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## Comments and Quotes

● Effect of Devaluation ● Hybrids on the Show Bench ● Publicity for the Hobby ● Marine Community Spawnings ● What Ever Next?

### Prices in the Hobby

DEVALUATION of sterling is undoubtedly going to cause some unwelcome rises in prices of aquarium equipment, since so much of what we use is manufactured abroad. It should, of course, also give a deserved boost to the sales of British equipment both at home and abroad, but although the extent of the exports of heaters, thermostats, pumps, filters etc. from Britain would in fact surprise many aquarists, the number of U.K. manufacturers in the field is small.

It will not be much consolation, we fear, for the new increases but it is true that our hobby is one of the very few spheres in which prices in general have come down from those of, say, 20 years ago. This applies to common items of equipment such as heaters and thermostats and for fishes, too. Mr Charles Wright, well-known London aquarist and for many years a professional one at Tottenham and Kingston has drawn our attention to an interesting anomaly in the matter of fish prices.

Whereas the prices of popular species such as angels, neons and the characins generally have lessened, prices of the common livebearers have tended to remain the same. Perhaps the readiness of their production means that livebearer prices have long been at the minimum economic level, but whatever the explanation they provide a useful example to answer those who sometimes allege that large-scale

breeding by amateurs will cause fishes to be 'dirt-cheap'.

### Cross-breeds at Shows

WHAT should be the attitude of a judge finding a hybrid fish before him on the show bench? Platys and swordtails have been extensively cross-bred and their hybrids in all their variety have, of course, come to be accepted and are judged without reservation. However, fish are occasionally seen that are said to be new cross-breeds, and incapable of being bred further since they are sterile, and it is about these that judges sought guidance at the Judges and Lecturers Conference of the F.B.A.S. in London at their annual meeting recently.

An example encountered by one judge was said to be a cross between a moonlight gourami (*Trichogaster microlepis*) and a pearl gourami (*T. leeri*). Crosses between various species of barbs are also liable to turn up from time to time. The general opinion of judges seems to be that such crosses should be down-pointed in competition with recognised species, although they could be judged on their merits when exhibited in breeders' classes. The British Killiefish Association has specifically banned cross-bred fishes from its shows, a matter of some interest in view of the revelation by Colonel Scheel in his talk at November's Hendon A.S. Convention (reported elsewhere in this issue) that killie crosses are commonly found in their natural waters.



## Furnished Tanks for the Public

A FEATURE of aquarium shows that has been in decline for some time is the display of furnished aquaria. Everyone acknowledges that this is a great pity, because above all else these exhibits are the ones most likely to attract newcomers to the hobby. The sight of a well set-up tank, showing what a decorative asset this can be to the modern home, is what attracts families to fishkeeping more frequently than anything else. Up to now little has been done to stimulate more entries of furnished aquaria at shows and therefore the news of a completely new venture to encourage aquarists who fancy their skill as 'aquascapers' is very welcome.

This venture is the National Furnished Aquarium Exhibition, arranged to take place in Bradford this coming June. It will consist entirely of furnished aquaria and entry is open to everyone. The Exhibition is sponsored by Mr Keith Barraclough, assisted by Bradford and District Aquarist Society. We think it is a brave new concept worthy of support by both societies and individual aquarists throughout Britain. It should be the finest display of set-up tanks in mass ever to be seen anywhere and could provide a first-rate publicity boost for the hobby.

Here's an idea for societies to consider. Why not start off right in 1968 by creating your furnished

aquarium prototype entry now and display it in your town? It should not be difficult to persuade a shop, store or cinema to give space and we believe that local aquarium dealers would gain by providing all equipment on loan for such a purpose. Good publicity for the society, for the dealer and for the hobby generally would be obtained (together with valuable experience for the entry to be taken to Bradford in June—there are, we hear, some pretty big prizes being offered). For the first society to send us a photograph of a furnished aquarium newly set up in public view (other than at an aquarium dealer's) after the publication of this issue PETFISH MONTHLY will award a copy of the 1968 edition of FRESHWATER FISHES OF THE WORLD by Günther Sterba.

## Marine Community Spawnings

MR Lee Chin Eng of Prinsen Park Aquarium in Djarkata is the leading exponent of the 'natural system' of tropical marine aquarium-keeping which involves the development of a living coral reef in the tank. He tells us that in a 68 gallons marine community aquarium first established by his system in 1959 he has fishes (some of them introduced when the tank was originally set up) that spawn repeatedly. One of these is the damsel fish *Dascyllus aruanus*;

in his letter Mr Lee Chin Eng said that a male of this species was occupied in guarding the eggs of his mate that had been laid the day before the letter was written. He said that any aquarist going to Djarkata is welcome to see his tank: 'With luck he or she may be able to see the eggs of *Dascyllus aruanus*, *Abudefduf coerulescens* or *Prumnas bimaculatus*. The water in the tank is crystal-clear although, with the swirl of a hand, the sediment will rise up'.

This aquarist claims that his method is now thoroughly proven and he has successfully started hundreds of aquaria in the same way with local hobbyists, even complete beginners. We know that one prominent aquarist in Britain is currently trying out the method, and although enthusiastic about it he intends to pursue it for a further year or so before he is prepared to make his assessment public.

## What Ever Next?

AMONG the 'attractions' for the tourist, visitor or diner-out in London's current scene is a nightclub at which can be viewed the spectacle of (we quote from a London evening paper) 'a shapely girl who removes her clothes in a fish tank'. There is absolutely no truth in the rumour that one aquarist tried to smuggle in some piranhas to liven up the performance.

## Technical Topics

TECHNICAL TOPICS was the title of the short talks given by members of YORK & D. A.S. to the rest of the club at a recent meeting when appliances were described that had been made or

modified for use in the hobby. Mr M. H. Cooper demonstrated his Swirlaway rejector that he had modified to run from the mains instead of on batteries. Mr G. Waudby took along his home-constructed power cleaner, the main unit being a washing-machine motor. Mr A. Stabler spoke about his cleaner, which had been built on similar lines; both cleaners were demonstrated and their effectiveness shown in picking up sawdust (used to simulate mud) from the bottom of the tank. Mr A. E. J. Simons showed how a thermistor, inserted into the lighting circuit, allowed the

lights to operate gradually, so preventing the fish from being startled by sudden brightness and also increasing the life of the bulbs themselves. Mr Simons also demonstrated his polystyrene cutter. Finally Mr H. G. Sutton demonstrated his automatic feeder, a time clock with a large plastic dial on to which were fastened 12 thimbles. Placed around the edge of the dial, the thimbles were spaced to give 2-hourly feeds. A small trip wire at the base of the clock ensured that the food would be dispensed into the tank even if it had become embedded in the thimble.



# KEITH BARRACLOUGH

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# LETTERS

## Simple Marines

I WOULD like to thank Messrs Hall & Jennings for their somewhat jocular reply to my query (PFM, December). In like manner may I remark that I am surprised they have not encountered any 'simples'. Indeed, these have a long history and one of the first works on the subject was written by Diocles, the Athenian, who was the first medical author to write in Attic Greek and produced the first book on anatomy. The title of the work to which I refer is usually translated as *ON THE CULLING OF SIMPLIS*, which sounds appropriate enough to be unlikely but is true nevertheless.

Doubtless their comment upon the wandering nature of fishes and the consequent uselessness of population studies is not meant to be read as a serious and universal truth, otherwise one might be led to suspect the re-emergence of that old aquarist saying: 'I have come to a logical conclusion, don't try to confuse me with facts'.

To leave this subject for another, December 'Comments and Quotes' mentioned the 'natural system' of sea water aquarium keeping. I kept native organisms without aeration and filtration, in one-time 'freshwater' tanks of ordinary angle-iron form, knew nothing of ion-exchange resins and ozonisers and brought no greater 'know-how' to the task than can be obtained through a few years of coldwater and tropical fishkeeping. This for some 10-12 years.

Philip Gosse, who made the first methodical study of the seashore and worked for nearly 10 years to produce his *HISTORY OF THE BRITISH SEA-ANEMONES AND CORALS* (1860), kept the first marine tank to be called an 'aquarium', and he had neither air pumps nor decently made tanks. Without quoting too much out of context, L. R. Brightwell has written: 'The (i.e. his own) tanks enjoy 15 hours aeration a day' and 'Filtration, in sea water at least, is only a nuisance—it destroys so much plankton'—and Brightwell was a highly successful marine aquarist for (I believe) over 60 years. One must also record that he did recommend all-glass tanks, however.

One of my angle-iron tanks was used as a tropical aquarium for some 6 years; in addition it was second-hand when I first received it, then had salt water in for another 6 years, laid idle in a garden for another 2 years and has been in further use for 6 years or so as a spare marine tank. How long does one expect a tank to last?

To conclude on a more helpful and less carping note, I wonder if prospective seashore enthusiasts have met the book *SEA-SIDE LIFE* by De Haas and Knorr. One of the 'The Young Specialist Looks at . . .' series, it costs 15s. and is a useful addition to the bookshelf.

H. J. VOSPER,  
Director,  
South London Field Studies Society

## Water Hardness

IN several publications<sup>(a, b, c)</sup> I have noticed that, when dealing with the subject of water hardness, many authors state, quite erroneously, that the following equation can be used to convert British degrees of hardness into German degrees, DH:

$$DH = \frac{100}{56} \times \text{British degrees}$$

The German and British degrees of hardness are defined<sup>(d)</sup> as:

$$1 \text{ DH} = 17.8 \text{ p.p.m. as calcium carbonate} \quad (1)$$

$$1 \text{ British degree hardness} = 14.3 \text{ p.p.m. as calcium carbonate} \quad (2)$$

Dr Günther Sterba states that 1 DH = 17.8 p.p.m. as calcium oxide. This is incorrect.

From equations (1) and (2) the correct equations for the conversion from one system to the other can be elicited, namely:

$$DH = \frac{14.3}{17.8} \times \text{British degrees} \quad (3)$$

$$\text{British degrees} = \frac{17.8}{14.3} \times \text{DH} \quad (4)$$

Equations (3) and (4) can be approximated as follows:

$$DH = 0.8 \times \text{British degrees}$$

$$\text{British degrees} = 1.25 \times \text{DH}$$

I hope that this will help other aquarists in their quest for the correct water conditions when attempting to breed a particular species of fish.

Redcar, Yorks.

W. B. PEARSON

(a) *AQUARIUM CARE*, Günther Sterba, page 34.

(b) *ALL ABOUT TROPICAL FISH*, D. McIlhenny & G. Gerard, page 45.

