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Comments and Quotes

● Societies for specialists

● The month of The Aquarium Show

Specialist Groups

SOCIETIES specialising in one section of the hobby have generally proved their worth by the expansion of general interest in their respective sections that has occurred as a result of the efforts of officers and members. The British Killifish Association, the Fancy Guppy Association and the Goldfish Society of Great Britain are specific examples of organisations who can point to a great deal achieved in their various spans of existence. In due course it is inevitable that further successful bodies of this kind will emerge to promote additional sections, and a letter from Mr R. Forder in this issue puts forward the interesting suggestion that there are sufficient aquarists with a keen interest in the cultivation of water plants to lead to the formation of a specialist group to study and document knowledge of this speciality. It is noteworthy that in the past those in this country who have pushed the idea of water plants being worthy of study in their own right and who have done most to make new plants and information available to aquarists have, in the main, been professional aquarists or horticulturists; Miss Frances Perry, Mr Thomas Horeman and Mr Colin Roe are British names that aquarists will immediately associate with water plants and water gardening. It remains to be seen what the response to the idea of a specialist group in plants will be from hobbyists.

Another specialist group that seems as if it might be getting under way is the National Koi Society, under the instigation of Mr Ken

Fawcett, who has been a devotee of the Japanese carp for some time. Mr Fawcett has already collected over 80 names of interested koi-keepers and he has been trying to encourage the introduction of classes for koi at society shows.

As this issue of *PetFish* goes to press discussions are taking place between the Goldfish Society of Great Britain, Bristol Aquarists' Society and the Midland A. & P.S. on the proposal from the last-named two societies that a set of 'national show standards for British goldfish varieties' should be produced. Goldfish enthusiasts in the Bristol and Midland societies (historically both strongholds of coldwater fishkeepers) do not entirely agree with the G.S.G.B. Standards that last year received acceptance from the Federation of British Aquatic Societies, and are urging the recognition of 13 varieties each to be recognised as either 'scaled' or 'calico', or in both forms where these exist. These two names used to describe the varieties in themselves appear to represent a major challenge to terminology adopted by the specialist society, and it looks to us as if the differences to be ironed out concern issues somewhat deeper than is indicated by the description 'finer details' that has been used by Bristol A.S. and M.A.P.S. in presenting their case.

The Aquarium Show 1969

ONE of our advertisers in a recent issue gave public utterance to his amazement that 'THE AQUARIUM SHOW was 'here again already!' To some extent we share this feeling;

it certainly does not seem that 12 months have passed by since we wrote our first invitation to readers to visit THE AQUARIUM SHOW. This year we know that large numbers of aquarists have been eagerly awaiting our London SHOW as a result of their enjoyment of last year's event and once again we are looking forward to meeting many old friends. We are sure that among those coming to the SHOW will be aquarium keepers who started fish-keeping a year ago as a direct result of visiting THE AQUARIUM SHOW 1968. Equally we are sure that among those making their first visit to a fish show this year will be many destined to go away bitten by the hobby 'bug'. We would like to make special mention of the extra 'sit-down features' of this year's SHOW for the Saturday and Sunday open days. Programmes have been arranged with society audiences particularly in mind, and visitors mindful to have a weekend in London then can make two afternoon visits to the SHOW to be sure of seeing and hearing all that is going on. Please see page 283 and below for further details.

These special attractions for week-end visitors have been arranged at THE AQUARIUM SHOW at the Royal Horticultural Society's Old Hall, Westminster, London S.W.1, this month.

Saturday 1st November

3.30 p.m.
Illustrated talk by LEIF CHRISTENSEN (chairman, Copenhagen Killie Association)
Show of films of fishkeeping interest

Sunday 2nd November

3.30 p.m.
Illustrated talk by JIM KELLY (chairman, Fancy Guppy Association)

All at
The AQUARIUM SHOW
in LONDON

see also page 283

Transatlantic TOPICS

NEWS has reached me that research by the U.S. Space Programme engineers on light is also benefiting the fishkeeper. Giant xenon light bulbs introduced for ground lighting at the Apollo launching pads are now being used in the raising of tropical fishes in the outdoor pools of the Florida Fish Farms.

The huge bulbs, each with a rating of 20,000 watts, are reported to be very close to simulating natural sunlight. With my 'current' fish house power bills already running at the impossible level, despite my 40 and 60 watt bulbs, I don't envy the Sunshine State farmers their 'quarterly' shocks.

* * *

Frank Adam's Long Beach aquatic shop was packed with customers when the jack boots marched again. Into the shop strode representatives of the California Fish and Game Department and without further ado netted out Frank's two pet piranhas and stamped them to death on the floor before the stunned crowd of shoppers.

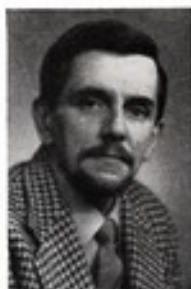
The men shouted, the women screamed and the kids just cried when they saw fish they had known for 12 years—familiar figures in the store, done to death. The destruction of the piranhas had been ordered by those in authority because they were frightened that fish of this kind might be tipped into the natural water of the State and become a menace to game fish and swimmers.

Our SUNDAY MIRROR asked a British naturalist, Dr Maurice Burton, to comment: "These fish are extremely ferocious," he said, "and in my opinion the Game Wardens in Long Beach were quite right."

Rats, too, are ferocious creatures but we don't exterminate them by kicking them to death!

That account is now history but those actions to bring in legislative control have brought forth much comment from both the trade and the organised hobby in the States—the discussion is still going on.

In a world smouldering with riots, one half starving and large areas plagued by napalm, nuclear fission



By JIM KELLY

and guided missiles of steel, it is refreshing that despite every exquisite, costly device for the infliction of pain and unlimited destruction, some of us are still daft enough to worry ourselves about a few inches of fish.

* * *

Though my mail from the New World is usually a hefty one it isn't often that it contains a letter from the Governor of an American State. So I was flattered when I received an invitation from Governor Dewey F. Bartlett of the State of Oklahoma inviting yours truly to a Convention there in September.

He informed me that the American Association of Zoological Parks and Aquariums was holding what promised to be the best ever annual meeting at Oklahoma City and would I like to attend?

I had to refuse as September was already booked up for me with fishy business in Britain. After all, charity does begin at home but on re-reading the letter I wondered how many similar legislators in such prominent positions throughout the world would have taken the trouble of sending (and signing) such an invitation personally?



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B. orphoides
B. gonionotus

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Tetras

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P. thomasi
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Pseudo. elongatus (adult)
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P. aureocephalus
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Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London S.W.17

Moving Large Cichlids with 'Nest'

I HAVE recently had the following experience using a poly bag as a net. In my 48 in. by 15 in. by 15 in. tank full of large cichlids I found, when clearing the usual bottom debris, that a pair of blue acaras had spawned in a flowerpot; so rather than lose what appeared to be a rather large spawning I removed a pair of saddle cichlids, which had shown little sign of breeding, from their 24 in. by 12 in. by 12 in. and set about the task of removing the acaras, eggs and all. The job was made more difficult as the tank was the lower one on a two-tier stand. However, I decided to use a gigantic poly bag and found that once I moved the flowerpot with eggs inside into the submerged bag the parents followed and did not need chasing. Then, with all the care in the world, the bag was lifted out and into the 24 in. by 12 in. by 12 in. tank and allowed to sit on the bottom for an hour, when one side of the bag was submerged and the flowerpot moved out. Of course, the parents followed. I was then very careful again when emptying the bag and lifting it out.

Did it work out O.K.? Yes, I'm pleased to say and at the moment I have about 250-300 young half-inch acaras still swimming with their parents.

I would also like to let you know of my experiences with cichlids etc. in a tank of plants. The tank in question is 48 in. by 15 in. by 15 in.; the fish—blue and brown acaras, convicts, Texas cichlids, firemouths, severum, Malayan angels (monos), ordinary and pin-tailed paradise, red-tailed black shark and a wonderful character—the 'talking' catfish. In the tank there is one of the fibre-glass rockworks used for outdoor waterfalls (this had to be drilled in the pool part first as previous experience proved plants difficult to grow unless this was done, though I do not know why). This part was filled with gravel and cryptos were planted. This 'rockwork' was placed at one end; then I had a small undergravel filter, as I find *Bacopa* thrives with one of these, and finally a big Amazon sword but no undergravel filter.

This tank has been set up now for a year and I have seven extra Amazon sword plants in other tanks taken from the cichlid one and have replanted only about a dozen shoots of *Bacopa* in the year.

So, with careful choice and placing, plants can be grown with large cichlids. But do try to breed the cichlids—it's most rewarding watching the youngsters swim with their parents.

King's Lynn, Norfolk

A. FORD

Rotting Aquarium Plants

MR S. TERRY (Letters, PFM, September) mentions the 'rotting away' of imported water plants that can occur when they are first purchased, and suggests that the cause of this could be the placing of the plants in over-warm water. I think that one far more likely reason is the excessive handling the plants have received after collection and in being packed for shipping to this country. With species such as the Amazon swords and cryptos the rotting usually stops at the base of the stems and I have found that however miserable the rooted remnants might look they will still grow if planted and given plenty of light. This does mean putting them in rather shallow water so that they get the full benefit from overhead lighting, and much patience is needed because their rate of growth is not exactly speedy.

Since I have so often found that the new leaves appearing during recovery look very much different from the original leaves of the plants that rotted away, I suspect that another reason for the rotting is that the plants were collected from the banks of streams and were not actually growing as fully submerged aquatics when

found. Their aerial foliage does not for long tolerate the full immersion it receives when the plants eventually get to the dealers' tanks.

A point that I have never seen mentioned anywhere but which I know to be a real observation, is that these rotting leaves appear to generate a substance that is very irritant to human skin. If there are lots of the plants rotting in a container of water, the water takes up this irritant substance. The irritation can be washed away from the skin fairly easily but the effects are apt to linger in the more delicate skin between the bases of the fingers.

Esher, Surrey

K. HURST

Chilled Guppies

PETER UNWIN (Guppy World, PFM, September) asked what is the correct procedure for dealing with chilled guppies. As I am sure he knows quite well, there is no single answer to his question because results will differ very much with circumstances, in particular with the length of time that the fish have been chilled. The old advice to make changes in water temperature gradually for tropical fishes is, I think, good advice, but

if I found some guppies inactive in cold conditions and suspected that they had been there some time I would not hesitate to drop them at once into warmer water (not above normal tank temperatures, of course!). With less cooling or exposure to the cold for a shorter time the fish could be allowed to warm up more slowly by keeping them in a jar floating in an aquarium at 75 F (24 C) for an hour or so before they were finally released into warm water.

Exeter, Devon

organised body of aquarist societies, under any title, would like to take advantage of this invitation we will gladly supply copies, free of charge, on request.

31 Siddley Street,
Liverpool, L17 8XU

W. T. KELLY,
Hon. secretary, Federation of
Northern Aquarium Societies

Film List

THE Federation of Northern Aquarium Societies has recently published a 10-page list of films which are available on hire or on loan from various sources and which are likely to be of interest to all aquarist societies. The list covers 8 mm. and 16 mm., sound and silent, colour and black and white.

For obvious reasons the Federation cannot supply copies to each individual Society in the country but the list has been circulated to those Federations and Associations with whom we are in contact, together with an invitation to have further copies printed or duplicated for distribution to their member societies. If any other

P. SCOTT

For Plant Specialists

WITH the growth of our hobby, there appears to be one thing lacking. I would like to see a specialist Society, with the sole objective of furthering the propagation of aquatic plants. We owe a lot to several traders in this connection, but there is room for a get-together of growers and specialists in this field.

I am now inviting anyone interested to write to me. If there is sufficient interest shown, we could then form a Society. Although most of our business would be by post, the issue of a quarterly newsletter with 'wants' and 'ads', and possibly a spring and autumn meeting, would establish personal contacts.

2 Field Heath Avenue,
Uxbridge, Middlesex

R. FORSTER, Ant. Secretary and
Show Manager,
Uxbridge & D.A.S.

Yes, Our Society is Working!

By BILL KELLY

Merseyside A. S.

A RECENT article by columnist Jim Kelly suggested that scope for greater participation by club members is required and that people are crying out for roles that require involvement.

This must be a bout of wishful thinking by one who is an acknowledged enthusiast, for surely there has never been greater scope for participation during the existence of the organised hobby than there is today? At society level, in small local associations, the larger federations and nation-wide specialist bodies there is more scope for participation than people willing to participate. The only problem is not to create more opportunity but to sort out the members who are willing to take advantage of the opportunities already available. This is no new problem nor is it confined to the aquaria world.

Every committee in every hobby faces the same difficulty when one

of 'the few' falls by the wayside. A request for volunteers at the club meeting produces a deathly silence so you have recourse to other methods. First you consider who could do the job—because there is little point in electing a willing treasurer if he can't add the columns up. After this first rough selection you have to decide if he will be a worker—fee there is equally little point in electing a secretarial wizard if he fails to keep the Minute Book up to date and doesn't bother to write the necessary letters.

Having found the paragon who fills your requirements you ask him will he participate and what happens—either he is already engaged on 13 different committees in five other hobbies; or he works a 96-hour week of shift work or he is a television addict and cannot spare the time. So back you go again and work your way through those who 'don't want to know' until eventually somebody

diffidently offers that he, or she, will try the job if you really cannot find anybody else.

The remaining committee members promptly jump on this sacrificial offering and chain him down so that he cannot escape before a rather farcical election can be arranged, and then you hope for the best. Surprisingly, this system works very well. Probably about 75% of the diffident volunteers prove both willing and efficient and are promptly absorbed into the few—that dedicated half dozen or so whose sudden removal would cause the collapse of the whole edifice.

After a chastening selection ordeal such as this, some committees become very underhanded and propose that the club rules be altered so that

Continued on page 291

DECORATIVE AQUARIA INSTALLATIONS—2

Aquarium in the Wall or as Room-divider

By H. J. GILBERT



An aquarium forming part of a room-divider in the home of a member of Chester & D. A.S.

