeding habits of any of the South American tetras. The few species of barbs whose food has been studied, do not include any of the popular aquarium species.

There are several reasons for our ignorance. One is that the investigation of a fish's food needs painstaking and



A stickleback (*Gasterosteus aculeatus*) eating a flatworm in an aquarium. This photograph was taken by the author in collaboration with Dr R. W. Davies, who has recently discovered that some fishes include flatworms in their natural diet.

skillful work. Another is that there is a shortage of scientists in the tropical countries that the popular aquarium fishes come from. A third is that scientists naturally pay more attention to fishes that grow big enough to eat than to the small species favoured by aquarists: for instance, the African barb whose food has been studied most thoroughly is a species which grows well beyond normal aquarium size, to a length of 3 ft.

You can sometimes get a fair idea of the food of a fish by seeing what bait it will take, but you are almost as likely to be led astray. I have caught *Myleus rubripinnis*, a South American characin that probably feeds almost entirely on plants, on hooks baited with fish. You can sometimes learn about the feeding habits of fishes by watching them, if the water is clear enough. Skin-diving scientists have learnt a lot by watching fishes in coral reefs.

Still, the most reliable way of finding out what fishes eat is by catching specimens in their natural habitat, killing them, cutting them open and looking at the contents of their stomachs. Even this may not tell you everything. Flatworms are small slimy creatures which are common in lakes and ponds, where they crawl about on the bottom. They are never found in the stomach contents of fishes but it has recently been shown, by a method similar to the method of identifying human blood groups, that at least some British fishes eat them. Apparently they are digested so rapidly that they are always gone by the time a scientist opens the stomach.

### What They Swallow

The contents of a fish stomach are nearly always pretty disgusting, but they are sometimes easy enough to identify. Predatory fishes usually swallow their prey whole, and a recently swallowed fish is easily identified. More skill is needed to distinguish different species of insects from a few mangled fragments of legs, or certain types of worm from bristles among otherwise featureless slush. Sometimes the stomach contents seem to be utterly unidentifiable. Stomachs of 'sharks' (*Labeo* spp.) contain slimy stuff that looks like nothing in particular, even through a microscope. 'Sharks' have been watched in African lakes, eating the green slimy coating of algae from rocks and even from the backs of hippopotamuses. They eat algae in aquaria, too. The slime in their stomachs must be remains of algae.

Some species of fish seem to feed more or less exclusively on a single kind of food. The 'sharks' seem to eat practically nothing but algae. An elephant nose fish (*Gnathostomus longibarbis*) feeds almost entirely on the larvae of insects such as midges, which live in water until they become adult and can fly. The African tiger fishes (*Hydrocynus* spp.) feed almost entirely on smaller fishes, except when they are young.

Other species eat a variety of things, with different foods predominating at different places and different times. One of them is *Alestes jacksonii*, an African fish which is closely related to the tetras and grows to a length of 8 inches.

Dr Corbet of the East African Fisheries Research Organisation examined the stomachs of over 600 specimens of this species, caught in various places in Lake Victoria. About half came from muddy places where

there were lots of water weeds. Their stomachs were filled mainly with pieces bitten off the weeds, but some of them contained adult insects which must have been taken at the surface of the water, as trout take flies. Some of the other specimens came from sandy and stony places where there was much less weed. They had fed mainly on insects, but had also eaten some weed. *Alestes* seems to prefer plant food, but eats insects as a second choice.

### Moon Phases and Feeding

When Dr Corbet compared the stomach contents of the *Alestes* caught on different dates, he made the intriguing discovery that they change with the phase of the moon. *Alestes* eat more midges in the week following the new moon than at other times, and more mayflies in the week following the full moon than at other times. The explanation is that the life cycles of the insects are geared to the phases of the moon, so that midges and mayflies are most plentiful over Lake Victoria in these periods.

The food of fish often changes with the season, as well as with the phase of the moon, because different foods are available at different times of year. This is illustrated nicely by the case of a catfish, *Clarias gariepinus*, in a lake in Rhodesia. It has been found to feed mainly on water snails in February, on water fleas like *Daphnia* in July and on midge larvae in September. In other months it eats mixtures of these and a few other foods, in varying proportions.

*C. gariepinus* is a big fish, growing to lengths a little over 3 ft. It is odd that it should feed on tiny water fleas even when it is adult—indeed, it eats an increasing proportion of water fleas as it grows larger. It apparently does not chase them one by one but strains them out of the water passing through its gills by means of its gill-rakers. These are closely set bristles which stretch across the gill slits.

### Algae-eating Cichlids

I have used a lot of space telling you how difficult it can be to get an adequate picture of the feeding habits of a species of fish, because they can depend on so many things. I have told that very few of the popular aquarium species have had their food investigated scientifically. Still, one can often guess the food of a whole group of species from investigations on one or two. I will end with some guesses of this sort.

The South American tetras and hatchets feed mainly on insects, which land on the water or fall (as ants may do) from overhanging trees. The small barbs probably mostly eat a mixture of water fleas, midge larvae and algae. The 'sharks' and the sucking catfish eat algae. None of the many species of *Corydoras* seems to have been investigated properly, but they are said to feed on decaying organic matter from the surface of mud. Killifishes eat midge and mosquito larvae and other small aquatic animals. Cichlids vary so much in feeding habits that no generalisations can be made. Some small species feed mainly on insect larvae whereas others, including the *Labeotropheus* and *Pseudotropheus* species that have been imported recently from Lake Malawi, feed entirely on algae. Still other species feed on molluscs or on other fishes.



## Personal COMMENT by ARPEE

**I**F you pour a gallon of detergent into a fish tank and watch the inmates die you are undeniably as mad as a March hare, but at least the situation is a clear one of cause and effect. Numerous less obvious reasons for failure have been alluded to elsewhere in this column, but even these are traceable to some malpractice or oversight or pure accident. There is a fringe of experiences, however, which are much less easily rationalised, and I expect that most readers will be familiar with the sort of thing I have in mind.

A gardening writer, whose column I was reading the other day, asked why it was that some folk can grow onions better than others, why some cannot grow them at all, and how it is that some grow them absolutely superbly. It is assumed that climatic, soil and other conditions are equal: perhaps some of us have got 'it' (whatever that is), whilst the rest of us do not possess the requisite gift at all. So with fish; we all know how we have tried to encourage the chap who has tried and tried and tried with the variety best suited to local conditions, and all he has finished with is a succession of infertile eggs or none at all. You cannot quite dismiss the whole thing by saying that A has a gift for it, whilst B hasn't, as it is a quite unsatisfactory way of attempting to explain the phenomenon. The 'green fingers' of the successful gardener are charming in concept, but again it is begging the question, simply to accept an epithet where a reason would be more interesting.

It should not be assumed from this that I should like to rationalise everything—far be it, as there are all too few mysteries left! I do rather think, though, that this so-called 'feel' for animals and other living things can be linked with frequencies which imperceptibly emanate from other living things, and can be received by others. The way in which things react to the frequencies they receive determines their behaviour to the transmitter of those frequencies. It is well known that the 'smell of fear' can put animals off certain human beings either temporarily or permanently, and that the 'smell of death' emitted by certain ailing shoal fish guarantees their rapid enthusiasm by the rest of the shoal. A soprano can shatter a wine glass by emitting a certain note, and it has been shown that cows give better milk if they have music in their byres; recently the effect of sound on plant growth has been studied, and it seems that there is some connection between the stimulus of sound and a corresponding reaction on the part of the growing thing.

Old ladies who grow the most wonderful pansies will tell you that they talk to their charges as they walk round the garden, and old gardeners will bear them out, even if they secretly believe them to be witches. In my own

experience I never tell anyone these days if one of my spawning set-ups has worked, as it has always seemed to me that I have no sooner uttered an optimistic word about a spawning than the whole lot has either turned white, cooled off or boiled. The beekeeper will announce any death in the family to his bees, in the certain knowledge that by doing so they will remain in the hive, and so on. There are lots of rather odd sets of circumstances which come into the 'frequency' concept, and if you develop the idea logically it can account for such simple things as personal like and dislike. In fact it explains almost everything as regards living relationships, excepting how it is that certain people have that particular sort of frequency which makes them able to breed tiger barbs and rasboras. But wasn't that where we came in?



My attempts to breed glowlights have hardly reached the dizzy heights one hopes to attain when embarking on a breeding programme. From five spawnings exactly three fry have made it, and their future seems uncertain. In this hard water area it is, of course, not the easiest thing in the world to breed these fish, so I have used them as this winter's 'challenge' fish, in the hope that if success comes it might give heart to those who, like me, have suffered defeat after defeat in proliferating this attractive little creature.

Last winter I managed to spawn this variety quite well, obtaining several hundred fry from each attempt, but rearing them was the problem as they just petered out after a couple of weeks, not piecemeal, but *en masse*. The fry are lethargic curious little things which assume odd angles all over the tank and may need the stimulus of an airstone to get them going. The principal problem seemed to be that of providing a food to take over after the initial doses of Liquifry, on which they seemed to manage quite well for the first 2 weeks. The fish house owner with unlimited supplies of Infusoria probably has no great worry in this respect, but the aquarist with limited means has to seek an alternative.