(c) *TROPICAL FISH SOCIETY*, March 1967.

(d) *HANDBOOK OF CHEMISTRY AND PHYSICS*, 42nd edition, Chemical Rubber Publishing Co., page 1747.

We agree that this mistake has been perpetuated too often. Correct conversion factors are shown in the PFM *Diary for Aquarists*.—EDITOR.

## Goldfish Standards

THE following is the text of a letter sent to Mr T. L. Dodge of the Midland Association of Aquarists' Societies, in answer to his letter published in the October issue of PFM.

We would like to apologise to the Midland Association of Aquarists' Societies for not keeping them informed of the negotiations that took place between the G.S.G.B. and the F.B.A.S. This agreement took over 6 months of discussion before final agreement was reached, and we thought that you were in receipt of all information as supplied to our own affiliated societies, but this now seems was not the case.

Organisations that use other goldfish standards, and do not wish to change, are quite free to do so. The reason for making this agreement public was for the



benefit of exhibitors who show at shows where F.B.A.S. standards and judges are used, but do not belong to affiliated societies.

Always prepared to discuss any matter with other aquatic organisations, we would have welcomed a direct approach to us, rather than reading of your dissatisfaction in the aquatic press.

A. G. JESSOPP  
Chairman, Federation of British  
Aquatic Societies

### Judging Standards

**I**N the October Letters column of *PFM*, Mr T. L. Dodge, chairman of M.A.A.S. and general secretary of M.A.P.S. makes a number of observations regarding the recently agreed F.B.A.S. and G.S.G.B. universal pointing system for the judging of exhibited coldwater fishes.

He reminds the F.B.A.S. of an existing agreement between them and M.A.A.S., Bristol A.S. and the F.N.A.S. made some 10 years or so ago. He asks why they were not consulted before this step was taken. I presume that reports in our aquatic press during the earlier part of the year were missed. It wasn't a five minute decision. Only now that a decision has been reached do they hear or read of it! I find this hard to believe.

With respect, he squashes his own argument or complaint. He states that all show organisers in his area from the various societies are most careful to advertise that their shows are to F.B.A.S. standards, and with the most silly or suicidal comments asks, 'Are we then all to go our own way as in the past?'—adding that the coldwater side of the hobby needs all the encouragement it can get.

Be reasonable—the new standards cover all the previous ones and the comet and veil-tailed moor are to be included by the end of 1967. All the revised standards are to commence from 1st January 1968. If shows are run under F.B.A.S. standards, where then does the argument come in? I agree some word to the above-mentioned bodies might have been given, but surely, if the feelings are so strong, a word of advice or opinion could also have been offered before the announced agreement.

We accept the winds of change in our hobby in most ways happily and eagerly. Therefore let's be logical. A universal standard is surely the best thing for the judging of our pets. As is often said, a step forward in the right direction. After all the F.B.A.S. are the only body, to my knowledge, who publish a complete set of Standards covering all aspects of the hobby for use at shows. This is financed solely by themselves, too.

This standardisation between them and the G.S.G.B. is in my humble opinion definitely aimed at encouraging the coldwater enthusiasts. The thing is now that they have done it, accept it. If after a trial it doesn't work, propose another change.

The F.G.A. and the F.G.B.S. have also finalised a set of universal standards for the guppy. As I said earlier a set of universal standards for shows would benefit everyone and every aspect of the hobby. If it ever becomes possible, an international set of complete standards would be even better.

A few months ago we had a saga of letters re judging

a killifish at a show in 1966, which terminated not long before last year's show of the same club. Halfway through it got boring, and my last wish is to spark off another serial on judging standards, so please be tolerant and, as I've said, try them, encourage everyone to use them. Then, if time proves it necessary, revise them.

JOHN THORNE  
Chairman, Houslow & D. A.S.

### Guppy Deterioration

**I** STARTED keeping tropical fish about 2 years ago. I had a small and rather poor quality tank which I stocked, among other things, with a breeding pair of guppies. They bred and I soon had quite a number of young. The next Christmas (I have my birthday on Christmas day) I bought with my gift money and some from other sources a bigger aquarium, 27 in. by 15 in. by 12 in. This aquarium was well lit with many tropical water plants and a constant heat of 85°F. I had in this tank about 10 female golden guppies and about the same number of males; also there were a pair of black widows, a pair of catfish, a platy and a black molly.

Suddenly the female guppies began to get thinner. We saw they had enough to eat, but they got thinner and thinner until they started to die off; but only the females were affected. We put them in a small quarantine tank. Two of them survived and we have now built up the numbers again. I wonder if they have been inter-bred too many times? Have any other readers of *PFM* found this happening with their female guppies, or is it just a beginner's mistake?

Hill Place School, Gloucestershire

J. D. PRATT

### Guppy Comment

**H**AVING read Bill Armitage's Guppy Comment in the November issue I can't help getting the feeling of 'Here we go again'. He says the F.G.A. colour class is ill-conceived and that it must be apparent to everyone. I mix with many F.G.A. members and have never heard anyone criticise this class before. As for mongrel guppies! For goodness sake come off it Bill. Having judged quite a few classes I would say 'just try competing in the colour class at a normal F.G.A. show and you will find it one of the most difficult classes to win'.

What really gets me is that as an F.G.A. member he has the perfect right to try and alter this at the A.G.M. The fact that he has never even tried surely means he has no conviction in his own argument. We have not become the largest specialist tropical fish association in the world by being unwilling to accept new ideas or change, but we can well do without people sniping at us when they are unwilling to alter things through the proper channels.

If any non-member does not like the colour class as Bill says then I suggest he joins the F.G.A. and finds out what it's really all about. Let's keep our business within the F.G.A. and make any alterations to the satisfaction of all members. In the cause of better and brighter guppies,

DON CURRY  
Secretary, Fancy Guppy Association (Edmonton)

### Prize Letter



For the Community Aquarium

# Six of One, Half a Dozen of the Other

By R. S. B. PINKS

MY article in last November's issue giving suitable collections of small fishes for beginners indicated that in the next instalment I would comment on half a dozen 'marginal' varieties which require a little thought before being included as automatically as some of them so frequently are.

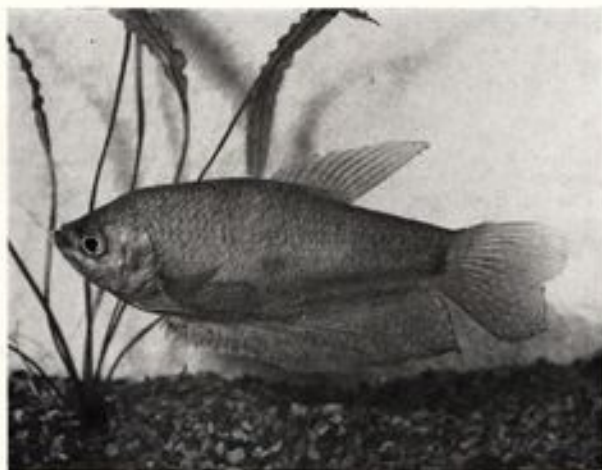
The first of these is the zebra danio, one of the most popular of all aquarium fishes, and certainly few I can call to mind are its match whether in coloration or vivacity. It never seems to rest for long, and if you have a pair in a tank there is a constant interplay of emotions, often at the cost of tranquillity on the part of the other inmates. The zebra is often quoted as one of the easiest egg-scatterers for the would-be breeder, but there is a growing feeling that there are better candidates.

If you have a community tank containing, *inter alia*, a number of zebras, you will almost certainly find them amongst the last you are able to net when you have some reorganization to do, and it is absolute agony trying to net them specially for a breeding exercise from a mixed collection. Since they really deserve a very long tank in which to exercise you may find them a little irritating in a smaller one, as they swim up and

down incessantly and detract from the other less flamboyant varieties. Subject to these limitations the zebra is a fine fish, but as with the other danios, please give it plenty of swimming space.

The second on my list would be the beacon fish (*Hemigrammus ocellifer*). My own experience of this has been that it can be quarrelsome and something of a fin-nipper. I would not condemn a fish for this propensity alone, since such can be overcome by good organization or cunning or both, but Mr McInerney considers it *Ichthyophthirius*-prone, which is certainly worth noting. I cannot personally put it in this category as I have not found it to err in this respect, but if ever I include further specimens in my collection, a full quarantine (and a bit for good measure) will be enforced, as even this attractive tetra does not outweigh the risk of an attack of white spot in any collection.

My third word of warning concerns the flame fish, but it is more by way of a gentle caution as this little jewel has so much to recommend it in other ways. This fish never does things by halves. It is either dead or it is performing gracefully, in and out of the plants, an unending and vigorous pink courtship which glitters and entralls all who witness it. It breeds readily and



Gouramies are favourites for the community tank when small, but species like the three-spot gourami shown here can rapidly outgrow their companions. When large the three-spot gourami is sometimes (although not always) a bully and looks 'out of place' in a tank of smaller fishes

The Siamese fighting fish is a magnificent villain as far as the community aquarium goes. It is not safe with small fishes and is quite often the unsuspected cause of 'mysterious' fish deaths in a mixed tank.



the fry present no great problems, even to the beginner. The one thing that detracts from its overall charm is a savage ferocity towards anything it regards as inferior, and this can be a specimen of its own kind as readily as some other, so if you do have a rogue flame you can be sure that you will have plenty of trouble on your hands. In this event the sensible thing to do is to find it a mate and turn them to good purpose in a breeding tank.

My number four is the *Moenkhausia sanctae-filomenae*, sometimes called *M. oligolepis* or the red-eye tetra, which is usually offered for sale at about an inch long. As it grows to 3 or 4 inches it can hardly be considered seriously for a community tank, and with age it loses much of the youthful attraction which it unquestionably possesses. I am reminded of the markings of the wood-pigeon whenever I see these young fish; grey, black, white and that reddish eye are very tempting colours to the would-be purchaser, but this is a fish to buy with very definite purpose in mind.

Fifth on my list is the White Cloud Mountain minnow, with which one automatically brackets the venus fish. If the collection consists of other fishes which favour the low seventies, and if you live in a hard water area, this advice to think carefully before buying can be safely disregarded, as both fishes will do well in these conditions. They do not prosper in a tank maintained in the upper seventies, and their condition generally seems to deteriorate as the water inclines to softness or acidity. Their immense popularity over the years is thoroughly justified, and they are very well suited to the budding breeder.

The White Cloud can be trusted to leave its eggs (most!) and its young (most, again!) in comparative peace; the venus fish is not as reliable but should be treated as a normal egg-layer and separated from its issue. In both cases the fry are easy to raise and are not subject to the frustrations which beset so many other varieties.

