

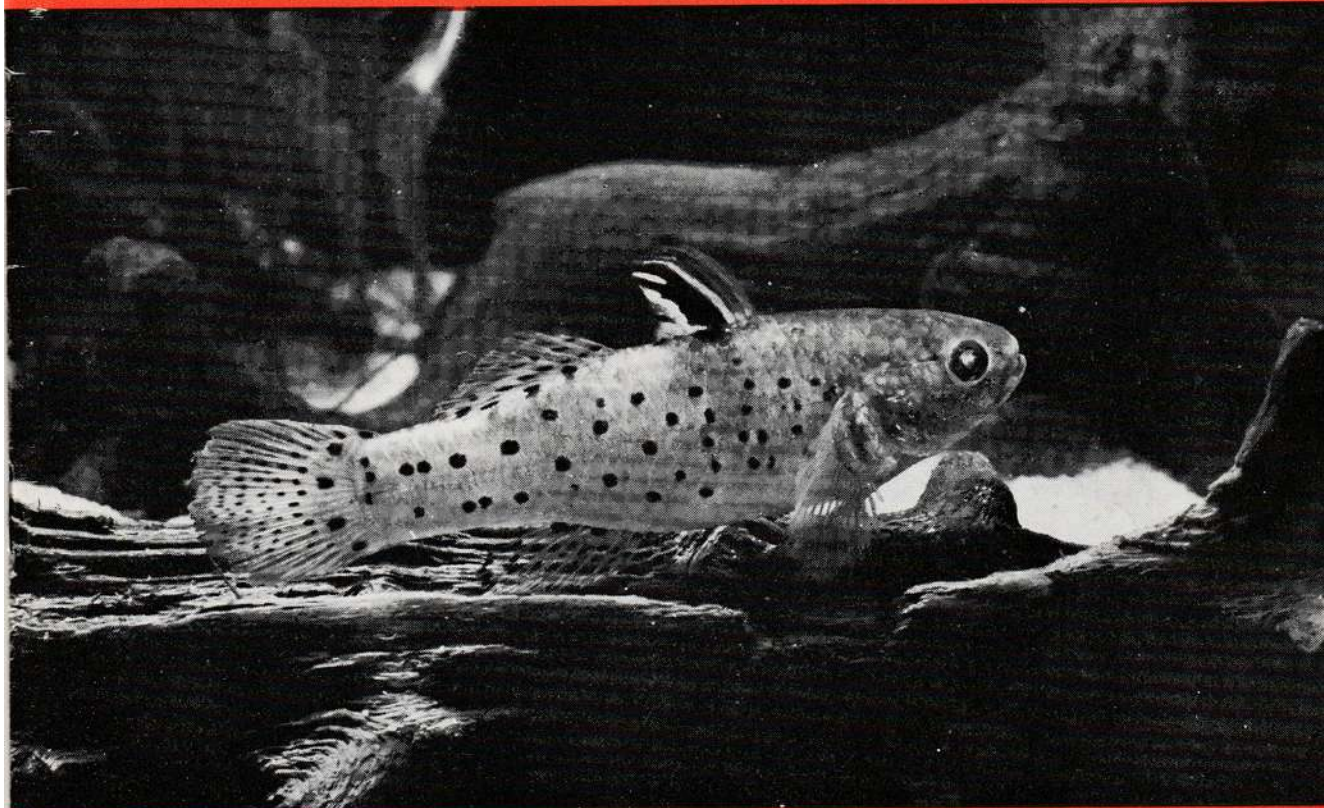
JANUARY 1972

15p

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE



Contents include:

Goby from the Philippines

Water Sprite

Incubation by Malawi Cichlids

Croaking Gourami

Wrasses and Eels

Paradise Fish

In-Breeding

News from Societies etc.

7% need live food

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Grade of Care required

Temperatu.
required
° F

Average Size
Adult Fish

Minimum
Size

inches

1 2

English Name

English Name	Grade of Care required	Temperatu. required ° F	Average Size Adult Fish	Minimum Size
Anostomus anostomus	1	72-84	4	30
Aphyocharax rubripinnis	2	72-84	2	20
Carnegiella strigata	1	72-84	1 1/2	24
Cheirodon axelrodi	1	72-84	1 1/2	20
Copeina arnoldi	1	72-84	2 1/2	20
Corynopoma risei	1	72-84	2 1/2	20
Gymnocorymbus ternetzi	1	72-84	1 1/2	20
Hasemania marginata	1	72-84	1 1/2	16
Hemigrammus caudovittatus	1	72-84	2 1/2	24
" erythrozonus	1	72-84	1 1/4	16
" ocellifer	1	72-84	1 1/2	20
" pulcher	1	72-84	1 1/2	20
" rhodostomus	1	72-84	1 1/2	20
Hyphessobrycon callistus	1	72-84	1 1/2	20
" flammeus	1	72-84	1 1/2	16
" georgettiae	1	72-84	1 1/4	16
" griemi	1	72-84	1 1/2	16
" heterorhabdus	1	72-84	1 1/2	16
" ornatus	1	72-84	1 1/2	20
" pulchripinnis	1	72-84	1 1/2	20
" rubrostigma	1	72-84	2	20
Red Headstander	1	72-84	2	20
Bloodfin	1	72-84	2	20
Marble Hatchet	1	72-84	1 1/2	24
Parrot Characin	1	72-84	1 1/2	20
Flashing Tetra	1	72-84	2 1/2	20
Black Tetra	1	72-84	1 1/2	20
Black Tetra	1	72-84	1 1/2	20
Buenos Aires Tetra	1	72-84	2 1/2	24
GloFish Tetra	1	72-84	1 1/4	16
Head and Tail Light	1	72-84	1 1/2	20
Garnet Tetra	1	72-84	1 1/2	20
Rummy-Nosed Tetra	1	72-84	1 1/2	20
Jewel Tetra	1	72-84	1 1/2	20
Tetra from Rio	1	72-84	1 1/2	16
Georgetti Tetra	1	72-84	1 1/4	16
Red Gold Dot Tetra	1	72-84	1 1/2	16
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Ornate Tetra	1	72-84	1 1/2	20
Lemone Tetra	1	72-84	1 1/2	20
Cherry Tetra	1	72-84	2	20
Black-Lined Tetra	1	72-84	2	20
Phantom Tetra	1	72-84	1 1/4	16
Glass Tetra	1	72-84	3/4	30
Diamond Tetra	1	72-84	2 1/2	24
Red-Eyed Tetra	1	72-84	2 1/2	24
Red-Tailed Pencil	1	72-84	1 1/2	16
Brown Pencilfish	1	72-84	1 1/2	16
Dwarf Pencilfish	1	72-84	1 1/2	16
Neon Tetra	1	72-84	1 1/2	16
Congo Tetra	1	72-84	1 1/2	16
Pristella	1	72-84	1 1/2	16

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Comments and Quotes

● Future of fishes—and man

Bright Future?

A BRIGHT New Year is upon us and traditionally everyone ought to have a cheerful forward-looking attitude to all our activities. Without really wanting to be dismal Jimmies, however, we do find that what calls forth our Comments this month is not calculated to create any rosy glows. Although to some extent the purpose of a hobby such as ours is to help its followers to shake off the cares of the world, it is undesirable to use it to retreat altogether and shut out matters we must all start thinking about. Such as, can we feel certain that what we as citizens are condoning now will not rob our grandchildren and their children of the chance to enjoy such simple pleasures as keeping a few fish in a tank?

From a look at the (apparent) abundance of fish life it might seem fanciful to imagine that man's activities not actually directed towards catching and killing fishes could ever cause them to disappear. But let's take a look. A dam built for the betterment of man at Aswan has caused the Eastern Mediterranean to become saltier to a degree probably approaching the limit of safety for some fishes. Changes in that area have virtually eliminated sardine fisheries and scientists are predicting the demise of other fisheries in the next 10-20 years.

Now in Russia a giant scheme to divert rivers is likely to remove about half of the freshwater supply to the Arctic Ocean.

All the world wants nuclear power stations (the radioactivity hazard from these if things go wrong is another story). Such power stations produce hot water—lots of it. Their effluents into natural waters raise their temperatures with results not always forecast. Who would think that young trout and salmon escape less readily from their predators in warmer waters? Sweden is to commission two nuclear stations on the Baltic and even more in the next 10 years. What will the heat from these do to the ecology of the Baltic? (Fair's fair—the project is undergoing a computerised assessment even now.) Quite a few are planned for the U.K. in the years ahead as well.

No one seems to think it possible to wash things clean without detergents these days. Where do they go after use?—into the rivers and sea, the phosphate content of the compounds giving rise to particular difficulties (Lake Geneva is said to be polluted to such an extent that it can probably never recover. Well, it happened to the Great Lakes in Canada, too).

The list could be added to—poisonous organic residues building up in the mid-Atlantic plankton, mercury contamination over a wide area. Let no one be unaware of all this—it's not only 'wild life' that suffers in the long term but man himself.



LETTERS

Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London SW17 0NY

Equipment—a Manufacturer Replies

MR F. W. Coles' article in the November issue of PFM has caught my eye and I find it very interesting. Also I do largely agree with Mr Coles in certain respects—for instance, I do feel that the heating equipment and thermostats and any other accessories should be hidden out of sight.

I personally have been redesigning some of our products with a view to removing them from the aquarium, and perhaps Mr Coles is referring to our PAH outside heater in the second paragraph of his article. This heater is not yet available to the aquarist as our tests are not yet complete, but it should be on the market by early March. It would appear that Mr Coles is not aware of our under-gravel flexible heater, which has been on the market for many years, but filters we have not yet dabbled in although, of course, there are undergravel filters available.

The main point I would like to take up with Mr Coles is contained in his third paragraph where he says that aquarium appliances seem to be merely a side line with most manufacturers. I would very much like Mr Coles to pay us a friendly visit at our works at Penryn, firstly so that we can discuss with him his various ideas but perhaps, most important, so that we can show Mr Coles a factory covering 6,500 square feet, built to modern standards, containing modern equipment, and dedicated to the production of aquarium equipment. We have a number of new ideas up our sleeve which I am sure will interest him.

S. A. SINGLETON

Managing Director, Singleton Bros. (Electronics) Ltd.

Not Just for Dog Fish

I HAVE been reading your magazine for some time now and have noted various comments on how to bring fish into breeding conditions. Well, here is a comment that may be unusual. I breed gouramis, catfish, guppies, platys and angels, and by accident discovered that all types except the angels were very fond of Bonus dog food—yes, dog food! It's good and cheap and when small lumps were dropped into the tank it was followed down to the tank bottom by shoals of fish all fighting to be first. This food is great for bringing them into top condition and, as regards the instruction to give fish only enough food for

them to clear in 10 minutes, these boys of mine break that rule easily—it only takes them 5 minutes at the most.

If any readers wish to try this, here's what I do. I have two dogs who are fed at about 6.0 p.m. every night. I open one tin of Bonus and leave a small proportion of the meaty matter that is usually to be found at the top stuck to the lid and put this in my tank (lid and all). In no time you will find the lid cleaned. This I then remove and so there is no food left to foul the tank.

Bonhill, Alexandria, Dumbartonshire J. MCCAFFARY

The British Koi Keepers' Society

I WRITE on behalf of The British Koi Keepers' Society to thank you most sincerely for making available the room at The Royal Horticultural Society's New Hall in which we held our meeting in conjunction with the recent AQUARIUM SHOW. Over 40 members and interested aquarists attended this meeting and the question-and-answer period with Mr L. Vanderplank together with his brief talk were much enjoyed by all present.

May I remind anyone interested in the keeping of koi who would like to join The British Koi Keepers' Society should write to our secretary, Mrs H. M. Allen, 1 Anthony Close, Francis Gardens, Peterborough PE1 3XU, for details. The subscription rates are 50p per adult, 75p for husband and wife, 25p for junior member under 18 years of age. Subscriptions should be sent to the Society treasurer, Mrs C. J. Holley, 40 Fallow Court Avenue, London N.12.

Reigate, Surrey

K. D. FAWCETT

Chairman, The British Koi Keepers' Society

Phantom Breeders Please Materialise

IN the November issue (PFM Letters) you were able to help Mr W. S. S. Clarke of Aberdeen by putting him in touch with a breeder of *Betta splendens*. I wonder if you could help me. I wish to specialise in a particular species of *Betta* known as the golden or phantom variety. I have seen some but they were not for sale and my

Continued on page 411

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LETTERS

Continued from page 406

enquiries have drawn a blank. I would be most grateful if you could put me in touch with a breeder who could supply me with some. I must congratulate you on a most interesting and helpful magazine.

Marske-by-Sea, Redcar, Teeside M. WILKINSON

Guppy Variation

I FOUND Mr Fred Campbell's article 'Variation in Guppies' (PFM, August) very disappointing. It could have contained a wealth of information from his long experience, without wasting time and space with inaccurate and misleading material on ethology and genetics.

Mr Campbell seems to forget the comparatively drab colouring and finnage of the wild-type male, who cannot flash his '... brilliantly coloured tail...'. Since the mating behaviour of fancy guppies is not noticeably different from that of the wild variety, the flashy tail is clearly not a necessary part of the display. The dance of the male, so obviously directed at the female, is certainly not designed to protect her from enemies. His gyrations would be more likely to attract predators, as any angler would know from experience with spinning lures. No, this elaborate dance is a demonstration, on the part of the male, of his fitness and vigour, in which he may compete with others. The female certainly takes avoiding action, though not from Women's Liberation type motives as Mr Campbell suggests, but to ensure that the final mating will be with the most vigorous male. This is an advantage to the species, at the expense of some safety for the individuals.

The colouring of the wild male is similarly restricted by increased vulnerability to predation, while it must be distinctive enough to stimulate the female. To this end, he has large black ocelli on his flanks, which are presented in turn to the female in his quivering dance.

Neither Mr Campbell's explanation, nor mine (which, I might add, is that generally accepted by ethologists), explains '... why it is relatively easy for breeders to produce and maintain a strain of fish which are all alike so far as colour goes'. This does not follow, as the author claims, simply from the necessity of colour to the display. I would suggest that this is easier than the production and maintenance of a strain with uniform finnage,

because fewer genes control the colour, so it is easier to get a strain pure breeding for a characteristic of colour than of finnage. In a pure-breeding strain, both parents and offspring all have identical genes for the characteristic in question, all others having been bred out, so the fewer the genes involved the fewer the generations needed to eliminate those unwanted.

Once a pure-breeding strain is developed, mutations—spontaneous chemical alteration of the genes—may still cause changes in that characteristic. The word mutation is not, as Mr Campbell believes, simply a learned synonym for variation.

If he is, as he states, even vaguely aware of Mendelian principles, he would not be surprised at his observation '... that in a particular strain, only a certain percentage carry a caudal of the desired shape'. This, though very vaguely expressed, is fully in accordance with Mendel's laws. Although deep understanding of genetics is certainly not required for breeding guppies, Mr Campbell must have gained some considerable experience of practical heredity, which he could have conveyed to his readers more fully.

Bayswater, London, W.2 M. TREASURE

Disappearing Tench

I FIND that there is little information regarding the 'Doctor' fish, or tench as we would prefer to call them. Are they beginning to disappear from the world of scavengers? I am disappointed by the lack of interest in these fish, but they are just as important as goldfish. I have a large outside pond, complete with two well-bred tench, and one inside aquarium with one tench and two goldfish. I must note that the tench are rarely seen in the pond, but in the well planted aquarium the tench is always out in front joining the two goldfish—so here is one tench that is not afraid to show itself. Long live the tench!

Addiscombe, Croydon, Surrey W. G. WOOD

Common Market Comments

A DUTCH aquarist I invited for The AQUARIUM SHOW '71 thought the standard of fish and club tableaux was good. Fishes offered for sale, however, he thought were poor compared with fishes in Holland and the price was high. Other things he remarked on were the prices of some imported foods and silicone rubber sealants—in Holland they are a third of the cost. Perhaps manufacturers might like to tell us why such a difference?