Photo: R. DUTTON

THE first type of decorative aquarium installation that comes to mind, because it is so eye-catching, is that which is recessed into a wall to be viewed either from one or two sides. The next type may be closely associated with the ordinary aquarium stand, but bearing in mind the number of 'open plan' houses these days there is great scope for the 'room divider' type of aquaria. This may be followed by the 'built-in-alcove' aquarium, or, if you are looking for something simple, the free-standing cabinet aquarium. Finally a development of the cabinet type is the wall cupboard set-up, for the aquarist who can use only a limited amount of space to indulge his hobby but wishes to graduate past the one tank stage.

When planning any type of built-in aquarium there are a number of problems that are common to all. They concern extremely important matters and any time spent in deciding how they may best be overcome is well worthwhile. One is the availability of a power point, even if you are contemplating keeping coldwater aquaria.

This in turn leads to the distribution of the electricity for your lights, aerator or pump for filtration, heaters etc.

It is advisable in dealing with this problem to get professional help to arrange a simple, foolproof switch board for whatever devices you decide are necessary. Should you belong to an aquarist society arranging this will be easy and much cheaper, as most societies have an electrician among their members who will be only too pleased to give advice and help to produce a first-rate job. (It is a strange reflection, however, that their own set-ups are either an unholy tangle of wires and insulating tape or an elaborate, mystifying array of switches, warning lights, buzzers and other electrical gadgetry!) Of course, the final electrical layout will not be decided until you have settled on your type of installation, but it has to be kept in mind.

The other problems may nearly all be grouped under one heading—position: whether the aquarium is to be in a large or small room or even a hall way; where it will be

in relation to surrounding furniture or such things as cupboards and doorways; what the position is in relation to other light sources and whether the majority of people viewing it will be doing so from a sitting or standing position.

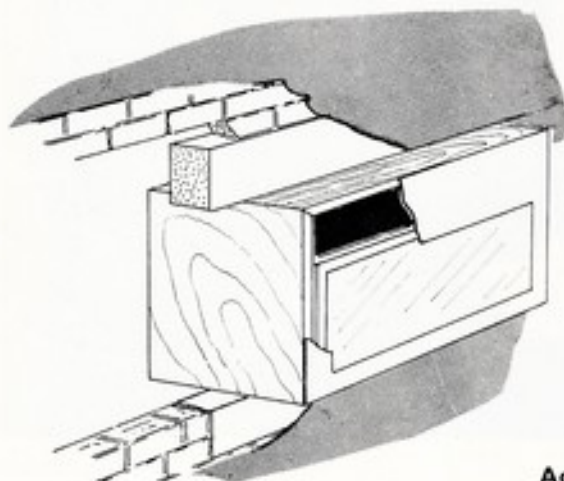
Siting the Aquarium

This may all sound very elementary but it will have great bearing on whether your siting is such that your underwater aquatic scene is not overwhelmed or obscured in some way by existing features. Remember that doors open and pictures or other wall decorations have a habit of drawing one's attention. Your tank may even have to compete with a television set!

Windows may well be a problem on their own. Much depends on the direction they face. A southern aspect

friends) will help with this part of the project. Accept all their ideas for discussion but insist that you have the final word.

Other matters to be considered at this stage are what form the final set-up will take, and whether there will be any problems of servicing and maintenance in your choice of position and type of set-up. One should also check up on the strength of the flooring at the chosen point if your aquarium supports rest on it. With a wooden floor a great deal will depend on which direction the joists run. Finally it is preferable to choose one of the standard sizes of tank for the set-up (reference to the advertisement pages of this magazine will tell you which they are). This is so that should a replacement be necessary at any time, this will not be a major catastrophe financially or otherwise.



Cut-away view of an aquarium arranged to be viewed from either side of a narrow inside wall. A sill and a lintel border the opening in the wall above and below the wooden box-like housing for the aquarium. Ample space above the aquarium must be allowed to facilitate servicing. Removable cut-out fascia boards each side restrict the view to the contents of the aquarium.

may allow direct sunlight to reach the tank at certain times of the year; this in turn raises viewing difficulties as well as plant growing problems. An infinitely variable lighting system and a more than usual careful selection of plants would appear to be the answer. Even without the intervention of direct sunlight a variable lighting system can be an asset to any set-up, as apart from your being able to produce the optimum conditions of light for growing your plants the whole appearance of the aquarium can be changed to avoid monotonous viewing. It is never wise to site an aquarium adjacent to or below a window, as the light from it, whatever the aspect, will detract from the tank appearance.

Whatever type of installation you eventually decide to make, it is as well to put an empty tank of the appropriate size (although this may eventually have to be changed) on a temporary stand that may be moved around as well as being raised or lowered as deemed necessary to find the perfect position. No doubt all the family (and your

Aquarium in the Wall

Should you decide that the wall-recessed type of aquarium is the one for you, it is essential that you get professional advice on whether the necessary structural alterations, in the position you have chosen, are feasible and how they may best be carried out. Make sure your adviser is aware of the size and weight of your aquarium and how much clearance you require above and at the ends of the tank. This is necessary as most inside walls are a mere 6 in. thick, making a substantial sill and lintel absolutely essential. It is a good plan to line the aperture made in the wall with a wooden box-like structure slightly wider than the tank. This will facilitate the installation of the electrical fittings etc., as well as provide a suitable attachment for the external framing (which has to be easily detachable for feeding the fish and servicing the tank). If the aperture lining is made of a suitable hardwood, the portion exposed by the relative thinness of the wall may be polished and will so provide a suitable screen for the excess width of the tank. Consideration must be given as to whether both back and front glasses of the aquarium are to be exposed to view, with the

attendant problems. These will be discussed later in connection with another type of installation. If only the front of the tank is to be exposed it may be necessary to forego the advantages of a standard size tank because of the complications brought about by the excessive overhang of the normal 12 in. width. Do not, however, be tempted to reduce the width too much or you may have difficulty in glazing the tank, not to mention providing sufficient room for enough plants to hide the back of it later.

This type of aquarium installation, apart from being the most difficult and expensive to make, is the most impressive to view and merits every bit of the thought and planning that have to go into it. The cutting of the aperture in the wall, with the installation of the strengthening members, is a skilled job but all the rest of the work is within the scope of the average handyman aquarist.

Room-divider Aquarium

With the modern open-plan type of house an aquarium sited in a room divider can be quite an asset. I am really thinking of the proprietary brands of adjustable room dividers on the market. Many of them may be built up in a number of ways to accommodate shelves and cupboards of various sizes, so by carefully checking the

strength of the structure it is a comparatively simple matter to install an aquarium of the appropriate size.

For the sake of appearances it may be necessary to make a special light shade that will look equally well from either side of the aquarium. A striplight will be a great help in this case and together with a combined thermostat-heater the electrical wiring may be kept extremely neat and unobtrusive, running along the length of the divider, under a shelf to an adjacent point. If striplight is found to be necessary for neatness greater care must be taken in assessing other light sources before deciding on the wattage, or a lot of unnecessary expense will be incurred through having to change the tube.

If one's technique of setting up a furnished aquarium does not extend to skill in providing two viewing sides, and it is most difficult to do this satisfactorily, decide which is to be the back of the aquarium and mask it with one of the wood veneers or plastic sheets which are readily available in all finishes.

As with all other types of aquarium stands, one should make sure that the feet of the room divider supports will not sink into the floor or floor covering and so unbalance the whole set up with disastrous results. Some thermoplastic floorings are very treacherous in this respect.

To be continued

Yes, Our Society is Working!

continued from page 288

the committee can be extended to include some extra committee members. No particular job is proposed for these candidates: 'Just attend the meetings and see what goes on,' they are told. Curiously, there seems to be very little trouble in finding volunteers for these positions; the new initiates attend regularly, listen intently, vote reasonably and generally absorb the atmosphere. When the next vacancy arises there is no great alarm, for we already have some likely candidates; but, lo and behold—while the older hands thought that the extra members would be avidly learning everybody else's job and preparing to jump into the breach, the people concerned are in fact already participating to their fullest extent and do not wish to take any greater part in the activities.

Folk are crying out for roles that require involvement indeed! There seems little likelihood of insurance companies facing bankruptcy by way of death benefit claims arising from this particular stampede.

The foregoing is of course slightly exaggerated, deliberately so, for the

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point I wish to make is that this is not such a sad state of affairs as it sounds. First, we must remember that 'the few' are only doing so much because they are clerically minded or committee minded and because they want to do the jobs. Much as they may protest about being 'press ganged' into office or 'not really wanting the job', they are not forced to work by a whip-armed overseer or even threatened with a firing squad if they resign. Assuming that the quoted 'half dozen or so' refers to average societies with an approximate membership of 30, the percentage of the few seems to remain remarkably stable in proportion to the membership, so it appears that replacements will be found when needed. Secondly, all the members are already participating in varying degrees. We all pay subscriptions, attend meetings, buy or sell raffle tickets or teas and bring along a few fish to the table show or a few plants to the club auction. Even the member who pays an annual subscription and is then seen only at the open show is participating—and his sub-

scription and entry fees help to provide facilities which others can enjoy.

Surely, one of the main attractions of the hobby is the infinite variety of interests available and this applies almost as much to society life as to the keeping of fishes. Unless our natures alter, there will always be those who like organising meetings or shows and scheming ahead for future activities—just as there will always be others, a larger number, who prefer to play a more passive part. The hobby can well cater for all tastes in this respect and I venture to suggest that any member of any society who feels that he would like to take a more active part has only to mention the fact and he will find his services readily accepted, in any capacity.

One final thought. The idea behind that original article could lead us to a very awkward situation if carried too far. Can you imagine a society where all the members had become sufficiently involved that they wished to become active committee members—just think of all those planners and workers with nobody left to be planned or worked for. Most frustrating. No, I think we should stay a little longer with the present system under which we can safely say 'Yes, our Society is working—quite successfully.'



Personal COMMENT

by
ARPEE

THIS fish should really be given a tank of its own' is a very overworked piece of advice in the aquarium hobby, and I have been as guilty of doing it to death as anyone. It can arise from, possibly, two quite separate circumstances: either the writer is charmed to bits by the species in question, or its requirements are such that it is a bad mixer.

I think that all enthusiasts may be forgiven for claiming special treatment for their favourites, though they usually end up by compromising with suitable communities of one sort or another, and, certainly some of the most impressive collections I have ever seen have consisted of large shoals of just three or four separate species. The group of fish requiring special consideration is rather larger than many people may think. Some, like the piranhas, stand out quite clearly, and it takes a lot of thought before deciding on the purchase of the butterfly fish. Here and there amongst the smaller fishes, however, where there would seem to be few real problems over introductions to community conditions, one occasionally gets an unpleasant surprise.

When I first started collecting tropical fishes I bought pairs, sometimes sexed and sometimes not. At least I always started off with two of each species. The motive was generally that one would be company for the other, and although this sometimes got upset if a rogue specimen crept in, the principle itself seemed sound enough. There always seems something desperately wrong when there is only one fish of a kind in a collection, and if you disbelieve this, try rectifying the balance some time in your own collections, and see whether the effort is worth it. The habit I established did not, however, always pay off because the death of one here and another there ultimately gave me exactly what I had set out to avoid—a whole lot of single specimens, many of which looked pretty fed up with their lot. I therefore set my normal purchases at the trio or quartet level, and although the range had, necessarily, to contract, the overall appeal was greatly more pleasing.

Until a recent purchase I always found that this micro shoal had immediate impact in a community tank, and if the specimens were a little on the small side, the safety afforded by numbers seemed to give them the confidence they badly needed when in competition with the larger inmates of the tank. I was made to think twice about this proposition when I bought a quartet of January (sometimes called Costello) tetras a short time ago. These little fish, which seldom reach $1\frac{1}{2}$ inches in length, are rather like slim garnet tetras and look extremely effective in a large shoal. They remind me of tiny fireflies, and I could already see them lighting up the tetra collection with their sharp movements and delicate manners. They were

quarantined with some clown loaches that I had also managed to acquire, and their demeanour throughout this awkward period was exemplary. The clowns gave their usual display of acrobatics during their share of common quarters, and the tetras held their ground.

When the January tetras were introduced to the community tank they seemed to take to the change as to the manner born and the immediate effect was much as I had thought it would be, and it seemed that I could record them as yet another good community fish. On the following day not one was to be seen and I finally discovered them cowering behind a piece of cork bark. Had it been possible to net them I would have done so, but they were too quick and too terrified to track down after that, and I have had the sad experience of seeing them gradually deteriorate. I have only seen one within the last week or so, and this makes frenzied dashes into open water when food is around and then returns to the safety of seclusion. I have seldom witnessed such unaccountable terror, and hope not to have a repetition of the unfortunate situation when trying out similar small fish.

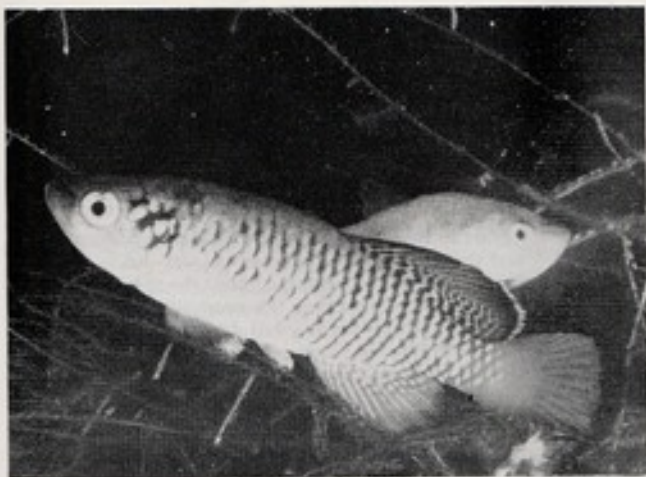
The specimens were all good ones, and were about an inch in length, but their awe of anything over this size was startling. I wonder whether others have experienced this characteristic in this fish, or whether I was just unfortunate in having picked up a few from a strain whose forebears had a nasty experience with a giant angel or something of equal stature?