The final word of caution relates to the gouramies. No aquarist worthy of the name is long without a gourami of some sort, but the chances are that the

beginner will plump straight for either the blue or the pearl. Neither is really very suitable for a small tank, as they reach the 4-5 inch mark without much prompting. The dwarf is the most suitable of the family for the beginner, but never seems to do particularly well in a community tank, possibly because its trailing appendages form objects of derision for the other occupants and are therefore tweaked, bitten or pulled, as appropriate to the offender's nasty nature. There never was a more agreeable fish than the dwarf, so if you are to keep it, provide the privacy of a smallish tank and it will reward such consideration many times over.

How about the six fishes I would miss out of a beginner's collection at all costs? Here my comments apply to the varieties mentioned only in relation to their community value. Individually their ratings would, of course, be completely different.

The first fish so commonly offered for sale as suitable for the beginner is the angel. It is a beautiful and fascinating creature and the half-crown tiddlers look charming companions for those other 'first fishes'. All will go well for some months, but then the angel begins to outstrip his tankmates, both in growth and appetite, and in the process usually develops a mean streak. Torn fins, deaths and disappearances of some of the smaller fishes then follow and the novice works up a quite unreasonable hate for the miscreant who is, unhappily, just acting naturally. No, the angel should be treated as a solo venture. The results are immensely rewarding and full of incident and warrant treatment elsewhere and at greater length.

The second fish I would avoid is the tiger barb. This is, again, a simply glorious sight when an inch long, and has turned the head of many a beginner to his subsequent chagrin. 'Tiger' is an apt name, as torn and battered bodies can result from their being wrongly associated with other fishes, particularly those with trailing appendages, such as the gouramies, which they often attack with great ferocity. It is quite true that older tigers are more often than not reformed characters, but in their growing up there are many anxieties.

The barbs are not, in my experience, particularly



good beginners' fishes, as their carp-like habits can create something of a problem in terms of water clarity, but this does rather depend on the variety in question. I hate to appear to denigrate this group of fishes—this is certainly not my intention. But they are such an interesting lot that I would prefer to keep a barb tank quite on its own, including in it a few other compatible varieties such as the loaches, which are good matches in size and bulk.

The third fish I would be careful about is the *Corydoras* catfish, which is sometimes recommended, often as an afterthought, as the scavenger. I personally hate this term as it lowers the catfish in the social ladder to a position it simply does not deserve. Again, I am most fond of the 'cat' and would gladly reserve a 36 in.-tank for a collection if I had the space. The trouble with the odd one or two in a beginner's collection is that they tend to stir up the mulm and often outgrow the proportions of the tank to which they have been introduced. Cloudiness of water is one of the factors which most undermines the beginner's confidence, so catfish should wait until you have mastered the initial tricks of aquarium-keeping.

Fourth on my list of aversions is the penguin. Its attractiveness, alone or in a shoal, is really captivating, but I have found it a true fin-nipper and wouldn't give it tank space at any price. If impecos stopped completely I would regard it as no great loss, and rather wonder why we have put up with this variety for so long.

The fifth fish to avoid is, I regret to say, the guppy, and I am quite sure that this will bring every sort of condemnation on my head from round and about. This warning, of course, comes from respect and not dislike, since the guppy is a complete study in its own right and loses so much of its charm pitched in with all the motley. If you like the guppy, then, take it up as a special study and the interest will last a lifetime.

My sixth non-starter is the Siamese fighter. It is often introduced to a community of large fishes with some success but it is an utter menace with smaller fishes, which it stalks and attacks stealthily and successfully. It is a magnificent villain and, like the guppy can fascinate the breeder for years. It seldom seems at its best in any sort of mixed tank, and has a shorter life, comparatively, than in exclusive accommodation.



## Personal COMMENT by ARPEE

I AM often 'got at' by friends and acquaintances over the matter of my non-participation in showing and club activities. This applies to both my gardening and fishkeeping interests; the assertion often made is that my disinclination to go after the red tickets and to spend time at the club is rather bad form. So far as I am concerned it is purely shortage of time that keeps me away from the club, and this I regret very much, since both the company and the activities are very enjoyable indeed, and I hope that the time will come when I can go along more often and learn something more about the hobby. Shows, however, I find rather a different matter, and I have never come completely to terms with them.

I was reading a gardening journal a few weeks ago in which John Bloom described his feelings when judging a flower show. He confessed to being a not very good judge (a comment I think is basically very far from the truth), because he found himself influenced by the obvious efforts which had gone into certain exhibits and was not able to base his awards on just quality alone, without a tremendous struggle with his conscience. The lovingly contrived exhibit by a newcomer or somebody with the means of a pensioner has to be looked at against that of the professional or the old hand despite the theoretical protection which segregation into classes

is designed to afford. This was written by somebody after my own heart, and how I echo his qualms!

This is why I much prefer the club table show or the friendly inter-club competition, in both of which justice can go the rounds and satisfy all, even if the odd point does get stretched here and there. The open show, however, I think is a very different concept, and this is where I really start losing interest. After spending an hour or so in a very hot room or tent amongst disgruntled losers and pale-looking fishes I often wonder why they all thought it worthwhile, and wonder at the courage and perseverance of the organisers who must have sweated blood to make it all possible. I can quite understand the wish of those who have splendid fish or flowers to let others enjoy the spectacle, and the open show, from this point of view, is of inestimable value to the hobby and to the public alike, but why every class has to be ordered into some sort of categorisation—the winners and the others, is a subject which to me has always seemed a little childish and primitive, particularly when all the comparisons and backbitings have been weighed.

Anyone who has seen well-presented professional exhibits will know how very odious it is to attempt to award a Gold Medal to this display and a Silver to that, leaving a number of quite excellent efforts utterly condemned because they do not attract a bauble. There is no doubt that the rules of a number of shows do attempt to limit the absurdities, but I have never been able to see real room for more than two types of award at any show. One is for furnished tanks, and the other for breeders. What credit belongs to an aquarist who has superbly conditioned a bought fish I cannot assess in terms of cups and tickets; this sort of activity should be quite normal to him as a member of the hobby, and all his fishes should be in superb condition. If they are not, he should be drummed out of the hobby, not given pats on the back for doing his expected bit! If, however,



he has bred and conditioned his fishes, that is rather a different matter.

I hope that it will not be assumed from the above that I deplore the spirit of competition that the show encourages. Without this there would be few standards and the hobby would become sluggish and degenerate. I would nevertheless like to see more non-competitive exhibits tabled purely for the joy of exhibiting; no reason why the judge could not commend some of these for the good of morale, but this would at least remove some of the pot-hunters from the scene and encourage the lesser lights to participate. The biggest deterrent to wider member-participation in shows is the refusal of the pot collectors to admit that they have had their fair share. Some hang on like grim death and cannot retire gracefully, and only delude themselves that, but for their support, the annual show would collapse.



The comments in the December issue of *PFM* about fish 'Lending Libraries' were rather less scornful than I had expected. Mr Marsh's observation that big fish are often difficult to come by was anticipated by Cheltenham Aquatics and no doubt a number of other enlightened undertakings some time ago by the introduction of a sale and exchange notice board in the shop, on which customers could conduct a certain amount of lateral business.

On the face of it this might be regarded as detrimental to the shop trade, but I do not think this is so. If you have a large fish in sole occupation of a large tank and want to dispose of it, the dealer might have to decline it as a trade-in as he is equally embarrassed for space. If, however, he lets you advertise its availability for free on a board in his shop and you thereby find yourself with several cubic feet of untenanted water, he is almost certainly going to be able to tempt you with a dozen of those cardinals you have been eyeing so purposefully for some weeks.

It was encouraging to note that both letters published touched on the hygiene and the condition of fish which might be subjected to 'library' treatment, and in particular the rigid quarantining drill practised by at least one dealer. This is a habit which, these days, should be noteworthy only on account of its absence rather than in its adherence, but there are still a lot of shortcomings in the trade in this respect.

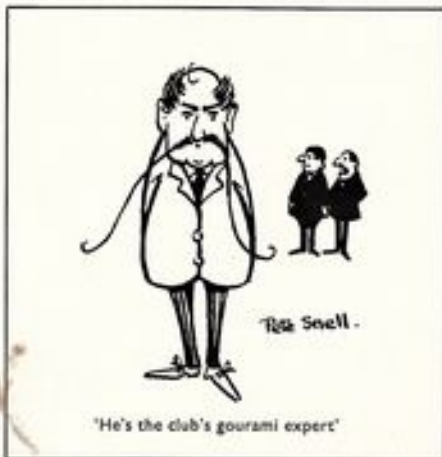
On quite a different subject, the letter from Mr Acland about injuries to his golden orfe was distinctly puzzling, and I am not at all sure that he has fastened upon the true miscreant even after all his hard work and research. In this connection I would comment how much of a pleasure it is to read of efforts made by members of the hobby to get conditions right for their charges. Mr Acland has really done his bit, plus a lot more, to get to the root of the trouble. Despite what he has said about *Notemeta*, I very much doubt whether they were the culprits, as I have had dozens of them, together with *Coryxas*, beetles, dragonfly larvae etc. in my ponds containing goldfish, orfe and golden rudd (both adult and young of the former and latter), and have never had the sort of trouble he describes. I would suspect some form of fish-hunting bird rather than a pond insect, as these would seem to be the only things which would move with the requisite rapidity to catch

up with these large orfe and inflict wounds in almost precisely the same places.

I lost some large shubunkins several years ago. Some just disappeared and one was found behind a row of trees bordering my garden. Although I suspected cats I do not think they were in fact guilty as I noticed a coot slipping away from the pond one day, which was a most unusual happening, as such birds do not normally penetrate into the garden. Although these birds do not indulge in a fish diet either it could well be that hard times or some perversity had driven this specimen to raids of an abnormal nature. An attack from above from some thwarted bird therefore is my theory. The best way of establishing the fact is to erect some form of hide and really subject the pond to conscientious observation. I also suggest that Mr Acland furnishes himself with a flaskful of his favourite beverage during the vigil. It will make it more interesting, and he certainly deserves it.



**Tailpiece.** Domestic activities during the past month have been not very uplifting. My female breeding angel failed to survive the redecorations and all the moving, so I am now left with a large male for whom I am trying to find a good home. There are twelve of his offspring jockeying for position at about the 2-inch size, so I shall put half a dozen of these in the stock tank and see how the pairing off goes. With a bit of luck and good feeding they should be ready for breeding quite soon. My efforts to breed the glowlights were only partly successful. The conditioning went well and there were some eggs, but I have grave doubts about the male I used since there was not a single fertile egg. I am repeating the experiment with males of known ability, though the age disparity could be something of a difficulty. The only fish I am having any sort of success with at the moment is the poon, which I find reproduces much more dependably than the White Cloud, despite an article to the contrary in *PFM* in August, 1966.