I was very interested in the Shirley Aquatics Ltd. advertisement in *PFM* for December, which offered for sale San Francisco brine shrimp eggs. These, allegedly, are suitable for the smallest of fry, so I sampled some, with the object of turning them to good use when a really good hatching of glowlights came along. To date, my only conclusions are that these brine shrimp really do look tiny and have real possibilities, but whether they will help with my glowlights remains to be seen. Meanwhile I continue to examine my technique to try and discover what went wrong.

Water, undoubtedly, is the most likely difficulty, but as I was using rainwater in which peat had stood for some time I expected fewer difficulties than were in fact encountered. I suspected some *Cyclops* at one stage (these are fearfully bad in a spawning tank), and boiled the

water, but this made little difference. I have had good results in the past by using Blackwater Tonic as an additive, so I am now trying this with filtered rainwater, so I hope soon to remove at least one of the worst of the uncertainties.



There are plenty of self-adhesive labels on the market these days, of varying size and shape. If you stick them unobtrusively, on the side panels of your tanks, they can be used to record the date on which fry were hatched, or the last day on which the water was changed, for example. They come off very readily, using a razor blade as a scraper.



**Tailpiece.** After a lot of shopping around in 1967 I managed to secure some *Corydoras hastatus*, the pigmy catfish. I am a great catfish fan—to the extent that I have none in my collection at the moment, as they don't fit with what I have, but I always hope to have room enough some time to give them their own tank. My experiences with the pigmies were not at all encouraging, and I still don't know where I went wrong. I put four of them

(against all the rules) into my tetra collection. A small *Betta splendens* had been prospering greatly for some months in the same tank and I took a chance that the *hastatus* would do likewise. For several days all went well and none of the tenants took much notice of the newcomers. This was encouraging, as serious trouble by way of relationships, if there is to be any, usually occurs just as you are releasing new stock, not days afterwards. However, the *hastatus* just didn't seem to prosper and as they deteriorated the larger fish made their lives a misery, so I removed them to more peaceful quarters. These comprised the rearing tank for my White Clouds, but once again things seemed not to their liking and they finally succumbed. I did a major water change in this tank and tried another quartet from a different source. Although they looked much happier and healthier stock they, too, wilted and finally died. I have absolutely no idea how or why. Possibly they were old fish which simply couldn't take yet another water change, but I would have given them at least a couple of years' life judging by their appearance in the shop. Well-fed, but not coddled, and in surroundings which generally suit my other fishes very well, they made me feel most puzzled and not a little disappointed that I had utterly failed a variety for which I have the utmost affection and respect. I shall keep trying; perhaps this will be the factor which finally swings me over to that 'Catfish Only' tank.

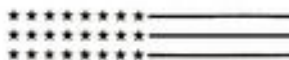
## Transatlantic TOPICS

MEMBERS of the fair sex have come a long way towards freedom since they chained themselves to railings, spurred on by Emmeline and Sylvia Pankhurst. Emancipation has spread into most male spheres and that includes aquarium clubs, probably more so in the States than in the Old World.

Though the ladies do form a very useful adjunct to our clubs it is on the other side of the Atlantic that they really come into their own: I remember the clubs that had female presidents and one that was run by an all-female management committee!

Because of this fact it seemed strange to read the report from the Green Water A.S., Illinois, by one of their founder members, Zane Scobey, describing the early days of the group. Their first set of by-laws prohibited women from membership, but even these male stalwarts had to give in, and changed the rule 3 years later.

Much to the dismay of their masculinity, the females proved they could soon master the piscatorial arts as well and in some cases a lot better . . . one of the probable reasons that



By JIM KELLY

this club has just celebrated its tenth anniversary?

Novelty Furnished Aquariums are as rare on our benches as mice in a cat's home, but they are catching on over here. For the benefit of the uninitiated, Novelty is similar to Furnished, only more play is made for artificialities as opposed to natural plants and decoration. To give some of the would-be exhibitors some ideas here are a few examples taken from a show in the U.S.

The winning tank sported a Jack Dempsey cichlid in a decor of the boxing ring; the second prize tied up with a publicity schéme organised by a well-known petrol company and implied that everyone should put a 'you-know-what' in his or her tank. A cat house, complete with red light, stopped me in my tracks. What's a

cat house? Some feline version of the canine home, no doubt?

Back to some form of sanity with a treasure chest full of jewel cichlids, a jeweller's shop containing pearl gouramis and bringing up the rear of the parade an aquarium dressed overall as a circus waggon, carrying a banner: 'The Greatest Show on Earth'. Inside were swimming everything from lionheads, leopard cats, elephant noses and, as you might have guessed, a clown loach.

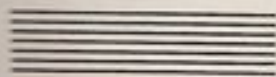
Come to think of it, there is something to be said for the serenity and dignity of a furnished aquarium, British-style, or am I old-fashioned? (Footnote: that cat house turned out to be the residence of Mr and Mrs Al G. Cat!)



'Five dollars—do I hear six?' Though the currency may be different, we, too, are familiar with the cry of the auctioneer. The rhythmic chant was heard in Chicago recently when the Milwaukee Aquarium Society held its first public auction. The money raised by this function was destined to swell the fund the 150 strong group have to maintain

Continued on page 496

# PRACTICAL



## JOTTINGS

By F. N. GHADIALLY,

M.D., Ph.D., D.Sc.

If a fish jumps out of a tank on to the floor the novice can panic and try to pick it up in a hurry as if every second's delay were important and would make all the difference between life and death. The idea at the back of his mind is that a fish out of water cannot obtain oxygen and hence will suffocate and die in a few minutes. Nothing can be further from the truth, and generally more damage can occur from futile attempts at picking the fish off the floor with bare fingers than a stay out of water.

The first point I would like to make is that as long as the gills and skin remain moist a fair amount of gaseous exchange will go on. Therefore it is not surprising to find that a guppy can stay out of the water for about 45 minutes in this manner without dying. Anglers will tell you that they have often brought home fishes they have caught, wrapped up in damp grass, and such fishes have lived happily in their aquaria for years after.

### Fish on the Floor

One thing is certain, that the fish on the floor is not going to die just because it is out of the water. Make sure that you pick it up successfully at the first attempt when you do try. One of the best ways of doing this is to slip a piece of damp paper or card under the fish and flick it into

a net. But no two situations are alike; you must decide the best course yourself.

Obviously the tactics used will vary depending upon whether you are picking up a big cichlid or a tiny guppy, whether it is easy to get at the fish or whether it has slipped into some awkward corner. The important thing is do not rush the job; you have adequate time to think and get the right piece of apparatus for the task.

If, after returning the fish to the water, you find that the skin is lacerated and the fish has picked up some dirt, it is best to isolate it in a little jar or a spare tank and add some methylene blue to the water. This minimises the chance of the wounds becoming septic or developing fungus. Methylene blue is quite harmless to fish; about 5 drops of a 1% solution added to a 2-lb. jam-jar three-quarters full of water is adequate. This drug, however, is not kind to plants and it should not be used in a planted tank. A day or two's stay in the methylene blue solution is usually all that is necessary to achieve healthy healing of the skin of a damaged fish.

### Tubifex in the Diet

*Tubifex* are fine, thread-like, red worms approximately 1-1½ in. long and can be purchased quite cheaply in unlimited quantities all the year round at aquarists' shops. Collecting *Tubifex* is really a job for the professional. Though they may be found in small numbers inhabiting the mud at the side of *Daphnia* ponds it is rarely worth while attempting to collect them from such sites, as successful collection is only feasible when they occur in really large numbers.

It is along the banks and flats of streams carrying sewage, about half-a-mile to a mile below the point where it is discharged into the stream, that *Tubifex* occur in numbers sufficient to warrant collection. Here the professional collector scoops out the surface mud containing the worms with the aid of a shovel. This mud is then placed on wire-mesh trays and a stream of water is played on it, which washes most of the mud away leaving behind huge masses of red worms and also a fair amount of mud. The partially clean worms are then further cleaned by placing them in cold running water. Colossal quantities are collected daily and distributed to retail shops all over the country.

*Tubifex* dig a tube-like hole in the mud, hence their name. The head end is hidden in the hole while the tail waves about in the water. They swallow the mud in the depths of the tube and throw it out at their tail end, at the same time removing large numbers of bacteria from the mud for their food.

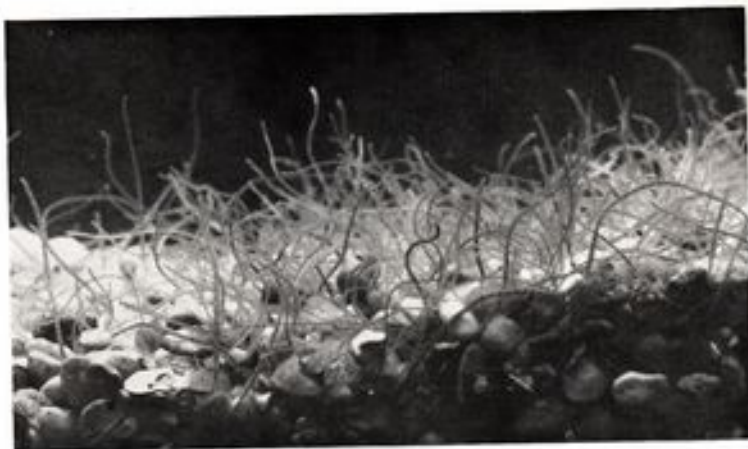
It is for this reason that some aquarists consider it a good thing to let *Tubifex* worms establish themselves on



When a fish jumps to the floor, do not allow it to become dry and use a flat card to ease it into a wet net. There is no need to rush the procedure, for haste may cause more harm to occur.