He did give me two tips that might be of interest. First, a cure for neon disease. A piece of orange about $\frac{1}{4}$ in. square is squashed, then dropped into the tank every day, but any that is left after 2

hours must be removed. The cure lies in the vitamin C content of the orange and the acid. Secondly, getting young fry to size quickly. I have only tried with livebearers so far. Take six or more pairs of mature guppies, divide the tank in two so that the fry are in one half and the guppies in the other but allow the water to circulate, feed as usual and

keep the water temperature at 75° to 80°F. It is suggested that the hormones ejected into the water by the guppies' continual copulation affects the growth of the fry.

Northolt, Middlesex

J. PARKER
Uxbridge A.S.



GUPPY

World

IN the search for the biggest and the best guppies many aquarists are resorting to actions that would have been unthinkable to their forbears.

Take the subject of temperature. Raising your guppy broods in the eighties (°F) will make them grow faster, enable you to preen yourself earlier, but in pursuing this bad practice have you stopped to think of the consequences?

One of the finest aids to recovery when disease strikes your guppy tanks is to raise the temperature. With white spot and other skin parasites, raising the aquarium temperature quickens up their life cycle and helps you to eradicate the unwanted fellow travellers. Yet, if our fish are used to an environment already in the high temperature range, further increases in temperature could be fatal.

If that isn't enough, guppies raised thus are also soon in 'hot water' when a heater breaks or a power failure occurs.

Temperatures not above 75°F might mean that we have to wait some time before the fish reach their 'majority' but it will usually result in our fish being around that much longer, and that must give us more pleasure.

Since the commencement of organised specialisation in the hobby began, each new year has seen a

By PETER UNWIN

change in the fads and fancies of the world's breeders. Like the changing world of fashion, the popularity has been in the hands of just a few trend-setters; in the guppy world, the commercial market and the showbench.

The gold, albino, half-black and king cobra have all had their day like any good dog. Like some comet they have flashed across the showbenches and tanks of the hobbyist, only to fizzle out and make way for some new trend.

The all-black guppy has long been the dream of the experienced breeder and now rumours reaching this office from across the water reveal that certain commercial establishments are already producing such a fish and will release it early on in 1972.

As with any rarity, initially the price will be high. One breeder confided that it might be so high as to put the rest of the cannot-afford-it fraternity into mourning! To those so affected I say: 'Cheer up. We remember the days when such other newcomers were thus priced.'

Unlike antiques and paintings, the guppy doesn't last for ever, or improve with age, and when the commercial market finds they aren't selling as many as they expected the price will tumble.

Received a letter from a breeder who in his spare time (?) had been attending art classes at his local Adult Education Centre. Having mastered the art of primary, secondary and tertiary colours, discovered that a mixture of blue and yellow pigment gave him green, he asks would the same apply to his guppies?

The simple answer is 'no'. If such laws did work with *Poecilia reticulata* we should soon be knee deep in red guppies!

On the subject of colour can I lay the rumour that still seems to be going the rounds that 'crossing in' golden guppies will improve a red strain? From practical experience of such matings I only found the red became muddier.

On the other hand, if you 'cross in' albino guppies with red you might finish up with the former bearing beautiful red caudals. The drawback to such a breeding experiment seems to be the difficulty of finding an albino. This scarcity doesn't seem to apply to countries outside Britain—some even hold classes in their shows for them.

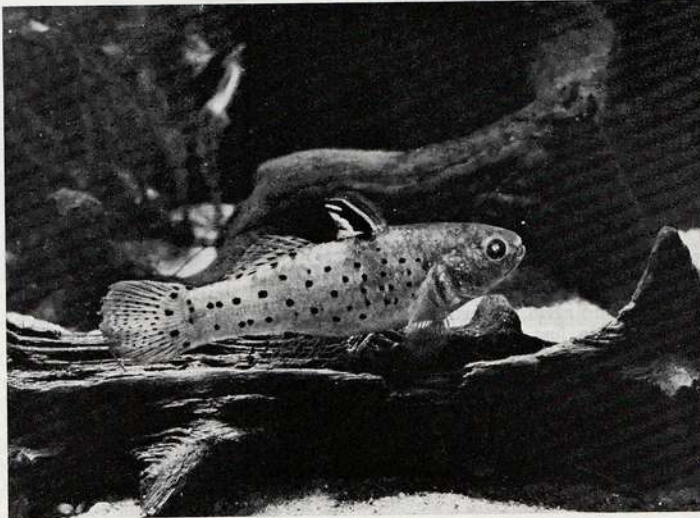
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Working on the assumption that it is easier to read PFM than it is to experiment with a guppy strain, I would like to pass on some pearls of wisdom. They issue from no less an authority on all things guppy than

If you are perturbed that your strain of swords is not displaying that lovely long-flowing dorsal, then please take note! Bill writes that if a brood of these fish are throwing out the short top fin then an outcross is required. Use a similar type of swordtail male with the correct

Continued on page 418

A Beautiful Goby from the Philippines



OUR permanent aquarium Exhibition in Brno was enriched in 1969 by the addition of some very beautiful fish of the Gobiidae family. We received these speckled bottom-dwellers from Herr Weiss of Vienna, who often visits us during the year with a consignment of fish for us. In return he takes tropical fishes we have bred; and so both sides are satisfied and the Exhibition is in the happy position of being able to change the inhabitants of the aquaria and so always have something new to show the visitor. Our *Stigmato-gobius sadanundio* served our purpose very well. As aquarists know, imported fish do not always withstand the journey very successfully and will succumb to various parasites and diseases. But this was not the case with our bottom-living fish, except for a little fin rot.

We knew that these fishes would be new to our visitors in spite of the fact that they were brought to Europe for the first time as early as 1905. However, so far they have not been bred so you can see that they can be considered as practically a new fish.

In their natural waters in the Philippines they live mainly in fresh water. In spite of this it is wise to make their water slightly saline—we add one teaspoonful of cooking salt to 2 gallons of

By R. ZUKAL

Photograph by the author

Translation by F. MARSH

water. This gives them really optimum conditions.

By means of their ventral fins these fish can cling to a firm surface, even a steep, sloping one. We housed 12 specimens in a 20 gallons tank, at a temperature of 74°F (23°C). We augmented the usual plants with roots and stones. The fish rested for hours on these roots, as you can see from the photograph. The sex differences are not very easy to recognise, but the female has smaller fins. We hope, of course, to be able to get them to spawn and if we succeed we shall report on this at once.

Foods that are received well are gnat larvae and tubifex worms. The faster-moving creatures such as water fleas are usually avoided and only turned over as they die and fall to the bottom.

The sadanundio goby is a peaceful enough fish amongst its own kind and I can report that it also behaves well amongst other gobies.

The Mbuna—5

Incubation by the Malawis

By D. TERVER

Laboratory and Museum of Zoology
Aquarist Circle of Nancy, France

Photographs by the author

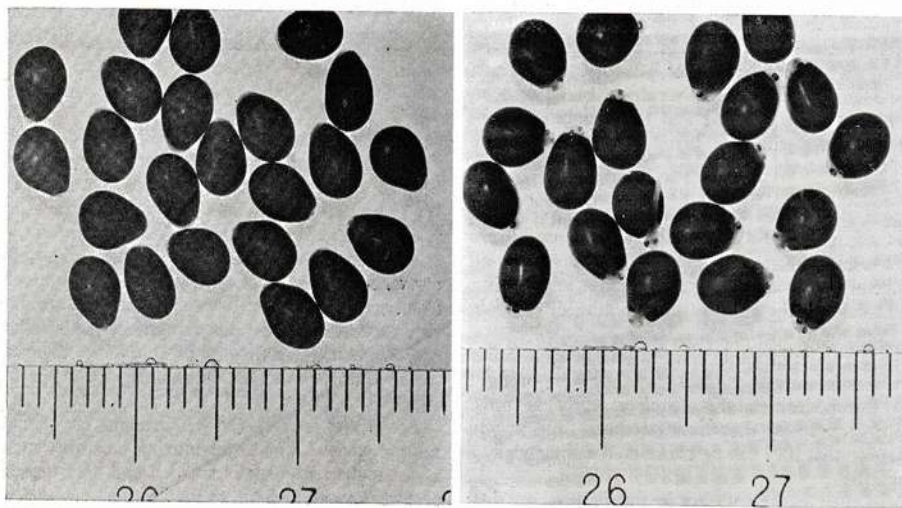
INCUBATION starts as soon as the eggs are laid. If this has taken place in a small aquarium the male must be removed because he will continue to pursue the female vigorously. It is not advisable to remove the female at once, for there is a risk that during the process she will lose the eggs, even if she is removed with great care and guided into a jar or bowl under the water with the aid of a net.

However, if any eggs that have been dropped are collected up and put in with the female she will always pick them up again, no matter when they are given to her. In just the same way, if an alevin accidentally escapes out of her mouth before the end of the incubatory period (when the yolk sac has not yet been absorbed), she will immediately take it back into her mouth. This behaviour has been noted on many occasions.

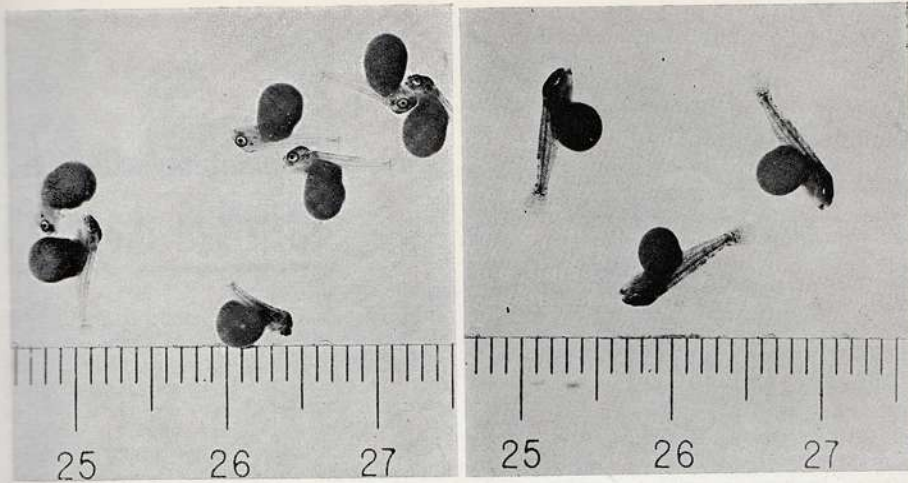
If the spawning has taken place in a community tank it is better to wait some hours before taking the female out, so that she is assured of a peaceful incubatory period. After this time lapse, the eggs are well in place in the buccopharyngeal cavity

and there is no risk of her dropping them. We have never seen any such loss even when the female is taken out of the aquarium by means other than the submerged jar. In a community tank, if the female is not removed the young are very likely to be eaten by the other fishes. Of course, in a well-planted aquarium, with a number of small hiding places, a certain number of fry will escape this fate and reach adulthood, but the proportion will be very small.

The incubation period is calculated from the time of the spawning to when the fry, having absorbed their yolk sacs, leave the mother's mouth for the first time. For the following 9 or 10 days the female will collect the fry back into her mouth, mainly at night (and if allowance is not



Eggs of *Labeotropheus fuelleborni* are slightly pointed at one pole. On the left, eggs 48 hours after fertilisation are shown magnified and those on the right were pictured 5 days after fertilisation. (The magnified scale shows millimetres)

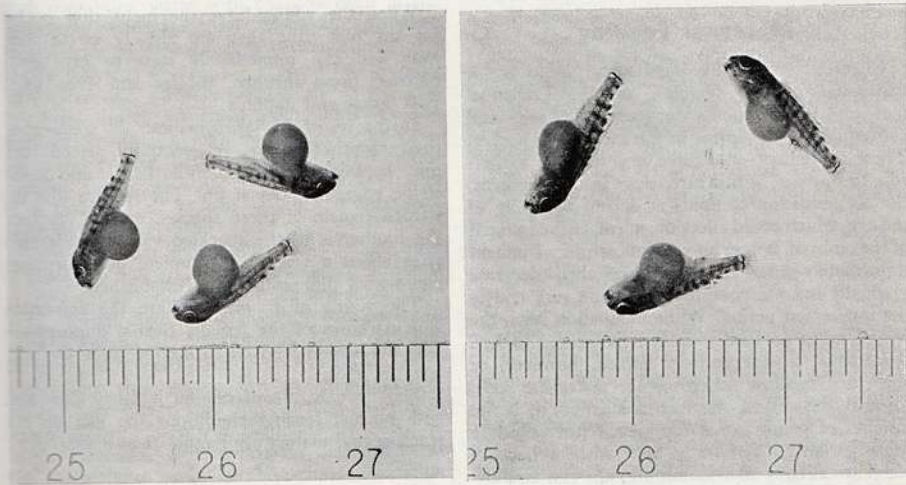


Further development and growth of the *Labeotropheus fuelleborni* eggs are shown (left, 10 days, and right, 12 days, after fertilisation)

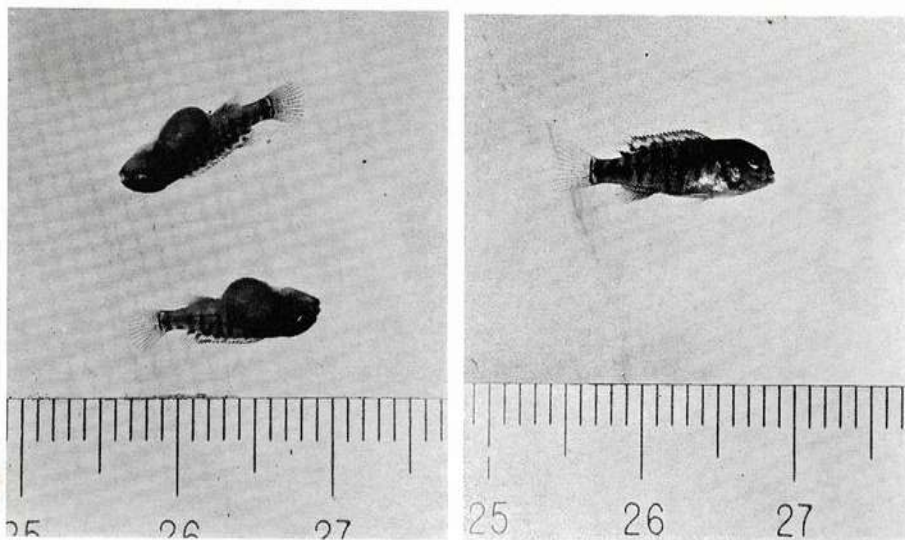
made for this fact the incubatory period might seem rather long). The incubation period is rather shorter amongst first-spawners (23 days on average in 28 observed cases) and amongst those females that have bred before and are incubating a high number of young (22 and 23 days for 33 and 46 fry; 27 and 30 days for 27 and 28 fry). The length of the incubation also varies with tempera-

ture and environmental conditions. Artificial incubations now being carried out will define these conditions.

Amongst first-spawners the number of alevins that survive the incubation period varies considerably, though it is usually small. In 32 spawnings we counted 12 young on average (minimum 7, maximum 17), generally free-swimming after



As the form of the fish develops the abdominal yolk sac diminishes (left, 13 days, and right, 15 days, after fertilisation)



At 16 days (left) and 21 days (right) after fertilisation the end of the mouth-incubation period for the developing fry is approaching and the yolk sacs are disappearing fast. The series of pictures reveals how the pigmentation and markings of the fish increase in intensity throughout the incubatory period. The young *Labeotropheus fuelleborni* on the right is approximately 24mm from snout to tip of tail. For the first week of the free-swimming life of the fry their mother will continue to take them back into her mouth if they are disturbed

23 days (minimum 22, maximum 25). Amongst the females that had spawned before, the number of fry is much higher. An average of 24 young has been obtained in 18 spawnings (minimum 15, maximum 46). In one case we noticed an alevin of normal size free-swimming 17 days before the rest of the brood; it was almost certainly born in the previous spawning.