My failure here was as total as it was in testing the limits of the dwarf catfish, but the significant difference was that the latter seemed totally unconcerned about the competition it encountered and stood up most gamely. The January tetras I had just never really seemed to try. So it looks as though here is a fish which simply has to have its own tank. It might even be worth trying it with the *Corydoras hastatus* for, although they have different water requirements for optimum results, they will probably both do tolerably well in something around neutral, and the matching temperaments would bode well for all-round equilibrium. A small shoal of cardinals would round things off and I should have neatly avoided having had to give that advice to which I alluded in my opening remarks.



I was both surprised and delighted with the letter in the October issue addressed to me by that Chinese Mandarin: this resulted from my earlier article on *Corydoras* in which I had likened the facial characteristics of the one (plus old time music hall comedians) with those of the other. I was delighted because this proved beyond all doubt that my remarks had lost little of their meaning in the difficult process of translation into Chinese, and, further, that of the thousands of Chinese Mandarins who must have read them, only one of their number—and he was of no fixed abode, took issue with what had been said. It was obvious from my comment that I have the greatest affection for *Corydoras*, ergo for Chinese Mandarins and old-time music hall comedians. I was surprised not to have been threatened by cat lovers, car rally enthusiasts and makers of circular stick-on aquarium thermometers. Still, that's life. I hope if the writer comes along to our local Tong on club night he will establish for himself that our local Mandarins regard me with their traditional tolerance and understanding.

Breeding *Nothobranchius guentheri*



By P. BIRD and C. WITHERS
(Mid-Herts. A.S.)

Photo: D. W. ELLIS

ABOUT the end of November, 1968, we came across a pair of *Nothobranchius guentheri* in a dealer's shop. It was obvious from the size of the fish that they were quite old but as we were selling some other toothcarps to the owner we decided to take a chance and buy them.

At the time the only empty tank available was one 10 in. by 8 in. by 6 in., which was a bit too small but would do for a temporary home. The tank was set up with rainwater and a layer of peat on the bottom about half an inch thick. The temperature was maintained at about 72-75°F (22-24°C) although this varied considerably as the tank was one of a bank that were heated from beneath by a tubular electric heater.

Almost immediately after the fish were put in the tank the male started to chase the female, and was soon seen to push her into the peat to lay an egg or eggs. This behaviour continued for about 10 days, when the female died, to be followed by the male about 3 days later.

On 15th December, about a week after the female had died, we decided to dry out the peat in preparation for dry storage. The water and peat were poured into a fine nylon net and the peat was squeezed out until it was just moist. After the water had been removed we sorted around in the peat to see if there were any eggs; we found a few, but apparently not very many. Two of the eggs were put into a dry plastic container by themselves to act as indicators of the progress of development. The rest, with the peat, were placed in a large plastic container with a screw top and sealed. The container was labelled with the date, and put away in a dark cupboard for future reference. This cupboard was in a corner of the fish house where the temperature stayed at 70-75°F (21-24°C) all the time.

Now began the long wait. About a month later we looked at the indicators and were surprised to see that

they had 'eyed up', but took this as a good sign that the two eggs at least were fertile.

An American book on toothcarps we consulted stated that the incubation period for these eggs was 45 to 90 days; not very definite, so we decided to compromise and try our luck at 10 weeks. The indicators at this point were still the same.

A plastic dish 10 in. by 4 in. by 3 in. deep was used, and the peat spread out on the bottom. Soft, acid water at about 70°F (21°C) was added to this, to the depth of about 2 inches, and we sat back to wait; a few drops of water were also added to the indicators. We had read somewhere that the eggs should hatch in a few hours, but by bedtime nothing had happened. Next morning, however, we were pleased to see seven small fry darting about on top of the peat.

From the size of the eggs we had expected the fry to be quite large, and able to take brine shrimp nauplii right away, but they were minute. Panic stations!—what can we feed them on? A frantic search through the tanks of two fish houses and microscopic examination of their contents revealed nothing of any use, so we resorted to hard-boiled egg yolk squeezed through nylon, and this worked. In a few days they were big enough for brine shrimp and then they grew so fast you could almost see them get bigger. Of this first seven, only four survived the first few days, which was a bit disappointing. After 3 days with no more hatching we decided to dry out the peat, and try again in 4 weeks. The indicators had not done anything, so they were dried again, too.

The second attempt with the peat was set up in the same way as previously and this time we had a large hatching. We decided to move the fry from the hatching dish, to another containing similar water, with an eye-dropper and in this way we counted 80. They were fed in the same way as the others and in a few days we

moved 75 small fish to an 18 in. by 10 in. by 10 in. tank.

The first four survivors, now 4 weeks old, were about 1½ in. long and had developed into two males and two females. At this age they had started to spawn, or at least go through the motions.

Encouraged by this result we dried out the peat again for another 2 weeks. At the third attempt to hatch from the peat we again had seven fry, and once again four survived. We wonder if this was just coincidence, or if there is some significance.

The second hatching were now 3 weeks old and showed quite a large discrepancy in size, but of the larger ones the males were quite obvious.

Each time we wet and dried the peat we did likewise with the indicators, but strangely enough they never developed beyond the 'eyed up' stage.

This was our first attempt at raising any of the 'annual' toothcarps and we think it can be considered quite successful. From observation of the first four fish, we can see that deep peat is not necessary; a quarter of an inch or slightly less is sufficient and requires less storage space.

It would appear from our experiences that Nature has not only provided this species with a method of

overcoming complete drying out of their natural habitat but also a built-in protection should the normal pattern of rainfall vary.

All the experts say, and our very limited experience seems to confirm this, that the main batch of eggs hatches after approximately 14 weeks of dry storage, and not before. However, although Nature is more regular in her habits in the tropics, now and again, the rains do come early. If all the eggs had to wait the usual 14 weeks before hatching then the species would very quickly perish. So, by some means, the fish produce a few eggs that will be ready for these early rains. If it should only be a shower and, after a few days, all is once again dry, these early hatchers will die and the main batch will take over later.

Just in case some disaster overtakes this main batch, and they all perish from a second dry-out, a few eggs have been held in reserve to protect the species yet again.

It could well be that a few eggs still remained in the peat after all this soaking and drying, but as tank space was becoming very restricted we had to call a halt. Having obtained the next generation, we hope that we may experiment further at a later date.

BOOK REVIEW

Identity and Origins of Types of Koi

KOI—FANCY POND CARP OF JAPAN by Colin D. Roe & Anthony Evans. 56 pages. 4 line illustrations, 8 half-tones, 19 colour plates with line drawing keys. PetFish Publications, London. 1969. 10s 6d.

ONE is often taken aback by the achievements of people on the other side of the world. More often than not these days it is the Japanese who reveal their secrets to those who have the good sense to listen. This book describes very clearly how the nishiki-koi has evolved and acknowledges the extent to which all this has been due to the painstaking methods and discipline of specialist breeders in Japan during the past 100 years. The fact that the West has only recently shown interest in this beautiful type of carp is perhaps due to its lack of enterprise rather than failure on the part of the Japanese to realise that they had once again developed a very saleable work of art.

The authors have stated the case for the koi quite fairly. It would be madness to overstate the desirability of a creature which is as beautiful and exclusive as this, as it has its drawbacks. These are set out, certainly, though I think more stress might

have been given to the unwisdom of introducing koi into an existing garden pond containing a mixed community of other species. The cautionary finger is, however, raised in many other directions, and suggestions are there in plenty as to how to overcome the major snags.

The colour plates are wonderful and have nearby line drawings which act as a key to enable the reader to identify many of the types of koi which he may meet. This section alone is worth the purchase price of the whole book, as it draws a clear line between the worthwhile fish and the terrible junk which is so often offered for sale at low prices; no one who sets out to buy koi should leave this book at home because it will materially help him in his selection of the wide 'worthwhile' range, quite apart from preventing him from wasting his money.

The authors do not assume that you are an experienced pondkeeper. You are led from the first principles, through pond construction to stocking and general maintenance. There is a useful section on diseases and a lesson on breeding. The message also emerges that if you are going to keep koi you are in for some experiences

not so commonly encountered with the ordinary garden pond.

The book has authority founded on experience, and I think it hits the right note in leaving the reader thirsty for a little more knowledge at the end of each chapter. As the introduction states, the koi is still part of an experiment, and as such it offers something of a challenge to the researcher. It is therefore a serious contender for consideration by the fishkeeper in the doldrums who wants something different on which to try his skills; it is distinctly not just another vehicle for scientific experiment. The findings of the pondkeeper and the scientist are vital, however, for our ultimate appreciation of this fish.

You will find this book as attractively looking as it is readable—it is a pleasure to find such clear reproduction and quality paper in the range of smaller publications. I look forward to the twentieth edition or thereabouts in 5 years' time in which there is evidence that, as a result of this book, it is now possible to purchase a 15 cm. kohaku for 25 new pence. The challenge is set.

R. S. B. PINKS

Readers' Queries Answered



Livebearers in the Garden

I have taken advantage of this warm summer to house some of my mollies and platys in a garden pond and they have grown extremely well there. Could they now be said to be 'acclimatised' and ready to survive a winter out-of-doors?

No, not at all. The risk is far too great with the vagaries of our weather. In fact, the fishes have not really become 'acclimatised'. There is a lower limit to the temperature range in which they can live and this cannot be further decreased. For once our climate this year has provided out-door conditions quite acceptable to these fishes, but it would be a very rare winter indeed in which water temperature did not fall below the minimum value for survival of these species.

Poor Living Conditions

I have a goldfish that has been sick for a long time now. It is one of four I have had for 2 years in an aquarium 13 in. by 9 in. by 8 in. and up until now they have been very healthy. Then this fish went off its food and was very listless. Later blood appeared on all its fins and tail and on its sides behind the gills. The fish began to eat again and then as the bloodstaining began to disappear the fins seemed to tear and from time to time the fish seems to have difficulty in maintaining its balance. Once again it is hanging about the surface in one corner of the tank. The tank is cleaned well, once every 4 days in fact.

You have given an almost classic description of fin congestion and fin rot. Loss of appetite, sluggish swimming movements and hugging of the water surface are early signs of ill-health in goldfish. The blood in the fins pinpoints the trouble called fin congestion—a symptom of unhealthy living conditions and

dietary deficiencies. If the fish have now spent 2 years in the tank they have certainly outgrown a container having only 100 sq. in. of water surface. The old rule of 24 square inches of water surface to 1 inch of fish (excluding tail) is still a perfectly acceptable means of calculating how many goldfish can be kept in a tank. The warm summer will also have played a part in producing uncomfortable conditions for the fish as on some of the hot days we have had the tank water must have become uncomfortably warm for them. If you are accustomed to removing all the water at once from the tank and replacing it with cold water straight from the tap, the difference in temperature this very warm summer could have been enough to chill the fish badly.

Moving the affected fish to larger, cleaner quarters should produce an improvement in its condition fairly quickly. Diet is also important. The sick fish should be given suitable live food, such as small or chopped earthworms. If the fins continue to show signs of fin rot place the affected fish in shallow water, in a separate container, in which has been dissolved sea salt to the concentration of two tablespoons to the gallon. Change the solution daily for fresh—the correct temperature can most easily be obtained by keeping the unused portion of the solution in the same room as that in which the goldfish is housed.

Sudden Cloudiness

When I used a chemical preparation to treat a tank infected with white spot, the water became very cloudy and developed a smell. Why should this have happened?

We think that the tank was probably in a state close to active pollution, perhaps with badly con-

taminated gravel at the bottom, and that the chemical treatment disturbed the precarious balance in a way that caused gross development of bacteria from the gravel. As it is usually the so-called anaerobic types of bacteria (they have very low requirements for oxygen) that cause development of smells in aquaria, it could be that the drug had affected the oxygen content of the water to the detriment of the aerobic types of organisms, whose activities do so much to keep things sweet and clean in the tank. However, the main point is that conditions in the aquarium were not satisfactory before the drug was used and pollution had probably been occurring through the rotting of plants (inadequate light?), the incautious use of dried food (wrong type, too fine, too often?) or too liberal use of live worms at feeding time. Whatever the mistake in technique that was responsible, you should endeavour to discover it to ensure that the bad conditions do not develop again.

What is it?

Could you identify the under-mentioned parasite? It first appeared in my tanks about three weeks ago. Since then I have destroyed a dozen or more. It is about 1½ in. long and resembles a leech in appearance. It usually sticks to the glass but can swim in a snake-like manner. The colour is reddish brown (the same as the Tubifex that is fed). The young (or larvae) of this creature are contained in a liquid-filled sac. Each sac contains three or four young.

The animals in your aquarium are, from your description, quite clearly leeches. Although it is not possible to try to identify the type of leech precisely without knowing much more about its appearance, it seems highly likely that it is either *Herpobdella* or *Glossosiphonia* (the latter has rows of spots and contracts to a very small size if touched). Both are very common, both deposit eggs in transparent cocoons (that of *Herpobdella* is attached at both ends).

Both of these species are not known to harm fishes: they live on other forms of water life including *Tubifex*. It is highly unlikely that these unwanted additions to your tank will continue to thrive for long, but if they do persist you could try suspending *Tubifex* feeding for a period.

A Seashore Survey Reveals Rare Clingfishes

IN recent years the attention of aquarists has become focused on the seashore to a greater extent than ever it has been before. It is worth stressing that, whether collectors are casual or scholastic, if finds are very carefully identified it may well be that some specimens are of zoological importance. It is not generally realised that, despite the comparatively large amount of investigation that is undertaken around the British shore, there is still much to be learned.

Although I am at present a student of general zoology I have always found the seashore to be an area of considerable interest. The constantly changing environment of the inner-tidal zones, with their extremes of condition brought about by submergence in water, exposure to the atmosphere, wide temperature ranges and the varying extent of wave action etc., supports a diversity of animal life of which each species appears to illustrate some form or other of adaptation designed to

By **GRAHAM J. VOSPER**

counter these trying conditions or to employ them satisfactorily.