Enlarged view of part of a colony of *Tubifex* that has become established in the gravel of an aquarium

(photo by the author)



the aquarium floor. They withdraw into their tubes very rapidly at the least sign of danger and most aquarium fishes find it difficult to catch them once they are established in this manner, nor do they relish them when they do occasionally catch them. In time therefore, where conditions are favourable, the bottom of the aquarium becomes a carpet of swaying worms. Then there arises the danger that large numbers may suddenly die and really foul the gravel and pollute the water. Before this happens a few catfish or loaches should be introduced for they soon root the worms out of the gravel. Failing this one has to strip down the aquarium and set it up again after washing and boiling the gravel.

The worms as purchased should not be fed directly to fish. Their gut can still contain a lot of the foul material which may upset the digestion of any fish that gorges on them. They should first be placed in a flat dish under a small stream of water from the tap. The live worms will collect in a mass and any that are dead will be washed away. If the mass of worms is turned over some hours later you will find a fair quantity of foul debris which has been excreted by the worms. The mass of worms should be broken up every now and again and washing continued for at least a day, and preferably 2 days before feeding with them is commenced. When really cold water is available these worms can be kept alive for about 10 to 15 days but, in the summer months, it is difficult to keep them alive for more than a day or two.

*Tubifex* are looked upon with suspicion by many aquarists. Some of the dangers attributed to them are quite untrue and belong purely to the realm of fancy,

others are difficult to prove or disprove. These worms are not intermediate or definite hosts to either the white spot or velvet parasites and, coming as they do from waters too polluted to support fish life, they are unlikely to meet these parasites in the wild. But the water containing the *Tubifex* could become contaminated with the parasites, e.g. if a net that had been dipped into an infected tank was used to remove them. Washing under running water will tend to wash away the parasites and this will minimise the risk of transferring them to your tank, but it cannot eliminate all danger. But in this case, of course, one can hardly blame the worms, for the same objections can be levelled at every live food in the wet state, e.g. *Daphnia* and glassworms.

The other complaint frequently made is that after a while fish eat them very reluctantly and do not grow well on them. Some even believe that feeding with these worms can cause wasting, particularly in livebearers. A number of these troubles may be due to feeding with unclean worms. Another point to bear in mind is that fish get tired of any food, even *Daphnia*, if they are fed on it almost exclusively. Because these worms are so cheap and easy to obtain there is usually a tendency to feed with them continually.

In contrast to live foods such as *Daphnia* or insect larvae, which contain a lot of roughage, *Tubifex* are almost 'pure meat' and if fish are forced to live almost entirely on such a rich but unbalanced diet it is little wonder that it has untoward effects.

I use *Tubifex* worms for feeding truly carnivorous fishes such as fighters, gouramis and angels but I do not like giving them to livebearers.

### Transatlantic Topics (from page 494)

aquaria in schools, hospitals and homes for the elderly.

Most of the gear on sale was donated by manufacturers, dealers and the hobbyists themselves, and start-

ing at Sunday lunch time the auction had realised some 660 dollars (over £250) by 6 p.m., and the 400 folk attending seemed to think it a good idea.

So do I, and feel that it could provide activity at our shows to entertain the visitors during the judging. To whet your appetite here are some of the items that were auctioned and the prices raised: pike cichlids at 35s.; under-gravel filters, 7s.; a 55 gallon tank for 60s.

## MARINE FORUM



A WORD of warning to all marine enthusiasts—if you are uncertain of the identity of the dangerous-looking brute in the dealer's tank, ask his advice before purchasing it. I neglected to do so the other day, which resulted in my purchasing a grouper (*Epinephelus maculatus*—or what very nearly passes for a maculatus). 'Fred', as I have now called him, was at first quite a docile little character—well, 'little' is perhaps a misnomer as he is fully 4 in. long—until I read that certain groupers grow to enormous proportions and were generally measured in feet rather than inches! I'll have to find out the exact species now, Fred!

I decided to move Fred into a 24 in. by 12 in. by 12 in. tank after quarantining him in a smaller 16 in. by 10 in. by 10 in. tank, and I also added (you'll never believe this one!) my three albino lyretail *Molliesia nigrifera*; yes, true marine veliferas! Fred ignored these completely and concentrated on devouring large quantities of freeze-dried brine shrimp and a few small ( $\frac{1}{2}$  in.) native marine gobies, caught locally, during the first couple of days. The other evening I returned home, glanced

# Know Your Choice

By GERALD JENNINGS

(International Marine Study Society)

quickly into Fred's tank and—you've guessed it—there are only two mollies now where once swam three.

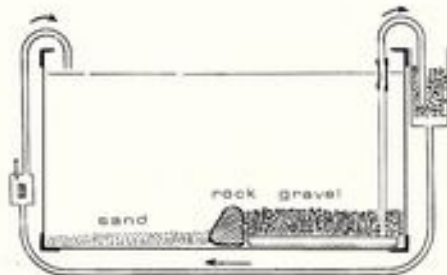
●HAVING gleaned an idea for a new and inexpensive filter from an old publication from America, I decided to adapt this for marine use. Basically, it was a combination of an outside filter and a base-plate-type of sub-gravel filter, having the outflow pipe of the sub-gravel filter attached to the inflow pipe of the outside filter. Being dubious about both the gallonage per hour of a standard outside filter and the use of sub-gravel filters in marine aquaria, I substituted a Halvin medium Filter-fast model for the outside filter and reduced the size of the sub-gravel filter used so that only one-third of the tank had a deep gravel layer.

The gravel was then laid over the plate and a large oblong concrete rock used to prevent the layer of

gravel from sliding off the filter base on to the thin layer of silver sand covering the remainder of the base. Being cautious in the extreme, I adapted the return pipe of the outside Halvin so that the flow would run across the sandy base, carrying sediment from the sandy area on to the gravel, to be dealt with by the filter underneath.

Although somewhat cumbersome to install, it works, and works perfectly at that, giving both a fast flow and crystal-clear water. I hesitate in adding that there is nothing but nylon floss in the filter chamber of the Halvin. Well, with the price of all imported goods rising rapidly I can barely afford to be extravagant; let the bacteria do the decomposing—you get those free.

The INTERNATIONAL MARINE STUDY SOCIETY announce that they are shortly to publish a series of beginners guides to marine fishkeeping and a series of specialist guides to various genera of the more commonly kept marine species. The I.M.S.S. guide to tropical and indigenous marine plants and algae is available, price 11 plus 3d postage, from the general secretary, Mr T. R. Hall, 23 Canfield Gardens, London, N.W.6.



Sectional view of aquarium to show combined sub-gravel filter and fast-flow outside filter set-up described above



# GUPPY

## World

### PETER UNWIN'S Notebook

**G**ERONTOLOGY is the science of old age and this, as far as the guppy is concerned, has been the study of Dr Alex Comfort at University College London, for many years. Though the work was towards aging in man, it has provided the hobbyist with much needed information on this subject.

Age is a cause of variation; a guppy develops as it grows until it reaches its zenith, and beyond this point a steady decline sets in towards the inevitable end. The physiological decline can set in long before the visible, outward signs of this deterioration are obvious; the sex glands atrophy and the fish ceases to be a functional part of our breeding schemes.

This process can be artificially induced by chemicals, or prolonged exposure to strong light etc.

Another way it can be hastened by the breeder is to keep his fish tanks continually at high temperatures—this only quickens the guppy's metabolism and shortens lives.

Unlike man, the guppy is not homoiothermic, and though the cold weather at this time of year might make you feel that your body temperature has dropped, your range of variation is very slight. Not so the fish, who adopts the temperature of its environment and reacts accordingly.

Like treasure-seekers on the lookout for buried treasure, some fancy guppy breeders seek to find the

riches that they think will accrue from developing a new strain. There seems to be a Paul Hahnel in most of us.

Towards this end many aquarists make the mistake of trying to keep all their eggs in one basket, and they hang on to the very last fish from each brood and deny the requests of fellow hobbyists for stock. Perhaps they are frightened in case their colleagues beat them to it?

The usual end to this quest is that the selfish breeder arrives in his fish room one morning to find the 'stat' stuck on and all his prize specimens dead. If success was obtaining good stock from top breeders, guppies wouldn't hold the fascination they do. Instead of being priced in pounds, they would be on sale for a few pence.

Parting with some of your stock to a friend isn't only a charitable act, it is also good insurance against the day when that inevitable accident happens—and it happens to the best of us!

The arguments for and against inbreeding have as many facets as the Koh-i-Noor diamond, but no matter what system of breeding you choose, it is wise to keep a close eye on the resultant broods and see that the youngsters are developing according to plan; you must cull vigorously if you are to improve.