Maternal Feeding

Characteristic of this incubatory period is the distension of the female's mouth. Continual masticatory movements oxygenate the eggs and subsequently the alevins in the incubation pocket. These movements also serve, according to Fichelson, to prevent, at this early stage in development, the accumulation of lipids at one of the poles of the egg, which could affect the normal development of the embryo. These movements are very frequent immediately after the spawning, then decrease gradually but are continued until the very end of the incubation period. While incubation lasts, the female takes no food even if it is offered to her. Sustenance is not entirely barred, however, as she can swallow microscopic material. Also, towards the end of the incubation period, if the number of young is not too great (either because there are only a few fry to start with or because some are already free-swimming) she can swallow material the size of a bloodworm while she still has some fry in her throat. She starts to eat

normally from the time when the complete brood are free-swimming for the first time, though she takes them back into her mouth, as we said, particularly in the evening or at the least sign of danger, for the next 5-10 days.

Food for the Fry

When the young leave the incubation pocket for the first time they are already 10-12 mm. long and can immediately start to eat newly hatched brine shrimps, tubifex and even small gnat larvae and daphnia.

In the fry of *L. fuelleborni* and *L. trewavasae*, their mouths are not yet ventrally placed (this only happens about 3 months later), and a red stripe edges the dorsal fin. The fry are like the striped female of these species, even if, in fact, the mother is of the speckled variety. It is only after about a year that complete polymorphism and sexual differentiation is established.

The young of *P. auratus* have the coloration and markings of the female. Sexual dimorphism does not always follow set rules (see PFM, October 1971, p. 268).

The growth rate of mbuna is fairly slow and with normal feeding conditions the fish do not reach sexual maturity for more than a year.

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Personal COMMENT

by
ARPEE

DURING the winter months most aquarists with indoor interests will concentrate on bringing their tanks into tip-top condition, not purely for the benefit of the inmates but also in order that they may be more than usually attractive at a time when everything outside is wrapped in gloom, wetness and general depression. In the course of so doing one often wonders what can be done to introduce an element of newness into what have become perhaps all too familiar settings without dismantling absolutely everything.

Perhaps the simplest thing to do is to transpose existing features within a tank: with slightly more difficulty one can also move furnishings from one tank to another. One has to be careful that no disease is transferred, and therefore rearrangements have to be confined to aquaria which have for long remained untroubled. If you have rockwork peculiarly sympathetic to water conditions in a tank you would have to be watchful for whether it would be harmful after removal to a tank containing water with characteristics at the other end of the spectrum. In no circumstances should features be moved as between tanks of a totally different nature, for example as between freshwater and saltwater unless the entry drill has been thoroughly undertaken. This involves sterilisation of each item and examination of it for characteristics that might prove harmful after transfer, such as iron ore in rockwork on its way to a marine tank or salt residues in materials destined for the catfish.

Two decorative media are always sought after at times like this, and neither is normally available in the form or condition in which it is most likely to be of immediate value. They are cork bark and what is commonly described as driftwood. The latter is technically tree branches which have spent some time at sea, but we may regard it as any decorative tree limb which has been stripped of its bark and hardened by exposure to the elements. Both cork bark and driftwood are particularly useful in aquarium decoration and the latter especially is under-employed. Suitable pieces up to several inches in diameter

may be used as focal points: all too often the user employs thin and scraggy twigs where something of thumping proportions is what is really called for.

The main drawbacks of cork bark and wood are their dryness and lack of seasoning. Both will float, and require quite unreasonable measures to be persuaded to assume the stances you fancy, and furthermore probably contain a number of toxins of varying severity which could make inroads into either your fishes or your plants, possibly both.

It is not the best time of the year to undertake a plan to circumvent these troubles, but it could be a good time to mark your diaries in advance if some other time of the year seems best to suit your circumstances. It is well worthwhile to set up a plastic container—as large as possible, even a dustbin—in which you can consign as many pieces of cork bark and wood as you can lay hands on, and then fill it with water. The contents will, of course, float, but if they are weighted from the top with a lump of 'safe' stone like granite they will gradually, over a period of months, become completely waterlogged, and this will enable you to deploy them about your tanks without the fiddling and irritating job of counterweighting them.

They must first be thoroughly washed, even though you will have changed the water several times during the soaking process. The work will probably require no further processing but the wood should, if at all possible, be boiled before it is used. If, because of its size, this proves not to be a practicable proposition, boiling water should be poured over it several times before it is introduced to a tank. On no account should the period of seasoning the wood be curtailed, and a year may not be too short. There is, unfortunately, no known method of telling whether wood is safe or not, and therefore try any doubtful pieces in an experimental container in which you have introduced some daphnia and a convenient oxygenating plant. If either reacts violently, use the wood to light the fire, as this will be cheaper in the long run.



There is a refreshing approach by some members of the hobby trade to open their premises to their patrons at times when the latter are not actually employed earning their daily bread. This is good and simple logic and must bring those with the wit to do it quite a lot of trade during the early evening or at weekends. Having gone to the trouble to do this for our benefit so many of them seem to forget the need to communicate the facts

to their customers and we often find out the full facts purely by chance. Obviously the most effective method of getting the point across is by including opening times—and closing days—in their advertising material in the press, but the additional opportunities offered by the yellow pages of the Telephone Directory to convey the same information seem to be used far less than

they should be. What a pity this is. So many members of the trade have gathered unto themselves reputations for this or that speciality for which aquarists will travel for very long distances. How utterly frustrating if, having done so, they find that it is half day closing or the one day in the week that extended hours are not being worked!

Guppy World

Continued from page 412

finnage. All the male offspring from this cross should then be run with your good females.

On maintaining his own strains, he uses the largest, unrelated lower-sword he can find, out-crossing every fourth generation. Thank you William, for not being selfish with your 'secrets'.

Those followers of the other than broadtail guppies can take heart from the fact that a top sword took the best male in the show award at the FGA Manchester Section Open.

At first glance the number of points this guppy was awarded (73) might not seem much to other fish-

keepers yet in the field of specialist competition it was but two marks short of a silver award.

This tendency of guppy judges to point a fish realistically might put guppy entries at a disadvantage when competing in shows with other tropical fishes. But at least they are sticking to the true meaning of best fish in the show.

Visiting so many shows as I do, I often come away with the feeling that where tropical fish competition is concerned the award should be altered to be 'BIGGEST' fish in the show'.

Meetings and Changes of Officers

BASINGSTOKE & D. A.S. President, Mr D. Walls; vice-presidents, Mr J. Lovegrove, Mr H. Gough; chairman, Mr M. Strange; vice-chairman, Mr A. Marshall; secretary, Mr D. Chitson (8 Longmoor Road, Basingstoke, Hants.); treasurer, Mr B. Weston; assistant, Mr T. Harmsworth; show secretary, Mr A. Blake (50 Bounty Road, Basingstoke); assistant, Mr R. Ilsley.

BETHNAL GREEN A.S. New members and visitors welcome to meetings every Tuesday, 7.45 p.m., Bethnal Green Institute, 229 Bethnal Green Road, London, E.2.

BRISTOL T.F.C. Life president, Mr L. Littleton; chairman, Mr W. Holland; vice-chairman, Mr R. Parsons; secretary, Mr F. Shorland; treasurer, Mr R. Tooze; reporting secretary, Mr R. Chapman (6 Tockington Lane, Lower Almondsbury, Bristol); programme officer, Mr M. Ellick; assistants, Mr P. Lewis, Mr R. Lawrence; show manager, Mr L. Littleton; show secretary, Mr R. Lawrence; assistant, Mr P. Lewis.

BRITISH MARINE AQUARISTS' ASSOCIATION. President, Mr G. Cox. Enquiries to Mr Denis Horton (125 Lowlands Avenue, Streetly, Sutton Coldfield, Warwickshire).

CARSHALTON & D. A.S. Secretary (change): Mr K. Thomas (183 Durand Close, Carshalton, Surrey). Meetings, from January 1972, The Sun Public House, North Street, Carshalton.

CASTLEFORD & D. A.S. New secretary: Mr J. B. Stevens (72 Falcon Drive, Love Lane, Castleford, Yorks.).

DUKERIES A.S. President, Mr J. Hutchinson; chairman, Mr D. Jackson; treasurer, Mr J. Dornie; secretary, Mrs L. Dornie (89 Sparken Hill, Worksop, Notts.; Worksop 2975); show secretary, Mr M. Woodley

(20 Park Street, Worksop).

EAST KILBRIDE A.C. Secretary's change of address: Mr I. Brown (107 Alberta Avenue, Westwood, East Kilbride; phone 33474).

ERITH & D. A.S. Chairman, Mr R. Roberts; treasurer, Mr M. Steel; secretary, Mrs J. Squires (30 Woodhurst Road, Abbey Wood, London, S.E.2); show secretary, Mr T. King (57 Murchison Avenue, Bexley); club captain, Mr F. Squires. Meetings: Alternate Wednesdays at 8.0 p.m., Hurst Community Centre, Hurst Road, Bexley (A222) Kent.

F.G.A. MANCHESTER SECTION. Meetings: First Sunday of month. From January 1972 venue Tudor Room, Longsight Hotel, Belle Vue, Manchester. Secretary, Mr F. Campbell (37 Cardigan Drive, Bury BL9 9LG, Lancs.).

HASTINGS & St LEONARDS A.S. Change of venue. The Conservative Association Rooms, 18 Cornwallis Gardens, Hastings. Meetings: Second and last Fridays of month. Secretary, Mr P. R. Martin (20 Silverlands Road, St Leonards-on-Sea, Sussex).

HOUNSLOW & D. A.S. Chairman, Mr R. Scurry; vice-chairman, Mrs R. Brewer; secretary, Mrs S. Parish (18 The Barrons, St Margarets, Twickenham, Middx.); assistant, Mr B. Nelhams; treasurer, Mrs S. Parish; assistant, Mr H. Pratt; social secretary, Mr Bob Nelhams; show manager, Mr E. Sheppard; show secretary, Mr D. Brook; P.R.O., Mr R. Allun; press secretary, Mrs R. Brewer. Meetings: 8.0 p.m., St Stephens Church Hall, Whitton Road, Hounslow, alternate Wednesdays.

LAND OF BURNS A.S. President, Mr D. Potter; treasurer, Mr O. McConnell; secretary: Mr G. Brown (19 Solway Place,

Troon, Ayrshire). Meetings: 7.30 p.m., first and third Wednesdays of month, Whitlets Community Centre, Ayr.

NORTHWICH & D. A.S. Chairman, Mr P. Hyland; secretary, Mr L. Bradley (4 Ash Road, Sandiway, nr. Northwich, Cheshire); assistant, Mr J. Bailey; treasurer, Mr B. Pearson; show chairman, Mr L. Thorne; show secretary, Mrs D. Thorne; assistant, Mr T. Bailey; P.R.O., Mr H. Buckley; social and entertainment secretary (new post), Mr B. Connelly.

SOUTHEND, LEIGH & D. A.S. President, Mr D. Edwards; vice-president, Mr D. Finch; secretary, Mrs J. Norris (58 Leigh-cliff Road, Leigh-on-Sea, Essex); treasurer, Mr D. M. Cheswright; show secretary, Mr R. D. Orford; journal editor, Mr P. F. Capon; asst. editor, Mr L. Mitchell; P.R.O., Mr T. Russel.

TOTTENHAM & D. A.S. President, Mr D. Nutt; director, Mr K. Nutt; secretary, Mr T. Tiffany (38 Talbot Road, Tottenham, London, N.15; 01-801 1351; treasurer, Mr L. Clements; show secretary, Mr K. Massey; liaison officer, Mr S. Mole.

WORKSOP A. & Z.S. President, Mr A. Manson; chairman, Mrs A. Manson; secretary, Mr P. Spittalhouse (8 Dennis Street, Worksop, Notts.); show secretary, Mr F. G. Sibson; assistant, Mr E. Briscoe; treasurer, Mrs F. G. Sibson. Meetings: St John Ambulance Brigade Hall, Central Avenue, Worksop, Notts.

WREXHAM TROPICAL FISH SOCIETY. Chairman, Mr J. Evans; new secretary: Mr C. Pritchard (Cregneish, Middle Road, Nant, Coedpoeth, nr. Wrexham); treasurer, Mr J. Jarvis. Meetings: The Fellowship Hall, Bradley Road, Wrexham, second and last Thursdays of month.

YEovil & D. A.S. Change of meeting night and venue. Meetings now held on first and third Wednesdays of month at St Michael's Church Hall, Yeovil, Somerset.

NATIVE MARINE AQUARIUM FISHES—3

Wrasses and Eels

By H. J. VOSPER & G. J. VOSPER

SEVERAL types of wrasses are found along our shores, all fairly closely resembling one another. They may be found in rock pools of the lower shore (if there is plenty of seaweed present) or they can be trapped easily in the shallows at almost all states of the tide, though traps set in the sublittoral zone will prove best. The wrasses are the most 'normal' and fish-like of the species we intend to recommend in this series, being characterised by a fairly pointed head, robust body, distinctly large thick lips, a mainly spiny dorsal fin, bright colours often forming conspicuous patterns and, less obvious externally, strong crushing teeth.

All these species are fairly voracious carnivores, preying upon the smaller crabs, swimming crustaceans, worms and a variety of shellfish, and often attacking barnacles. In tanks their staple diet should be the flesh of mussels but tougher foods must be provided as well, for which boiled shrimps and prawns can be used if raw material is lacking.

Most of the wrasses are hardy and take quite well to tank life, but since they are not strictly shore fishes they ought to be provided with a reasonably constant temperature in the lower ranges, a degree or two on either side of 45°F (7°C). The wrasses usually sleep lying on their sides at the bottom of the tank.

Goldsinny (*Ctenolabrus rupestris* L.). Also occasionally known as the rock wrasse (especially in the older literature), this is a fairly common species growing to a suitable size for home aquaria, up to 150 mm, and usually readily distinguished from its relations by the dark spot at the upper edge of the caudal peduncle: the overall coloration is a reddish or soft yellow, banded by dark markings. All the fins are reddish. It is a gregarious species, found in shoals which will readily disperse from the shallows into deeper water when disturbed. They will come up close to the tide lines as the water rises up the beach.

For foods they are especially keen on small crustaceans and worms.

Corkwing (*Crenilabrus melops* L.). Growing to a maximum length of about 230 mm, this species tends to hug the inshore rocks rather more than the goldsinny and is less often caught in deeper waters. The colour is variable though emerald green is common and there are several yellow or red and green bands across the gill-covers. There is a dark spot behind the eye and another a short distance from the caudal fin, half way along the caudal peduncle. The spots and body bands may be greatly obscured by the darkness of the overall coloration. The species is widespread but localised in its distribution.

Ballan wrasse (*Labris bergylla* Ascanius). Rather more heavily built than the two preceding species, the ballan wrasse or conner may grow to nearly 500 mm and attain a weight of 0.75 kg (1.5 pounds). The coloration of younger specimens is usually some shade of green but the species is strangely coloured and highly variable: green, blue, yellow, orange, brown, cream, in markings and marblings that are often iridescent. Colours are brightest in the late spring and early summer when the edging to the scales may be especially noticeable. The finnage tends to be reddish orange.

Although really a fish of the deeper waters it will, like the goldsinny, follow the rising tide towards the shore and can be found at high tide nosing the seaweeds around the rocks.

This species is especially keen on crustaceans and molluscs, for it seems to be able to tackle tougher prey than its near relations. They are typical in possessing a voracious appetite and even the well-protected hermit crabs are not safe when they are really hungry.

We call attention to the fact that this species constructs a rough nest

of seaweed, set between close-fitting rocks (both male and female share in this task), and specimens in good condition can be found, not often of course, stranded on the shore between the tide marks.