# GUPPY

## World

### PETER UNWIN'S Notebook

**JANUARY!** The time of the year littered with unfulfilled resolutions, empty Alka-Seltzer packets and the cry: 'Only 300-odd shopping days to Christmas!'. As you use your rush-hour traffic skills to edge your armchair a little closer to the fire, you will appreciate the diabolical cunning of those travel agents who send out their brochures full of sunshine and silver sands at this time of the year.

Whilst doing some armchair travelling recently, it struck me that many *PFM* readers who have travelled abroad might have come across a particularly excellent public aquarium, some aquatic store or a guppyatic whose main problem was keeping his fish tanks cool!

If you have had such an experience, why not write to me about it and through the medium of this column let us pass on the information to would-be future globe-trotters. (Though, on reflection, with the travel allowance being what it is, perhaps I had better restrict my request to apply to these islands!)

**MONEY** isn't everything! After all it won't buy poverty, yet I still see that the 'brass' spectre is still haunting our shows and that old cliché, 'he buys all his entries', still echoing round the benches.

Despite the machinations of folk like Darwin, Mendel and Crick, who showed us that despite our lofty ideals to the contrary, man was just another animal, *Homo sapiens* still strives to be human and it is

a human failing to be top dog, to beat one's fellow competitors on the show bench; as long as man behaves this way we shall always have the 'pot hunter'.

Yet, talk to some of the more successful breeders (where guppies are concerned) and you will quickly find that good fish are bred, not bought. Ask yourself the question: 'If I had bred a super strain of guppies, would I part with the best?' If you are honest and human, the answer will be a firm no.

So the next time you are tempted to twist your tongue round the words of criticism about someone else's winning entry, make sure those words aren't the result of either sour grapes or just plain jealousy.

**EVER** since our nursery days we seem obsessed by 'giants' and probably the one factor that most followers of the guppy cult aim at is increased size in their offspring.

The correspondence I receive on guppy matters does nothing to allay these thoughts, as most letters contain the question: 'How can I breed bigger fish?'. A simple answer doesn't exist and suggestions put forward differ as much as the weather

Readers of our Guppy World columns will be sorry to hear that Mr Bill Armitage was taken ill in November and has had to enter hospital. We all hope that he will soon be well again and able to resume writing 'Comment'.

forecast does from the weather experienced, but most breeders seem agreed that a well-balanced diet is quite a large part of the answer.

Much has been written on the subject of 'balanced diets' and I don't intend to add to them, simply to state that after we have taken care of evolution and environment, our guppies need the requisite chemicals in their intake of food if they are to grow into large, colourful adults.

We cannot mention the word large without discussing the B<sub>12</sub> vitamin. In the year 1926 the main source of this vitamin (used in the treatment of anaemia) was animal liver, but this source yielded only a fraction of the quantities required and it wasn't until 1955 that chemists found a more prolific and cheaper source available from the by-products of the antibiotic industry.

Experiments soon showed that if creatures were fed on a wholly vegetable diet plus B<sub>12</sub> their rate of growth was markedly accelerated. It didn't take long for the guppy breeder to add this to his arsenal.

To those who make and prepare their own liver foods, a warning. Badly cooked liver has its valuable content destroyed in the preparation; the obvious answer is to feed with small portions of uncooked liver, but if you do so be careful not to overfeed. Liver fouls tank water very quickly.

**I SEE** that British guppy breeders did rather well at last year's International Guppy Show held in Berlin, taking amongst many other place awards first prize in four classes.

A letter from the organisers some years ago giving advanced information about this show stressed that expert interpreters would be on hand for the visitors. On entering the exhibition with a party from Britain I was eager to show my knowledge of their language and bid a polite *Guten tag* to the first German I met. His reply: 'It isn't actually, it's raining outside', uttered in a perfect replica of the Queen's English, deflated my ego somewhat. It set me wondering about those interpreters? Perhaps they were for the German visitors?



# Names of the Goldfish Varieties

From this month the judging Standards for goldfish mutually agreed between the F.B.A.S. and the G.S.G.B. will be applied. Here the names used for the varieties are reviewed in relation to other names used in the past

By M. D. CLUSE

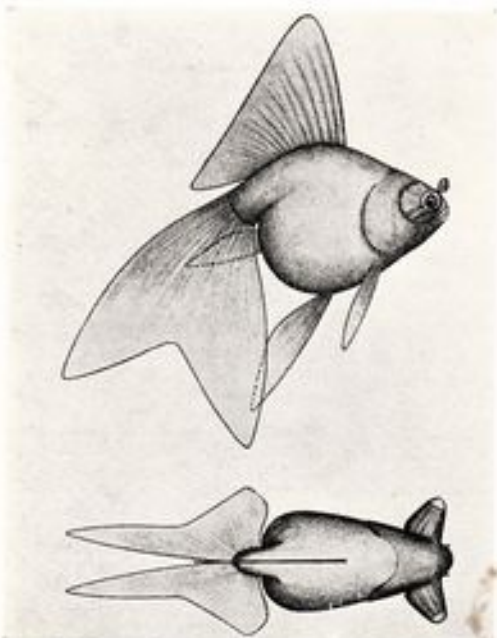
THE report in the September, 1967 issue of PETFISH MONTHLY regarding the agreement reached between the Federation of British Aquatic Societies and the Goldfish

Society of Great Britain makes pleasurable reading. The acceptance of one set of Standards for goldfish varieties will considerably reduce the confusion which has existed in the hobby during the past 17 years.

The G.S.G.B. Standards clearly define the shape and the proportions of the anatomy based on fractions of the body length for eleven varieties of goldfish. Moreover, the system of detailed marking gives the number of points to be allotted for the various characteristics and it is important to note that extra emphasis is given to special characteristics.

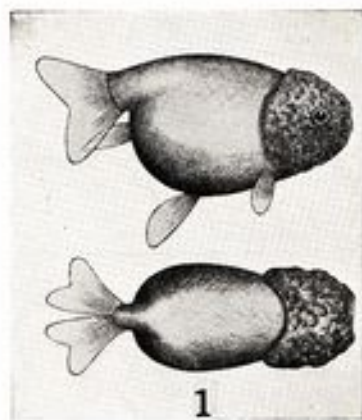
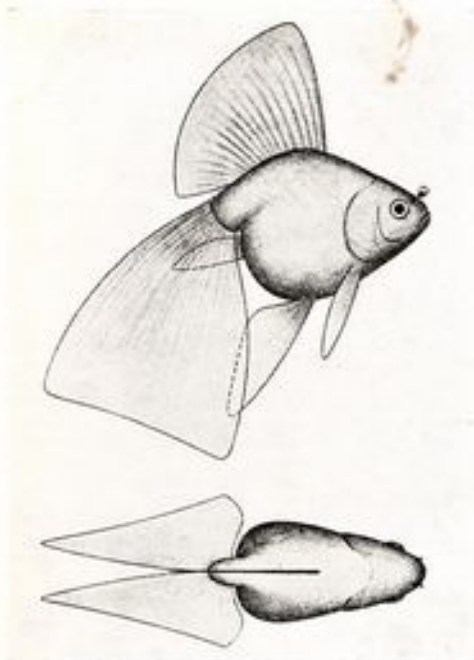
Nevertheless, some of the words used by the G.S.G.B. to describe goldfish will need to be translated or explained to many keepers of fancy goldfish. When the society decided to issue its own Standards because it was dissatisfied with the misleading drawings and terminology then in use, it produced Standards for four basic varieties, which between them, would enable all the main characteristics then available to be preserved.

The Standards were drawn up in a logical manner and incorporated some new principles. It was thought best in the circumstances to give new names to the varieties concerned, as new Standards had been produced. A particular feature of these Standards was that they recognised that each variety could be obtained in three groups: (1) the group with the normal amount of guanine or 'shine', (2) the group entirely lacking this substance and (3) the intermediate hybrid group with plenty of blue showing.



Globe-eye goldfish: side view and as seen from above





Above: bramblehead (lionhead) goldfish, side and top views

Left: twintail (veiltail) goldfish

Diagrams with this article were kindly provided by the G.S.G.B.

In the hobby at the time it was generally assumed that there were only two types, known as 'scaled' and 'scaleless'. This was, of course, misleading and ridiculous because all types have scales. Somewhat more reasonably, the two groups lacking in guanine were referred to as 'calico' because of the likeness to spotted and blotched printed material. But this word gave no indication that two groups were involved and that only the paler, often white, fish were true-breeding.

Similarly, in single-tailed fish these two groups were entitled 'shubunkins'. The G.S.G.B. named the shining group 'metallic', the intermediate group 'nacreous' (because of the mother of pearl appearance) and the third group 'matt' because it had no shine.

The G.S.G.B.'s first basic variety was somewhat similar in shape to the Bristol shubunkin, but, of course, there was no name for the 'metallic' version in this shape and so the name 'singletail' was coined to cover the metallic, nacreous and matt groups.

The second basic variety was called the 'twintail' to emphasize that characteristic. It was similar to the 'veiltail' or 'broadtail'.

The third basic variety incorporated the black-type fish known as the 'moor', which is always associated with the protruding eyes (erroneously described as 'telescopic'). The G.S.G.B. entitled it 'globe-eye' and the black group is the metallic, but it should be noted that nacreous and matt are also recognized.

The fourth basic variety was entitled 'bramblehead', which was considered to be a better description than 'lion-head'.

Four other basic standards have since been produced to cover gold-

fish with other special characteristics which have now arrived from the orient. Three are varieties with no dorsal fin (see also beamblehead). They are the bubble-eye, the celestial and the pom-pom. The fourth is the pearlscale, so-called because of its domed scales. These four names are generally known throughout the fancy goldfish hobby.

Three popular varieties are also now included in the G.S.G.B.'s Standards booklet. The oranda and the fantail in metallic, nacreous and matt forms bear universally accepted names. The London shubunkin, which is the nacreous or matt form of the common goldfish, is grouped with it for shape, which is identical.

### Equivalent Names

<i>Goldfish Society of Great Britain</i>	<i>Popular</i>
Metallic	Scaled
Nacreous	
Matt	
Twintail	Calico
Bramblehead	Scaleless
Globe-eye	Veiltail
	Lionhead
	Telescope-eye

## MARINE FORUM



I SUPPOSE that among the members of the general public a live seahorse is a sight that has to be seen to be believed in. One on display at one of the London aquatic suppliers recently certainly aroused a great deal of interest both from the general public (most of whom would like to own one 'as long as it will live peacefully with the goldfish') and from experienced aquarists thinking of setting up a small tropical marine aquarium.