The novice usually finds this advice very difficult to follow and looks for a simple answer to the question whether his strain is developing or deteriorating?

Such a simple answer doesn't exist, but the best indication is to

closely observe the colours displayed by the males; if those colours tend to fade, it is usually a sign that the strain is not progressing. Usually all that is required is the introduction of a fish from a brood, not blood-linked, but as similar in appearance as is possible to the existing strain.

Remember, loss of colour can also be caused by many other factors, such as poor conditions, diet and disease; check these causes first.

### BILL ARMITAGE'S Comment

**I**T is not my usual practice to reply to criticisms, but as Don Curry's letter in the January issue of PETFISH MONTHLY may create a misunderstanding in guppy circles I feel a reply is warranted. May I say at the outset that, although I have been a member of the F.G.A. for some years, it has never been my opinion that it is a secret society whose affairs can only be discussed behind the closed doors of an annual general meeting. Furthermore, several of the suggestions put forward by me in these columns have received favourable consideration by the F.G.A.

Regarding Mr Curry's criticism of my opinion of the colour class, surely he must know that the main reason the F.G.A. was formed was to promote the breeding and showing of broadtailed guppies. Bearing this fact in mind, it is beyond my comprehension why he, as a member and judge, should want to support a class which awards few points if any for finnage.

May I add that my comments are generally written with a main object in view—that of raising points of interest to guppy breeders and also creating talking points whenever possible. Success in this respect can only be measured by the number of readers' letters received, and as there has been an abundance of these in the past I can only look forward with anticipated gratitude to a similar response in the future.

Successful present-day enterprises find that if they are to remain successful they must advertise. Some aquarist societies are well aware of



this, and do advertise on every possible occasion. The majority of societies, however, are somewhat conservative in this respect and apart from advertising their annual shows are content to discuss club affairs with members through their club magazines. Unfortunately, this will only have negative results from a recruiting point of view, as most club magazines are rarely, if ever, read by prospective members. The Club News, In Brief, and Dates for Your Diary columns of PFM provide clubs with an excellent opportunity of

recording their activities regularly to an ever-increasing number of readers, and clubs that have not already taken advantage of this service might well consider using it. (EDITOR'S note: Thanks for the suggestion, Bill, but are there many not using it?—we are pretty well snowed under already with club reports!)

• • •  
The combined F.G.A. and F.G.B.S. show held in Liverpool a few months ago afforded an opportunity to discover the views in

general of F.G.B.S. members regarding the organising of an international show. The last two international shows organised by the F.G.A. would have benefited from more overseas entries and now that the show standards are unified it would appear to be a sound policy if both clubs were to join forces in promoting a show that would prove attractive to overseas and British guppy breeders alike. There is little doubt that an international show is needed and should appeal to guppy breeders everywhere.

## PFM Photo COMPETITION

How this  
month's front  
cover picture by  
BRAZ WALKER  
was taken

Here is a picture that would be the envy of amateur fish photographers. Braz Walker, of Texas, U.S.A., who photographed this 3-inch long sailfin mollie (*Mollienesia latipinna*), has supplied these technical details for the guidance of beginners: camera, Pentax H3A with a no. 3 close-up lens; aperture, between f8 and f11; lighting, Honeywell modelling light; film, Panatomic X (improved); printing, 07% with normal development. Let's see your results—see the entry form on page 518 of this issue.



There are no special categories of entry for this Competition. Photographs in black and white or colour (prints or transparencies) can show your favourite fish in close-up, the interior of your aquarium, fish breeding or other fish behaviour, or your garden pond. Each entry will be judged according to photographic merit as well as for its interest to fish-keepers. Main cash prizes will be

£5 each, with subsidiary prizes of £2 each, plus a monthly chance of being paid one guinea if a picture is selected for printing in an issue of PFM appearing before final judging and announcement of results. Use the entry form from a current issue of PFM when sending your pictures and please read the Rules and Conditions for the Competition printed in the February issue of PFM.

## SCIENTIFIC NAMES OF FISHES — 6

By H. J. VOSPER

# What is Meant by 'Types'

VERY occasionally some mention is made of 'holotypes' in connection with a description of fish species, or of 'types' in general (as was done in our discussion of trivial names (Part 1)), so a digression into this subject should not come amiss.

Somewhat naturally, those specimens of fish used as examples when a species is described are considered highly important. For one thing neither the written description itself nor drawings or photographs can do justice to the original specimens. In due course a doubt raised in any way, perhaps due to the further acquisition of specimens or fresh knowledge of some allied kind, may make it necessary for the originals to be re-examined.

Thus it is important that the specimen(s) that the original author

had before him when the species was founded should be well documented and placed in a national or other particular collection where they can be reached as and when required. These highly important specimens, and certain others, are known as 'type specimens', and several of these may be found mentioned in specialist literature:

**Holotype:** that specimen by which a new species is described.

**Paratypes:** specimens, other than the holotype, referred to in the original description of the species.

**Syntypes:** (or co-types) those specimens referred to in a description

yet without one in particular being taken as a holotype.

**Genotypes:** the 'type species' especially indicative of a genus.

**Geno-holotypes:** the particular species which is described, by the author of a genus, as being typical of his genus.

**Geno-syntypes:** a list of species which an author of a genus considers as belonging to his genus.

Much confusion can arise if the author of a species does not select one holotype from his list of syntypes, more especially if it is later found that more than one true species exists among the specimens of the syntype list. Similarly when a genus is divided, if one species has not been selected as geno-holotype a good deal of argument can be promoted.

## Our Native Fishes

*British Freshwater Fishes* by Margaret E. Varley. 148 pages, 22 plates, 25 figures. Fishing News (Books) Ltd., London, 1967. £1 11s. 6d.

ALTHOUGH primarily addressed to the angler, this book is not concerned with the grim technicalities of rod, line and hook. Its author is a university zoologist who has specialised in fish physiology and who is the editor (under her maiden name of Margaret Brown) of *THE PHYSIOLOGY OF FISHES*. The book is based on the three Francis Buckland Lectures given by Dr Varley in 1963, and the result is a most enjoyable text that can be read with profit by anyone interested in fish life and, of course, in our hobby by the 'coldwater man' in particular.

In the Introduction the author points out that the common British freshwater fishes represent only a few of the orders of bony fishes or teleosts, the majority belonging to the orders Clupeiformes (salmon, trout and pike) and Cypriniformes. She shows in her first chapter that the Ice Age was to blame for British fishes being so few in comparison with the fish fauna of the Continent. The

temperature requirements of the fishes and the relation of temperature to water oxygen content and their consumption of this gas are discussed, as are the consequences of seasonal temperature and other changes in natural waters on the growth and breeding cycles of fishes. Geographical features can also determine the characteristics of natural waters and affect the distribution of the various species. A series of photographs illustrate very well a variety of habitats, for which there are descriptions of the usual inhabitants and explanations of why they are suited to these waters.

Some interesting facts about the breeding and onset of sexual maturity of our native freshwater fishes are summarised in several Tables in the chapter on the annual climatic cycle. Feeding habits of the fishes forms the subject of a chapter, and photographs reveal in a most emphatic way something of the meaning of 'food-chains' in the aquatic environment. That man, too, can be at the dry end of such a chain is the point of the book's last chapter, on the commercial aspects of freshwater fishes.

A bibliography and full list of references to sources of observations and experimental work discussed in the text are provided, together with a commendable index.

ANTHONY EVANS



NINE-TENTHS of the total force of the society turned out in very bad weather and travelled long distances to attend the third annual general meeting of GLOSSOP A.S. Officers were elected for the new season and members were particularly pleased that live-wire chairman Mr Mike Fidler had agreed to stand for reelection after it was feared that pressing business commitments might prevent him from taking office. The list for the new year therefore reads: chairman, Mr Mike Fidler; vice-chairman, Mr John Ingram; treasurer, Mr Dennis Crook; secretary, Mrs M. Brunt; show secretary and advisory committee, Mr Ralph Tomlinson and Mr and Mrs Alan Newall; magazine and bulletin officer, Mr Len McCourt; publicity officer, Mr Christopher Macdonald.

The society's calendar is already bursting at the seams: open shows, auctions of fish and plants, inter-society quizzes, jumble sales, beetle drives and coffee evenings are just some of the events being planned. The society also hopes to extend its facilities for newcomers and novices by giving optional, informal courses on all aspects of fishkeeping. Anyone wishing to join the Society or have further information about it can do so by telephoning Glossop 2748 or by writing to Mrs Brunt, Sunnyside Dry Cleaners, Sheffield Road, Glossop.

AT THE January meeting of NEWPORT A.S. the newly elected chairman, Mr T. G. Wall, presented the Society trophies. The Points shield was won by Mr J. Lowndes and the Breeders trophy was won jointly by Mr Lowndes and Mr W. Chapman. Other awards were: home furnished aquaria (large tanks), Mr J. Lowndes; (small tanks) Mr L. J. Bannerman; ladies section, Miss B. Brown; cup for meritorious service, Mr W. Chapman.