Anyone tempted, by the ballan wrasses's considerable size, into eating a prize specimen should be warned that the flesh is quite soft and insipid!

Cuckoo wrasse (*L. ossifagus* L.). Undoubtedly this is the most attractive of all our wrasses, and being worth special mention because the coloration of the sexes is so dissimilar that at one time they were thought to be entirely different species. The male is strikingly coloured in the spring (breeding time): yellow or orange with long blue stripes running down the body (the species is also known as the striped wrasse). The female is reddish, with three light-edged dark spots on the posterior part of the body.

It is, unfortunately, seldom found along the shore though small (50 mm) specimens may turn up in the deeper pools of the lower shore at times of extreme tidal recession. Crabbers and lobster fishermen might be a good source of supply, because the fish is trapped fairly readily.

The cuckoo wrasse prefers to eat swimming crustaceans (prawns etc.) and it is important that they be provided with rockwork ledges and crannies where they may secrete themselves while they settle down in the tank.

Eels

True eels (Anguillidae) have long round and slippery bodies, and the unpaired fins (dorsal, caudal, anal) all run into each other without any break. The so-called sand-eels (Ammodytidae) are elongated but are laterally compressed and the unpaired fins are clearly separated:

the lower jaw is distinctly shovel-shaped. The Ammodytidae never seem very happy in aquaria.

Our two eels have similar habits in tanks. Both are secretive, spending much of their time buried beneath the substratum or in some cranny with merely the mouth and eyes exposed, or even entirely concealed so that only an occasional disturbance of the sand marks their passage below the surface. For this reason they are useful in aquaria because the continual disturbance of the sand is a valuable contribution to the general welfare of the tank, and no waste food is likely to accumulate anywhere. This is not to suggest that they be treated merely as scavengers, for they must be provided with their fair share of meaty foods. However, a piece of fish or crustacean meat lying on the surface of the sand is not likely to remain there for long: a sudden jerk and it will disappear from view as it is taken downwards into the maw of the hidden eel. Against these useful habits is the fact that any animal small enough to be eaten by the eel would be well advised to steer clear at all times.

Both our eels are expert escapologists, so a firm and tightly fitting top cover should be provided for tanks containing eels. Even when the water level is kept low they can thrust themselves upwards at a corner and 'ooze' through a crack: they seem especially adept at utilising the crannies provided by aerator tubing, wriggling their way along with comparative ease and emerging through apparently escape-proof holes in the top covers.

Common eel (*Anguilla anguilla* L.). Difficult to define as to size and colour because this is so highly variable, from 900 mm dark olive-

green females to 75 mm elvers: males are rather yellow-bronze dorsally. The dorsal fin commences well behind the pectorals; the lower jaw tends to extend beyond the upper, but this feature is not readily apparent. Widespread, often found under boulders on the lower shore rather than stranded in pools.

Conger eel (*Conger conger* L.). On the shore these eels are usually 300-900 mm long, though adult females actually attain a length of 3 metres and weight around 55 kg. Males are much smaller, not longer than 600 mm. Both sexes are greyish above and considerably paler below. The dorsal fin starts at or about level with the pectoral (compare this with the common eel, above) and the upper jaw tends to overhang the lower.

Common on the south and west coasts but, probably, less common in the north-east, small specimens are found under boulders and occasionally in pools or among seaweeds of the middle and lower shore. The teeth are very effective and the conger is most aggressive—without fear and very powerful. A 400 mm conger can move over pebbles with considerable speed and always seems to reckon that attack is the best method of defence, so that when disturbed by a prospective hunter unused to handling their powerful bodies a conger of this size can prove to be a very awkward customer.

Species to be Avoided

Mention should be made of the several seashore fishes likely to be found but which do not make good inmates for the home aquarium,

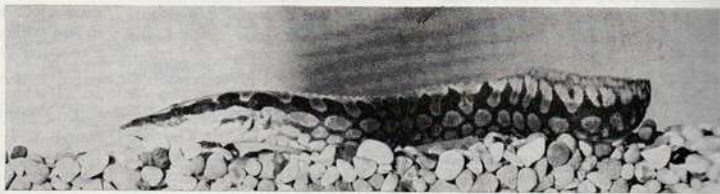
at least as far as most beginners are concerned.

Firstly, the pipe-fishes and the very rarely found seahorse, because they feed on such minute swimming animals that they are almost to be termed plankton feeders. One of these fish might be supported for several weeks in an inland aquarium but it will be a great trouble to keep supplied with such animals as freshwater shrimps and brine shrimps. Neither of these foods will live long in the cold sea water. Maintaining the pipe-fishes can be done but we have not found it a very attractive proposition. These fishes are not active hunters but like to drift along or rest among seaweeds while their food comes to them.

The same objection applies to the fifteen-spine stickleback.

Rays and dogfishes, as we mentioned in an earlier article, are not to be recommended; often they eat or harry other specimens. Pouting are great jumpers and also gorge themselves, attacking others and jostling for the food available. Pollack will fall into poor health if given carrion and this makes them a great trouble to inland aquarists. Small mackerel, though seldom found, will thrive but may prove a nuisance because they swim actively both day and night, eat smaller fishes and can create havoc after dark. Weavers or sting-fish spend a great deal of time buried beneath the sand, awaiting the small organisms on which they feed. In addition, the spines of the anterior dorsal fin and the elongated spine on the gill-plates secrete a poison, so they can cause a very painful sting, which can be a serious matter for young children.

**Have
You
Seen
This
One?**



Now being imported rather more frequently than before, this particular spiny eel (*Mastocembelus* species) has an attractive dark brown pattern on a gold background in the young (7-inch) specimen pictured. Dorsal, anal and caudal fins are continuous. Habits and requirements appear to be the same as for the more commonly imported spiny eel

to try to obtain scientific qualifications such as a university degree in biology or zoology, as posts advertised in fish farming almost always require such qualifications.

Netting Fish

I have a well planted tropical aquarium in which livebearers breed profusely. When I want to catch the fish I usually spoil the plants. Could you tell me if there is a tranquillising chemical that can be used; or I believe a small electric shock can be used to stun the fish so that they float to the top of the water for ease of collection.

Tranquillising chemicals in use in the transport of large quantities of tropical fishes from abroad cannot be recommended as a substitute for netting. It would not be possible to tranquillise one fish and continual tranquillisation or anaesthetisation of a whole tank of fish would seriously interfere with their metabolism. Also, all the water in the tank would have to be changed after use of such

a chemical. The electric shock suggestion is best forgotten for aquarium use. Netting fish is not really so difficult. It is not easier to use a small net—a 6 in. by 4 in. net is a useful size and it is often easier to use another net to drive the fish into the catching net rather than sweep one net about the tank. The catching net, or a reasonably sized polythene bag, can be held in the right hand, under the water, while the fish is guided into it by a planting stick or another small net held in the left hand. If it's small fish that you want to net out a surface sweep with a large net soon after you have put floating food in the aquarium should get quite a bag!

Glass too Thin

I have a tank frame in 1¼ in. angle iron of rather unusual shape. The base is 2 ft. long and the top angle 3 ft. The frame is 36 in. high and 22 in. back to front. I glazed

it with ¼ in. plate, filled it with water before I went to bed, and found next morning that the tank was empty and had just burst out. And this was ¼ in. plate glass! Could you tell me what thickness glass to use and does it have to be the same thickness all round, as glass is very expensive?

The main consideration determining the thickness of glass to be used is the depth of your aquarium in relation to length. For tanks up to 24 inches long, and not more than 24 inches deep, ¼ in. (6.4 mm) glass can be used. But for longer tanks and depths 18–24 inches ⅜ in. (9.5 mm) glass is required. From this you will see that ¼ in. glass is inadequate for your aquarium. For a tank 36 in. deep we would recommend ½ in. glass, although for a panel not more than 2 ft wide the ⅜ in. would probably be satisfactory. A table giving the recommended thickness of glass for various tank sizes is printed in the PetFish Aquarist's Diary.

Croaking Gourami *Trichopsis vittatus*

By N. G. GRANT

President, East Kilbride Aquarium Club

THIS very small anabantid is found in Thailand, Malaya and Indonesia. The male grows to approximately 2 in. and the female to 1½ in.

I acquired the pair I have from one of the members of my club. I have never seen a more beautiful gourami and cannot understand why it is not more popular, with its iridescent blues and greens in both male and female.

I conditioned both fish on cyclops and small screened daphnia for a week before introducing them into the breeding tank. The tank I used was an angle-iron 18 in. by 10 in. by 10 in. with fine sand on the bottom. I used water from the main water supply (pH 7.0), which I had allowed to stand for 2 days. On the surface of the water, I placed a small piece of Indian fern. The temperature in the tank ranged from 78°F to 80°F.

After I had put both fish in the breeding tank, at dusk I noticed a marked difference in their coloration. Both fish appeared to have lost all colour and next morning I noticed a lot of activity under the piece of Indian fern on the surface of the water. At this time the depth of the water in the tank was 4 inches.

As I watched, the fish were seen to be spawning in a typical labyrinth embrace. The colours had

not changed from what they had been the night before, and the thing that intrigued me most about this small gourami was that there was no sign of a bubble nest. Later on I was in for another surprise. After the spawning was over, contrary to all the books I have read, I removed both fish and after 48 hours the fry were seen to be hanging on.

The colour of the fry was ebony black and the surprise I referred to above was that all of the tiny fry were hanging round the outside edge of each leaf of the plant that formed the nest. It looked to me as though the parent fish had placed them individually round each leaf. This was a sight that had to be seen to be believed.

After 5 days the fry became free swimming, but one day before this I had added six drops of Liquifry to the water to create Infusoria. On the second week I fed with Infusoria and newly hatched brine shrimps and in the third week gave them fine dry food.

At the time of writing this, the fry are 30 days old and so far I have had very few fatalities.

In-Breeding

By F. W. COLES

IN my article in PFM (March, 1971) I outlined a suggested programme for line breeding livebearers, and briefly mentioned the subject of inbreeding. I think this is a subject that, although frequently mentioned in conversations, is usually misunderstood by most people.

First, I would emphasise that there is no magical quality in either line breeding or inbreeding that will enable fanciers to produce winners from mediocre parents. Also, I must say that to take up either course it is necessary to have a definite object in view, and indiscriminate line breeding or inbreeding will bring no worthwhile results whatever.

Most breeders have a general idea that inbreeding consists of pairing close relatives, but there is a lot of misconception regarding how close these matings are. History tells us that the ancient Egyptians continued the Royal line by marrying brother and sister generation after generation, and thereby producing kings akin to geniuses, and also mentally deficient kings, with every step in between. This, of course, was indiscriminate inbreeding and these results could be expected.

Effects of Inbreeding

In scientific laboratories scientists use rats and mice for various experiments and these animals have been inbred for generations. If you compare these rats and mice with show animals kept by fur and feather fanciers, they would appear to be different animals altogether, so much have the laboratory ones changed. This again is indiscriminate inbreeding, since the laboratory stocks are completely unselected for the qualities valued by fanciers.

But let us look at the other side of the coin. It is not generally known but rats have been inbred for about thirty generations, selected solely for size, and the final result was an increase of almost 50% in size and weight.

Inbreeding is frequently practised by aquarists without knowing it. Community livebearer young are passed from friend to friend, community tank to community tank, and generations of brother and sister matings must have occurred. As this again is indiscriminate, the stock cannot be expected to improve under these conditions.

This applies to egglayers also, although these are usually handled by people with fish houses rather than community tanks. The procedures and results, though, are usually the same.

How then can we use inbreeding to improve our fish?

Inbreeding for Improvement

First, it is necessary to obtain stock as good as it is possible to obtain. There is obviously no profit in starting with worse stock than the best available—this would merely be wasting time and if it is necessary to part with hard cash to get good stock, then this must be done. Secondly, it is necessary to make a firm resolution to destroy any progeny that (1) show the slightest tendency to weakness in any form, (2) although appearing healthy, are even slightly smaller than the sibs, and, of course, (3) any that have deformities or abnormalities of any kind. The fact that such progeny may have some desirable attribute (colour etc.) must be firmly ignored.

Having then obtained stock, the best pair can be used to produce the first generation. I mentioned

previously that one must have an object in view and, in connection with this, it must be emphasised that one factor, and one factor only, can be dealt with at a time. It is not possible in inbreeding to consider two factors if the results desired are to be achieved. In fish, size is frequently the first requirement, so therefore each generation produced must be bred brother to sister and selected solely by size until the desired size is obtained.

Now I would like to suggest that two lines should be run at the same time, starting with the largest pair in the first batch, and using the second largest pair to produce the other line. This gives an insurance against some accident suddenly ending the strain, and also provides a means of continuing with a new strain by crossing the two when size has been obtained and one wishes to start another project (say, breeding for colour). In this way, by an intelligent use of inbreeding, progress can surely be made.

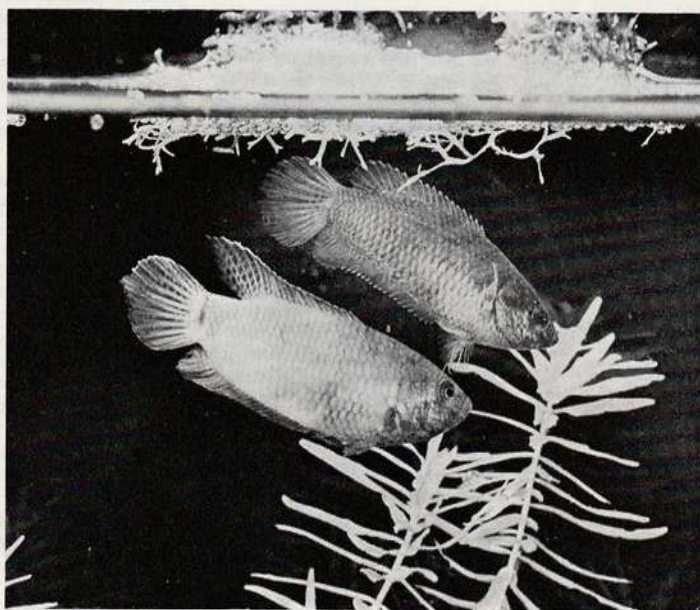
It is more difficult to inbreed successfully than it is to line breed a strain, usually because faults are allowed to creep in through inefficient culling, which is so much more important than in line breeding, and so much more disastrous when not carried out properly. Let me again reiterate that it is necessary to have a firm object in view, and to keep to that objective alone.

Now another point arises: when is it necessary to inbreed? Well, generally I would say that it is necessary when the desired objective can be obtained only by that means. If it is possible to achieve your objective by line breeding, then by all means do it in preference to inbreeding, which can carry so many hidden dangers.

It is sometimes better not to do either. One case springs to mind where a very successful competitor carried on his own operations by outcrossing all the time, and making use of 'hybrid vigour' alone. This aquarist was keeping an albino variety and size and shape were his only criteria.

So do not get carried away by either line breeding or inbreeding, but use either as a tool for a desired objective, and only use when necessary. In this, as in other pursuits, one can become too technical, and simplicity and directness are what are most required.

An Unappreciated Paradise Fish



Macropodus cupanus cupanus Cuvier u. Valenciennes

DURING my many years experience as an aquarist I have owned countless varieties of fishes but rarely one that changes its coloration as do these paradise fish. The spike-tailed paradise fish does this remarkably swiftly in accordance with its mood or sudden excitement.

Like the other paradise fishes it has a long body and slightly compressed sides. The dorsal and anal fins are elongated and the tail fin is drawn out into a spike. The very variable colouring is usually reddish-brown with a green glint. Occasionally light, horizontal, stripes are clearly visible on the sides of the body. A dark fleck on the caudal sometimes disappears completely, but the eye is a very definite red. The dorsal, anal and caudal fins are orange to reddish. The male's dorsal and anal fins are drawn out to points whereas the female, which is the smaller fish, has rounded fins. When excited, or during spawning, the male is coloured bright red and the female becomes almost black.