Immersion in water and exposure to the air are undoubtedly the most testing circumstances but the necessity for resistance to wave action is scarcely less productive of especial physical characteristics. Gastropods, each with a broad, muscular foot enabling them to move and yet still to adhere firmly to the surface of rocks; lamellibranchs, producing byssus threads by which they can secure themselves to a firm surface; porcelain crabs with flattened carapace and powerful gripping legs; echinoderms, whose tube feet end in effective suckorial pads; soft-bodied ascidians that offer little or no resistance to the movement of water—the list of special features is long.

Even certain fishes have some extraordinary characteristics enabling them to withstand the buffeting

of the waves, the finest adaptation to this end being shown by those groups that possess an organ by which they can hold fast to any reasonably smooth and firm surface. I have met the commoner forms of these fishes in many places, but it was while carrying out a survey of the shore life of a Scottish sea loch that I first encountered one particular group of fishes specialised in this way, an encounter which eventually proved to be of some scientific interest.

The point where the investigation was made lies on the northern shore of Loch Sunart (Argyll), a typical sea loch some 20 miles long and about $\frac{1}{2}$ mile wide at the site chosen. The coastline is indented by numerous tiny bays and the narrow, unfenced road linking the small villages runs in serpentine fashion between the mountains and the sea, but the nature of the terrain ensures that most beaches are hidden from the view of passers-by. The study area consists of a sequestered beach



Photographs
by
H. J. VOSPER

The little bay on Loch Sunart where the clingfishes were recorded. The old slipway can be distinguished as well as part of one elongated boulder heap within which many interesting organisms were hidden. On the right can be seen the rubber dinghy used for research in deeper water

The photograph on the right shows the sucker process of a clingfish (these animals proved difficult to photograph under field conditions). In the background the external gills of a sea slug are visible. At the bottom of the page is seen a Connemara sucker adhering to the front glass of the specimen tank that is used on the shore for close examination of specimens. In the background is a sea urchin and a fully retracted dahlia anemone



some 50 yards across, with about 200 feet exposed between the extremes of high and low tide (springs). It is guarded by sheer cliffs on two sides and by a heavily wooded slope on the third, where we set up camp to devote many hours each day to an examination of the shore.

The exposed littoral margin of the loch consists of coarse sand and pebbles (of igneous origin) interspersed with angular boulders but, at some time in the past, our study area had been used as a harbour for a small fishing vessel (the corru-

gated-iron boat-house is still standing) and a slipway formed by the removal of rocks from a path down the centre of the beach. These rocks had been stacked at the sides of the slipway and they now form two elongated heaps stretching from above high tide level to well below the position reached by falling tides. Consequently most of the tiny bay is a plain pebble beach while the amassed boulders provide a rocky shore. Since pebbles do not support a community of large animals our line transections and grids within

that area proved somewhat unrewarding, so attention was turned to the one or two pools that exist at the ends of the enclosing headlands and to the elongated boulder heaps.

The rock pools contained an unremarkable fauna of crustaceans, sea anemones etc., but the animals within the boulder heaps (especially within the lower shore zones) were quite exciting. Excluding those of microscopic size, which we were not equipped to capture or examine, 60 animal species were recorded, of which some were new to our personal lists. Of particular interest were several species of sea slug (*Nudibranchia*) and the fishes. The latter consisted mainly of such species as the ubiquitous common blenny, the buttergunnel, long-spined sea-scorpion and the common eel, but when an 18 inch conger and a rock goby were found then some elation was felt.

The conger is common enough, of course, but we ourselves had never recorded such a large specimen within the littoral regions; the rock goby, according to the textbooks we carried, was reputedly 'rare in Scotland'. Yet within another 48 hours there was cause for celebration indeed, for 'two' species of clingfish were found when I was searching among the boulders towards the lower part of the shore. These were undoubtedly very unusual finds, but we did not know then just how unusual.



Placed in the small tank that always accompanies us in the field, the two larger specimens were clearly seen to be identical, and although there was a slight difference between the two smaller specimens it was not enough, we thought, to indicate a major or specific difference. Nevertheless, on examination I was surprised to find that I was unable to determine the species exactly and so the four specimens recovered were preserved for closer investigation on our return to London. The best that could be said, by reference to the literature at hand, was that they were apparently of the genus *Lepadogaster*, popularly known as clingfishes.

The clingfishes belong to one of the groups capable of adhering to the surface of rocks, there being several such groups found in British waters. First there are the Gobidae, in which the sucker mechanism is provided by the pelvic fins being united to form a cup; these are the well-known gobies, of which we had recorded one species at Loch Sunart. This is shown in the accompanying photograph taken to illustrate the relative

size and position of the sucker process. Secondly there are the Cyclopteridae, which again have the pelvics forming a circular sucker (and the strength of this perhaps can be judged by noting that some species may grow to a length of about 2 ft. yet their sucker is adequate to the task). Thirdly there are the Gobioidae, the clingfishes themselves. In general they are the smallest of the sucker fishes yet they have what is probably the most effective apparatus.

Allied to the perches (Percomorphi), the members of the Gobioidae are 'naked' fishes (i.e. lacking scales) and are rather tadpole-shaped, with a broad head, pointed snout and somewhat unusual teeth. These last, which I have since learned are important in specific identification, are often termed 'canines' and doubtless prove extremely useful in holding and masticating the small but tough-skinned invertebrates upon which the fish feed. The ventral suction discs are their most distinctive features, occupying nearly one-third of the body length and, unlike the

similar processes of the gobies and lumpsuckers, are formed not only from part of the finnage but also partly of bone. Surrounded by a fold of skin, the subcircular disc is supported at the front by the rays of the pelvic fins and at the back by a cartilaginous extension of the pelvic girdle. This tough and flexible apparatus is extremely effective, enabling the fish to cling very firmly to any reasonably smooth surface; indeed when fastened to the glass of an aquarium they can hardly be removed without causing them injury.

At the loch I could not determine satisfactorily the species that I had found but thought that there were two forms, of which one was probably *Lepadogaster caudatus* but the other was certainly not *L. caudatus*. Yet even with this decision I was far from happy because the range quoted was 'in the south-west' and the density was 'not common'. I had found two specimens of two species, in the comparatively far north-west.

To be continued

GUPPY WORLD

WHEN selecting pairs of guppies for a breeding programme it is often very difficult to know what to pair with what. Even the fact that the male by displaying certain characteristics can halve the problem, there still remains our choice of female.

The beginner ploughing through the literature gets very little guidance, so controversial are the views expressed; in desperation he studies genetics and finds the way strewn with pitfalls. The old, tried way is to cross the male of your choice with as many different females as is possible and compare the broods, but now thanks to a lot of hard work put in by one biologist we have found that straw on which we may clutch.

In the land of sunshine, California, Dr E. C. Larr has been compiling a book on guppy genetics, and though it is not yet on general sale he has already published quite a lot of his findings.

At present here in Britain we recognise seven different types of female guppy shapes: roundtail, superba, metropolitan, scalloptail, wedgetail, natural tailed and cofer. Of these preference has been given to the superba (American shark tail), when a mother to sire good male delta guppies has been sought.

By PETER UNWIN

Using different females in extensive experiments, Dr Larr found that though no one shape could be selected as guaranteeing delta males, those fish who at 12 months of age displayed a slight thickening of the upper and lower rays of the caudal fin produced the best number of young broadtails. With typical scientific honesty he writes that it would be completely wrong and misleading

to claim that this is a sure way but it has at least given us something to experiment with for ourselves.

He asks the help of all guppy breeders to contribute to his fin theory and I would consider it a pleasure and privilege to forward your letters on to him.

• • •

Though it comes as no surprise to many aquarists that the guppy female can have up to seven successive broods from just one mating, they seem to take the number in the brood as a matter of course and chance. The largest number never made the Guinness Book of Records, but the figure of 180 once quoted to me by the late Paul Hahnel as having occurred in one of his tanks would take some whacking.

In the switch in popularity from the small-tailed varieties to the broadtails of today's bench, it seems that the size of the brood suffered. Today's yields seem to be much smaller in numbers, many hobbyists being satisfied if they raise but a dozen from each dropping.

In some old letters I recently came across one from the famous guppy

geneticist, Professor O. Winge, and as one answer to the question, I quote from his letter:

'Finally I moved my aquaria back to this institution when I was appointed leader of the Physiological Department. I gave up the experiments where I had been inbreeding my guppies through several generations in order to solve the problem of sex determination. The animals could not stand this heavy inbreeding and finally produced very few young, while formerly I had 30, 40 and sometimes 80 young fry in each brood, the

numbers, after intensive inbreeding brother to sister, dropped to a mere dozen.'

• • •

In the year 1630, during the reign of Charles the First, a monk called Gracian wrote the following words; I have no doubt he had never heard of a guppy let alone seen one but applied to the hobby his scribbles had a prophetic ring about them. Judge for yourself: '... all fools get lost because usually they do not think; they never see half the things and knowing neither their loss nor

their profit, they make small efforts in either direction. Some make much of what is of little importance or little of what is of much importance and finish up by always judging their fellows' actions wrongly.'

• • •

Have you any questions you would like us to answer on fancy guppies?

Why not send them along to Guppy World and have them answered through these columns—it costs you only the price of a stamp. Please though, keep your questions brief.

What's New?

Aquarium Sealant

HOME manufacture of all-glass tanks is being tackled by more and more handymen aquarists and a product that caters for their requirements is **Trophix Aquarium Sealant**. The makers of the Sealant supply a very detailed set of instructions for making the tanks and supply advice on this and other applications for Trophix. The Sealant is a silicone rubber compound capable of resisting forces up to 300 lb./sq. in. when its adhesive qualities are tested. It can also be used to seal existing putty in old tanks that have dried out and are likely to start to leak when filled with water again. The important practical point about its use is that surfaces to which it is applied should be grease-free (the use of an organic solvent such as a proprietary stain-remover sold for cleaning clothing will remove grease and leave the surface clean and dry). Best sealing and adhesive action of the compound can then be obtained. A novel way of providing support for

the aquarium cover glass in the Trophix all-glass tank described in the instructions is an interesting adaptation of the glass-sealing technique. Trophix Aquarium Sealant is manufactured in Britain by Trophy Products and is supplied in a squeeze tube (85 grams; 3 ounces), together with an application nozzle, and costs 17s 6d.

New Fish Foods

WHATEVER mysteries remain to be investigated in connection with the well-being of our fishes, a great deal of research has already been carried out into their food requirements and the manufacture of modern fish foods has taken full advantage of the discoveries made. A new range of flake fish foods is being offered by Fish-E-Quip Ltd (Shrewton Road, London, S.W.17) for sale at a recommended price of 3s. The food is packed in clear, brown-tinted plastic containers with snap-fitting white plastic caps. Quip Hi-Protein Fish Food for faster growth is an adaptation of a famous trout food and contains essential vitamins, amino acids and minerals required. Quip General Fish Food also has a high protein content with the addition of vitamins B₁, B₂, E, iron, manganese and phosphorus. Vitamin E, plus thiamine and riboflavin feature largely in the contents of Quip Wheat Germ Flake Food, and Quip Snow Flake Fish Food, particularly recommended for young livebearers, contains a higher proportion of carbohydrate. Quip Freeze-Dried Whole Tubifex Worm

(5s 3d) can be fed to large fishes or crumbled up for smaller varieties.

Water Clarity

AFTER 3 years of research into the problem of cloudy water in aquaria Bioquatic Laboratories announce that their new preparation, now on the market under the name **Acurel F**, is a quick-acting and easily applied remedy for this and related water troubles. Acurel F is a liquid, sold in plastic bottles containing 28 millilitres (price 8s 6d), described as harmless to fish and water plants; it does not contain potassium permanganate. As well as clearing cloudy water, Acurel F, the makers say, can improve the action of filter media that do not remove the finest suspended particles causing cloudiness, and it will increase the flow through clogged outside filters and thus prolong the useful life of filter media. The preparation is even recommended for the tedious job of washing aquarium gravel. The action of Acurel F is to cause small particles to aggregate into larger ones, which, because of their size and weight, will rapidly settle to the tank bottom for removal by siphoning or become more heavily trapped by the loosest filter medium; it is also said to make dissolved organic matter in water become insoluble. Uses of this product and dosages are fully outlined in a leaflet supplied with each bottle. For most of its applications the recommended dose is one drop of the liquid for each gallon of water to be treated.

A Simple Aquarium for the Spineless Marines



By HUW COLLINGBOURNE

TO most aquarists 'marines' mean the fishes that inhabit tropical saltwater reefs. The arguments against keeping a saltwater aquarium usually include the high prices of the fishes, the cost of a stainless steel, all-glass or other suitable aquarium, and of power filters etc., which are all supposed to be absolutely essential.

If someone should suggest 'native fishes', these are said to be dull, colourless and just as expensive to maintain. If 'invertebrates' are mentioned, silence prevails. The aquarist's mind wanders amongst slugs, snails and other equally undesirable creatures. So I shall try here to give an idea of how beautiful and interesting a native invertebrate tank can be. It requires no extra cost, not even for heaters.

Many aquarists already have the ideal tank to start with—an 18 in.

all-plastic tank and lid. Seawater from a fairly clean pool from the nearest shore is added, care being taken to ensure that the salt content has not increased because of evaporation on a very warm day or decreased because of dilution on a rainy day. Once you have a tank with water, all that is needed is heavy aeration from a good air pump, or, if desired, filtration from a sub-sand filter. I have a successful invertebrate set-up kept with only an air-stone.

The first British creature likely to be seen on a collecting trip will probably be the good old anemone, and very possibly the beadlet anemone (*Actinia equina*) will be the first to be noticed. Or perhaps the dahlia, snakelocks or, if you are very lucky indeed, the wonderful plumose anemone (*Metridium senile*) that feeds on plankton. All the anemones mentioned, with the exception of the

plumose anemone, feed on large creatures such as prawns or fish, paralysing their prey with the poisonous stinging cells in their tentacles.