The same evening a table show was held for two classes and judged by Mr Brian Light, chairman of Barry A.S. Results were: a.v. egg-layers: 1, Mr B. J. Main (firemouth mollies); 2, Mr A. J. Payne (dwarf gouramis); 3, Mr W. Chapman (standing-heart tetra). A.v. live-bearers: 1, Mr W. Chapman (tuxedo swordtail); 2, Master A. Berry (sail-fin mollie); 3, Mr D. C. Bishop (swordsword guppy).

MR KAVANAGH of Bekay Tropicals, Hitchin, gave a very popular talk to members of MID-HERTS A.S. on the setting up and keeping of tropical marines. Club members particularly appreciated seeing the complete marine set-up that was used to demonstrate the talk. At a later meeting, members found the talk by Mr K. Parbrick of Hendon A.S. on the keeping of barbs full of interesting and helpful material.

Results of recent table shows have been:

Toothcarps, characins, rasboras, danios and minnows (judged by Mr K. Nutt). Toothcarps: 1, Mr T. Tamra, 2, 3, and 4, Mr C. Withers; Rasboras, danios and minnows: 1, Mr T. Mahoney; 2, Mr P. Bernard; 3, Mr T. Tamra; 4, Mr A. Withers. Characins: 1 and 2, Mr P. Bernard; 3, Mr C. Withers; 4, Mr T. Tamra. Best fish in the show: the black widow owned by Mr F. Harman and awarded 62 points.

Guppies (judged by Mr B. Hawkins, an F.G.A. judge from Dunstable). A.v. males: 1, Mr B. Bradshaw (75 pts); 2, Mr B. Ramsey (74); 3, Mr L. Weller (73); 4, Mr R. Adams (72). A.v. females: 1, Mr L. Weller (73 pts); 1 and 2, Mr B. Bradshaw (72, 69); 4, Mr T. Tamra (68). Breeders: 1, Mr B. Ramsey (70); 2, Mr L. Weller (66).

THE GREAT feature of 1967 had been the gratifying increase in the number of junior members. This pleasing news, underlined by the fact that their new vice-president is a junior member, was given to AYRSHIRE A.S. at its final meeting in 1967, when the new president, Mr T. D. Potter of Prestwick took the chair. This meeting always forms the climax in the club's table show programme and Mr J. W. Mollison was awarded the trophy as Member of the Year. Mr J. G. B. Graham (Mauchline) won the Fish of the Year trophy and Mr J. W. Mollison (Crosshouse) took second and third

places. In the breeders competition ex-president Mr N. J. Baines took the first three places.

THE COMMITTEE of MID-HERTS A.S. have asked us to bring to the notice of interested show secretaries the proposal that was raised at one of their recent meetings concerning the possible formation of a league comprising clubs from Hertfordshire, north and north-west London and Bedfordshire. Show secretaries of clubs who would be interested in forming such a league are asked to contact Mr C. Withers of 15 Charmouth Road, St. Albans, Herts.

WARRINGTON A.S. have tried out their new headquarters at the White Hart Hotel and the general verdict on the new venue is—a great success! At the first meeting there, over 60 people arrived in bitterly cold weather to hear Mr Vic Partington talk on tropical marines and introduce a film on the same subject. Club members were enthralled by the wonderful colour photography that this displayed.

The table show at this meeting was for matched pairs and Mr T. Whitney carried off the trophy for the first time with a pair of thick-lip gouramis. Mr B. Bewick and Mr B. Worrall took second and third places.

The club looks forward to welcoming members old and new at the new premises in the future and further details of club activities can be obtained by phoning Warrington 31635.

## IN NEXT MONTH'S ISSUE

Technique of Aquarium Furnishing

Tropical Catfishes

PFM'S Review of Heaters

Handspawning of Goldfish

Plus, of course, the regular features you expect to see in Britain's best-informed aquarium magazine, and—  
Full Index to volume 2 (1967-1968)

WITH experienced fishkeepers among the ranks, a club need never lack programme material. This was proved at the January meeting of **BRISTOL A.S.** Because of a sudden change of programme the question and answer period became the main event of the evening, but less-experienced members nevertheless went away happily armed with much valuable information on topics such as the rearing of goldfish fry and coloration in platys, given freely by the senior members of the club.

A VERY GOOD YEAR, was the verdict of **HIGH WYCOMBE A.S.** on 1967. The highlights had been the annual open show which had received very pleasing comments from exhibitors and public alike, and the Christmas social, to attend which visitors had travelled up to 50 miles with road conditions of a foot of snow in places. Although the Society had lost four highly valued members in Mr and Mrs Halliwell and Mr and Mrs Chatfield, who had moved away from the district, it was hoped that the current year would bring many new members to take their place. Officers for the year are: chairman, Mr R. Bayntun; vice-chairman, Mr A. F. Wilkinson; treasurer, Mr A. F. Wilkinson; secretary, Mr R. Thomas (Bungalow 8, Finimore Wood Camp, Nr Marlow, Bucks); show secretary, Mrs P. Bayntun; show manager and P.R.O., Mr C. Pike (16 Ashley Drive, Tylers Green, Penns, Bucks); librarian, Mr C. Beavis; committee, Mrs S. Thomas, Mrs V. Pike, Mr R. Cox.

THE NEW committee for **YORK & D. A.S.** is composed of: chairman, Mr. G. B. Hawksby; vice-chairman, Mrs A. E. J. Simons; secretary, Miss H. Renwick (32 Grange Garth, Fishergate, York); treasurer, Mr G. Thiel; show secretary, Mr M. Cooper; editor, Mr A. E. J. Simons; librarian, Mr K. Harrison; committee, Mr P. Carey, Mr D. Parlane; Mr M. Smith, Mr G. Sutton, Mr G. Waudby. Good news for prospective new members was also announced in that membership to the club is now open again. Because of the great influx of members the numbers had been restricted to 87 last May, but more members can now be accommodated. Highlights in the first half of the present year will be the return visit of Dutch aquarists from The Hague at Easter and the open show at the end of April. Meetings are held on the second Tuesday of the month at the Woolpack Hotel, Stonebow, York at 7.30 p.m., and the secretary will be pleased to supply further details.

**THE MARCH CONVENTION of the FEDERATION OF SCOTTISH AQUARIST SOCIETIES** will be held on 3rd March in the National Engineering Laboratories, East Kilbride. The lecturer for this Convention will be Dr N. Carrington, who will be speaking on 'Modern Techniques of Fishkeeping'.

CLUB members turned out in force for the two January meetings of **BRIGHTON & SOUTHERN A.S.** At the first, a tape-slide lecture hired from Horsforth A.S. was shown. It was made up of recordings from aquarist societies the world over and proved to be very interesting, particularly a section from America in which the speaker explained his set-up for line breeding fighters.

At a table show for labyrinths held later in the month, 15 entries were received and the club welcomed Mr Dave Ellis from Kings-ton to judge these. Mr Les Ainsworth was awarded first and second for thick-lip gouramis, Mr Peter Pavey third (kissing gourami) and Mr David Soper fourth (comb-tail).

Any person interested in joining the club and attending the fortnightly meetings may contact the secretary, Mr B. Shelton, at 45 Coventry Street, Brighton.

**BOURNEMOUTH A.C.** members received pleasing news at their annual general meeting. A successful open show and a rapidly increasing membership, together with a substantial profit made during 1967, meant that the club could look forward to even greater success in 1968. During the last year, club members were prominent in the awards lists of local shows and the club had been one of the founder-members of the Association of Southern Aquatic Societies. Several outings had been arranged and thoroughly enjoyed by members, such as the one to Downton Salmon & Trout Hatcheries.

One very popular move at this meeting was the adoption of Mr Jim

**CONGRATULATIONS TO SWILLINGTON A.S.** on winning the 1967 Annual Award competition of the Association of Yorkshire Aquarist Societies. Consistent attendance at many shows by their members achieved the 168 points that gave them the award. Congratulations also to **BRADFORD** (second, 135 points) and **TADCASTER** (third, 122 points).

Scott-Morgan as president. A very enthusiastic and devoted aquarist all his life, although prevented by ill-health from attending meetings very often Mr Scott-Morgan regularly enters fish in the club's shows, and throughout the country as a club member, with great success. Other officers are: chairman, Mr B. Coombes; secretary, Mr I. Andrews (17 Plemont Close, Parkstone); treasurer, Mr L. James; show secretary, Mr J. V. Jeffery (30 Braemar Avenue, Southbourne); committee, Mr R. Matley, Mr H. Earl, Mr B. Hillier, Mr J. F. Jeffery; librarian, Mr D. Hagg; Press officer, Mr J. V. Jeffery.

Results of the championship show of the year, judged at this meeting by Mr Jeffery, were: 1 and 2, Mr Hagg (87, 82 pts); 3, Mr Poole (81). The annual Points Trophy was awarded jointly to Mr Hagg and Mr Earl.

Club meetings are held at Kinson Community Centre, Pelhams Park, Kinson, at 7.30 p.m. on the first Monday of each month. Anyone interested in fishkeeping is cordially invited to attend.

THE three films shown to members of **ILFORD & D. A. & P.S.** at their January meeting were a departure from the usual features, being a selection from British Railways film library entitled 'The Scottish Highlands', 'The Lake District' and 'Between the Tides' and portraying many unusual aspects of wild life in sound and colour. The last-named film, however, is of special interest to aquarists since it includes brilliant underwater shots of marine life on the west coast.