These paradise fish were brought to Europe

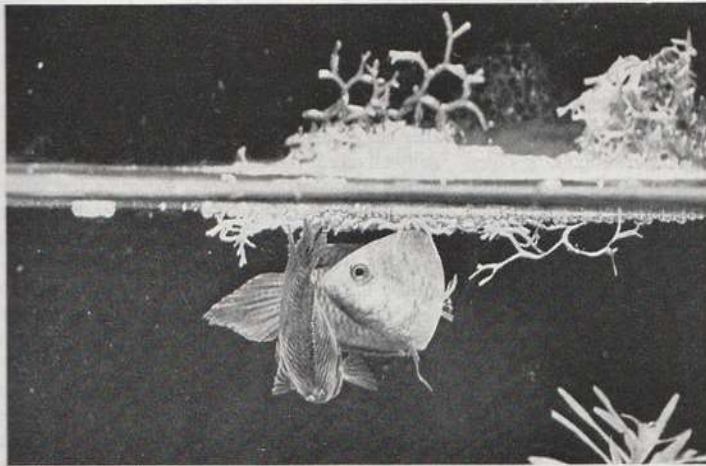
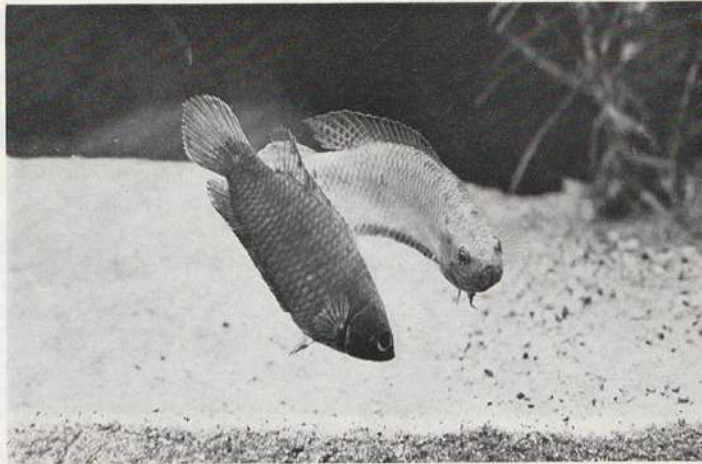
By R. ZUKAL

Photographs by the author

Translation by F. MARSH

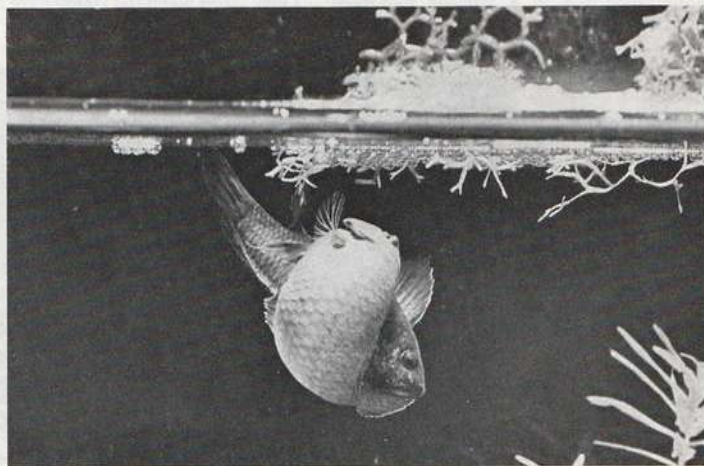
for the first time in 1903 from India and Ceylon but, perhaps because of their rather plain and unattractive colouring when young, they didn't receive much attention from aquarists. Consequently they had to be reintroduced after World War 2. Even so, and in spite of the fact that they are quite peaceful and sociable and most undemanding as regards temperature, I was quite unable to find any in Czechoslovakia. However, thanks to a good friend in Vienna I was finally able to obtain some and breed from them. Indeed, I hope that I have laid the basis for further propagation, as when adult these fish are really beautifully coloured, and there are no special difficulties involved in keeping them. Rearing the young is

In the picture on the opposite page the male (lower fish) has not yet completed the bubble nest and chases the female away from the water surface. The female has turned darker and the male is a brighter red. Later an unusual sight in the courtship was (right) when the dark female remained in the head-down position while the male swam round and round her



When the female comes into the nest area and touches the belly region of her partner with her jaws, he immediately curves his body around her. At the first embrace no eggs were released

At later embraces the male stayed wrapped around the female as he turned her on to her back and the pair slowly descended in the water beneath the nest towards the tank bottom





As the pair of paradise fish descend through the water after the embrace they separate and a few white eggs are released and fertilised

simple and they are quite happy in a medium-sized tank of 3-6 gallons.

Nest-Building and Spawning

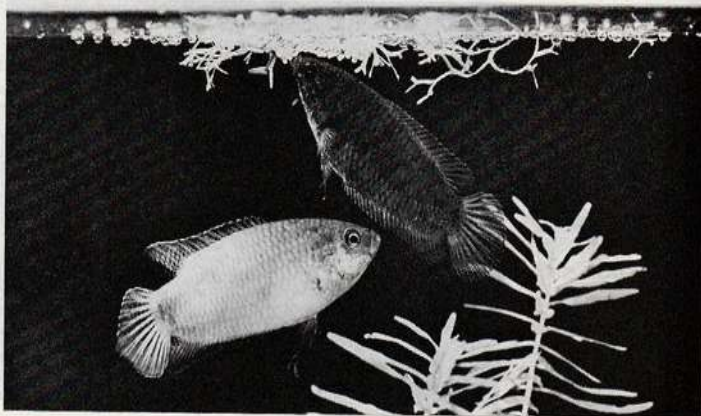
For breeding, the temperature should be raised to 79-80°F (26°C). The macropods are labyrinth fishes and nest-builders. It is the male who does the building and the female is not too welcome near the site until he has largely completed his work, though the nest-building continues during the prelude to spawning. This includes chasing the female, ramming her and biting her sides, though I have not noticed any damage done to my fish through this nipping. During this display the male's colour becomes bright red and the female gradually becomes very dark. One observation made a great impression on me—at one point the female stood on her head and the male approached her in a circular movement. This

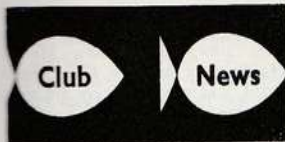
happened several times and it is not something that I have seen before.

Gradually the female is enticed into the nest and as she comes up to it she gently touches the male's belly region with her jaws. He immediately curls his body round and they try out the embrace. This takes place several times and then they embrace in earnest. The female trembles and, still embraced, the fish fall together to the bottom of the tank. As the embrace loosens a few white eggs can be seen falling to the bottom and these are carefully collected up by the male and put into the nest. Here was another new sight for me—unlike the males of other labyrinths, who can turn very nasty if their partners interfere in their 'work', my female was allowed by the male to join in the egg-collecting.

The procedure for rearing the fry is similar to that for fighters or ordinary paradise fish—the fry are very small and should be fed on the finest fry food. The female should be removed from the tank after the spawning and the male 2 or 3 days later when the young have hatched.

Eggs may be collected by both male and female paradise fish and put into the bubble nest but the male takes over the job of guarding and renovating the nest until the fry hatch





THE first Open Show held by WEST CUMBERLAND A.D. was a huge success. Exhibitors travelled from as far afield as Bristol, benching a total of 218 entries. Show judges were Mr C. Walker of Rochdale and Mr I. Wood of Bury, and best in the show award was won by Mr G. Burton of the Border Club, who also topped the points list with 14 tickets from 18 exhibits. Full show results were:

Plays: 1, Mr G. Burton (Border); 2, Mr B. Bray (W. Cumb.); 3, Mr H. Warring (Loyne). **Swords:** 1 and 3, Mr G. Burton; 2, Mr G. Scott (W. Cumb.). **Mollies:** 1 and 3, Mr L. Leadbetter (Fleetwood, section winner); 2, Mr H. Warring. **Guppies:** 1, Mr W. Frain (W. Cumb.); 2, Mr J. Parker; 3, Mr R. Strand (W. Cumb.). **A.o.v. livebearer:** 1, Mr & Mrs Jones (Border).

Dwarf cichlids: 1, Mr L. Leadbetter; 2, Mr J. Parker; 3, Mr & Mrs Jones. **A.o.v. cichlid:** 1, Mr D. R. Standen (Loyne), section winner; 2, P. & H. Bachelor; 3, Mr E. Wilson (W. Cumb. and Bristol). **Small barbs:** 1, Mr R. Strand (section winner); 2, Mr E. W. Hodgson; 3, Mr G. Robinson (Border). **A.o.v. barbs:** 1, Mr G. Burton; 2, Mr & Mrs Howarth; 3, Mr L. Sharp. **Small characins:** 1, P. & H. Bachelor; 2, Mrs M. Martin (W. Cumb.); 3, Mr & Mrs Jones. **A.o.v. characins:** 1 and 3, Mr G. Burton (section winner); 2, Mr D. R. Standen.

Sharks and foxes: 1, Mr & Mrs Howarth; 2, Mr R. B. Mitchell (W. Cumb.); 3, Mr T. Dean (Fleetwood). **Rasboras, danios, and minnows:** 1 and 3, Mr R. Strand (section winner); 2, Mr E. W. Hodgson. **Catfish:** 1, Mr T. Dean (section winner); 2, P. & H. Bachelor; 3, Mr G. Scott. **Loaches:** 1, Mr D. R. Standen; 2, Mr G. Burton; 3, Mr E. W. Hodgson. **A.v. coldwater:** 1 and 3, Mr E. Wilson (section winner); 2, Mr H. Warring. **Anabantids:** 1 and 2, Mr L. Leadbetter; 3, Mr & Mrs Howarth. **A.o.v.:** 1, Mr W. Riddle (W. Cumb., section winner); 2, Mr G. Burton; 3, P. & H. Bachelor.

Pairs, livebearers: 1, Mr G. Burton; 2, Mr L. Leadbetter; 3, Mr R. Mitchell (Fleetwood). **Pairs, egg-layers:** 1, Mr I. Todd (W. Cumb.); 3, P. & H. Bachelor. **Breeders egg-layers:** 1, Mr G. Scott (section winner); 2, Mr E. Wilson; 3, Mr G. Robinson.

RESULTS of the BRISTOL A.S. thirty-eighth annual Open Show were as follows:

Common goldfish (12 entries): 1 and 3, Mr H. T. Jago (W. Butler Coronation Cup); 2, Mr W. Ham. **Bristol shubunkins,** 3 in. (59 entries): 1, 2, and 3, Mr L. G. Emery (E. R. Blunsden Cup for best shubunkin shown by member, Mid-Somerset Cup, best in class, and H. G. Denman Cup for highest points). 5 in. (27): 1 and 2, Mr L. G. Emery (T. T. Wills Cup); 3, Mr D. S. Langdon. **Veiltails (21):** 1, Mr R. J. King (J. J. Spencer trophy); 2, Mr S. Tibble; 3, Mr D. S. Paul. **Moors (12):** 1 and 3, Mr T. Roberts (A. D. J. Brooks Cup); 2, Mr N. O. Grimston. **Telescopes, lionheads, celestials, pearlscales, bubble-eyes (7):** 1, Mr R. M. Whittington (B.A.S. Cup); 2, Mr L. G. Emery; 3, Mr K. C. Juson. **Orandas (5):**

1, Mr R. King (Jack Savage Cup); 2 and 3, Mr K. C. Juson. **Nymphs and comets (7):** 1 and 3, Mrs V. King; 2, Mr K. C. Juson. **Fantails, Scaled (6):** 1, Mr V. Collins (A. W. Rudge Cup); 2, Mr D. S. Paul; 3, Miss J. Leach. **Calico (5):** 1, Mr F. Radford (B.A.S. Cup); 2 and 3, Mr C. H. Barratt. **A.o.v. pond or river (12):** 1 and 3, Mr W. Ham (George Harper trophy); 2, Mr F. Radford.

Bristol shubunkins bred '71 (20): 1, Mr K. C. Juson (Mrs Blunsden trophy); 2, Mr R. J. Pinnock; 3, Mr L. G. Emery. **Moors bred '71 (5):** 1 and 2, Mr T. Roberts (C. F. Whitehead Cup); 3, Mr S. Tibble. **A.o.v. fancy fish bred '71 (13):** 1, 2, and 3, Mr R. J. King (R. G. Watson Cup). 4 single-tails bred '71 (7): 1, Mr L. G. Emery (S. J. Davis trophy); 2, Mr K. C. Juson; 3, Mr W. Clark. 4 fancy fish bred '71 (7): 1 and 2, Mr S. Tibble (Bristol Coldwater Breeders' Cup); 3, Mr R. J. King. **Bristol shubunkins, matched pairs (9):** 1, Mr R. J. Whiting (Beryl Hill Cup); 2 and 3, Mr K. C. Juson. **Novice shubunkins (8):** 1 and 2, Miss V. P. Rockey (Lewis Emery Cup); 3, Mrs A. Wicks.

Furnished aquaria, Coldwater (3): 1, Mr P. Lloyd (Zenias Webb Cup); 2, Mr B. Jacobs; 3, Mr G. J. Bell. **Tropical (2):** 1, Mr P. Lloyd (J. S. Warry crystal goblet); 2, Mr R. Bishop. **Inter-club:** 1, Bristol A.S. (V. Capaldi trophy). **Aquatic plants, Coldwater (1):** Miss A. H. Morgan. **Tropical (7):** 1, Mr D. A. Lewis; 2 and 3, Mrs A. H. Morgan.

Fighting fish (2): 1, Mr J. Avery (Lowell Baldwin Cup); 2, Mr T. Hamshire. **Labyrinths (11):** 1, Mr R. Bishop (J. F. Robinson Cup); 2, Mr C. J. Lelong; 3, Mr S. Bethell. **Barbs (6):** 1, Mr B. Jacobs (J. H. King Cup); 2, Mr C. J. Lelong; 3, Mr S. Bethell. **Characins, H. & H. (3):** 1, Mr M. Butcher (O. E. Organ Cup); 2, Mr N. J. Lavis; 3, Mr P. Lloyd. **A.o.v. characins (6):** 1, Mr S. Green (F. Brown trophy); 2, Mr E. Wilson; 3, Mr C. J. Lelong. **Cichlids (9):** 1 and 2, Mr S. Green (J. & J. Phillips Cup, and Lewis's Cup for best tropical); 3, Mr M. Samuels. **Angels (5):** 1 and 2, Mr T. Hamshire (Donaldson Brown trophy); 3, Mr N. J. Lavis. **A.o.v. egg-layers (14):** 1, Mr G. R. Furber (M. Bellis trophy); 2, Mr K. R. Jones; 3, Mr S. Bethell. **Catfish (8):** 1, Mr M. Taylor; 2 and 3, Mr S. Green.

Guppies, Longtail (17): 1 and 2, Mrs S. F. Langdon; 3, Mr C. A. Truman. **Female (10):** 1 and 2, Mr H. H. Bell (Percy Gibbs trophy for best livebearer); 3, Mr P. A. Lewis. **Swordtails (6):** 1, Mr R. Watts (Keynsham Cup); 2, Mr M. Butcher; 3, Mr S. Bethell. **A.o.v. livebearers (13):** 1, Mr M. Powell; 2, Mr S. Bethell; 3, Mr J. Avery. **Breeders, Livebearers (9):** 1, Mr M. Samuels (R. James Cup); 2, Mr M. Taylor; 3, C. & A. Truman. **Egg-layers (5):** 1, Mr B. Jacobs (Suregrow Cup); 2, Mr P. A. Lewis; 3, Mr S. Green.