The dahlia and beadlet anemones look like shapeless masses above water but, once submerged, the tentacles spread out to reveal their true beauty. The snakelocks, however, cannot contract and it has very long, constantly moving, tentacles. To collect anemones it is advisable to take a hammer and chisel to remove the anemone complete with a piece of the stone to which it is attached. It should not be forced off the rock as this will probably damage it and it will die. Although they are said to be sedentary, anemones do move around. One of my strawberry anemones moved off its rock, on to another, over some plants and halfway up the back of the aquarium in one day. If there are peawns in the tank the anemone may lose its meal. The prawn will spend minutes circling an anemone just waiting for a chance to tug away a piece of meat from the anemone's tentacles.

Prawns are really the comedians of my tank. In fact, I think the prawn is so interesting and inquisitive and is such a character that if I ate one I would be ashamed to have deprived the world of one of its greatest clowns. They spend hours each day cleaning themselves. There are so many different parts inside and outside its head that are seen clearly only at 'washing' time. The clear body of the prawn (*Palaeomon* sp.) enables all the internal organs to be seen clearly and these all seem to be condensed in the region of its head.

The eggs of the prawn are attached to its swimmerets, and these help to aerate the eggs as the adult swims around the aquarium. At first the eggs look like a grey mass but then each egg develops two 'eye spots'. One day, I noticed some prawn's eggs had hatched and, on close

observation, I saw many tiny creatures with swirling fin-like appendages. Soon these turned into tiny prawn-shaped prawns and then swam under their own power instead of moving with the water currents.

I do not advise prawns as scavengers where fish are present. I once introduced five 2-3 in. whitebait. The prawns ate three and badly injured the other two in only two nights. One type of prawn not inclined to do this is the chameleon prawn (*Hippolyte tasiana*). It is small and abundant, but it is rarely seen because it has the ability to change colour to match its surroundings.

Under the heading of rock-bound animals come barnacles, the fanworms (*Pomatoceros triquetus*), sponges, sea squirts etc., all of which live in my small tank. Firstly the barnacles. These are probably the ones to be most easily overlooked. Although only little movement can be seen in the aquarium, they help make a balanced community. Next come the tiny fanworms in their coiled, hard, white tubes. Although no great spectacle, the fanworm is a miniature beauty and its filtering action helps purify the water in the unfiltered aquarium.

A small crumb-of-bread sponge and a few tiny sea squirts are doing well in my tank. It is interesting how many people think that a sponge is anything but an animal. With most of the creatures just mentioned, ozone, power-filtration etc. is to be discouraged for these instruments would rid the water of the food vital to the well-being of the little animals.

Much of the life in my tank was introduced with the algae. For example, two small brittlestars were found crawling along by means of their undulating arms shortly after 'plants' were introduced. However, although brittlestars are good aquarium inmates, their distant cousin, the starfish, is not desirable unless a large supply of its food (bivalves) can be supplied.

Next to prawns, hermit crabs are my favourite 'pets'. In many ways, the hermit crab, which lives in a shell of a whelk or such-like, resembles the prawn in the way it cleans its antennae, eyes etc. An added spectacle with the hermit is to see it change from its small shell into a larger one. For this reason plenty of whelk shells must be provided in the tank. This allows the crab plenty

of choice. Sometimes, crabs of this sort will be found with an anemone stuck firmly to their shell, and the hermit crab will transfer its own anemone to the new shells it inhabits.

In this small tank with a layer of about 1/2 inch of pure clean sand and no more than an air-stone, one can keep all these creatures and more with great success, but remember to provide a small cave for the prawns

etc. The green sea lettuce (*Ulva*) and the lovely red algae (*Ceramium*) can be introduced into such a tank as described and algae will grow spontaneously on the sides. As long as enough light is provided, trouble with sea-weeds should not be encountered. However, hermit crabs have a taste for these plants and in this case they form a welcome addition to the diet.



TWENTY-NINE furnished aquaria added a great deal of colour and interest at the twenty-third annual open show of EAST LONDON A. & P.A. The show was mainly for tropical breeding achievements with four classes for fishes bred since 26th June 1968, a.v. platy pairs (F.B.A.S. trophy) and a.o.v. live-bearing pairs. The I.G.M. trophy awarded in the open club furnished aquaria (24 in. by 15 in. by 12 in.) class was won by East London A.C., and the individual furnished aquaria by Mr G. Green. First in the 12 in. by 8 in. by 8 in. class was Mr L. R. Baker, and Mrs P. Harris won both the Creds Cup for best plant and the Breeding Achievement trophy for her entry of *Epiplatys anallatus*. The Manor Cup for best fish in show went to Mrs S. Armitage for her entry of *P. playfairi*, which also won her the F.B.A.S. shield. The Five Star Cup was won by Mr J. Boss. Class winners were presented with plaques and a number of prizes presented by Aqua Imports of Ilford that included a pair of discus. Results were:

A.v. toothcarp: 1 and 2, Mrs S. Armitage; 3, Mrs P. Harris. A.v. loach and loachlet: 1, Mr F. Campkin; 2, Mr F. Vickar; 3, Mr W. Corby. A.o.v. egglayer: 1, Mr G. Green; 2, Mr F. Campkin; 3, Mr F. Vickar. A.v. livebearer: 1 and 2, Mr R. G. Cox; 3, Mr G. Green. A.v. platy pairs: 1, Mr G. Green; 2, Mr L. Baker; 3, Mrs J. Armitage. A.o.v. livebearer pair: 1, Mr G. Green; 2, Mr W. Corby; 3, Mr K. Peint. Large home-propagated plant: 1 and 2, Mrs P. Harris; 3, Mr F. Campkin. Other home-propagated plants (three plants or cuttings): 1 and 2, Mr G. Green; 3, Mrs S. Armitage.

THE COMMITTEE of AMESBURY & D. A.S. have been set the task of drafting a constitution, since the club has now been formed for six months. A decision was also taken at the August meeting to split the combined office of secretary and

treasurer and Mr P. Pogram of 28 Beaulieu Road, Amesbury, was elected the new treasurer. The auction held at this meeting provided good entertainment as well as a useful boost to club funds. The items ranged from a cactus plant to a giant snakehead and the entertainment reached a peak as Mr Ruddle bid against Mrs Ruddle for the same fish for the same tank at home. Bottle show results were: danios, rasboras, minnows: 1 and 2, Mr Harvey; 3, Mr Elliott. A.v. catfish: 1, Mr Lane; 2, Mr Barron; 3, Mr Smith.

THE PLAQUE for the best fish in the LLANTWIT MAJOR A.S. open show was awarded to Mrs P. Kimber of Bristol. Plaques were also awarded to Mr R. Hill for best livebearer, Mr B. A. Harding (breeders livebearers), Mr R. Wilkie (breeders egglayers), Mr S. Nelson for the furnished aquaria class and Miss Player for best junior entry. Class results were:

Fighters, Mr A. Ibbertson. Labryrinth: 1, Mr D. Warramant; 2 and 3, Mr B. A. Harding. Characins (H. and H.): 1, Mrs P. Kimber; 2, Mr A. Hoare; 3, Mr A. Ibbertson. A.o.v. characin: 1, Mr R. S. Wigg; 2 and 3, Mr D. Spongner. Barbs: 1, Mr C. Potts; 2, Mr D. Warramant; 3, Mr R. S. Wigg. Guppies, male: 1, Mr P. Player; 2, Mr R. S. Wigg; 3, Mr R. Hill. Guppies, female: 1 and 2, Mr P. Player; 3, Mr R. S. Wigg. Platys: 1, Mr R. Hoare; 2, Mr R. Rogers; 3, Mr A. Ibbertson. Swordtails: 1, Mr R. Hill; 2, Mr A. Butcher; 3, Mr R. Hoare. Medians: 1 and 2, Mr B. A. Harding; 3, Mr C. Harding. Catfish and loaches: 1, Mr R. Hill; 2, Mr A. Ibbertson; 3, Mr C. Potts. Corydoras: 1 and 2, Mr B. A. Harding; 3, Mr D. Warramant. Dwarf cichlids: 1, Mr C. Barber; 2, Mr J. Almad; 3, Mr L. Butcher. A.v. cichlids: 1, Mr A. Payne; 2, Mr C. Barber; 3, Mr J. Thomson. Danios and rasboras: 1, Mr A. Payne; 2, Mr C. Harding; 3, Mr D. Warramant. Killifish: 1 and 2, Mr G. Churchill; 3, Mr M. Gadd. A.o.v. egglayers: 1, Mr P. Player; 2, Mr R. Hill; 3, Mr A. Ibbertson. Breeders livebearers: 1, Mr B. A. Harding; 2, Mr F. Spencer; 3, Mr P. Player. Breeders egglayers: 1, Mr R. Wilkie; 2, Mr G. Churchill; 3, Mr C. Barber. Angel fish: 1, Mr C. Potts; 2, Mr A. Llewellyn. Junior egglayers: 1, Miss Player; 2, B. Roberts; 3, C. Potts. Junior livebearers: 1 and 2, C. Brooks; 3, H. Rowlands. Seed pairs: 1, Mr D. Hayter; 2, Mr C. Harding; 3, Mr D. Spongner. Furnished aquaria: 1 and 2, Mr S. Nelson.

JUDGES Mr C. Brown, Mr R. Eason, Mr E. Jessopp and Mr R. Masley had over 520 entries to judge at **BASINGSTOKE A.S.**'s very successful open show. The best fish in show award and that for best characin went to Mr A. Cox of Weymouth A.S. Awards for best cichlid went to Mr T. Sweeney of Basingstoke (who also won the R. Keeping trophy no. 1), for best livebearer to Mr L. Little of Bracknell, for best labyrinth to Mr J. Mitchell of Basingstoke and for best barb to Mr A. Marshall of Basingstoke, who also received the award for highest pointed fish. Mr S. Tarrant of Hendon won the breeders egglayers award and Master M. Little of Bracknell that for breeders livebearers. The F.B.A.S. junior trophy went to Master M. Gough of Basingstoke and the F.B.A.S. Championship trophy to Mr G. Greenhalf of Kingston. The award for best furnished aquarium was achieved by Mr G. Clewer of Basingstoke and the individual furnished coldwater aquarium to Mrs W. Voysey. Mr A. Blake of Basingstoke won the award for the highest number of points and the R. Keeping trophy no. 2. Basingstoke A.S. were the club with the highest number of points. Detailed results were:

Furnished aquaria. Club, tropical: Basingstoke. Club, coldwater, Portsmouth. Individual, tropical: 1, Mr G. Clewer (Basingstoke); 2, Mr D. Walls (B.). Individual, coldwater: 1, Mrs W. Voysey (un-attached); 2, Mrs J. Blake (B.); Barbs, A.S.: 1, Mr A. Marshall (B.); 2, Mr G. Clewer (B.); 3, Mr T. Errey (B.). Characins, A.S.: 1, Mr A. Cox (Weymouth); 2, Mr F. Goussier (Russeyville); 3, Mr C. Bees (Portsmouth). Fancy fish, A.S.: 1 and 2, Mr A. Blake (B.); 3, Mr G. Greenhalf (Kingston). Cichlids, A.S.: 1, Mr T. Sweeney (B.); 2, Mr M. Davies (Reading); 3, Mr R. Willey (Salisbury). Dwarf cichlids, A.S.: 1, Mr M. Davies (Reading); 2, Mr T. Hutton (Weymouth); 3, Mr A. Blake (B.). Angels, A.S.: 1, Mr A. Cox (Weymouth); 2, Mr G. Orton (Weymouth); 3, Mrs J. Howe (Southampton). Labrynthia, A.S.: 1, Mr J. Mitchell (B.); 2, Mr A. Blake (B.); 3, Mr I. Lamb (B.). Fighters, 1, 2 and 3, Mr R. Wynd (Fauldrough). Toothcarps, A.S.: 1, Mr S. Tarrant (Hendon); 2, Mr H. Gough (B.); 3, Mr D. Hancock (Reading). Catfish, A.S.: 1 and 2, Mr G. Greenhalf (Kingston); 3, Mr F. Lange (B.). Corydoras, A.S.: 1, Mr R. Cox (High Wycombe); 2, Mr S. Cook (Salisbury); 3, Mr D. Craichbank (Uxbridge). Bushoras, A.S.: 1 and 2, Mr F. Merritt (Reading); 3, Mr J. Pollard (Kingston). Danios, A.S.: 1, Mrs T. Craichbank (Reading); 2, Mr M. Carter (Bracknell); 3, Mr T. Errey (Basingstoke). Loach, A.S.: 1, Mr F. Lloyd-Worth (Weymouth); 2, Mrs G. Carter (Bracknell); 3, Mr P. Stevens (South Bucks). Molly, A.S.: 1, Mr T. Jones (Weymouth); 2, Mr T. Errey (B.); 3, Mr A. Marshall (B.). Swordtail, A.S.: 1, Mr R. Cox (High Wycombe); 2, Master S. Munnart (B.); 3, Mrs J. Howe (Southampton). Livebearer, A.S.: 1, Mr D. Craichbank (Uxbridge); 2, Mr A. Blake (B.); 3, Mr I. Lamb (B.). Sead-pairs, A.S.: 1, Mr S. Tarrant (Hendon); 2, Mr R. Ridley (B.); 3, Mr R. Biggs. Common goldfish: 1 and 2, Mr V. Voysey (un-attached); 3, Mr D. Hancock (Reading). Fancy goldfish, A.S.: 1, Mr V. Collins (Yeovil); 2 and 3, Mrs A. Seed (High Wycombe). Shubunkins, A.S.: 1, 2 and 3, Mrs A. Seed (High Wycombe). Coldwater

A.S.: 1 and 2, Mr V. Voysey (un-attached); 3, Mr V. Collins (Yeovil). Breeder egglayers, A.S.: 1, Mr S. Tarrant (Hendon); 2, Mr R. Cox (High Wycombe); 3, Mr P. Goussier (Russeyville). Breeders livebearers, A.S.: 1, Master M. Little (Bracknell); 2, Mr T. Errey (B.); 3, Mr R. Cox (High Wycombe). Plants, A.S.: 1, Mr H. Gough (B.); 2, Mr J. Mitchell (B.); 3, Mr V. Collins (Yeovil).