At this meeting the awards gained by members during 1967 were presented by one of the society's vice-presidents, Mr Jack Nott. Award winners were: Home aquaria competition: 1, Mr L. Smith (Cup and replica); 2, Mr J. Hattam (plaque); 3, Mr P. Sheehan (medal). Pond competition: 1, Mr and Mrs D. Woodley (Cup and replica); 2, Mr M. Brill (plaque); 3, Mr M. Beaham (medal). Table show competition (highest number of points during year): 1, Mr J. Hattam (Cup and replica); 2, Mr M. Beaham (plaque); 3, Mr H. Berger (medal). All classes table show (plaques): best live-bearer, Mr P. Sheehan; best egg-layer, Mr W. Rowe; best junior entry, Mr R. Sampson.

A further programme of films that includes one on furnished aquaria is to be shown on the 11th March at 8.0 p.m. The April meeting (on the 8th) will incorporate an auction of fish and plants for members and the May meeting (13th) will feature a talk, with slides, on coldwater fish and garden pools. Meetings are held

at 8.0 p.m. at St Laurence's Church Hall, Barkingside, Ilford and further information can be obtained from secretary Mr R. Ruth, 13 Dunkeld Road, Dagenham.

## Badge of the Month



**DERBY REGENT A.S.** was founded in 1957, and named after the Prince Regent—the public house at which meetings were first held. The Siamese fighter was chosen as the badge motif in 1963 because at that time the secretary, Mr Terry Jerram (now at Terry J. Aquatics), was having a great many successes with his line-bred fighters at major shows. Membership is around 50 at present, and meetings are held on the fourth Thursday of each month, 7.30 p.m., at the Engineers' Club, Osmaston Road, Derby. Visitors are always welcome. Secretary is Mr T. Jerram, 36 Almond Street, Derby.

**CO-OPERATION** with a local cine club has resulted in a filmed record being made of last year's annual show of **STOCKTON-ON-TEES A.S.** It was taken and presented to Stockton members by the Billingham Cine Club.

A recent meeting also featured Stockton's annual Championship show for members, judged by Mr Walton and Mr Trinder of Durham A.S., results were: a.v. livebearers: 1, velifera molly shown by Mr L. Collins; 2, velifera molly shown by Mr J. Chamberlain; 3, black swordtail shown by Mr L. Collins. A.v. egglayers: 1, silver shark shown by Mr L. Collins; 2, *Anostomus* shown by Mr J. Chamberlain; 3, *Berberus splendens* shown by Mr R. Caygill; 4, dwarf gourami shown by Mr E. York.

## In Brief . . .

... **ATTENTION SCOTTISH READERS.** A new club has been formed in Selkirkshire. The **GALASHIELS & D. A.S.** meets on the first Monday of each month in the Harrow Inn, Galashiels, at 7.30 p.m. A warm welcome will be extended to anyone who would like to attend and the secretary Mr Michael S. Povey (13 Lamburn Street, Galashiels) will supply further details.

... **MR J. COLEMAN** is the chairman of **ENFIELD & D. A.S.** for 1968. Other officers for the year elected at the annual general meeting are: vice-chairman, Mr C. Comley; secretary, Mr E. G. Whittaker (26 Shirley Road, Enfield, Middlesex); show secretary, Mr B. Senior; P.R.O., Mr I. Young; treasurer, Mr C. Grey.

... **BRADFORD & D. A.S.** much regret that unforeseen circumstances make it necessary for them to cancel the open table show they were to hold on Sunday, 3rd March in the Textile Hall, Westgate, Bradford 1. However, they hope to announce a fresh date soon.

... A **BALANCE SHEET** for the end of the year showing cash in hand! That was the good news reported at the annual general meeting to members of the **SOCIETY OF AQUARISTS SOUTH STAFFORDSHIRE.** President (Mr H. Clarson) and vice-president (Mr B. Pickering) were elected at this meeting, together with the following officers for the year: chairman, Mr J. Beale (re-elected); vice-chairman, Mr C. Westmancoat (re-elected); secretary, Mr F. Ash (re-elected, 292 Harden Road, Walsall, Staffs); show secretary, Mr T. Miles (re-elected); assistant show secretary, Mr F. Everett (retiring, Mr R. Thurstan); treasurer, Mr G. Law (retiring, Mr J. Newell); assistant treasurer, Mr N. Weatherer; services secretary (new office), Mr P. Sanders; news letter editor, Mr G. Parker (re-elected); social secretary, Mrs Westmancoat (retiring, Mrs M. Thurstan).

... **MRS VERA PARKES** becomes news editor of **MERSEYSIDE A.S.** Two other changes made to the committee for the year are: vice-chairman, Mr B. Kelly and librarian, Mr T. G. H. Wyles.

... **WHEN SWILLINGTON A.S.** were hosts to **AIREBOROUGH &**

**D. A.S.** the table show results were: livebearer pairs: 1, Mr C. J. Burnap (Aireborough); 2, Mr R. Stringer (Swillington); 3, Mr J. Grace (Swillington). Egglayer pairs: 1, Mr F. Cummings (Swillington); 2, Mr W. Emmett (Swillington); 3, Mr J. Whiteley (Aireborough).

... **THE STALWARTS** who managed to reach the January meeting of **HORSFORTH A.S.** through a heavy fall of snow might well have wished that they were to be greeted with a meat and potato supper similar to the one that 50 members and friends had enjoyed the previous month. However, the atmosphere soon warmed up with a team quiz and it was at least possible to hold the table show. Results were: a.o.v. 1, Master P. Kirby; 2, Mrs J. Dickinson; 3, Mr Pollad. J.a.o.v.: 1, Master J. Callaby; 2, H. Plews; 3, A. Kirkbright. Best fish in show, the red-finned shark belonging to Master J. Callaby.

... **THE CHAIRMAN** of **CHELTENHAM & D. A.S.**, at the club's annual general meeting, reported that 1967 was the most successful year that he could remember the club having. The society had enjoyed many notable speakers and good contact had been made with other societies at inter-club shows. Good publicity for the club had been achieved through the Society stand being staged at many local events during the year. Officers elected for the new year are: chairman, Mr Barry James; vice-chairman, Mr R. Deadman; treasurer, Mrs J. Deadman; secretary, Mr V. Howes (19 Dinas Road, Hatherley, Cheltenham); committee, Mr D. Andrews, Mr N. Binding, Mr N. Hughes, Mr C. Surgeoner. Club meetings are held at Christchurch Hall, Malvern Road, Cheltenham, Glos, every second and fourth Wednesday in the month and new members will be made very welcome.

... **THE WINNER** of the best tropical (single) fish bred in 1967 among **YEOVIL & D. A.S.** members was Mr N. Wright (2, Mr R. Gott; 3, Mr D. Phinn). Mr D. S. Langdon was the judge on this occasion, but at a subsequent meeting took on the role of commentator at a very interesting slide show on barbs that club members enjoyed.

... **MR GERALD WHITELEY** is the new secretary of **DEWSBURY & D. A.S.** Correspondence should be addressed to him at 17 Lower Hall, Hightown, Liversedge, Yorks.

... **JANUARY** saw the inauguration of **PRIORY A.S.** Members already

number 25 and prospective new members will be made most welcome at the club meetings which are held once a fortnight on Mondays at 8.0 p.m. in the Percy Arms Hotel, Freet Street, Tynemouth, Northumberland. Mr G. E. Louthian is the secretary (111 Trevor Terrace, North Shields).

... MEMBERS of BRENT A.S. enjoyed a most interesting lecture at one of their January meetings from their vice-president, Dr R. O. B. List, on many aspects of the aquatic hobby. Two very successful table shows were held during this month. Mr C. Swinburne won one best-fish-in-show award with a very nice red-eyed tetra, and at the show judged by Mr Len Smith of Bethnal Green A.S. the award went to Mr P. Shrimpton. The society meets on the first and third Tuesday of each month and full details can be obtained from secretary Mr T. D. Smith at the society's offices at 97 Fleetwood Road, Dollis Hill, London, N.W.10.

... SECRETARIES of local societies are asked to forward schedules of their open shows to Mr G. Hoyland (36 Haggstones Road, Oughtibridge, Sheffield S30 3GP, Yorks) who is the secretary of the newly formed STOCKSBRIDGE & D. A.S. This club meets every Thursday fortnight in the Sportsmans Inn, Manchester Road, Deepcar, Nr Sheffield and propose to hold their own first open show on 7th April in the Victory Club, Manchester Road, Stocksbridge, Nr Sheffield (see Dates for Your Diary).

... WINCHESTER A.S. report that the table shows and lectures staged at their meetings since the group was formed 4 months ago have been very successful and membership has been increasing steadily. Six film shows have been booked to be shown before June and the club's first annual open show will be held on 27th April. Club trophies were awarded for 1967 and Mr V. A. Simmons won the Wingate trophy for the best home furnished aquaria and Mr P. Bennett won the D. J. Pope trophy for the table show champion.