AT REIGATE & REDHILL A.S. annual Open Show the total number of entries was an improvement on last year. As with previous shows, space was the problem, aggravated by the number of large cichlids competing for the FBAS Championship Award, and needing appropriate accommodation. This class provided an impressive display for the visitors, Mr W. Waterman's red oscar taking the honours and earning itself an entry in The AQUARIUM SHOW '71. Reigate & Redhill's own members had no little success, taking first awards in the barbs, swordtails, labeos, and breeders egg-layers classes, as well as gaining several places in the tropical classes. In all, 14 clubs were represented in the 34 classes,

an addition to last year's schedule being a pairs class (for both live-bearers and egg-layers). Reigate & Redhill were overall winners on points, beating Independent A.S. by one point. The trophies list continued to grow, with a salver for the Best Exhibit by a lady competitor presented by Mrs B. Humphreys, recently retired Reigate & Redhill secretary, and a tankard for best labyrinth presented by Thistle Hotels Limited. Society president Mr K. Fawcett officiated at the prizegiving ceremony, assisted by chairman Mr S. Perham and show secretary Mr J. Wood. Award winners were:

Barbs (class Ba): 1, 2, and 3, Mr J. Bellingham (Tonbridge). **A.o.v. barbs:** 1, Mr Q. Taylor (Reigate & Redhill); 2, Mr P. Coyle (Independent); 3, Mr S. Mason (Roehampton). **H., H., and Cheirodon:** 1, Mr A. M. Kinsey (Ind.); 2, Mr A. J. H. Smith (Croydon); 3, Mr L. J. Brazier (Anson). **Nannostomus:** 1, Mr L. S. Derrick (Croydon); 2, Mrs D. Barrett (Kingston); 3, Mr J. T. Horscroft. **Characins:** 1, Mr A. J. H. Smith; 2, Mr P. Isherwood (R. & R.); 3, Mr N. T. Fisher (Havant). **Angels:** 1, Mr D. Dare (Ind.); 2, Mr M. Uden (R. & R.); 3, Mr K. G. Norris (R. & R.). **Apistogramma, Pelmatochromis, and Nannacara:** 1, Mr K. Barrett (Kingston); 2, Mr A. J. H. Smith; 3, Mr P. J. Brenchley (E. Dulwich). **Cichlids:** 1, Mr W. M. Waterman (Hampstead); 2 and 3, Mr K. Adams (Southend). **Stemmed fighters:** 1, Mr R. Bowes (Ind.); 2, Mr S. W. Applin (Ind.); 3, Mr G. Page. **Anabantids:** 1, Mr J. Stamp (Free-lance); 2, Mr M. Uden (R. & R.); 3, Mrs D. A. Mathieson (Tonbridge). **Labyrinths:** 1, Mr J. Blackwell (Nomads); 2, Mr R. Wright (E. Dulwich); 3, Mr P. Coyle (Ind.).

Egg-laying toothcarps: 1, Mr J. Bellingham (Tonbridge); 2, Mr I. Mathieson (Tonbridge); 3, Mr D. Dare (Ind.). **Tropical catfish:** 1, Mr A. M. Kinsey; 2, Mr M. Sandford; 3, Mr R. J. Baker (Tonbridge). **Corydoras and Brochis:** 1 and 3, Mr R. Wright; 2, Mr K. Dryden (Croydon). **Rasboras:** 1, Mr W. D. Harper (Kingston); 2 and 3, Mr K. Barrett. **Danios and minnows:** 1, Mr A. M. Kinsey; 2, Mr R. Cottle (Carshalton); 3, Mr R. Bowes. **Loaches:** 1 and 2, Miss W. Barrett (Kingston); 3, Mr D. W. Armour (Riverside). **Labeos:** 1, Mr M. Uden; 2, Mr P. M. J. Brenchley (E. Dulwich); 3, Mr J. Cook (Croydon). **A.o.s. tropical egg-layer:** 1, Mr A. M. Kinsey; 2 and 3, Mr J. W. Blackwell (Nomads).

Guppies, male: 1, Mr J. Stamp (Free-lance); 2, Mr L. J. Brazier (Anson); 3, Mr R. Bowes. **Female:** 1, Mr L. J. Brazier; 2, Mr R. Bowes; 3, Mr T. Mason (Ind.). **Swordtails:** 1 and 2, Mr S. Perham (R. & R.); 3, Mr C. Lamb (Carshalton). **Platys:** 1, Mr R. Wright; 2, Mrs J. Rood (Tonbridge); 3, Mr S. Mason (Roehampton). **Mollies:** 1, Mr D. Pope (Croydon); 2, Mr J. Wood (R. & R.); 3, Mr J. Stamp. **A.o.s. livebearer:** 1, Mr J. W. Blackwell; 2, Mrs D. Barrett; 3, Mr L. J. Brazier. **Pairs, Tropical egg-layers:** 1, Mr S. Mason; 2, Mr R. D. Orford (Southend, Leigh & D.); 3, Mr J. M. Wood (R. & R.). **Tropical livebearers:** 1, Mrs D. Barrett; 2, Mr P. Coyle; 3, Mr S. Mason.

Coldwater, Singletailed goldfish: 1, Miss F. Leach (G.S.G.B.); 2, Mr D. Pope (Croydon). **London shubunkins and Bristol shubunkins:** 1, Mr W. Leach (G.S.G.B.); 2, Miss D. Morris (G.S.G.B.); 3, Mr R. M. Whittington (G.S.G.B.). **Twintailed goldfish:** 1, Miss D. Morris; 2, Mr D. Stokes (Havant); 3, Mr R. M. Whittington. **A.o.s. coldwater:** 1, Mr D. Stokes; 2, Mr R. M. Whittington; 3, Mr D. A. Smith (R. & R.).

Breeders. Tropical egg-layers: 1, Mr R. Bartlett-Love (R. & R.); 2, Mr I. Mathieson (Tonbridge); 3, Mr I. Stamp (R. & R.). Tropical livebearers: 1, Mrs D. Barrett; 2, Mr S. Mason; 3, Mrs P. Geal (R. & R.). Coldwater: 1, Mr R. M. Whittington; 2 and 3, Miss D. Morris.

THE first BUXTON & D. A.S. Open Show was a great success, with 617 entries benched by 36 visiting societies. The President's trophy and the gold pin for the best in the show was won by Mr H. Ormesher of Southport, and Sherwood A.S., Nottingham, were awarded the King British trophy for the society with the most points. Class and section winners were:

Guppies: Mr H. Ormesher (Sandgrounders, section winner). **Mollies:** Mr J. Igoe (Sherwood). **Platys:** Mr M. Clark (N. Staffs.). **Swordtails:** Mr Rhodes (Scunthorpe). **Barbs.** Small: Mr & Mrs J. Dawson (Ostram). Large: Mr & Mrs Hubert (Derby Regent, section winners). **Small gouramis:** Mr D. Sewell (Sherwood, section winner). A.o.v.: Mr & Mrs Cobb (Belle Vue).

Fighters: Mr J. S. Hall (Aireborough). **Angels:** Mr A. Ashton (Buxton). **Dwarf cichlids:** Mr K. Ankers (N. Staffs.). A.o.v.: Mr B. Knowles (N. Staffs., section winner). **Characins.** Large: Mr A. B. Cass (Buxton, section winner). Small: Mr A. K. Jackson (B.V.). A.v. killifish: Mr B. Hughes (Stone & B.K.A., section winner). A.o.v. tropical, Mr H. Ormesher (Sandgrounders, section winner and best in show).

Sharks and labocs: Mr P. Eberill (Hyde). **Rashoras, danios and minnows:** Mr H. Blades (Creswell, section winner). **Corydoras:** Mr D. Sewell (Sherwood). **Loaches:** Mr & Mrs Dean (Ellesmere Port). A.o.v.: Mr J. S. Mooney (Glossop, section winner).

Pairs. Egg-layers: Mr F. Mardin (Alfreton, section winner). Livebearers: Mr J. S. Hall. Mini-jars: Mr & Mrs Heap (B.V., section winners). **Breeders and teams.** Egg-layers: Mr & Mrs Wells (Doncaster, section winners). Livebearers: Mr & Mrs Cobb (B.V.). Furnished aquaria: Mr L. Thorne (Northwich, section winner). Fancy goldfish: Mr J. S. Hall (section winner). Coldwater: Mr J. S. Hall. A.o.v.: Mr J. S. Hall.

THE SOUTHWESTERN GROUP of the B.M.A.A. held a recent meeting at the house of Mr F. Bye of Exeter, and a tour of his fish house produced some interested comments on his use of plastic funnels in his underground system, converting at least one member to his system. Film slides taken at Torbay's 'Open' were received in time for members to see shots of the Society stand and to see their fish on the show bench. The main topic of the evening was a lively discussion about the showing of fish. All present agreed that the entries of marine fish at Torbay produced a lot of interest from the public who were astonished to learn that practically all the fish in the native section were from local waters. It was agreed that showing fish is a challenge to improve stock.

The Society was represented at

The **AQUARIUM SHOW** in London, and Mr L. Doubleday's *Blennius gatturogine* gained sixth place in the Supreme Championship class. History was made: the first marine to get into a Championship class and to get placed. It was felt that this was the beginning of a breakthrough—that marines do show and that some of the marines owned by the group can knock the freshwater species into a cocked hat. More marine champions will be the aim next year.

JUST received from **NORTHWICH & D. A.S.** are the results of their inter-society quiz and table show held with **CHESTER & D. A.S.** The quiz was won by Chester with 28½ points (Northwich, 18½), and they also won the table show by 44 points to Northwich's 27. So Chester regain the trophy by an overall total of 72½ points to 45½. Results were:

Guppies: 1, Mr T. Bailey (Northwich); 2, Mr R. Dutton (Chester); 3, Mr C. Bowyer (Chester). **Mollies:** 1, Mr R. Dutton (C.); 2, Mr T. Bailey (N.); 3, L. & D. Thorne (N.). **Characins to 3 in.:** 1, L. & D. Thorne; 2, Mr G. M. Jones (C.); 3, Mr L. Bradley (N.). **Characins over 3 in.:** 1, Mr R. Dutton; 2, Mr C. Bowyer. Large cichlids: 1, 2, and 3, Mr R. Dutton. Angels: 1, Mr C. Bowyer; 2 and 3, Mr L. Bradley.

Botia, loaches, and flying foxes: 1, Mr P. Hyland (N.); 2, Mr C. Bowyer; 3, Mr T. Bailey. **Fighters:** 1 and 3, Mr R. Dutton; 2, Mr H. Buckley (N.). A.v. anabantids: 1 and 2, Mr C. Bowyer; 3, Mr R. Dutton. **Breeders egg-layers:** 1, Mr C. Bowyer; 2, Mr G. M. Jones; 3, Mr T. Bailey. **Breeders livebearers:** 1, Mr G. M. Jones; 2, Mr T. Bailey; 3, Mr C. Soek (C.). Coldwater: 1 and 2, L. & D. Thorne; 3, Mr G. M. Jones.

IN the second leg of the inter-society competition between **ALFRETON & D. A.S.** and **DERBY REGENT A.S.**, 106 entries were benched in 13 classes. The best fish in show award went to Mr S. Hill (tinfoil barb). This leg was won by Alfreton (48 points), Derby Regent, 35. Results were:

Guppies: 1, 2, and 3, Mr R. Holmes. **Platys:** 1 and 2, Mr S. Dooley; 3, Mr B. Hickling. Large barbs: 1, Mr S. Hill. Small characins: 1, Mr D. Robertson; 2, Mr J. Wright; 3, Mr A. Rowe. Dwarf cichlids: 1, Mrs J. Lindley; 2, Mrs Newton; 3, Mr B. Gascoyne. **Sharks and foxes:** 1, Mr D. Robertson; 2 and 3, Mr R. Harlow.

Corydoras: 1, Mrs J. Lindley; 2, Mr Bull; 3, Mr S. Hill. A.o.v. catfish: 1, Mrs J. Lindley; 2, Mr M. Footitt; 3, Mr Bull. **Egg-layer pairs:** 1, Mr S. Hill; 2, Mr M. Footitt; 3, Mr M. Ford. A.o.v. tropical: 1, Miss J. Cooper; 2, Mr R. Harlow; 3, Mrs P. Ford. **Breeders livebearers:** 1, Mr B. Hickling; 2, Mr K. Sax; 3, Mr R. Harlow. A.v. ladies: 1 and 3, Mrs D. Robertson; 2, Mrs J. Lindley. A.v. goldfish: 1, 2, and 3, Mrs V. Wright.

A very interesting talk was given by Mr A. Lindley on judging fish,

giving members an insight into the pointing of fish. Details of Alfreton A.S. are available from Mr B. Hickling, 15 Meadow Close, Eastwood, and new members are most welcome.

OVER 50 members attended the **CASTLEFORD & D. A.S.** annual members-only table show, when 76 fish were shown. Best in show was awarded to Mr G. Gillespie (guppy), and the best exhibitor award was made to Mr A. Thomas. Other results were:

Barbs: 1, B. & I. Heptinstall; 2, Mr A. Barret; 3, Mrs P. Heptinstall. A.o.v. livebearers: 1, S. & A. Thomas; 2, Mr A. Barret; 3, Mr & Mrs Stevens and Denise. **Characins:** 1, Mrs Asquith; 2, Mr D. Hiscock; 3, Mr & Mrs Nock and Harvey. **Anabantids:** 1, E. & S. Clowes; 2, Mr & Mrs Gates; 3, S. & A. Thomas. **Guppies:** Mr G. Gillespie; 2, Mr & Mrs Stevens and Denise; 3, L. & S. Pitchford.

Carp and minnows: 1, Mr G. Gillespie; 2, Mrs P. Heptinstall; 3, Mr & Mrs Stevens and Denise. **Toothcarps:** 1 and 2, Mr P. Keith; 3, Mr & Mrs Baker and Jimmy. **Pairs:** 1, Mr W. Bastow; 2 and 3, Mrs Asquith. **Cichlids:** 1, S. & A. Thomas; 2, Mrs P. Heptinstall; 3, L. & S. Pitchford. **Catfish and loach:** 1, Mr & Mrs Gates; 2, Mr K. Frew; 3, Mr & Mrs Baker and Jimmy. A.o.v.: 1, B. & I. Heptinstall; 2, Mr W. Bastow; 3, G. & G. Thickbroom. Coldwater: 1, B. & I. Heptinstall; 2 and 3, Mrs Asquith.

BRISTOL TROPICAL FISH CLUB

enjoyed a first-rate talk on 'Water Chemistry' by club member Mr P. Lewis at a recent meeting. As a qualified chemist he was able to deal with the finer points of water composition, measurements of hardness and acidity, and the necessary techniques for obtaining specific water values. He concluded his talk by defining the requirements of various species of tropical fish. The results of the table show for characins and a.o.v. were: Characins (Open & Novice): 1, Mr R. Lawrence; 2 and 3, Mr W. Eager. A.o.v. Open: 1, Mr G. Furber; 2 and 3, Mrs Martin. Novice: 1, 2, and 3, Mrs Martin. Members have also enjoyed a well-supported outing to Belle Vue for BAF. At another meeting Mr B. Evans of Weston-Super-Mare was guest speaker, choosing Siamese fighters as the subject of his talk, accompanied by some excellent slides of the breeding and growth cycle photographed personally by him. The enthusiastic response to this slide lecture prompted the club chairman to arrange a further visit from Mr Evans in the near future. The table show for breeders egg-layers and breeders livebearers was judged by the speaker with the following results: Breeders egg-layers. Open: 1, Mrs K. Martin; 2 and 3, Mr R. Lawrence. Novice: 1, Mrs K. Martin; 2 and 3, Mr R.

Lawrence. Breeders livebearers. Open: 1 and 3, Mr G. Furber; 2, Mrs K. Martin. Novices: 1, Mrs K. Martin.

The Bristol T.F.C. has enjoyed a very successful year, as reported at the A.G.M. with a steady membership of around 70 and a highly successful open show to provide a healthy bank balance. The club look forward to an equally successful 1972 and extend a welcome to visitors and new members at meetings held on the third Thursday of each month at the National Dock Labour Board Social Club, Welsh Back, Bristol 1.