A NUMBER of **BRISTOL A.S.** members travelled to Birmingham in August for the Midland Open Show to take part in the competition for the Inter-City trophy held annually between themselves and M.A.P.S. and awarded to the society gaining the most points at their opponent's open show. Last year Bristol A.S. won it and this year they scored six firsts, eight seconds, nine thirds and eight fourths. M.A.P.S. members' results at the Bristol A.S. open show have yet to be received.

'HOW the other half lives' might describe some of the club news items in the Australian magazine FISHNET published by the Aquarium Society of Victoria. In Melbourne members at a T.A.G. meeting discussed solar heating for fish houses. The solar unit itself requires only daylight and not sunlight to collect heat but it was decided that it could be used only in a manner supplementary to other heating sources. Members of the South Australian A.S. reported the following fish bred between two monthly meetings: dwarf gourami, cranial, King Cobra guppies, swordtails and three-spot gourami, zebra, blue sword, fire-mouth and severum, lyretail mollies, P. kribia, emerald platys, red wag sword, R. miles, R. tenuis and A. gardneri, albino sword, green leopard, albino tiger barb (this list was supplied by 10 members).

Other activities of Bristol A.S. have included a club 'Bring and Buy' sale in aid of Society funds. This raised the sum of £6 3s 6d, for donations from club members that varied from young shubunkins to a vacuum cleaner. Table show results were: tropical plants: 1 and 2, Miss H. Morgan; 3, Master I. Mildon. Coldwater plants: 1, Master I. Mildon; 2 and 3, Miss H. Morgan.

THE 612 fish entered in **BED-WORTH A. & P.S.** first open show were submitted by 23 different societies and some independent entrants and from an area that embraced Huddersfield and Southport in the north to London in the south. The most exceptional class was for characins (up to 3 in. in length) with 63 entries and the standard of fishes was so good that, on the judges' recommendation,

extra awards were made in four classes. Full results of the awards, presented by Councillor Mrs J. Ward, chairman of Bedworth U.D.C., and her lady, Miss A. Ward, were:

Guppy: 1, Mr Mason (Northampton); 2, Mr S. Dean (Tamworth Hills Assoc.); 3, Mr Hinson (Nuneaton). A.S.S. livebearer: 1, Mr and Mrs Jones (Bedworth); 2, Mr R. Trippa (North Warks.); 3, Mr South (Hempstead). Characin to 3 in.: 1, Edkins & Pagett (Nuneaton); 2, Mr South (Hempstead); 3, Mr D. W. Ellis (B.K.A.). Characin over 3 in.: 1, Mr R. Tedds (Bedworth); 2, Mr Gregory (Hader); 3, Mr Robinson (Northampton). Barbs to 3 in.: 1, Mr K. Buzza (Nottingham); 2, Mr L. Ball (Atherstone); 3, Mr Robinson (Northampton). Barbs over 3 in.: 1, Mr Wilkes (Hader); 2, Mr Moore (Letchworth); 3, Mr R. J. Hoagh (North Warks.).

Cichlids up to 4 in.: 1, Mr and Mrs Simpson (Bedworth); 2, Mr Edwards (Northampton); 3, Mr B. C. Roberts (Independent). Cichlids over 4 in.: 1, Mr Treadgold (Stroud); 2, Mr Ormsher (Southampton); 3, Mr R. Tedds (Bedworth). A.S. anabantids: 1, Mr Wilkes (Hader); 2, Mr Thompson (Loughborough); 3, Mr L. Kaye (Top Ten). Corydoras catfish: Mr W. Jones (Tamworth); 2, Mrs S. Leigh (Nuneaton); 3, Mr and Mrs Cox (Nuneaton). A.S.V. catfish: 1, Mr Goussier (Hader); 2, Mr G. Seed (T.K.A.); 3, Mr R. Shakspeare (Bedworth). Killifish: 1, Mr G. Seed (T.K.A.); 2 and 3, Mr Maltrett (B.K.A.). Bushoras, danio, minnow: 1, Mr R. Shakspeare (Bedworth); 2, Mr Trotman (Atherstone); 3, Mr J. Yates (T.K.A.). A.S.V. tropical: 1, Mr R. Devison (Widnesbury); 2, Mr W. Jones (Tamworth); 3, Mr Blakham (Nuneaton).

Livebearers pairs: 1, Mr J. Housden (Bedworth); 2, Mr and Mrs Jones (Bedworth); 3, Mr Trotman (Atherstone). Egg-layer pairs: 1, Mr T. Shady (Coventry); 2, Mr Underwood (Leamington); 3, Mr L. Ball (Atherstone). Breeders livebearer: 1, Mr Trippa (North Warks.); 2 and 3, Mr Walker (Loughborough). Breeders egglayers: 1, Mr Walker (Loughborough); 2, Mr Farley (Independent); 3, Mr Hinson (Independent). Fancy goldfish: 1, Mr Burgin (Bedworth); 2, Mr Bounfield (Coventry); 3, Mrs S. Leigh (Nuneaton). A.S.V. coldwater: 1, Mr Haines (Nuneaton); 2, Master D. Beard (Leamington); 3, Mr and Mrs G. Cox (Nuneaton).

Mr B. Devison won the best fish in the show award for his entry of a red-tailed black shark. The best large fish (other than best in the show) was the *Merysim* entered by Mr R. Tedds and the best small fish a *Corydoras* catfish entered by Mr W. Jones. Nuneaton was the Society with most entries and also the Society with most points (Bedworth not eligible). Messrs Edkins & Pagett of Nuneaton entered the most fish and Mr and Mrs K. Jones of Bedworth achieved the distinction of being awarded most points.

OVER the Bank Holiday weekend **EALING & D. A.S.** put on a display stand at the Southall Show, and found it very worthwhile. Six furnished tanks were on show as well as tanks containing a female sword-tail and young, a mysterious-looking *Pterostoma*, some tiny mosquito fish and a 'dreaded' piranha. Great interest was shown in the latter, particularly by bloodthirsty small

THE AQUARIUM CATFISHES—13

The Electric Catfish

(Family Malapteruridae)

By BRAZ WALKER



Photo: BRAZ WALKER

African electric catfish (*Malapterurus electricus*)

AMONG the freshwater fishes that are known to be capable of generating electrical current, there are three groups comprising seven families. The four families of gymnotoid 'eels' or knife fishes of South America and the two families of Mormyriiformes or 'elephant-nosed fishes' of Africa have all developed rather sophisticated electro-navigation systems, which are certainly reminiscent of, if not exactly similar to, our own radar systems without which our modern transportation facilities could not operate. The remaining freshwater electric fish family contains only one member, *Malapterurus electricus*, the electric catfish of Africa.

The electric catfish has a number of quite unusual features; one is that whereas other electric fishes have evolved electric tissue through a rather orderly modification of muscle and, in a few cases, nerve tissue, this corpulent creature seems to have derived his battery power through modification of material once thought to be glandular, which is housed in a gelatinous layer just beneath the dermal surface. Recent research seems to indicate muscular origin for this also, but this electrical tissue is rather irregular in arrangement and although large individuals are capable of producing rather high voltage shocks, apparently missing is the coordination of electrical activity which is vital for an effective electro-navigation signal. A friend who has been involved in research into the effects of drugs on the nervous system of electric fishes has registered over 250 volts in a 12 inch fish.

The skin of the electric catfish has a rather freckled, pinkish or grey appearance and the puffy obesity of some specimens almost makes them appear as if they might bleed grease instead of blood if wounded. Oddly, there is no rayed dorsal fin, although there is a rather oversized adipose. It has been observed that some speci-

mens seem to turn a darker, more reddish colour when being disturbed and presumably releasing voltage. Voltage is d.c. (direct current) and in relation to each other the head is negative and the tail positive, just opposite to South America's electric eel, *Electrophorus electricus*.

Although it has been stated that the electric catfish can be kept with other fishes of the same or larger sizes, this can be quite dangerous for the other fishes. Carps, even the toughest varieties, seem especially susceptible. I once had a large black shark (*Moridius chrysophekadion*), which was over a foot in length, that was permanently crippled from a shock administered by a 4 inch electric catfish.

Malapterurus electricus is a predator, and the electric charge is used in securing prey that might otherwise easily outdistance or outmanoeuvre him. Flesh of some sort is required for feeding. Although living fishes are best since they are a natural food, which does not result as readily in obesity, ox heart either ground or in chunks will make an excellent substitute. It is probably wise occasionally to fast larger specimens for stored fat to be consumed, since these sometimes die in captivity from fatty degeneration of the vital organs. Other good foods are earthworms, crayfish etc.

The electric catfish was immortalised in stone carvings by the ancient Egyptians more than 6000 years ago and was even used in certain religious rites. This is not surprising, because the Egyptians of early times were quite fish conscious, even to the point of deifying certain species. There were cults of fish worshippers whose

Continued on page 311

A Bright Little Community Fish

By RUDOLPH ZUKAL



Male (left) and female (right) beacon fish (*Hemigrammus ocellifer*)

Photographs by the author

SINCE the importers first brought the lovely little beacon fish into Europe in 1910 from Guyana and the waters of the Amazon it has been a great favourite with aquarists. Part of the reason for this is its unusual appearance, with the 'tail-light' spot at the base of the tail, its gill spot and luminous eyes; but its popularity is also due to the fact that it is one of the most undemanding of fishes in the aquatic world. The beacon is peaceful and, in company with other peaceful characins, a shoal of these fish will brighten the community tank. It is adaptable, and can be housed in either a small or large tank and will not grow to more than about 1½ in. It is not particular over water conditions and can be kept at a temperature as low as 68°F (20°C).

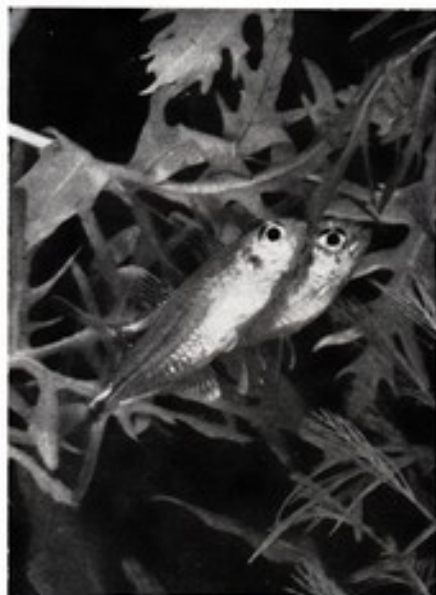
Breeding presents no difficulties and the procedure to be followed is the same as that for most *Hyphessobrycon* species, e.g. the flame tetra. A tank about 14 in. by 8 in. by 8 in. is prepared by being filled with tapwater maintained at a temperature of 77°F (25°C) and planted with fine-foliaged plants through which the fish can swim. The water, however, must not be hard. Young beacon fish

Translation by F. MARSH

Spawning behaviour of the beacon fish

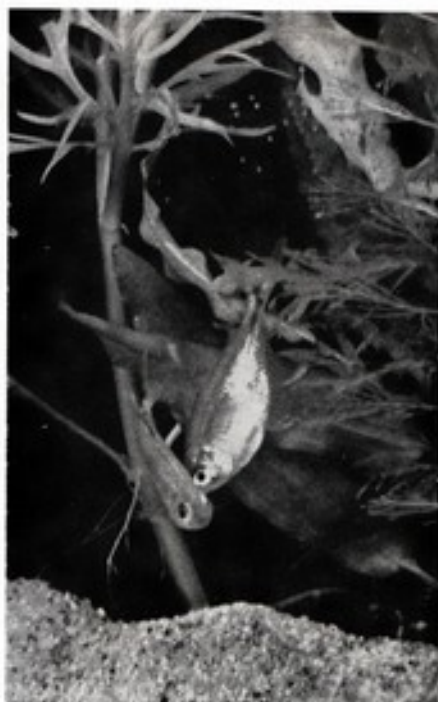


Much of the early stages of beacon spawning is taken up by the male displaying in front of the female and his attempts to drive her into the water plants. The photographs on this page show that he will also 'butt' the female occasionally (picture above). Once in the water plants the pair swim close together, flank to flank (right)





Left, above: a marked curving of the bodies of the fish is seen just before spawning takes place



Right, above: as the fish separate and swim rapidly away the released eggs are seen to swirl in the water before sinking to the bottom

are used for the spawning; where possible the male should be about a year old and the female somewhat younger. The difference in sex is very easy to distinguish: the male is slimmer and smaller than the female who is fuller in the belly; also, when the fish is viewed against the light the male's swim bladder is clearly visible, but not that of the female.

The male fish can be put into the tank during the evening, to accustom himself to his new surroundings, and the female put in next day. If the weather is fine and the barometric pressure consequently high, spawning will begin very shortly most likely during the early hours of the morning. The prelude is very interesting. At first, the male will display in front of the female and swim close to her. Once the female is settled in, she will reciprocate these attentions. When the male approaches he is nudged by the female. During this play, the male swims to and fro in the plants, trying to entice the female by various body positions. At last, when the female follows him, the fish press against each other, and, with a lightning-like movement that is hardly visible, the fish fall upon each other and at the same time the tiny transparent eggs fall to the bottom of the tank. This spawning play lasts about 2 hours. Once the spawning is completed, the adult fish should be removed as they eat their eggs. When the young are free-swimming (by the third day) they must be fed with the smallest forms of living food.

Birmingham's Big Fish Display



Mr. Bill Devison (right) being congratulated after receiving his awards, including that for the best fish in the show (the silver shark pictured on this page)

THE only dissentient voice at M.A.P.S. MIDLAND OPEN SHOW this year belonged to a small black bear being shown as a 'show stopper' by one of the traders that let out shouts of rage as it was being replaced in its cage after posing for Press photographs. None of the other thousands of visitors had any complaints.