Seahorses are not as difficult to keep with a mixed marine community as was previously thought to be the case. The one drawback to what will probably be a long and happy life is the task of feeding one once it has been acquired and placed in the marine tank. The most satisfactory method seems to be to feed the other occupants of the tank with dried or fresh foods until they can eat no more (no mean feat where certain species are concerned!) and then add a dozen or so small guppies. The 'horse' will normally swim eagerly towards these straight away, but will not catch any for about the first 15 minutes; but beware! After this period has elapsed, when the

# Keeping a Seahorse

By GERALD JENNINGS

(International Marine Study Society)

guppies are weakening under the change in water density, the seahorse will succeed in catching them in what must seem to the onlooker a most laborious process on its part.

● ON a recent visit to the London Zoo Aquarium I noticed that they have once again on display some tropical marines. Open-circuit filtration is being used, whereby the same filter bed is utilised for a series of tanks; although I am not an advocate of this method, which leaves a lot to be desired because of the danger of the transmission of disease from one tank to another, the Zoo seem to be having far greater success this time than was the case with the previous attempt.

Other fishes to be seen in the London Zoo collection are several large *Pterois colitans*, a shoal of *Scotaphagus argus* and *Monodactylus sebae*, both in excellent condition,

some small tropical wrasse and a triggerfish, besides numerous small damselfish.

● WHILST browsing through one of the more recent paperbacks to appear on marines, I noted that in the closing chapter mention was made that one sign to determine the health of a fish before purchase was to see it feeding. Surely the author, although he had the well-being of all in mind, has never worked in the aquatic trade. I, for one, would not wish to be the shopkeeper with a tank full of marines that had just been fed, and to have a customer demanding that food be given them before he will purchase them! The idea is sound, but I doubt whether the customer would believe that the fish had just been fed; after all, it says so in the book....

## Marine Queries

*Can I keep any seaweeds successfully in my tropical marine aquaria?*

Yes, if you do not use ozone, as this will kill all forms of seaweed except the most primitive slimy algae. The best ones to experiment with are *Enteromorpha* (a short, green, grass-like plant), *Ulva* or sea lettuce, and *Corallina*—a reddish seaweed often found coated with a calcareous deposit. The last is the best of the three but can only be found at extremely low tide. Fluorescent (daylight) tubes are much better for supporting seaweed growths than tungsten bulbs. Also the use of ion-exchange resins, such as Eheim resins, tends to restrict the supply of nutriment available to the seaweeds.

*Several of my tropical marines have developed a whitish film over*

*On a recent visit to the coast I collected some beadlet anemones, Actinia equina. When I reached home some of these had given birth in the bag to minute young. Can you tell me what to feed these on?*

Most young beadlet anemones born by being ejected as fully formed miniature versions of their parents will accept small brine shrimps, very fine scrapings of raw fish, or Tetramarin tube food. If the last is used, small particles should be powdered in a little seawater and fed by injecting the solution into the water around the young anemones with a dropper.

their eyes and subsequently have become blind. Have you any suggestions as to how to treat this disease?

This situation could be caused by an excessive build-up of bacteria in the water or a contagious eye infec-

tion. If the former, reducing the light intensity, and decreasing the density to 1.020, will assist, together with cutting down on any possible excessive feeding of dried foods.

If the latter cause, it would probably be wise to dose the aquar-

ium with an agent such as copper sulphate to restrict transmission of the disease, whilst isolating the affected fishes, treating them by reducing the density of the water and possibly painting their eye surface with Argyrol or a similar remedy.

## Readers' Queries Answered



### Galvanising

*As I intend to box in the tank I am setting up, can I use a galvanised frame? I have always wondered why galvanised tanks are not sold.*

A tank with a galvanised frame could be used, and some commercial fish houses employ such tanks. However, galvanising does not protect the iron for ever and, under some circumstances, could be harmful to fish; nor is it a particularly cheap or attractive product to substitute for the usual kind of aquarium.

### Aquarium Photography

*I wish to photograph a pair of Jack Dempsey cichlids belonging to a fishkeeping friend. My camera is a cheap one and I believe flash will have to be used, although I don't see how this is possible due to reflection unless I use an extension lead. Could I use photoflood? My camera is one with  $f/4$  and  $f/16$  and  $1/50$  shutter speed with provision for brief time. I would like if possible to take close-ups about 18 in.*

It will not be possible to get close-ups with your camera unless there is provision for the addition of close-up lenses to it. Then, however, the difficulties arise that (a) with ordinary cameras with close-up lenses what is seen in the viewfinder no longer matches the picture formed on the film, and (b) the distance between fish and camera lens has to be very accurately fixed or the subject will be out of focus.

It is possible to use photoflood lighting, but with many fishes prolonged illumination with such bright lighting causes them to take up unnatural positions and to cease to swim normally. Flash can be used and there need be no problem about reflection if an extension lead is used and the flash raised slightly above and to one side of the camera.

For colour work an artificial light film will be needed if photoflood lighting is used. With flash and a fairly fast film such as Ektachrome-X, the kind of exposure to try with your camera would be  $f/8$  at  $1/50$  sec., but a number of trial shots may be required before your results are satisfactory.

### Water Changes

*Although I do top up the water that has evaporated in my tank, I thought I was doing the right thing in keeping the water unchanged for as long as possible, on the principle of 'the older the better'. Now I have been told that this is not true.*

The belief that tank water should never be changed is one that has become discredited with modern findings. The yellowish colour of 'old water' is due to the accumulation of organic matter that does not readily decompose; plants can suffer in very old water because of the excess of such materials. In hard water areas continual topping up with fresh water without removal and change of the water already present will cause build-up of inorganic salts as well. For the

fishes themselves, living permanently in 'old' water is a very unnatural state of affairs. Remember that far more fish are living in a given volume of water in the tank than would be the case in their natural habitat. It is not possible to give exact quantities of water that should be changed because it depends on the size and number of the fish kept and the volume of the tank, but the replacement of one-quarter of the water every 6 weeks or 2 months would not be too great for a tank 24 in. by 12 in. by 15 in. and best results with some more sensitive fishes are obtained only with more frequent changes than this.

### Outdoor Tank

*My garden 'pool' is really a large aquarium tank. I am proposing to bring the fish inside for the winter but cannot move the tank. What is the best way of keeping it?*

If the water in a glass-sided tank were to freeze, the pressure of the ice could easily crack the glass, so the tank should be emptied. It must also be kept empty and not allowed to fill up again with rain. Rather than attempting to stand it on one side, which gives the up-ended glass panel no support and might well cause it to drop out, it is advisable to cover the tank with sacking or plastic sheeting. You might have some trouble with leaking after you first fill up the tank again but it is not usual for this to persist and a seal should be soon established.

### Mouthbreeder

*I have one Egyptian mouthbreeder and recently she was brilliantly coloured. She dug a dip in the gravel and laid about 300 eggs, immediately turning round and sucking them into her mouth. They are still there now. As I have no male mouthbreeder, will these eggs come to anything?*

No, the eggs will hatch only if a male is present in the tank to fertilise them as they are laid.



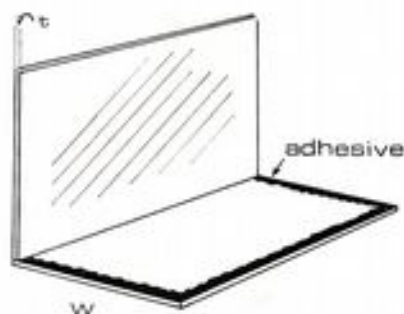
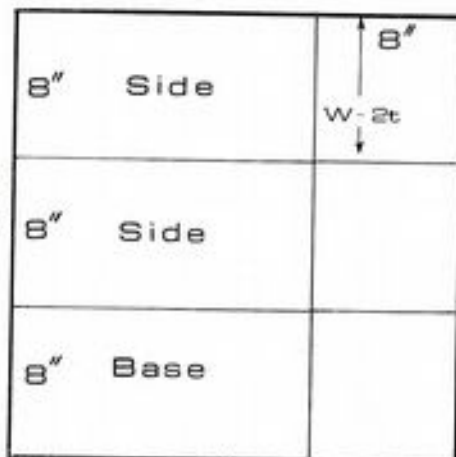
# Building Your Own All-Glass Tank

By B. G. BOAST

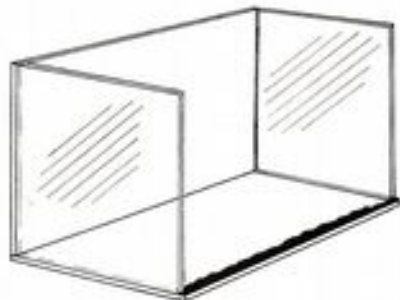
SOME time ago I wanted a number of small all-glass aquaria of various non-standard sizes. After several unsuccessful experiments I was recommended to try a method which involved the use of an adhesive that will bond glass sheets. I have made about a dozen tanks using this method for an average cost of about 5 shillings each. None of these has ever given the slightest trouble during the 5 months that they have been in use.

The smaller tanks were made from horticultural glass, glass intended for glazing greenhouses,

A 24-in. by 24 in. sheet of glass marked to show the cuts required to make a 16 in. by 8 in. by 8 in. tank



One side has been set in position on the base, which has a fillet of the adhesive all around its edges

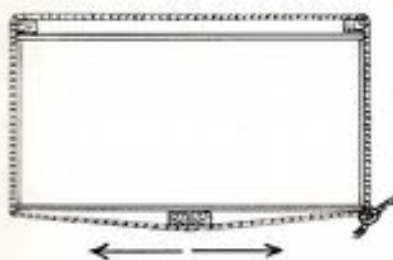


The end panels are set within the side panels and are fitted after the first side panel

cucumber frames and the like. This glass costs only a fraction of that of a similar weight of "window" glass, but is generally only available in three sizes: 24 in. by 24 in., 24 in. by 18 in. and 24 in. by 12 in. sheets. However, careful planning will allow for quite a wide range of tank sizes, and this grade of glass is quite suitable for tanks up to 18 in. by 8 in. by 8 in.