THE ILFORD & D. A. & P.S. home aquaria competition has been won by Mr D. Seaman (2, Mr W. Rowe; joint 3, Mr Knott and Mr Rendol). Member Mr W. Rowe has also lectured to the society on fish behaviour. The results of the club's annual all-classes table show are now announced as follows:

A.v. barb: 1, Mr J. Rendol; 2, Mr F. Hattam; 3, Mr M. Brill. A.v. characin: 1, Mr D. Seaman; 2, Mr N. Reade; 3, Mr G. Irish. A.v. labyrinth: 1, Mr F. Hattam; 2, Mr W. Rowe; 3, Mr M. Brill. A.v. cichlid: 1 and 3, Mr W. Rowe; 2, Mr C. Olley. A.v. catfish: 1, Mr W. Rowe; 2, Mr M. Brill; 3, Mr G. Irish. A.v. mollie: 1, Mr M. Brill; 2, Mr W. Rowe; 3, Mr F. Hattam. A.v. swordtail, platy: 1, Mr W. Rowe; 2, Mr D. Seaman; 3, Mr R. Ruth. A.v. male guppy: 1 and 2, Mr F. Hattam; 3, Mr W. Rowe. A.v. female guppy: 1, Mr F. Hattam; 2, Mr R. Ruth; 3, Mr W. Rowe. A.v. tropical plants: 1, Mr R. Ruth; 2, Mr F. Hattam; 3, Mr W. Rowe. A.v. coldwater plant: 1, Mr H. Berger. Breeders egglayers: 1, Mr J. Rendol; 2, Mr D. Olley; 3, Mr H. Berger. Breeders livebearers: 1, Mr W. Rowe; 2, Mr D. Seaman. A.o.v. coldwater: 1, Mr W. Rowe. A.o.v. tropical: 1 and 2, Mr W. Rowe; 3, Mr D. Seaman. A.v. singletail goldfish: 1, Mr H. Berger; 2, Mr F. Hattam; 3, Mr W. Rowe. A.v. twintail goldfish: 1 and 3, Mr H. Berger; 2, Mr W. Rowe. Furnished aquaria: 1, Mr J. Hattam; 2, Mr D. Seaman; 3, Mr W. Rowe.

WHEN THE MANCHESTER SECTION of the **Fancy Guppy Association** held its annual open show the occasion was well supported with visitors coming from as far afield as Bristol and Newcastle-on-Tyne. Altogether there were 316 guppies on show, in 157 entries; the breeders classes were particularly well supported. The award for best fish in show and best male went to a topsword entered by Mr D. O'Brien; best female went to a wedgetail entered by Mr H. Baldwin; best breeders went to a team of breeders pairs entered by Mr D. Glen. Class winners were as follows:

Male classes. Delta, Mr H. Baldwin; long dorsal veil, Mr & Mrs Warburton; short dorsal veil, Mr T. Hallett; fantail, Mr G. Steadman; topsword, Mr D. O'Brien; bottomsword, Mr M. H. Delingpole;

FEDERATION Achievements



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of 1971
and Plans for
this Year

DURING 1972 a number of amendments to the FBAS Show Rules come into force, and societies requiring Federation support for their open shows will be expected to conform to the amended Rules. A first major change is that 'optional use of gravel in tanks and show jars shall be allowed'. Other changes are: that furnished aquaria and aquascapes may be brought to any open show ready to set up; that open show schedules shall be in accordance with the FBAS lettering system of classes; that rooted plants shall be shown with their crowns showing.

Tropical breeders teams will continue to consist of four fish.

Trophy secretary, Mr Tom Glass, announces that applications for FBAS Championship trophies and Major perpetual trophies are invited for awarding at societies' open shows. Applications should be received by mid-February together with a rough draft of the show schedule and a provisional date of the show. Trophies will be allocated after the closing date on a 'fair-share' basis, and societies are asked to acquaint themselves with the Rules covering the award of such trophies. Extra perpetual trophies are available for 1972, thanks to societies donating them for Federation use, and to date include awards for Centrarchidae, AOS Coldwater, Veiltail goldfish, Mollies, Swordtails, Characins and Siamese Fighters (*B. splendens*).

December Assembly

A general pride in achievements in 1971 tempered with eagerness for yet further use to be made of the Federation's facilities and services by affiliated societies was evident in the various reports given by Council members at a well-attended FBAS annual general meeting and assembly last month. Very close to 100% attendances at the 13 Council meetings in 1971 was shown by the general secretary's report. Affiliations rose by 27 during the year, making the Federation the largest representative aquarists' body in Britain, said treasurer Mr D. Dove. At the assembly a strong contingent of aquarists from South Wales, headed by FBAS judge Mr D. Wigg, was present and participated vigorously in discussion of matters raised. Vice-chairman Mr F. Tomkins, general secretary Mr K. Pye and Council members Mr C. A. T. Brown, Mr M. Carter and Mr H. Towell were re-elected unopposed.

A motion that entries of fish at open shows should not be accepted 'at the door' on show day was defeated, and a referendum of the delegates present on the number of fish to constitute a team for entry in tropical breeders classes gave 26 for four fish and 22 for six fish. The thorny problem of the correct class for entry of certain loaches at shows was raised (i.e. whether a native stoneloach could be placed with 'tropical' cousins in class L or as 'a.o.s. coldwater') but after some discussion it was left for further examination by the specialists concerned, although everyone appeared to agree that the terms 'coldwater' and 'tropical' are unhelpful and meaningless. Affiliated societies are asked to note the date fixed for the Federation dinner dance and social in London (8th April) and to see details of venue etc. being sent to them shortly.

BRADFORD & D. A.S. report with regret the death of friend and fellow member Mr Ernest Little. A former president of the Society, he earned the highest respect of all those who knew him, and withstood the rigours of show judging for many years, his services being in demand

all over the North of England. But however busy he was, he never failed to keep an appointment, whether it be to speak or to judge. In all his activities he was ably supported by his wife, and members offer her their deepest sympathies in her sad loss.

doublesword, Mr A. Swain; colour male, Mrs P. Young; original veil, Dr A. Charlton; pintail, I. Peck; cofer male, Mr B. Hilton; dovetail, Mr G. Steadman; scarftail, Mr J. Hesketh; lyretail, Mrs S. Swain. **Female classes.** Superba, Mr G. Steadman, wedgetail, Mr H. Baldwin; natural tail: Mr D. Glen; scalloptail, Mrs J. Croft; cofer female, Mr B. Hilton; roundtail female, Mr D. O'Brien; colour female, Mr J. Hesketh. **Breeders classes.** Males, Mr M. H. Delingpole; females, Mrs J. Croft; matched pairs, Mr D. Glen; master breeders, Mrs P. Young; advanced master breeders, Mr M. H. Delingpole. **Ladies class.** Miss J. Johnson.

1971 has been one of the best for **BASINGSTOKE A.S.**, writes Mr A. Marshall, the Society's P.R.O. At the Society's own open show 987 fishes were benched out of 1003 entries and members have done extremely well in open shows—three best-in-show awards by Mr M. Strange, two best-in-show by Mr B. Isley and one best-in-show by Mr A. Blake. At the Kingston, Riverside and Bracknell open shows the club won the best club awards and members Mr M. Strange won the FBAS trophy for dwarf cichlids, Mr A. Blake the FBAS trophy for livebearers' breeders and Mr A. Marshall the Lester Coatman FBAS Memorial trophy for twintail goldfish. The final triumph was the winning of the Society Tableaux competition at The AQUARIUM SHOW '71 (the Calgary trophy and £25). Mr Marshall records that the credit for this must go to Mr Dave Walls and his workers who had worked on the entry for at least 6 months before the occasion. Other awards won at The AQUARIUM SHOW by members were first and second furnished aquaria, Mr B. Bisson; first, platys, Mr A. Blake; second, rasboras, Mr D. Putt.

Yearly awards have also been presented to club members as follows: Breeders Cup, Mr B. Cook; yearly Points trophy, Mr A. Marshall; Championship Cup, Mr B. Bisson.

THE BRITISH MARINE AQUARISTS' ASSOCIATION reports steady growth of the Association as it enters its second year of existence. It now produces a comprehensive monthly newsletter. Two local groups meet regularly, one in the south-west, and another in the west midlands, but similar groups are to be formed throughout the country. In addition to lectures, slide and film shows, displays etc., the south-western group put to sea and, with the aid of sub-aqua divers, took part in a Seafari collecting expedition. The BMAA Show Standards committee have devised a realistic pointing system for marine exhibits, and will supply judges to shows of marine life.

In Brief . . .

... **MEMBERS of MERSEYSIDE A.S.** recently enjoyed a Questions and Answers session chaired by Mr F. Mulla and Mr K. Parkes, and a talk by Mr Jack Sawin of the Oceanarium, Cleveleys, on marine fishkeeping. 78 members and friends attended the annual dinner and dance and enjoyed a marvellous evening. The Society are particularly proud of their achievements at BAF '71, members gaining ten awards in all. Mr E. Seymour entered two excellent aquascapes, one of which gained third place in the novelty aquascape class; other awards were: Mr E. Seymour, first, a.v. loach, Durham trophy; Mr N. Petersen, third, a.o.v. and second, dwarf cichlids; Mr F. Mulla, third, a.v. loach; Mr K. Parkes, first and third, single characins; third, single barb; best egg-layer other than best in show; and second champion of champions (*Mylossoma argenteus*).

... **NEW FOREST A.S.** members all agreed that a recent talk on breeding angel fish given by Mr D. Cox of Wareham was one of the most interesting enjoyed at the club for some time. In the final leg of the three-way quiz at Bournemouth, New Forest fared less well (finishing third overall, with 15 points to Bournemouth's 33 and Salisbury's 42) and also lost the quiz to Salisbury by 49 points. Results of the table show for fancy goldfish were: 1, Mr R. Travers; 2, Mr A. Williamson; 3, Mr L. Menhennet.

... **COLOURED** cine films hired for the evening by **BRADFORD & D. A.S.** included 'The Seven Seas', 'Goldfish'—showing some really beautiful goldfish, many of which are difficult to obtain in this part of the country, 'British Native Fish', 'Transportation of Fish'—an amusing film showing how many aquarium fishes come to be there, and a film on South Africa. Mr Barry Pengilly presented a new marine slide show showing equipment needed, methods of setting up and some magnificent fish. Member Mr C. Binns has also given a most interesting talk on Siamese fighters. The Society was again successful at BAF, three members winning the following awards: 1 and 3 (male Siamese fighters), Mr P. Robinson; 2 (single characins), Mr D. Kennedy; 3 (marine furnished aquaria), Mr G. Fairclough.

... **LEAMINGTON & D. A.S.** have enjoyed a very busy programme recently. At one meeting Mr Stowe showed some interesting holiday slides of Portuguese fishing off the beach, with the womenfolk very much to the fore, launching the boats and unloading the fish. The National Trust also entertained members with slides of some of the very interesting houses and gardens owned by them and open to the public. Members have visited BAF, and held their first pond competition, which produced nine very good entries with the following results: 1, Mr & Mrs Beard (68 points); 2, Mrs J. Smith (66); 3, Miss N. Smith (65). Recent table show winners have been: Barbs, Mr R. Gunthorpe; anabantids, Mr P. Bird; coldwater, Mrs J. Smith; furnished jars, Mr S. Bird; characins, Mr P. Bird; a.v. plant, Mr C. Beard.

... **THE** autumn and winter programme of **AMERSHAM & D. A.S.** started with a swing, with a cheese and wine party. Other meetings have included an interesting and informative talk on livebearers by Mr F. Tomkins, chairman of the Judges and Standards committee of the FBAS, two coloured films, 'Malayan Seashore' and 'The Lonely Places', and an illustrated talk on goldfish given by Mr R. D. Esson, chairman of the FBAS. Results of the annual home aquarium competition are expected soon.

... **VISITING** speaker at a recent meeting of **DIDCOT & D. A.S.** was Mr F. Tomkins, who gave a most interesting and educational talk on livebearing fishes. The club also held its annual closed show, judged by Mr M. Carter of Bracknell. Class winners were: A.v. coldwater, Mr F. Ritson (shubunkin); barb, Mr J. Davidson (tinfoil); cichlids, Mr J. Brown (marbled angel); characins, Mr J. Davidson (*Metynnis*); guppies, Mr G. Whiscombe; a.o.v. livebearer, A. Davidson jnr. (half beak); rasboras, danios, and minnows, Mr D. Whiting (w.c.m.m.); labyrinths, Mr J. Davidson (leeri gourami); catfish and loaches, Mr F. Ritson (bronze catfish); a.o.v. tropical, Mr J. Davidson (red-tailed black shark); furnished jar, Mr A. Watts; **breeders:** livebearers, Mr R. Turner (guppies); egg-layers, Mr J. Brown (dwarf gourami).

... **A TALK** by Mr F. Vicker of East London A.S. on Siamese fighting fish to members of **HASTINGS & St LEONARDS A.S.** included much useful information

on the breeding of these fish and the raising of the fry. The table show for the evening was for labyrinths: 1, Mr P. Martin (combat); 2, Mr J. Watson (leeri gourami); 3, Mr A. Barnard (dwarf gourami). The home aquaria competition has been judged by Mr H. Carey, chairman of Eastbourne A.S. Results were: Best planted aquaria: 1, Mr A. McCormick; 2, Mrs M. Grieg; 3, Mrs Reid. Best junior aquaria: 1, A. Harmes; 2, A. Reid; 3, C. Chalcraft. Best home aquaria: 1, Mr G. Pryke; 2, Mrs M. Greig; 3, Mr A. McCormick.

Members have also enjoyed another excellent lecture recently, when Mr R. Armstrong spoke on the breeding and raising of dwarf cichlid fry. He had with him some of the equipment and foods he uses to raise his young fish, and these were passed around for members' inspection. Table show winners were: dwarf cichlids: Mr J. Greig (*Nannacara*). Cichlids: Mrs M. Taylor (blue acara).

... A PLEASANT evening was spent when **BETHNAL GREEN A.S.** were host to **WALTHAMSTOW, CHINGFORD** and **TOTTENHAM**. Judge of the table show was Mr C. A. T. Brown and results were: Breeders egg-layers: 1, Mr A. Chandler; 2 and 3, Mr B. Baulsom. Breeders livebearers: 1 and 3, Mr T. Twine (W.); 2, Mr B. Baulsom. A.v. coldwater: 1 and 2, Mrs S. Hedges (B. G.); 3, Mr D. Goodbody (W.). A.v. plants: 1, Mr D. Goodbody; 2, Mr K. Nutt (T.); 3, Mr A. Chandler. Total points gained were: Walthamstow, 26; Bethnal Green, 9; Tottenham, 4; Chingford, 0.

... **MEDWAY A.S.** were hosts at an inter-club show with **MID-KENT**. Results: Barbs: 1, Mrs W. Empett (Medway); 2, Mr R. Mayne (Medway); 3, Mr G. Milner (Medway). Anabantids: 1, Mr G. Milner; 2, Mr K. Marsh (Medway); 3, Mr C. Elliott (Medway). Livebearers: 1, Mrs W. Empett (Medway, best fish in show); 2 and 3, Mr J. Marshall (Medway).

... **MEMBERS** of **YEovil & D. A.S.** turned out in force at the annual inter-club show with **WEYMOUTH A.S.**, judged by Mr Cavell and Mr Edwards from Taunton A.S. Yeovil were beaten by 133 points to 167, enabling Weymouth to retain the trophy. Individual winners were: Tropical: 1, Mr Worth (Weymouth); 2, Mr Hatton (Weymouth); 3, Mr Fischer (Yeovil). Coldwater: 1, Mr Collins

(Yeovil); 2, Mr Worth; 3, Mr Langdon (Yeovil). During judging a panel game of 20 Questions was organised by Mr C. Bushell. Yeovil & D. A.S. are now holding an extra monthly meeting for its winter programme; this proved successful last season as a non-business venture.