There were nearly 500 entries on view and Mr Bill Devison, who has judged at the Midland Open for the past 8 years, gave it as his opinion that the standard of this year's entries was 'fairly high'. It was his belief, however, that 'there seems to be a downward trend in quality of all fishes on show benches—not just at the Midland Open but at all shows'. 'Many people have better fishes in their tanks at home, yet they don't enter them because they don't realise how good they are', said Mr Devison, who thought that there should be a bolder approach towards showing, with people entering fishes without too much prior assessment of whether they are going to win or lose. Mr Devison thought that the best class at the Midland was that for cichlids with, in particular, some fine dwarf cichlids being benched. Bill Devison's entry of fishes included a silver shark that his fellow judge assessed as best fish in the show. His comment on this was that he didn't consider it to be the best fish at the

show, which he thought was a red-tailed black shark (also an entry of his!).

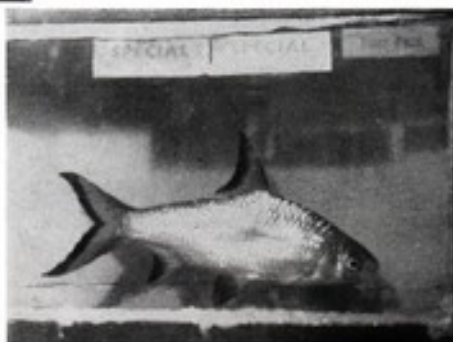
On the display staged by the B.K.A. Midland Group there were 22 tanks showing killie species currently being bred by members of the Group. A special drive for membership was being made since the new Management Committee of the B.K.A. has been formed by this section. Large line drawings showing the features of different killiefish genera, by Mr John Harris, formed part of the display.

The F.G.A. were holding the Midland Open Guppy Show and this, and the stand entered in the inter-society competitive display competition, was the work of the newly formed Birmingham Section of the F.G.A. (plus a certain amount of aid from Mr Jim Kelly). The

competition stand, as well as having many humorous touches, contained a good deal of information about the Association and the international aspects of the guppy hobby. Three tanks contained types of guppies popularly found in Austria and termed Viennese Greens.

In the main Open Show, a spectacular male guppy took first award in the a.v. single class. A very large fish, his entire body and finnage was richly coloured. It was being freely commented that it seemed likely to be an imported fish from Singapore and although undeniably first for quality in that class it was unfortunate that other good home-bred entries had to meet such competition.

Trade stands were uniformly good this year, offering a fine variety of fishes from local breeders at 2s 6d each to a pair of breeding oscars at



£17 10s 0d. The fishes were displayed in well-kept, clean, stainless steel or all-glass tanks. Aquatic, pond and fish-house plants were being offered for sale.

Once again Mr John Wits and the Midland Show Committee have done M.A.P.S. proud, with this year's new show secretary Mr A. M. Thompson obviously deserving special mention.

Detailed results were as follows.

Coldwater classes.

Common goldfish and comets, under 4 in.: 1, Mr D. Wilson (Raven Cup); 2, Mr H. T. Jago; 3, Mr S. Lloyd. Breeders' 14 fish a.v. fancy twinails, bred 1969: 1, Mr A. W. Smith; 2, Mr A. E. Roberts; 3, Mr S. Lloyd. Breeders' 16 fish fancy goldfish: 1, Mr S. Lloyd (P. Smith Cup); 2, Mr G. J. Bell. Bristol shubunkins, under 4 in.: 1, Mr K. Jaxon; 2, Mr I. Ford; 3, Mr E. A. Mason. Calico veiltails: 1 and 2, Mr A. W. Smith (Graham Keys Cup, Evenden Cup); 3, Mr H. T. Jago. Shubunkins, bred 1969: 1, Mr H. J. Whiting; 2 and 3, Mr S. Lloyd. Scaled

viridula; 1, Mr S. Lloyd; 2, Mr T. Young. Twinstails (other than calico variety) bred 1969: 1, 2 and 3, Mr A. E. Roberts (Boulder Cup), Shubunkin (M.A.P.S. only); 1, Mr C. H. Barrett (Carter Cup, Rowatt Cup, Cadby Cup); 2, Mr H. T. Jago; 3, Mr H. J. Whiting. Calico variety, bred 1969: 1, 2 and 3, Mr A. E. Roberts (Reeling Cup), Shubunkin, under 2 in., matched pairs; 1, Mr C. H. Barrett; 2, Mr H. T. Jago; 3, Mr H. H. Bell. Grandas: 1, Mr C. H. Barrett; 2, Mr K. Jaxon; 3, Mr E. A. Mason. Telescopes: 1 and 2, Mr A. E. Roberts (colossal); 3, Mr H. T. Jago (telescope-eyed veilt). Moors: 1, Mr H. T. Jago; 2, Mr K. Jaxon; 3, Mr A. E. Roberts. Shubunkin, under 2 in.: 1 and 2, Mr K. Jaxon; 3, Mr C. H. Barrett. Calico fantails and nymphs: 1 and 3, Mr C. H. Barrett; 2, Mr H. T. Jago. Sealed fantails: 1, Mr S. Lloyd; 2, Mr D. Wilson; 3, Mr I. Midson. A.v. pond or river fish under 7 in.: 1, Mr A. R. Haddon (1 in. sandfish); 2, Mr R. J. Hough (golden orfi); 3, Mr G. M. Haddon (pitterling). Decorative aquariums, individual: 1, Mr S. Dean; 2, Mr T. Young. Inter-society decorative aquarium: 1, Coventry P.A.S. (Society shield); 2, Tamworth K. & A.G. Shubunkin, under 2 in., novices: 1, 2 and 3, Mr H. H. Bell (Wells Cup).

Tropical classes.

Barbs, true pain (nitrya, oligolepis, novus): 1, Miss L. Skinner; 2 and 3, Mr R. Trippas. Barbs (tetrazona, nigrofasciata, ticto, schubonko): 1, Mr P. Skinner; 2, Mr

R. J. Hough; 3, Mrs F. Bolton. A.O.V. barbs: 1, Mr L. G. Wilkes (Nostatus, Dodge Cup); 2, Mr P. Massey (arabini); 3, Mr P. Skinner (soluberi). Danios, brachydanio, minnows: 1, Mr K. Wells; 2, Mr A. R. Haddon; 3, Mr D. W. Ellis. Any rubrom: 1, Mr P. Massey; 2, Mr J. D. Fellows; 3, Mr R. J. Hough. Characins (Hyphalocorynes, Homogammat, cardinalis): 1, Mr R. Trippas (bleeding heart); 2, Mr J. B. Colwell (novus); 3, Mr L. Ford (sarpas). Characins, a.o.v.: 1, Mr J. B. Colwell (W. V. Jones Cup); 2, Mr R. J. Hough; 3, Mr D. W. Ellis. Male fighters: 1, 2 and 3, Mr J. D. Fellows. A.O.V. male anabantid: 1, Mr W. Devison (Mrs Gilbert Cup); 2, Mr K. Wells; 3, Mr L. G. Wilkes. Cichlids, up to 2 in.: 1, Mrs F. Bolton (Carter Cup, J. ramirezi); 2 and 3, Mr R. Woodward (J. ramirezi; N. zimbabwe). Cichlids, over 2 in.: 1, Mr S. Dean (L. radiatum); 2, Mr R. J. Hough (12 in. marble cichlid); 3, Mr V. Currie (brown acra). Angels: 1, Mr R. Trippas; 2, Mr K. Wells; 3, Mr L. G. Wilkes. A.v. male guppy: 1, Mr R. Whitfield (T. G. Sutton Cup, Coleman Cup); 2, Mr T. A. Nasson; 3, Mr R. Trippas. A.v. mollies: 1, Mr K. Wells; 2 and 3, Mr R. Trippas. A.v. platys: 1, Mr R. Trippas; 2, Mr C. Nightingale; 3, Mr J. Wain. A.v. swordtails: 1, 2 and 3, Mr I. Ford; 3, Mr R. Trippas. A.O.V.: 1 and 3, Mr W. Devison (Gilbert Cup, Best Fish in Show award, 10 in. B. melanoptera, 7 in. L. bicolor); 2, Mr K. Atwood (L. fasciata).

Breeders' class, egglayers: 1, Mr W. Devison (Fandry Cup, Helanostoma sp.); 2, Mr D. Highfield (white convicts); 3, Mr R. Trippas (B. vittata). Breeders' class, live-bearers: 1 and 2, Mr R. Trippas (black swords, moon platys); 3, Mr W. Devison (moon platys). A.v. Carpaluan catfish: 1, Mr I. Ford (S. W. Richardson Memorial trophy C. annus); 2, Mr P. W. Jinks (C. julia); 3, Mr S. Green (C. annus). A.O.V. catfish: 1, Mr D. Highfield (I. C. Froggatt trophy, S. albent); 2, Mr D. W. Ellis (H. thoracatus); 3, Mr B. Tate (Plicostomus). Egg-laying toothcarp: 1, Mr J. D. Fellows (Carrington Memorial trophy); 2 and 3, Mr D. W. Ellis. Any characins, novices: 1, Mr N. Furness; 2, Mr S. Green; 3, Mr A. Massey. Any danio, brachydanio, minnow: 1, Mr S. Green; 2 and 3, Mr N. Furness. Any barbs, novices: 1, Mr H. E. Youngman; 2, Mr A. Massey; 3, Mr S. Green. Any livebearers, novices: 1, Mr N. Furness; 2, Mr G. Parker; 3, Mr H. E. Youngman. Any male anabantid, novices: 1 and 2, Mr S. Green; 3, Mr S. P. Fellows. Decorative tropical aquarium, individual: 1, Mr S. Dean (Loser Pet trophy); 2 and 3, Mr A. M. Thomson. Inter-society decorative aquarium: 1, Haden A.S. (Society Shield); 2, Tamworth K. & A.G.; 3, Nuneaton A.S. Inter-society competitive display: 1, Tamworth K. & A.G.; 2, T.G.A. Birmingham Section; 3, North Warwickshire A.S. A.v. aquarium plant, up to 15 in.: 1 and 3, Mr M. J. Allen (Aplousome sp.); 2, Mr E. G. Leadley (Cryptocoryne sp.).

Gipsy, Watermill, Moonshot or Castle?

WHILST at the Midland Open Show in August this year I undertook, by dint of the persuasive influence of John Wits the joint show secretary, to place the society display entries in order of my preference. "There are only four for you to judge" said Mr Wits. Judge? In 21 years of active aquatic journalism and a period very nearly as long again of aquarium-keeping I have been given several titles but never that of judge.

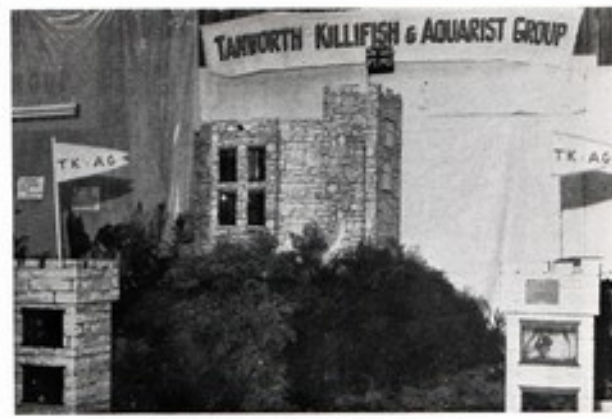
I suppose no one could be more ill-equipped than myself to be a show judge: such is my admiration of all who so enthusiastically mount displays for these competitive events that I start off by wanting to give them all a prize. "Only one prize," said Mr Wits firmly. We agreed that the criteria of assessment should be left entirely to me and I started to make my rounds of the entries.

The exhibit by Smethwick A.S. I'm afraid I put at the bottom of the list very quickly. Their general idea of the fortune-reader in authentic tent gazing into a goldfish bowl was acceptable and, apart from a poorly executed nameboard and punch line, was well presented. But to make a goldfish in a bowl the sole fishy note in an exhibit on view to the public I thought to be a mistake. A chance to have linked the future-telling figure with a really modern tank of goldfish, with the bowl shown discarded, and thus to make more acceptable use of the first-rate material available to the Society was

PFM's Editor was asked to pick the winning Society entries at this year's Midland Show

missed here, I think. Sorry, Smethwick, but my crystal ball says you'll try again. North Warks A.S. had an attractive water mill scene, but somehow it all looked familiar to me. I did not check at the time, so that I could continue to try to see their exhibit as someone who had never been to a

Midland Open Show before, but after handing in my selection I looked at PFM for last October and there it was—in essence: first prize in 1968 went to North Warks A.S. for a windmill. What really put the exhibit in third place was its row of rather battered small tanks with very, very cloudy water and the



The Tamworth 'castle' entry at the Midland Show



PetFish Monthly, November 1969

merest pretence at furnishing. A lot of good work there, North Warks, spoil't for the ha'porth of tar, but I won't suggest the treadmill.

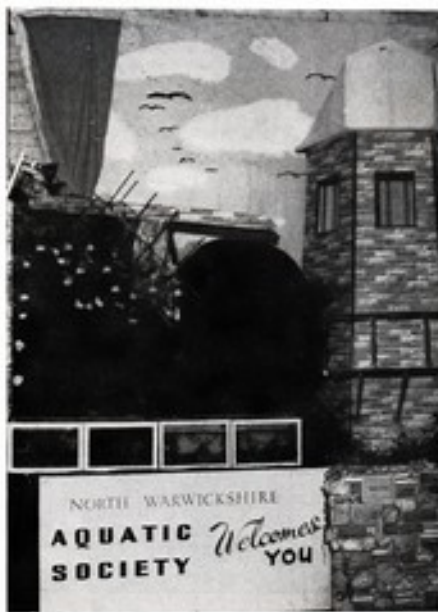
If interest of tanks and furnishing quality had alone been the background of my assessment, then the display by the Birmingham Section of the F.G.A. must have come first. Interesting all-glass tanks, clear water, acceptable furnishings and good colourful guppies formed two eye-catching banks at eye-level. The general theme linking with the moon landing was well handled with real humour—a colour picture of the space rocket during blast-off with the caption 'What a way to go to a guppy show!'; another photograph of the moon's surface with the comment 'One moon-man to another: They say it's made of cheese and over-run with guppies!' The display was complete with animation—an endless chain of guppies (on their way to the moon?) moved in a cut-out at the top of the stand.

However, at the end of my

Left: Fancy Guppy Association

Below, left: North Warks A.S.