... THE MEMBER of HARWICH & D. A.S. who gained most points in the ten table shows held by the club over the last year was Mr A. Male, who was presented with the John Smith shield for this achievement. The club name the following officers for the current year: chairman, Mr J. Farthing; secretary, Mrs P. J. Samwells (36 Nelson Road, Dovercourt, Essex); treasurer, Mr

Shrive; three more committee members are: Mr R. Willis, Mr R. Cann and Mr G. Shrive.

... MR BOB SHARP is the new secretary of LEAMINGTON & D. A.S. Please address correspondence to him at 33 Fairlawn Close, Leamington Spa.

... POLICY for 1968 was keenly debated when REIGATE & REDHILL A.S. held its annual general meeting, and the following committee was elected to serve the society during the year: chairman, Mr G. Bass; vice-chairman, Mr A. Burley; secretary, Mrs P. Whittington (Grange Coachhouse, Bonehurst Road, Horley, Surrey); treasurer, Mr W. Brookfield; show secretary, Mr I. Stemp (10 Benhams Drive, Horley, Surrey); assistant show secretary, Mr N. Packman; P.R.O., Mr F. Young; committee members, Mr R. Whittington and Mr S. Perham.

... CHAIRMAN Mr E. N. Gee asks erst to thank all those who have helped to launch the newly formed BLACKWATER A.S. The club, with a membership of 27, meets on the third Wednesday of the month at The Royal Oak at Hazeleigh, Essex, where they have been offered a room free of charge. A Perpetual trophy and replicas for the winner of the year's table shows have been donated as well. Other club officers are: vice-chairman, Mr E. Eaton; treasurer, Master B. Mills; secretary, this post is filled temporarily by Mrs E. N. Gee (Park View, Chelmsford Road, Putleigh, Chelmsford, Essex) but will be taken by Mr D. J. Kempen in the near future.

*IN CONNECTION with the annual open show of the ASSOCIATION OF YORKSHIRE AQUARIST SOCIETIES that will be taking place on Sunday, 12th May at the College of Technology, Leeds, the secretary, Mr. D. Carr, has asked us to make clear that the show is an open event to all aquarists. It is felt that some confusion has arisen in the past and that many societies seem to have been under the mistaken impression that this show is open to member societies of the Association only. All aquarists are welcome, in fact, as well as the 26 member societies. The A.Y.A.S. Diploma will be awarded of the show to any exhibitor whose entry gains the best exhibit-in-the-show award.*

... MEMBERS of LLANTWIT MAJOR A.S. heard at a recent meeting of the problems experienced by fellow club members K. Farrant and S. Nelson in keeping marine tropicals. Both experienced and successful fishkeepers with freshwater tropicals, Mr Farrant and Mr Nelson have suffered many losses since they have been keeping marines and the feeling was expressed at the meeting that a great deal more information is required before successful marine fishkeeping can be assured.

... ROEHAMPTON A.S. feel that 1968 has started well for them. They have been approached by their London borough (Wandsworth) with the suggestion that the club might care to put on a fish show as part of the Wandsworth Show in September—all expenses paid. ROEHAMPTON A.S. have accepted! A full fortnightly programme of table shows, quizzes, lectures and a bring and buy sale is planned for the first half of the year. Interested readers please contact Mr J. A. Waller, 39 Bramley House, Alton Estate, London, S.W.15.

... COMMITTEE members of DERBY REGENT A.S. re-elected at the annual general meeting were: secretary and assistant treasurer, Mr T. Jerram (36 Almond Street, Derby); assistant secretary, Mr P. Kendrick; treasurer, Mr J. Derbyshire; chairman, Mr H. Witney; show secretary, Mr E. Hazeldine. Also elected were: vice-chairman, Mr P. Wilby; librarian and P.R.O., Mr M. Jubb. The well-known Workshop judge, Mr A. Deakin, has kindly consented to become president of the club. Meetings are held on the fourth Thursday of each month at 7.30 p.m. at the Engineers' Club, Osaston Road, Derby.

... THE BRISTOL GUPPY GROUP sent a letter of appreciation to Mr K. Pearce for his services to the hobby on relinquishing his post as President of the F.G.B.S.

... OFFICERS elected at the RUNNYMEDE A.S. annual general meeting are: chairman, Mr V. Robinson; secretary, Mr P. Cairns (1 Muncaster Road, Ashford, Middlesex); treasurer, Mr J. Terry; show secretary, Mr K. Smith; P.R.O., Mr J. Marchant; committee member, Mr J. Sweeney. A very successful social and dance was also held at which the medals and plaques won in 1967 were awarded.

... MR BILL ARMITAGE was welcomed back after his recent illness and spell in hospital by chairman Mr Ken Rigby at the third

annual general meeting of the LIVERPOOL SECTION of the FANCY GUPPY ASSOCIATION. The existing committee was re-elected at the meeting. The table show attracted a large entry of 102 fish and the award for best in show went to the almost invincible partnership of Mr Beresford and Mr Jefferys. Prospective new members' enquiries, please, to Mr Bill Armistage, 12 Orrell Lane, Liverpool 9.

... JUDGING the fish in front of the owners proved to be very popular with members of UNBRIDGE & D. A.S. Mr Stewart judged the entries in front of the members and explained the method of assessing points in each case. This proved very interesting and helpful to the owners of the entries. First prize went to Mr McGaw (thick-lip gouramis) and second to Mr H. Thompson (golden tetras). (We regret that in the January issue of 1967 it was stated that Mr Peters of Highlands Water Gardens lectured to the Unbridge club. Mr Peters is a club member who has no connection with the firm.)

SAN FRANCISCO AQUARIUM SOCIETY report a successful

AN entry firm and the rules and regulations for the NATIONAL FURNISHED AQUARIUM EXHIBITION to be held at Bradford in June this year will be found in an advertisement page of this issue. Entries close on 1st June and there are reduced entry fees for those entering before 10th May.

annual fish show with an attendance of 75,000. We're still wondering whether this could be a misprint!

... THE PROGRAMME for 1968 published by COVENTRY POOL AND AQUARIUM SOCIETY shows how wide the range of interests covered by 'fishkeeping' can be. Lectures on killifishes, guppies, scavengers, cichlids and livebearers are listed, together with talks on breeding techniques, filtration, reptiles, foods and feeding, and lighting. Meetings are held at Wheatley Street School and those who wish to join in this year should apply to secretary Mr J. Grant, 26 Cecily Road, Coventry.

... WE hear via Mr Ron Bowman, president of the AQUARIUM SOCIETY OF VICTORIA, that siphoning out has taken on a new importance for Melbourne fishkeepers coping with a drought. Every drop of old guppy water is jealously stored up for the azalea. Says Mr Bowman in his society's publication FINCHIAT: "Azaleas do very well on old guppy water—and the occasional old guppy".

... NEW meeting place for RUGBY & D. A.S. This is Northlands School and meetings start at 7.30 p.m. on alternate Mondays. Mr B. V. Woolterton was elected chairman for the year at the annual general meeting. Other officers are: vice-chairman, Mr E. Sidwell; secretary, Mr D. Green (62 Coton Road, Rugby); treasurer, Mr S. Pirie; show secretary, Mr H. Harris; committee members, Mrs J. Smith, Mr E. Sidwell, Mr K. Russell; M.A.A.S. delegates, Mr Green, Mr Sidwell and Mr Russell; M.A.L. delegates, Mr Green and Mr Harris; newsletter editor, Mr K. Russell; librarian, Mr T. Wood; Society host, Mr D. Bramley; auditors, Mr Woolterton and Mr Russell.

## Dates for Your Diary

and March. FEDERATION OF BRITISH AQUATIC SOCIETIES Assembly.  
 and March. FEDERATION OF SCOTTISH AQUARIST SOCIETIES Convention. National Engineering Laboratories, East Kilbride.  
 10th March. HUDDERSFIELD T.F.S. 40th Open Show. United Commercial Travellers Club, Manchester Road, Huddersfield. Booking 12.00—2.15 p.m. Schedules from show secretary Mr P. Dose, 1 Sandstone Drive, Hensley, Huddersfield.  
 10th March. TOTTENHAM & D. A.S. Open Show. All enquiries to show secretary Mr S. Mooney, 44 Coniston Road, Burnell Hill, London, N.10.  
 10th March. STRETFORD & D. A.S. Open Show. Southpaw & Cowan Social Club, Mainfield Road, Streteford.  
 10th April. GOLDFISH SOCIETY OF GREAT BRITAIN quarterly meeting. Details from secretary Mr W. L. Wilson, 27 Constable Gardens, Edgware, Middlesex.  
 10th April. VALLEY A.S. third Open Show. Civic Hall, Runcorn-on-Sea. Schedules from Mrs M. Thompson, 88 Burnmore East Lane, Blacone Brook, Via Bury, Lancs.  
 10th April. STOCKSBRIDGE & D. A.S. 40th Open Show. Victoria Club, Manchester Road, Stocksbridge, Nr. Sheffield.  
 10th April. THURLOCK A.S. First Open Show. Gogry Lane, Essex. Booking 10.00—1.30 p.m. Schedules and entry forms from Mr D. C. M. Durnett, 22 Kingsway Road, Stanford-le-Hope, Essex.  
 10th April. STOCKTON-ON-TEES A.S. 40th Annual Show. St. Joseph's Church Hall, Norton. Schedules from Mr J. Clapham, 15 Tarring Street, Stockton-on-Tees. Phone 54773.