There are several makes of adhesive on the market. They are really intended for sealing the joints between the wall and the bath. The one I used is a silicone rubber sealant manufactured by Dow Corning, costing 13s. 6d. for a tube containing enough adhesive to make six or seven small tanks or two larger tanks, say, 24 in. by 12 in. by 12 in. The tubes are fitted with a special conical cap which acts as a spreader; the best results are obtained if this is cut to allow the adhesive to be spread from an  $\frac{1}{4}$  in.-diameter opening.

The adhesive takes only about an hour to set, stiffen, but may take



Left: a string loop around the cemented glass panels can be tightened by moving blocks of wood beneath it, as shown by the arrows

Right: for the initial assembly the interior of a stout cardboard box can be used



several days to harden though even then some elastic properties will be retained.

To find out which size of sheet will make the most economical tank, make a scale drawing of the glass sheet and on it set out the sides, ends and bottom.

The bottom is cut to the outside dimensions of the tank ( $L \times W$ ); the sides and ends are cut to the same height ( $H$ ), but an allowance has to be made when cutting the ends: the width of the end is the overall width of the tank less the thickness ( $T$ ) of the sides ( $W - 2T$ ).

Before proceeding any further try the pieces together dry, and make sure the glass is dry, clean and free from grease. Spread a fillet of ad-

hesive along the top edge of the base, and on to the vertical edges of the ends. Place one side piece into position and support it there with a block whilst the ends and the remaining side are positioned. The adhesive is tacky and can hold the sides on its own but if the tank is to be moved before the adhesive has had time to harden it is best to hold the sides in position with a loop of string, tightened with blocks of wood. Any surplus adhesive can be removed with a razor blade, after hardening. Test the tank by part filling with water and then tilting so as to cover each joint and any leaks can be filled with adhesive, usually without emptying the tank.

There are quite a few advantages

to these type of tanks besides low cost. They can be made to any size that the aquarist wishes and need not be the usual rectangular shape; they could be designed to fit into corners etc. Neither does this type of construction have the normal angle-iron which reduces the viewing area. The tanks have a wide range of applications; hospital tanks, quarantine tanks, or for breeding those fish such as killies, that need only the smaller tank.

The larger tank, 24 in. by 12 in. by 12 in., had a  $\frac{1}{2}$  in. thick base and sides of 32 oz. glass. Although it is possible to move the smaller tanks when partially full of water this treatment is not recommended when moving the larger tank.

## BOOK Review

*The Biology of Marine Animals* by J. A. Colin Nichol. Second edition, 1967. Sir Isaac Pitman & Sons Ltd. London (£5).

THIS book is an ideal choice for those who are just a little more interested in an overall picture of marine biology than the aquarist who is content merely to keep fish. It deals in simple, easy-to-understand terms, with a very intricate topic—the biology and physiology of marine life—and relates excellently all topics covered e.g. water balance, respiration etc. to the general overall ecological structure of marine life. Full coverage of how marine animals maintain themselves in both estuarine (changeable) and the comparatively stable open sea environment is given.

Although it is not general practice to list chapter headings in a review, I feel here that an exception should be made: 1, Introductory; 2, Water, salts and minerals;

3, Body fluids and circulation; 4, Respiration; 5, Nutrition and feeding mechanisms; 6, Digestion; 7, Excretion; 8, Sensory organs and reception; 9, Effector mechanisms; 10, Nervous system and behaviour; 11, Pigments and colour; 12, Colour changes; 13, Luminescence; 14, Associations: Parasitism, symbiosis and commensalism; 15, Skeletons, shelters and special defences. With an Appendix on saline media, it will be seen that a complete coverage of the field is made.

The original edition (first published in 1960) has been revised by the author, who is the zoologist at the Plymouth Laboratory of the Marine Biological Association U.K., to include many modern advances in study methods and discoveries made over the last few years.

From the serious marine aquarist's point of view, this book is an addition to his library that would be well worth while; indeed the introductory chapter gives excellent detailed explanations of the terms 'density', 'salinity' and 'chlorinity' and the measurement of the hydrogen ion concentration, the pH so often misinterpreted by the aquarist, besides a comprehensive list of references (which also follow each chapter).

G. JENNINGS



# An Unusual Fish Parasite

By DR G. FRYER

Freshwater Biological Association

The parasitic isopods of freshwater fishes are uncommon but interesting animals about which much has yet to be discovered



Fig. 1. A parasitic isopod attached to its host



Fig. 2. The parasite of Fig. 1 as seen lying free



Fig. 3.



Fig. 4.

FROM time to time aquarists encounter in their tanks exotic animals, usually parasites, which have been inadvertently introduced with fishes. Among the least common of such parasites are crustaceans belonging to the group known as the Isopoda—whose free-living relatives include the familiar water louse (*Aeolha*) and the terrestrial woodlice. Once such accidental introduction (the second to come to my notice) was reported recently by Dr F. N. Ghadially to *PETFISH MONTHLY*, and the accompanying photographs show the animal concerned.

Unfortunately I have not seen the parasite itself, which was subsequently lost, so a precise identification is not possible. In general appearance, however, it resembles a South American genus called *Braga*, which is a member of a family known as the Cymothoidae, and it is probably from South America that it was imported. It is in that continent that, as freshwater animals, parasitic isopods have their stronghold. Very few parasitic species occur in freshwater elsewhere in the world though in the sea they are richly represented and here show great diversity in form and habits. The freshwater species in fact are clearly derived from marine ancestors and some of the South American forms are apparently marine relics, that is species which formerly occurred in the seas which covered present-day land surface, were stranded as the sea retreated, and gradually adapted themselves to freshwater conditions. In other parts of the world marine species have penetrated rivers and have even succeeded in colonising Lake Tanganyika in Central Africa.

Identification of these animals is not always easy, partly because several of them are imperfectly known, and because some of them exhibit what is known technically as protandrous hermaphroditism. This means that, as they develop, they first become functional

Fig. 3. An adult female, seen from above, of the parasitic isopod *Uroneco tanganyikae*, which lives in the mouth of a cichlid fish in Lake Tanganyika, Africa

Fig. 4. The parasite of Fig. 3 seen from below. The overlapping plates make up the under surface of the brood pouch, which encloses and protects the eggs and later the young

males but later change their sex and become functional females. Even an egg-bearing female may retain traces of its former male attributes.

As juveniles these parasites are able to swim freely as the specimen in the photograph was reported to do, but the adult females become too bloated with eggs to move in this way and they settle permanently on a host. Sometimes this is in a truly external position, much as in the photograph, but often they seek a sheltered site such as the mouth. This is the case in the African *Lironexa tanganyikae* of Lake Tanganyika, whose grossly inflated females live in the mouth of a cichlid fish of the genus *Simochromis* where they attach themselves by their hooked legs (Fig. 4).

A related African species *Lironexa expansus* lives in the River Congo on the gills of a citharinid fish of the genus *Eugnathichthys*, where its presence is so constant that the local people refer to this fish as 'the one who wears ear-rings', the 'ear-rings' being the isopod. Curiously enough only one of the two closely related species of *Eugnathichthys* which live in the river is attacked by this parasite. The reason for this is unknown. Yet other

species penetrate the body of their host. This is so for instance in the South American *Arytonne tryblbia*, which bores into the belly of its hosts, which include both cichlid and characid fishes, and lives in a 'pocket' in the body cavity which communicates with the exterior by a large hole.

Adult females brood their eggs, and later their young, in a brood pouch beneath the thorax. This is closed below by overlapping plates which arise near the base of the limbs and, as can be seen from Fig. 4, occupies most of the under surface of the animal. Here the young remain until they are able to swim.

The chance to study living specimens of these parasites, about which much remains to be learned, comes but seldom, and if the aquarist who finds such an animal in his aquarium can restrain his natural desire to kill what he regards as a pest, he may well learn something about the habits and behaviour of isopods which is quite unknown. It is also possible that any such isopod may be new to science. The opportunity to study such chance arrivals should therefore be welcomed rather than deplored.

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## Killies and Other Fishes from the Cameroons

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WHEN several African killifishes all differing from one another in markings and coloration are found, how can they be separated as distinct species or varieties? A method involving the special technique of counting chromosomes is one way to do this that has been used by Colonel Jorgen Scheel, Danish aquarist speaker at the Hendon A.S. Convention in November last.

Colonel Scheel, professional soldier in the Royal Danish Army for 35 years, in 1966 travelled 4,000 miles in the French Cameroons studying and collecting fishes. His talk at the crowded Convention consisted largely of an account of his experiences in Africa and descriptions of fishes he saw and taught there presented with accompanying projected colour slides.

Fishes were frequently found in ponds close to roads which formed the major clear areas in the great expanse of tropical forest. The water of these ponds was often

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### A Danish aquarist's experiences with tropical fish from African waters provided an entertaining lecture at Hendon's Convention

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quite brown. Within the dense forests smaller swampy pools were found from which killifishes could easily be caught by hand. Colonel Scheel pointed out that the European aquarist has to take special steps if he wishes to keep these fishes in water like that of their source because the lime content giving the hard waters of northern countries is not found in the tropics. Softness of tropical waters is also maintained by the high rainfall there, he said.

Fishes were caught by Colonel Scheel from the larger rivers as well, but he said that these were large specimens, too big for aquarium life. In some of the small rivers he recorded at least 25 different species; killifishes were found most fre-

quently in the weedy shallows at the edges of rivers. Even the volcanic lakes in the Cameroon mountains were found to hold fishes. Many of the species he collected during his tour were hitherto unknown. Lots of small barbs were found, far more colourful than the larger barbs from Africa with which aquarists are more familiar, but these did not survive the journey back to Europe. 'There is a treat in store for you when these fishes can be imported', said Colonel Scheel.

It was in connection with his description of the occurrence of many varieties of the same fish in different rivers that he mentioned the chromosome counts. By means of these, in some instances what had



appeared to be varieties of *Aphyoseion bivittatus* in 12 different localities over a 300-mile area were shown to be in fact separate species. Very similar fishes, some having 19 chromosomes and some with 17 chromosomes, were found incapable of cross-breeding. An apparent *bivittatus* with 20 chromosomes was also found and when this was crossed with a 19-chromosome fish sterile progeny were obtained. This was the first time said Colonel Scheel that a big group of bony fishes had been studied by the chromosome technique. Of *Epiplatys sexfasciatus*, Colonel Scheel said that the varieties imported to Europe from the Cameroons were far less colourful than those collected from the Niger delta which are not

imported to us.

Fish collecting was described as very hard work in the heat and with the effort involved in the method that was found most successful, namely a sharp 'bayonet-thrust' type of action with the net to trap the fish at the surface. With interesting accounts of the life and social customs of the natives of the area, Colonel Scheel finished his talk with his experience of South American killifishes. He mentioned keeping eggs from some of these for periods of 3 years and finding them still viable after this time.