Below, right: Smethwick & D. A.S.



appraisal I put the F.G.A. exhibit in second place, despite its topicality, wit and wealth of information about the F.G.A. Overall for me, the Tamworth Killifish and Aquarist Group display just had the edge on it with its moated (goldfish pond) castle tower (with four aquaria in it) on an impressively created 'keep' of massed cultivated ferns, surrounded by crenellated wall with two aquaria in each of the two corner towers. A dungeon scene to one side I discovered later to be the work of the junior section of the Group. In analysis, contents of the tanks in Tamworth's display were inferior to those of the F.G.A. tanks, but the total effect achieved I found very pleasing.

So Tamworth took the top position, but only just. I think perhaps it was that very cleverly executed 'mound' of greenery that swung my vote. Anyway, congratulations. And thanks to all competitors—collectively your efforts must have made the Show for many visitors.

Mr Witts handed me four cards of the appropriate hierarchy of colours. 'Please sign these,' he said, 'where it says "Judge".' I signed, knowing that I was fooling no-one.

ANTHONY EVANS

Dates for Your Diary

17th October. **THE GOLDFISH SOCIETY OF GREAT BRITAIN** Convention and Open Show. Sutton Adult School, Bemhill Road, Sutton, Surrey. Open 2.30. Judging 2.30-4.30 p.m. (programme and letters for visitors). Details from Mrs F. Whittington, Fives Lodge, Ringley Park Avenue, Reigate, Surrey.

18th-19th October. **BRITISH AQUARISTS' FESTIVAL**, Belle Vue, Manchester.

26th October. **HALIFAX A.S.** Open Show. Smiths Balcony & Co. Ltd., Holmfield Mills, Halifax. Schedules from Mr A. G. Whyte, 11 Rothwell Drive, Halifax.

20th October-2nd November. **THE AQUARIUM SHOW '69** at the Royal Horticultural Society's Old Hall, London, S.W.1.

2nd November. **MIXENDEN T.F.S.** Open Show, Mixenden Community Centre, Clough Lane, Mixenden, Halifax, Yorks. Schedules from Mr J. H. Brown, 9 Clough Bank, Mixenden.

8th November. **THE NEW COLCHESTER & D. A.S.** Open Show. St Pauls Hall, Colse Bank Avenue, Colchester, Essex. Schedules from Mr N. Morris, 120 Collingwood Road, Colchester, Essex.

8th-9th November. **HEYWOOD &**

D. A.S. Open Show (Joint event with Heywood Horticultural Society).

22nd November. **HENDON CONGRESS**. Whitefield Secondary Modern School, Claremont Road, Hendon, London, N.W.1. 6 p.m. Tickets from Mr K. Farbrick, 3 Holme Way, Stanmore, Middlesex.

29th November. **THE FUR, FIN & FEATHER SHOW**, Shoreditch Town Hall. Show secretary for aquarium section: Mr T. N. Noodham, 14 Edinburgh Rd, Walthamstow, London, E.17. Closing date for entries 1st November.

30th November. **AIREBOROUGH & D. A.S.** Open Show, Governors Hall (ex Rawdon Drill Hall). Enquiries to Mr G. Walker, 24 West End Terrace, Guiseley, Nr. Leeds LS20 8LX.

6th December. **F.B.A.S.** Annual General Meeting. Conway Hall, Red Lion Square, Holborn, London, W.C.1.

14th December. **HORSFORTH A.S.** first Open Show, Governors Hall, Rawdon, nr. Leeds. Schedules from Mrs B. M. Helm, 29 Wellington Road, Leeds 12.

1970 Bookings

3rd May 1970. **BURY & D. A.S.** Open Show.

22nd June 1970. **SWILLINGTON A.S.** Open Show.

5th July. **LYTHAM A.S.** Open Show. Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

The Electric Catfish

continued from page 304

religion centred around the Nile perch, and the corpses of these fish were carefully mummified and buried in places denoting high honour.

Less respectful of any supernatural or god-like qualities that might be possessed by the electric catfish are certain of the Arab tribes who reportedly have enjoyed the flesh of the creature for some time. Respect of a sort, however, is indicated in the Arab name for the fish, *Raad*, which in translation means 'thunder' and somehow seems quite appropriate.

Malapterurus is one of the catfishes that employs what is known as the 'elastic spring mechanism'. Through the use of muscles attached to either side of the gas bladder, a series of vibrations is started which, in conjunction with the Weberian apparatus (discussed earlier in the series), serves as a sound generator. In the electric catfish a hissing noise is produced.

As with most catfishes, this is a night-hunter which in Nature prefers seclusion during the daylight hours if possible. Its gluttonous appetite, however, will usually aid in making a rapid adjustment to whatever your feeding schedule might be, and the fish can become quite tame.

A specimen that I had some years ago grew to the

ridiculous length of 19 inches in an aquarium which was only 30 inches at its greatest dimension. At feeding time, the fish would put his blubbery lips at the surface and make a 'smacking' noise. This particular fish was also quite fond of having his belly rubbed with one of the little sponges which are attached to the end of a stick for the purpose of dish washing. These are also quite useful in cleaning inside glasses of aquaria into which one does not wish to place one's hand, and the catfish acquired the habit of swimming directly to the sponge whenever he would see it, rolling over on his back almost like a dog and obviously 'asking' for a good belly-rub. Although it is doubtful that fishes have emotions, the ecstatic look on the countenance of this fat creature as he would open his mouth and roll over was in its comical way the most individualistic quality of any fish within my memory.

Admittedly, the foregoing individual was overcrowded even alone in a quite well-aerated and filtered aquarium. The reason was lack of larger quarters for a single fish. This is not recommended although it will be tolerated, especially if the fish reaches the large size in that aquarium. Also, if you attempt the 'rub' procedure, be sure you use a well insulated article or you might suddenly receive a sizeable jolt!

Malapterurus electricus, in spite of being unbeautiful, gluttonous, intolerable of other fishes and somewhat less graceful than a ballerina, is a show fish, pet and conversation piece that can fulfil the role of a solitary resident in a one tank situation as well as any fish one might imagine. Of course, this depends on taste, but certainly a fish with 6000 years of culture behind him is worthy of consideration.

In Brief . . .

... NEW secretary of **GOSPORT & D. A.S.** is Mrs D. J. Littleproud, 5 Caroline Place, Cobden Street, Gosport, Hants, PO12 4QJ.

... ALL future meetings of **TONBRIDGE & D. A.S.** will be held at 8.0 p.m. on the second Wednesday of the month in The Gardeners Arms, St Stephens Street, Tonbridge. Visitors and new members will be as welcome as those who attended a recent meeting after reading about the club in an article in the local paper. At this meeting Mr John Marshall, chairman of Medway A.S., spoke on fish houses and aquatic plants.

... SECRETARY of **DUKERIES A.S.** is now Mr B. L. Frost, 102 Anson Avenue, Worksop, Notts.

... THE lecture at the August meeting of **BOURNEMOUTH A.C.** was given by club secretary Mr Ron Matley on breeding the barbs and characins. Later in the evening an auction was held. Show secretary Mr Jack Jeffery judged the table show (a.v. cichlids) and awarded the following places: 1 and 2, Mr Watkins (angel 72 pts, firemouth 70); 3, Mr Merfield (jewel, 67).

... SECRETARY of **GLOSSOP A.S.** is Miss D. Smith, 3 Chapel Lane, Hadfield, via Hyde, Cheshire SK14 7PG.

... MR LEN SMITH has recently become resident lecturer of **HAMPSTEAD & D. A.S.** Members have enjoyed a varied series of lectures on topics ranging from brine-shrimp hatching to keeping piranhas and visitors and prospective new members are warmly invited to attend on club nights on the second Wednesday of the month at The Bacton Residents Hall, Lismore Circus, London, N.W.5.

... HOLIDAY absence affected attendances at the August meetings of **LEAMINGTON & D. A.S.** but those who were able to attend were most enjoyably entertained, first by cine films and slides taken in Norway by Mr and Mrs Smith on a recent holiday, and then by chairman Mr Fred Underwood's efforts to demonstrate the setting up of a furnished aquarium in a tank that turned out to leak badly.

... **HARLECH A.S.** society member Mr Stan Nelson stepped in at the last moment when the guest speaker failed to arrive for the August meeting and gave a lecture on his experiences in keeping tropical marines that won the longest burst of

Courses of informal talks on 'Aquaria and Natural History' (by Mr H. J. Vosper) are being run by the Clapham and Balham Adult Education Institute (6 Edgeley Road, Clapham, London, S.W.4) on Monday and Friday evenings (7.15-9.15). These new courses will include demonstrations of specimens and colour slides and deal with both freshwater and marine life. Special topics for fish breeders include an introduction to genetics.

applause ever heard at a Harlech meeting. Members did well to start 'training', however, because next year's speakers, eagerly awaited, include Mr A. G. Jessopp, chairman of the F.B.A.S., Mr D. G. Williams, deputy curator and zoologist of Hornimans Museum, Mr G. Jennings, I.M.S.S. and Mr G. Ellis, National Museum of Wales. Meetings start at 7.30 p.m. on the third Tuesday of the month at Gabalfa Junior School, Colwill Road, Cardiff.

... OFFICERS elected at the A.G.M. of **LLANTWIT MAJOR A.S.** are: chairman, Mr G. Vinnicombe; vice-chairman, Mr A. Lewis; secretary and treasurer, Mr R. S. Wigg (17 Ham Lane South, Llantwit Major, Glam., CF6 9RP); show secretary, Mr W. E. Pugh; assistant, Mr. A. Ibbertson; auditor, Mr K. Farrant; librarian, Mrs M. Jones. The winter programme includes taped lectures, 16 mm. films, the annual dinner and a talk on the local freshwater fish. New members will be very welcome at meetings held on the second Tuesday of the month.

... **BISHOPS CLEEVE A.S.** are honoured to report that Professor Dr Günther Serba of the Karl-Marx University of Leipzig has consented to be the Patron of their society. To mark the occasion Professor Serba sent them a copy of his book **FRESHWATER FISHES OF THE WORLD**. Recently members enjoyed a talk and slides by Mr J. Ken Davis on 'Life at the Sea Shore' in which the lecturer described where to find the sea creatures and which ones could be kept in an aquarium. Mr C. R. Surgeoner won in the table show for loaches (2, Mr T. Evans; 3, Mr I. Scriver).

... APPROACHING winter evenings bring memories of trudging through snow and sleet to attend society meetings, but members of **BRADFORD & D. A.S.** really look forward to the coming of darker evenings since, because of difficulties in blacking out the windows in their meeting rooms, film show programmes are held back for this time

of year. In October a film programme on brine-shrimp breeding and on fancy guppies was planned, and in November a film show will be given by club member Mr H. Fletcher. Meetings start at 7.45 p.m. on the first Wednesday of the month in room 5 and the third Wednesday of the month in room 4, Unity Hall, Rawson Square, Bradford; prospective new members and visitors will be welcome.

... A NEW society has been formed at Darwen, Lancs. Mr Joseph Holden was elected chairman of the **DARWEN AQUATIC CLUB** at the first meeting, which over 30 people attended, and enquiries should be made to Mr Holden at 33 Radford Street, Darwen, Lancs.

... **NORTH KENT A.S.** members planned their annual inter-club show for October. More clubs were invited to attend this year. Other activities have included a very enjoyable quiz run by Mr B. Bloss and Mr C. Hunter. Anyone who would like to join in should contact secretary Mr B. Bloss, 11 Lane Avenue, Greenhulth, Kent.

... MEMBERS of **M.A.P.S.** hardly have time to rest on their laurels in high summer! The Midland Open is no sooner safely negotiated than it is time for them to arrange displays of tropical and coldwater fishes as part of the City of Birmingham Show. But no-one is complaining. This huge city show covering 300,000 sq. ft. of Handsworth Park attracts enormous numbers of visitors and is a very worthwhile activity from the Society's point of view.

... AT the last quarterly meeting of the **GOLDFISH SOCIETY OF GREAT BRITAIN**, one of the guests enjoying the talk given by Mr R. Whittington on fish-house construction was Mr Joe Lightcap, secretary of the American Goldfish Society, who is also a member of the G.S.G.B. Judge of the table show for matched pairs of fish bred in 1968 was Mr R. D. Esson. Results were: Single tails, Miss Morris, 76 points. Twin tails, Mr J. Linale, 80 points. Globe eye, Mr B. Herbert, 81. Pearlscale, Mrs C. Smith (Breeders Cup), 82 points.

... **SPEAKERS to MERSEYSIDE A.S.** can be assured of a large audience. The club now has a paid-up membership of over 130, with 70 members and guests regularly attending meetings. Recent programmes have included a most interesting talk by Mr Alan Bland, chairman of Hoylake A.S., on breeding and a visit from naturalist Mr Eric Hardy who spoke on the changing plant life of canals, ponds and inland waterways.

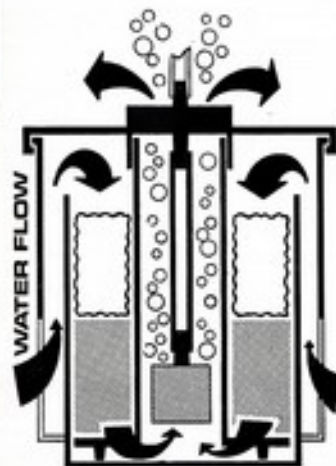
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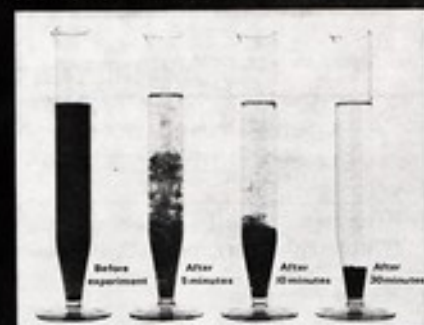
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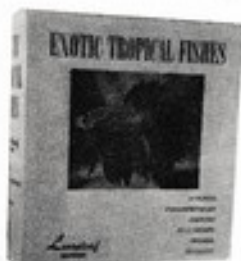
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