27th April. WINCHESTER A.S. 1st Open Show. Schedules available from show secretary Mr K. Hatchett, 2344 High Street, Eastleigh, Hants.

18th April. YORK & D. A.S. Open Show. 4th May. TROWERIDGE & D. A.S. Open Show.

19th May. OSSAM A.S. Open Show. Osram Recreation Hall, Refuge Street, Shaw, Oldham, Lancs. Booking 11 noon—1 p.m. Schedules from Mr J. E. Shore, 33 Refuge Street, Shaw, Oldham, Lancs.

19th May. DERRY REGENT A.S. Open Show. Railway Institute opposite Derby Midland Railway Station. Schedules from Mr E. Haxdine, 57 Tewksbury Avenue, Cladstone, Derry.

19th May. ASSOCIATION OF YORKSHIRE AQUARIST SOCIETIES. Open Show. The College of Technology, Leeds, Yorks.

12th May. WORKSOP A. & Z.S. Open Show.

19th May. BRIDGEND & D. A.S. first open Show.

19th May. MERSEYSIDE A.S. Open Show. Moonstone Athletic & Social Club, 1 Richmond Terrace, Liverpool 6.

8th June. LLANTWIT MAJOR A.S. Open Show. Schedules early May, from Mr J. Sanders, 26 Sandfield Road, Aberkang, Bridgend, Glam.

12th-16th June. NATIONAL FURNISHED AQUARIUM EXHIBITION at St. George's Hall, Bradford 1. Entry open to all.

12th June. YEovil & D. A.S. first Open Show. Grass Royal School, Yeovil. Details from show secretary Mrs. T. Gillard, 42 Crofton Avenue, Yeovil.

12th June. THREE COUNTIES annual Open Show (Owes BRACKNELL & D. A.S.) Victoria Hall, Bracknell, Berks. Show

secretary, Mr Ken Phillips, 40 Pondmoor Road, Bracknell, Berks.

18th June. LYTHAM A.S. Open Show. Lower Pavilion, Lower Gardens, Lytham, Lancs.

16th June. BRIGHTON & SOUTHERN A.S. Open Show. Marston Centre, Marston Road, Hove, Sussex.

16th June. SWILLINGTON A.S. third Open Show. Schedules available later.

21st June. CAMBRIDGE & D. A.S. Open Show. Details later.

21st June. ALFRETON & D. A.S. Open Show. Verse to be announced later.

17th-19th June. BRISTOL T.F.C. Open Show.

25th July. CHELTENHAM & D. A.S. Open Show. Ambulance Headquarters Hall, 85 Gloucester Road, Cheltenham.

12th July. Basingstoke & D. A.S. annual Open Show. Carnival Hall, Basingstoke. Schedules from show secretary, Mr A. Marshall, 61 Pitman Close, Basingstoke, Hants.

12th July. GOLDFISH SOCIETY OF GREAT BRITAIN quarterly meeting. Details from secretary Mr W. L. Wilson, 27 Constable Gardens, Edgware, Middlesex.

14th July. BOURNEMOUTH A.C. Open Show. Kinson Community Centre, Pelhams Park, Kinson. Show schedules and entry forms after 1st May from show secretary Mr J. V. Jeffery, 16 Beaman Avenue, Southbourne, Bournemouth.

14th July. MIDWAY A.S. Open Show. St John Fisher School, Chatham, Kent.

27th July. CROYDON A.S. Open Show. Stanley Hall, South Norwood, London, S.E.23. Information from Mr D. H. Crowley, 180 Harrington Road, South Norwood, London, S.E.23.

12d—12th August. PORTSMOUTH A.S. Open Show. Portsmouth Community Centre, Twyford Avenue. Schedules available from show secretary Mr W. Ryder, 403 Commercial Road, Portsmouth.

14th-17th August. **MIDLAND OPEN SHOW**, Hingley Hall, Broad Street, Birmingham 7. Details from Mr J. Wills, 140 Franklin Road, Kings Norton, Birmingham 30.

27th September. **HIGH WYCOMBE A.S.** Open Show.

27th-8th September. **ROEHAMPTON A.S.** first Open Show, King George Park, Wandsworth, London (Borough of Wandsworth Show). Details later.

27th-8th September. (Provisional). **NOT-**

**TINGHAM & D. A.S.** National Open Show.

8th September. **WARRINGTON A.S.** Open Show.

15th September. **REIGATE & REDHILL A.S.** Open Show.

21st September. **NEWPORT A.S.** sixth Open Show, Duffryn Junior High School, Snow Hill, Newport. Opening 9.0 a.m.—11.30 p.m. Open to public about 3.0 p.m. Show secretary, Mr M. J. Parry, 43 Western Drive, Gwalba, Cardiff.

27th-28th September. **BRISTOL A.S.** Op-

en show. Bishopstone Parish Hall, Bristol.

29th September. **HUCKNALL & BULLWELL A.S.** first Open Show.

*Show secretaries are asked to remember to follow up preliminary notifications to us with the addresses of venues, and to let us know time of benching and time of opening to the public as well as the address from which show schedules can be obtained.*

## Classified ADVERTISEMENTS

### AQUATIC SUPPLIERS

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**SALTWATER AQUARIUM MAGAZINE** (U.S.A.). Vol. 3, no. 6. Special 80 pages number, 12s 6d post free. PetFish Publications, 554 Garratt Lane, London, S.W.17.

*Continued on page 508*



# SEND YOUR ENTRY FORM NOW!!!

THIS IS A COMPETITION FOR EVERYONE TO ENTER

## THE FIRST NATIONAL FURNISHED AQUARIUM EXHIBITION

will be held at St. George's Hall, Bradford, on Wednesday, Thursday, Friday, Saturday and Sunday, June 12th, 13th, 14th, 15th and 16th.

This competition is open to all keepers of tropical fish, professional and non-professional alike, and there will be a separate section for Marine Aquaria.

The organisers will provide 24" x 12" x 12" stainless steel aquarium with hood, lights and heater/thermostat.

**TAKE PART IN THIS INTERESTING COMPETITION . . . .**  
send your entry form TODAY.

### FOR YOUR CONVENIENCE . . . .

- ☛ refreshments will be available during the setting-up period and throughout the duration of the exhibition
- ☛ there is seating, in the hall, for 500 people ☛ there is adequate parking space within 50 yards of the exhibition hall and the main line railway station and the bus station are within easy walking distance.

**JUDGES:** A. G. Jessopp, London; B. Pengilly, Lancashire; G. Reid, Scotland; J. Skinner, Yorkshire.

### RULES AND REGULATIONS

1. Judged to F.N.A.S. and F.B.A.S. rules.
2. Judges' decision will be final.
3. Entries accepted up to May 10th at 25/-.
4. Late entries accepted up to June 1st at 35/- and no entries will be accepted after June 1st.
5. Any competitor may enter any number of entries and win any number of prizes.
6. No aquarium will be dismantled under any circumstance before 4 p.m. on the final day.
7. All aquarium water will be removed by the management.
8. Any persons employed, related, or in any way connected with the organisers are exempt from entering the competition.
9. Whilst the utmost care will be taken, the organisers cannot be held responsible for loss of, or damage to, any property or livestock deposited in the exhibition hall prior to and throughout the duration of the exhibition.
10. The organisers reserve the right to refuse any exhibition entry.
11. The Hall will be open to competitors from 10.0 a.m. to 8.0 p.m. on Saturday and Sunday, June 8th and 9th, for the purpose of preparing exhibits.
12. Standard lighting will be provided by the organisers, comprising 2/40W lamps or 2/25W lamps; no alternatives will be permitted.
13. No competitor will be allowed in the Hall whilst judging is taking place.
14. Judging will take place on Monday and Tuesday, June 10th and 11th.
15. Any unforeseen circumstance will be dealt with by the organisers, at their discretion.
16. Each entrant will receive his numbers and final instructions by June 1st.
17. If required, a form will be available authorizing the show committee to feed the competitors' fish during the show. This is purely optional.
18. All entry forms must be accompanied by entry fee(s).

### FIRST PRIZE

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The First National Aquarium Exhibition, Bradford, June 1968.

I, (name)..... Address.....

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(25/- per entry up to May 10th, late entries 35/-), for the National Furnished Aquaria Exhibition, Freshwater/  
Marine section (delete where not applicable).

Please find enclosed P.O./Cheque to value £..... P.O. no..... Cheque no.....

This entry form confirms the acceptance of the rules and regulations laid down above.

Entrant's signature..... Date.....

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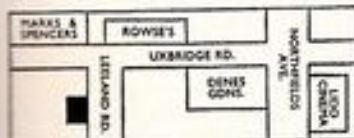


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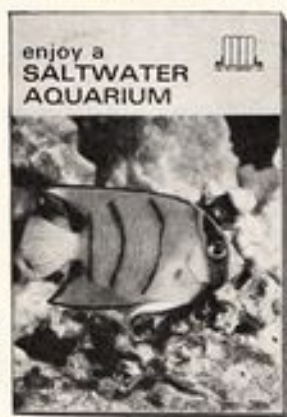
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