His talk was very well received by the numerous societies present and favourable comments were made on the excellence of the lecturer's colour slides. Here, he pleased one

section of the audience by plumping for Kodachrome II as the ideal film for fish photography in colour. It appears that there are two rival schools of thought on this matter in the Hendon Club!

Colonel Scheel ably answered the many questions put to him at the close of the lecture and afterwards joined in an informal discussion with a group of the audience in which B.K.A. members were prominent.

Once again, HENDON A.S. is to be congratulated on their organisation of the Convention. The lecture was supported by several interesting exhibits staged by Hendon members and by the presence of many distinguished aquarists whose advice was available to all attending.

## What's New?

### Fish Diets by Numbers

NEW introduction by **Suregrow** is a range of fish diets identified by numbers. All made in Britain, diet 00 is a fry food, diet 11 is a standard tropical fish food also available as diet 22 in a coarse grade, diet 33 is a high-protein fish meal, diet 44 is wheat-germ flakes, diet 55 is freeze-dried *Tubifex* and diet 88 is a tropical fish flake food. Diets 66 and 77 are additions promised for later this year. 00, 33 and 44 cost 3s. each, 11 and 22 are each available in small and large sizes at 2s. 6d. and 3s. 6d. respectively, 55 costs 4s. 6d. (small) and 7s. 9d. (large) and 88 is 3s. 6d. (small) and 6s. 6d. (large).

### Catching the Drips

IF you are having trouble with pools of water collecting below fish house windows or on ledges through

excessive condensation you might be interested in a new cellulose sponge strip that is designed to absorb the drips. This is made by Spontex and is called **Drip-Strip** (2s. 3d. a packet from hardware shops). The strip could also find application as a temporary measure to cope with a seeping set-up tank that you are hoping will ultimately seal itself.

### Sea Salt Mix

LATEST ready-to-use sea salt mix, together with several special remedies for marine tropicals, is the **HW** range introduced by Aquatic Hobby Ltd. The **HW Guaranteed Sea Salts** require only water to be added and are available in 25 litre (5½ gallons), 50 litre (11 gallons), 100 litre (22 gallons) and 500 litre (110 gallons) packs. **Oodinium-ex**, a remedy for marine velvet disease, **Spurelement** for 'revitalising' sea water and **Ektozon Salts** for use in the quarantining of new arrivals are also in the **HW** range (from Germany).

### PFM Photo Competition

A **COMPETITION** for amateur photographers of fish and aquaria is being arranged for 1968 by **PETFISH MONTHLY**. Full details, competition rules and an entry form will be given in the February issue.

### Dates for Your Diary

2nd March. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly, 19th March, 1968. **HUDDERSFIELD TROPICAL FISH SOCIETY** 6th Open Show, Friendly & Trades Club, Northumberland Street, Huddersfield.

20th April. **THURROCK A.S.** First Open Show, Gipsy Lane, Grays, Essex. Benching 10 a.m.—1.30 p.m. Schedules and entry forms from Mr D. C. M. Durrant, 22 Kingman Road, Stanford-le-Hope, Essex.

21st April. **STOCKTON-ON-TEES A.S.** Third Annual Show, St Joseph's Church Hall, Norton. Schedules from Mr J. Chamberlain, 15 Farring Street, Stockton-on-Tees. Phone 64173.

27th April. **WINCHESTER A.S.** 1st Open Show. Schedules available from show secretary Mr R. Hanchett, 1244 High Street, Eastleigh, Hants.

28th April. **YORK & D. A.S.** Open Show. 12th May. **BRIDGEND & D. A.S.** 1st Open Show.

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

8th June. **LLANTWIT MAJOR A.S.** Open Show.

12th-15th June. **NATIONAL FURNISHED AQUARIUM EXHIBITION** at St. George's Hall, Bradford 1. Entry open to all.

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

27th July. **CHROYDON A.S.** Open Show, Stanley Hall, South Norwood, London, S.E.25. Information from Mr D. H. Crowley, 180 Harrington Road, South Norwood, London, S.E.25.

29th-8th September. (Provisional). **NOTTINGHAM & D. A.S.** National Open Show.

**THROUGHOUT 1968:** Keep your dates with the aid of the PFM Pocket Diary for Aquarists (5s 6d post free from PFM's office).

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

# PRACTICAL

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## JOTTINGS

By F. N. GHADIALLY,  
M.D., Ph.D., D.Sc.

OVER the years one collects many little bits of information and experiences which are worth passing on but which individually can hardly provide substance for an article. They can, however, be collected together in a series of the sort I now intend to present.

I trust that at least some of the comments I make will arouse controversy and that lively letters to the Editor will follow. Thrashing out little points in this fashion is a healthy pastime that can do nothing but good. Ideas and suggestions as to topics on which you would like me to comment will always be welcome.

Before we start perhaps I should begin by pointing out that my interest in fish, like that of the majority of us, is only that of an amateur. I am neither a zoologist nor an ichthyologist. I am by profession a pathologist dealing with human diseases. My interest in tropical fish started about 20 years ago when, as I was wandering through a large department store in London, I saw some tropical fish tanks for the first time. I purchased one in the hope that it would provide amusement for a very favourite Siamese cat of mine called Cadenza, for as you know cats are fascinated by moving objects.

However, Cadenza's interest in the aquarium was very short-lived but my interest grew at an alarming rate. I spent hours watching the fish, acquired more tanks and fish and began making most of the mistakes that every beginner makes. It was fortunate for me that at this stage I joined an aquatic society. I received sound advice and help from men more experienced in this hobby than myself, which put me quickly on the right road. If you are interested in fishkeeping and you are not a member of a society then I would strongly recommend you to join your local aquarist club. For a modest subscription you will have at your disposal the experience and help of skilled aquarists eager and willing to assist you.

### Corrosion of Tank Frames

One of the most useful tips that I have picked up during my years as an aquarist deals with protecting the angle iron of fish tanks from corrosion and rusting. Most aquarists accept rusting of aquarium frames as something that is inevitable, something that one can do little about. This, at any rate, was my attitude some 14 years ago.

I had vaguely heard about some special undercoats and paints that prevent rusting but I had never given the subject serious consideration. I felt that the only real answer was stainless steel, which, being expensive, I could not afford. I learnt to endure what could not be cured. On viewing some of my rusty tanks with the top

angle more or less half eaten through a fellow aquarist, Mr C. Massey, said that he knew how to prevent this sort of thing happening. I listened politely but rapidly lost interest when he told me that the first step was to get all the rust off!

However, I was at the moment constructing a large aquarium and he offered to rustproof and paint it for me. The tank which he treated in this manner was in use by me for some 10 years and did not show a speck of rust either on or under the surface of the top frame, where as you know tanks rust most badly. This in spite of the fact that the cover glass rested directly on the angle-iron frame. The tank now rests in the house of another fellow aquarist and I have heard that it has been neither reglazed nor repainted since it was first made some 14 years ago and still shows little or no rusting.

Since then I have used the same method on numerous other tanks in my fish house and I am truly amazed at the results. The technique itself is quite simple. The angle-iron frame should be either shot-blasted to remove all rust or at least wire brushed to remove all loose rust in the first place. It is not vital that every speck of rust be removed but it is best to do as efficient a job as tools and circumstances allow. Next the frame is painted with a preparation called Galvafroid (Secomastic Ltd.).

This preparation is somewhat expensive compared with most paints and not always easy to obtain at ordinary paint shops. One or two coats of this preparation, which dries quite quickly and can be laid on easily with an ordinary brush, finishes the rust-proofing process. The tank can then be painted with one or more coats of any coloured synthetic enamel you fancy. Cellulose paint is unsuitable for use on top of this material. It is as simple as that and the results are truly amazing.

Today, of course, many plastic-covered angle-iron-frames of tanks are available, so rusting need not be the headache it used to be. Nevertheless these tanks are more expensive than ordinary ones and we still have a lot of 'old-fashioned' angle-iron tanks about which could be made to give a lifetime of service if treated as described above.

### Seasonal Live Foods

With the arrival of winter it becomes increasingly difficult to find live *Daphnia* to feed our fishes. Glassworms (*Chaoborus* larvae) and *Tubifex* are, however, available right through the winter months, but must be used with caution and in moderation.

Glassworms, ghost larvae or *Chaoborus* larvae are



almost completely transparent creatures approximately  $\frac{1}{4}$  inch long. They are the larvae of a plumed gnat. In the spring and summer these larvae are transformed into pupae, from which the insect emerges. The larvae are sometimes found in small ponds with *Daphnia* and other creatures or in greater numbers in larger pools or lakes. They can tolerate low temperatures amazingly well and may be collected in mid-winter from frozen-ponds after breaking the ice on the surface.

The method of collection is with a sweep-net similar to that used for collecting *Daphnia*. The creatures look like a mass of wriggling jelly when a number are caught in a net. They stand overcrowding very well and large numbers can be stored for many weeks in jars or small aquaria. When stored in this manner for future use they should be kept in a cool place.

Opinion varies about the value of glassworms as fish food. Some consider them superior to *Daphnia* whilst others place them at the bottom of the list of live foods. Being rather large and tough (in spite of their fragile appearance), they are really only suitable for feeding fish over 1½-2 inches long. These larvae have been known to eat fish spawn and fry and hence should be excluded from breeding tanks or tanks containing small fry. This is not surprising when it is considered that in Nature they feed on creatures such as rotifers and *Daphnia*.

Glassworm larvae (slightly magnified)



Glassworm pupae (slightly magnified)



#### SCIENTIFIC NAMES OF FISHES — 4

By H. J. VOSPER

## Some Common Abbreviations

IN the use of fish scientific names there are a large number of terms which are generally printed in an abbreviated form, even in popular literature, and in more specialised works such shortened forms may be said to have proliferated.

The better known authors of scientific names are often shortened to initials (e.g. L. = Linnaeus), to an abbreviated form of the name (e.g. Ag. = Agassiz) or perhaps all those attributed to a particular person are omitted entirely after due note has been made in a Foreword.

A generic name may be shortened to its initial letter, after its first expression in full, where several species are mentioned or a single species is alluded to several times. Thus in a discussion on members of the genus *Apistogramma*, after the first time of mentioning there will

be found *A. ramirezi*, *A. agassizi* and so on.