... AT a recent meeting of **HARROGATE & D. A.S.** the programme for the evening was a slide show entitled 'Discus and Others', given by Mr Roy Skipper; the slides were first-class. The table show for guppies was won by Mr M. Levitt, and the a.o.v. class by Mr D. Taylor.

... AT the **KEIGHLEY A.S.** monthly meeting in November Mr & Mrs Liddimore gave an enjoyable slide show on Austria and Snowdonia. Table show winners were: Fish of the month: Mr J. Mosley; a.o.v.: Mr J. Mosley; novice a.o.v.: Mr Ibbotson. Junior a.o.v.: Master P. Beckett.

... **LOUGHBOROUGH & D. A.S.** held their second annual furnished aquarium competition in conjunction with the Parks Chrysanthemum Show at the Loughborough Sports Centre. There were 11 entries, and show judge was Mr R. Tedds of Bedworth. Results were: 1, Mr D. Wood (81 points); 2, Mr G. Lindsey (78); 3, Mr G. Taylor (74½); 4, Mr I. Purdy (74). A stainless steel furnished aquarium was raffled in aid of local charities (ticket holder of no. 101 pink is asked to contact the show secretary, Mr T. H. Parry, 447 New Ashby Road, Loughborough).

... **MR ROY SKIPPER** gave a talk on discus to **MID-SUSSEX A.S.**, accompanied by a slide show. Amongst the many slides were shown varieties of discus, including a breeding pair feeding their young. Mr Skipper also showed how to prepare food for discus, as their mouths are quite small in comparison to the size of the fish. The table show was judged by Mr K. Nutt; class winners were: Fish of the Year: Mr & Mrs Tee (84). Breeders egg-layers: Mr G. Leech (78). Breeders livebearers: Mr D. Soper (78). Novices: Mr J. Burtles (77).

... **WHEN WREXHAM T.F.S.** held an inter-club table show with **CHESTER A.S.**, much interest was shown in some marine fish entered by a Chester member who took the best fish in the show award and received a small trophy. The highest-pointed fish from Wrexham was a leeri gourami owned by

Mr F. Oliver, which won him the Paramount trophy for the fish of the year.

... **PRIVATEERS A.S.** have heard a very interesting lecture on anabantids from Mr B. Tate. The meeting was attended by a heartening number of new members and was a great success.

... A VERY enjoyable BKA taped lecture and slide show on an aquarist's visit to Ghana was one of the evening attractions at the A.G.M. of **NORTHWICH & D. A.S.** The committee was elected to serve for 2 years (see Meetings and Officers). It was agreed that 1971 had been a very successful year, both in achievements at BAF, the club's own Open Show, and also from the financial position. Table show winners were C. & K. Davies (breeders, loaches and fish of the month award).

... **MR S. FORSTER** was speaker at a meeting of **EAST KILBRIDE A.C.** and he told members how to spawn the brown acara, as well as talking about other dwarf and large cichlids. Table show winners were: **Seniors.** Large cichlids, Mr M. Edler. Dwarf cichlids, Mr A. Lyons. **Juniors.** Large cichlids, J. MacLaughlan. Dwarf cichlids, S. Russell.

... **ERITH & D. A.S.** report that 'already the brains are ticking over for 1972' to plan the Society's tableau at this year's Aquarium Show in London.

... **TELFORD A.S.** members recently enjoyed listening to a talk by Mr T. Williams from Weston Park on his fishkeeping experiences.

... **WHEN CARSHALTON & D. A.S.** found they were without a speaker because of illness, chairman Mr Tom Barr stepped in and gave a talk on tropical fish books. The Society are holding their annual buffet dance on 28th January (members and friends please note). The club intend to give special emphasis in 1972 to the beginner to the hobby and new members will be particularly welcome.

... **MR N. LATHAM** was the winner of the **BILLERICAY A.S.** home furnished aquarium competition with 86 points (2, Mr C. Clark; 3, Mr R. Kane; judged by Mr B. Pye). The Society have enjoyed an interesting slide show from club member Mr R. Kane on killifishes and a talk with slides on fish house

construction by Mr Dave Cheswright.

... **TOTTENHAM & D. A.S.** report a very successful 1971 with increased membership, and look forward to 1972 as their Silver Jubilee year. Annual award winners are: Points Cup, Mr K. Nutt who also won the Breeders Competition for egg-layers and livebearers; Knock-out Competition Cup, Mr S. Mole and the Breeders Competition Cup; Home furnished aquaria, Mr L. Pry and Saline Cup; Best fish at Open Show, Mr J. Ellis.

... **RETIRING** chairman Mr Ray Scurry voiced the particular thanks of **HOUNSLOW & D. A.S.** at their A.G.M. to Mr D. J. Woodward who is retiring from the secretaryship, after many years of service, because he is moving to Sussex. Mr Woodward, who is a vice-president of the Society, has

seen many changes during his years of fishkeeping and many beginners in the hobby owe their successful start to the sound advice supplied to them by Mr Woodward with fish from the many different species he keeps in his fish house.

... **EALING & D. A.S.** members have recently surfaced after their children's Christmas Party—the debate still continues as to whether this or an open show is the more hectic. Mr Brian Baker has talked to the Society on angel fish ('This talk can last up to 4 hours' said Mr Baker when he started) and Mr B. Pyc of Brentwood A.S. has lectured on aquatic plants. The judging competition proved as popular as ever and the final rounds of the Irvine, Mills Trophies and the K.O. Cup were won by Mr J. Healey, Mr J. Batts and Mr J. Irvine respectively.

... **THE last leg of the SIX CLUB MEETINGS** took place at the **INDEPENDENT A.S.** venue in Holloway. Members expressed their thanks to Mr C. A. T. Brown who consented to judge the cold-water classes at very short notice. Final placings were: Independent 145 points, Hendon 107, Anson 75, Riverside 72, Hampstead 26, Hornsey 5.

... **ALTHOUGH** the **DORCHES-TER & D. A.S.** has held only a few meetings as yet, 28 members, including some who travelled 15 miles from Blandford, attended to hear vice-chairman Mr M. Cleall give a talk on breeding guppies. The table show for male guppies was won by Mr R. Christopher (25 points); 2, Miss L. Normal (23); 3, Mr P. Jefferies (22). The club meets at the Junior School, Damers Road.

Dates for Your Diary

15th January. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London, W.C.1.

5th March. **KEIGHLEY A.S.** Open Show. Victoria Hall, Keighley.

12th March. **BELLE VUE A.S.** Open Show. Openshaw Lads Club, Crossley House, Ashton Old Road, Openshaw, Manchester. Details: Mr R. Davies, 38 Wetherby Street, Higher Openshaw, Manchester 11.

19th March. **TOP TEN A.S.** Open Show. Huddersfield Town Hall.

26th March. **EAST DULWICH A.S.** Third Open Show. Territorial Army Hall, Highwood Barracks, Lordship Lane, London, S.E.22. Show secretary, Mr K. G. Quennell, 43a Carden Road, Peckham, SE15 3UB.

26th March. **NELSON A.S.** Open Show. The Civic Centre, Stanley St., Nelson. Details from Mr R. McKenna, 52 Bath Street, Nelson.

26th March. **WORKSOP A. & Z.S.** Open Show. North Notts College of Further Education, Carlton Road, Worksop, Notts. Schedules available shortly from Mr F. G. Sibson, 17 Clinton Street Worksop.

2nd-3rd April. **TOTTENHAM & D. A.S.** Silver Jubilee Open Show. Haringey Sports Council Drill Hall, High Road, Tottenham, London, N.17 (opposite Spurs Ground). Schedules: Mr K. Massey, 72 Westward Road, South Chingford, E.4 (01-527 7851).

15th April. **G.S.G.B.** Quarterly meeting. Conway Hall, Red Lion Square, Holborn, London.

15th April. **G.S.G.B. A.G.M.** Conway Hall, Red Lion Square, Holborn, London, W.C.1.

22nd April. **INDEPENDENT A.S.** Open Show. Details to follow.

22nd April. (Provisional) **THURROCK A.S.** Open Show. Thameside School, Grays, Essex. Tropical, coldwater, furnished aquaria, pairs breeders classes.

29th April. **UXBRIDGE & D. A.S.** Open Show. G.P.O. Motor Repair Depot, Willow Tree Lane, Yeading, Yeading, Hayes, Middx.

7th May. **OSRAM A.S.** Open Show. Recreation Hall, Refuge Street, Oldham, Lancs.

7th May. **DUKERIES A.S.** Open Show. The Winifred Portland Technical Grammar School, Sparken Hill, Worksop. Schedules: Mr M. Woodley, 20 Park Street, Worksop, Notts.

7th May. **COVENTRY POOL & AQUARIUM SOCIETY.** Open Show. Foleshill Community Centre, Foleshill Road (A444), Coventry. Details to follow.

13th May. **SOUTHEND, LEIGH & D. A.S.** Open Show. St Clements Hall, Leigh-on-Sea. Show secretary, Mr R. D. Orford, 3 Blenheim Chase, Leigh-on-Sea, Essex.

14th May. **DERBY REGENT A.S.** Open Show. Sherwood Foresters Recreation Centre (Normanton Barracks), Osmaston Road (A5111), Derby (follow R.A.C. signs). Show secretary, Mr R. G. Harlow, 180 Mansfield Road, Derby (phone 44322).

21st May. **YEovil & D. A.S.** Open Show. The School Hall, Church Street, Martock, nr. Yeovil. Full details later. Show Manager: Mr D. Phinn, 5 Hill Terrace, Bowerhinton, Martock, Somerset.

21st May. **CRoyDON A.S.** Open Show. Details to follow.

28th May. **CORBY & D. A.S.** Open Show. Corby Civic Centre. Details to follow. Show secretary, Mr A. Slow, 176 King Street, Kettering, Northants.

4th June. **ACCRINGTON & D. A.S.** Open Show.

11th June. **THORNE A.S.** Open Show. The Grammar School. Details: Mr H. C.

Jewison, 94 Hawthorne Road, Thorne nr. Doncaster: phone 813041.

11th June. **HIGH WYCOMBE A.S.** Open Show. Lane End Hall, Lane End, High Wycombe, Bucks.

11th June. **BISHOPS CLEEVE A.S.** Open Show. Tythe Barn, Evesham Road, Bishops Cleeve, Cheltenham, Glos. Further details: Mrs M. Scriven, 27 Warden Hill Road, Cheltenham, Glos.

25th June. **ALFRETON & D. A.S.** Open Show. Adult Education Centre, Alfreton Hall, Alfreton. Details: Mr B. Hickling, 15 Meadow Close, Eastwood, Notts., NG16 3DQ.

2nd July. **EXETER & D. A.S.** First Open Show (provisional). Kennford Village Hall, Kennford, nr. Exeter. Secretary: Mr W. F. Bye, 14 Beaworthy Close, Exeter EX2 9LB: phone 78936.

8th July. **BASINGSTOKE & D. A.S.** Open Show. Carnival Hall, Basingstoke. Schedules from Mr M. Strange, 10 Loddon Court, Neville Close, Basingstoke, Hants.

29th July. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London, W.C.1.

13th August. **NORTH STAFFS. A.S.** Open Show. Details later.

16th September. **HAVANT & D. A.S.** Open Show. Deverell Hall, Purbrook, Hants. Details: Mr V. B. Hunt, 120 London Road, Widley, nr. Portsmouth, Hants.

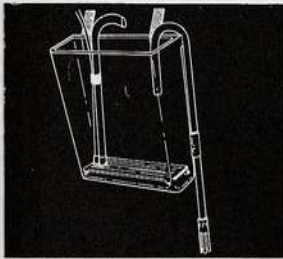
16th September. **HOUNSLOW & D. A.S.** Open Show. Hounslow Youth Centre, Cecil Road, Hounslow.

23rd September. **G.S.G.B.** 1972 Convention. Venue to be decided.

27th-29th October. **THE AQUARIUM SHOW '72.** Royal Horticultural Society Old Hall, Vincent Square, London S.W.1. All details from the Organiser, 554 Garratt Lane, London SW17 2NY (01-947 2805).

11th November. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London, W.C.1.

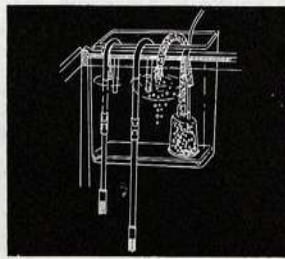
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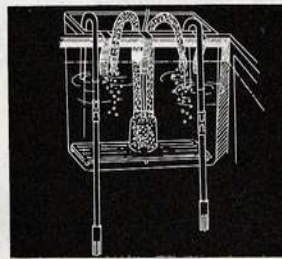
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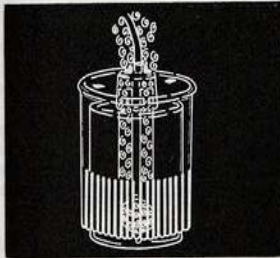


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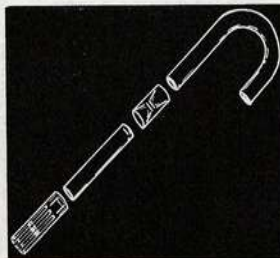
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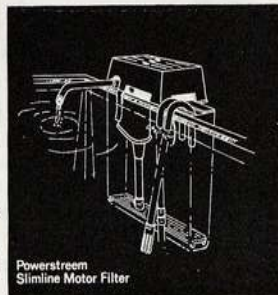
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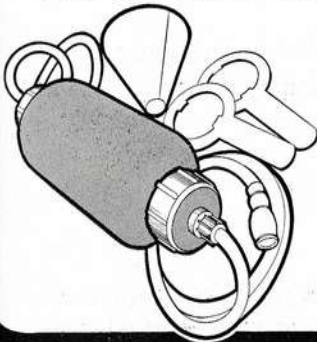
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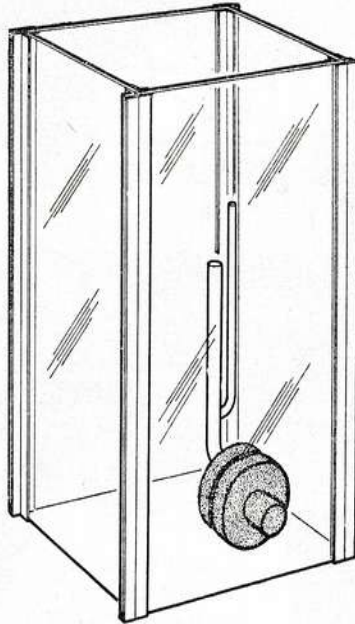
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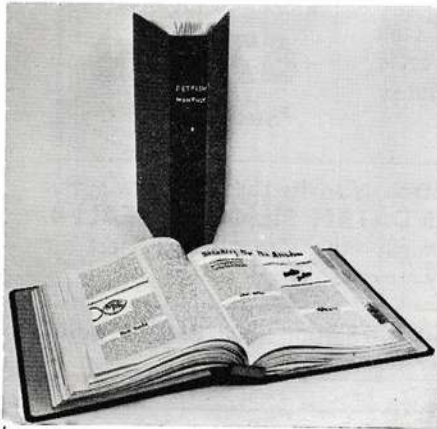
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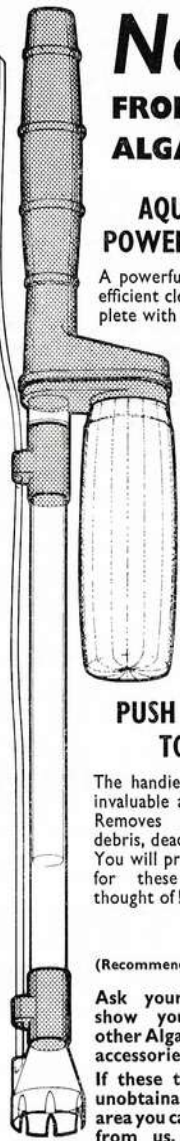
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