A number of less obvious, and less usual, abbreviations are given here.

aff. (having an affinity with) In the example indicated by the term *Epiplatys aff. grahami* (Boulenger 1911) it could be understood that here was a specimen of the genus *Epiplatys*, which, although not identical with the species *E. grahami*, yet appears to be genetically related to it.

cf. (to be compared with) In the specimen distinguished by the term *Epiplatys cf. grahami* (Boulenger 1911) it could be understood that here was a specimen of the genus *Epiplatys*, which, although not identical with the species *E. grahami*, yet is very much like it.

s. str. or *sensu stricto* (in a restricted sense) In the genus *Lepisosteus* the sub-genus containing

the genotype (which expression will be discussed later) is clearly of the original by which the genus was first erected. The ensuing sub-genus *Lepisosteus* is therefore identical with the original genus but yet in a restricted sense because some species have been excluded, and dispersed into fresh sub-genera.

sp. and spp. (species, singular and plural respectively) These shortened forms of the word 'species' are commonly found in all written works, where their most valuable contribution to clear understanding lies in the fact that by their use can be indicated an exact difference between the singular and the plural

Continued on page 416

# My Marine COMMUNITY TANK

Prominent among the attractions of marine tropical fishes are their unique patterns of behaviour. The author gives some of his own observations of such behaviour with special reference to the establishment of a marine community

By VICTOR PARTINGTON

ONE of the most outstanding and interesting features I have observed since keeping tropical marine fishes is the community spirit which exists between certain species. This, however, only evolves once the tank is established and the inhabitants have settled down to their new environment. Some will always continue to guard jealously their own particular territory but provided that they are not too aggressive this adds even more pleasure, interest and excitement to the keeping of tropical marines.

It is most important, however, that those new to the hobby and wishing to keep marine fishes successfully should purchase only those fishes which live in harmony with each other. There is nothing more soul-destroying than to spend quite a large sum of money on a particular beauty, only to find that the following morning it is nowhere to be seen. This may sound ridiculous but, believe me, quite recently, a close friend of mine purchased a very large attractive trigger and introduced it into his tank. It immediately settled in with the other fishes and for several days swam around quite peacefully. A few days later he arrived home one evening to find that during his absence it had gone berserk, eaten most of his smaller fishes and those it couldn't swallow whole were so badly mutilated that they had to be destroyed.

Under normal conditions, however, it is fortunate that any damage to finnage etc., which may occur from time to time, provided that it isn't too severe, is usually only of a temporary nature. I have discovered that marine fishes regenerate their new flesh so quickly that generally within a week to 10 days a fish is once again perfectly formed.

If the tank in use is furnished with large clumps of coral (and this I strongly recommend) in which the smaller fishes are able to seek refuge, I have observed many times the scornful antics they adopt by darting out and tantalising their attacker and just as quickly darting back, knowing quite well that the larger fish cannot follow. This game of hide and seek usually continues for 15 minutes or more, after which the bully becomes frustrated and retires quite dejected to his own chosen spot in the aquarium.

Just as with humans, fish temperament varies from individual to individual and therefore one cannot generalise but acquire this knowledge only by trial and error. Accordingly I can only relate my own personal experiences, which, on the other hand, may be quite different from those of the next man. For instance, when first selecting my fishes for a community tank I was informed that damselfishes were pugnacious and was therefore very wary of mixing them. Nevertheless, I was so impressed by their antics that I couldn't resist choosing a couple of these delightful creatures and since then have introduced several more. Provided that they are not overcrowded I have found them to be highly suitable as community inmates, although sometimes, when new fishes are introduced, it will probably be noticed that they will tend to fin-nip the recent



The author's marine community aquarium





A photograph by the author of one of his community tank inmates, a five-banded chaetodon

inhabitant, but generally after a short period lose interest and revert to their eternal dancing in and out of the coral.

If you are fortunate enough to acquire a sea anemone, then clown fish are a must. This species, apart from being reasonably priced and most colourful, is very exciting and the manner in which they paddle themselves along with their pectorals and caudal and let themselves in turn be caressed by the anemone is indeed a sight to behold. I have found the clown fish to be very hardy once settled in, and have kept one for 16 months and he is still going strong. I have also observed that there appears to be a very close affinity between this species and those of the chaetodon family, as on several occasions when placing new butterfly fish into the tank the clowns invariably swim to their aid and literally protect them from any adversary (just as would a male fighter whilst guarding its young). This procedure continues for several days until the butterflies have acclimatised themselves to their new surroundings, after which they are quite capable of fending for themselves.

I have always found butterfly fish to be peaceful and the graceful manner in which they glide through the water always seems to add charm and tranquillity to the aquarium. At feeding time they will occasionally squabble over an odd piece of chopped cod or luscious white worm, and many times when in this particular mood provide one with much entertainment by erecting their dorsal rays and angrily swishing to and fro with their tails.

Another interesting addition is the neon wrasse, commonly known as the doctor fish. This knife-like creature is for the most part continually on the move, as if chopping its way through the water, whilst the other inhabitants really enjoy his cleaning habits. Sometimes they will be seen to follow him around and quiver in front of him (similar in effect to the courting habits of a male guppy) to attract his attention, which they invariably do, resulting in a quick but nevertheless efficient spring-clean. This, however, must tell its toll, as every night at approximately 10 p.m. it curls up in a piece of coral and goes to sleep after a hard day's work! This surely is one fish I wouldn't be without and firmly believe it to be an asset to any aquarium.

For those wishing to set up a marine community tank I suggest you start with the above-mentioned varieties and avoid particularly those fishes which have viable teeth, like the trigger, parrot fish and emperor etc., unless, of course, there is a dentist in the house!

## Some Common Abbreviations

Continued from  
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of the word 'species', which obvious distinction is not evidenced when the word is printed in full. Hence *Doras* sp. (singular) is unmistakably separated from *Doras* spp. (plural).

sp. n. or *species nova* (new species) Indicating that the species is newly described and erected.

sp. n. y. i. (species not yet identified) Indicating that the specimen discussed has not yet been firmly identified beyond the state made manifest (e.g. *Anabantidae* sp. n. y. i., or *Betta* sp. n. y. i. etc.).

Although not strictly concerned with scientific names, there are other abbreviations with which the aquarist reader should make himself familiar. Certain terms are shortened in fin and scale formulae, in dentition and other anatomical features. Such formulae will appear where complete species-diagnosis is an important aspect of the printed work concerned and it will often save much confusion and constant reference back if a serious attempt is made to memorise the terms used. Sterba (1962) is an excellent example of this point.

A list of useful references will be quoted at the end of this series, including that indicated here, which indication is itself a further example of an abbreviation—in this case referring to:

Sterba, G., 1962, FRESHWATER FISHES OF THE WORLD (Vista Books, London).

In many text books and bibliographies etc. further abbreviations will be found:

*et. al* or *et alia/alii* (and others) Indicating that writers other than that/those particularised have contributed to the work concerned.

*ib.* or *ibid* (in the same place).  
*op. cit.* or *opera citato* (in the work quoted).

*loc. cit.* or *loco citato* (in the place or passage quoted).

*in lit.* or *in litteris* (in correspondence).

# Where the Plants (and Fish) Come From

**W**ORDS cannot convey the vast extent of completely unspoilt country, jungle and bush that one finds in Brazil.' This was Mr Tom Horeman's first comment after returning from a 7-weeks' expedition in Brazil and Paraguay. During this trip he estimated that he had covered about 33000 miles by almost every possible means of transport. To emphasize the extent of the jungle area he instanced one flight by jet aircraft to Mato Grosso when, for 2 days, almost nothing but jungle was seen.

Mr Horeman travelled as a member of a small party of naturalists and he was following his special interest of collecting water plants and studying them in their natural habitat. He saw a great number of types, many of them ones prized by aquarists, during his travels and was specially pleased to find that he had collected four *Echinodorus* species that are probably new ones, as yet unnamed.

Plants of this genus, the 'Amazon swords', were in particular being sought on this survey of the systematic ecology of aquatic plants in Brazil. With Mr Horeman were Dr Joachim Schulze, Berlin botanist, and Michael Bleher of Lotus Osiris, a plant exporter who lives in Brazil. It was Michael Bleher who so often tracked down concealed growths of *Echinodorus*, 'almost as though he had a "nose" for these plants' said Mr Horeman.

The plants were found growing both above water and fully submerged in rivers, the latter specimens being, of course, the ones most difficult to spot. In the rivers the plants were sometimes found in a sorry state as they had been grazed on by aquatic mammals. The best specimens were found in backwaters which were inaccessible to these

Brazil is a country at present receiving much attention from exploring biologists, members of the joint Royal Society and Royal Geographical Society Expedition who commenced their work early last summer. British professional aquarist Mr TOM HOREMAN has told **PETFISH MONTHLY** some of his own experiences of the region after the time he spent there last year



The general route of the journey is shown by the line of arrows

animals and reached only with great difficulty by the party.

'Looking at the jungle from the air is one thing, and coping with it on the ground is another story

altogether', said Mr Horeman. The expedition carried out much of their work under extremely rough conditions and Mr Horeman recalled how he had spent many hours of

A canoe with outboard motor was used for collecting trips on the Guapore River by Mr Tom Horeman, seen here on the river bank

each day, for days on end, in swamp and marsh steadily accumulating more and more mud that became increasingly difficult to remove as it dried on his skin.

At one period a van was used for transport over rough tracks, and it was also used for sleeping in at night. An entry from the diary that Mr Horeman kept during his travels reads: "Slept 1-5 a.m. Started 5 a.m. . . . day ended 11.30 p.m."

From Rio de Janeiro, where the party entered Brazil, they travelled south and first surveyed the river Uruguay area. They then moved north-westwards to Paraguay, travelling along mountain roads that for long stretches could be covered at speeds of only about 10 miles per hour. In Paraguay, Mr Horeman stayed at a farm at Vileta in Mato Grosso that had 12000 cattle and where he found himself among cattlemen who had never before met an Englishman. When he wanted to collect plants from a swamp towards the farm boundary he had to go on horseback for a ride lasting 2 days! In this area anacondas and alligators were frequently to be seen in the rivers.

In the second half of his trip,



after a brief return to Rio de Janeiro, Mr Horeman travelled by jet to the Mato Grosso, from there working along the Guapore river on the border of Bolivia before going northwards via Porto Velho to Manaus on the Amazon, which he used as a base for further collecting trips in the many tributaries in that region.

Fish did not escape his attention, although aquatic plants, of course, were his main quarry. He recalls seeing large shoals of small catfishes, almost certainly *Corydoras* species,

in the river shallows. A particularly impressive sight, he said, was nearly 36000 cardinals that he saw collected together in a pond on a fish farm that he visited in northern Brazil.

With numerous notes, dried specimens of the plants he was interested in and with records of their natural growth characteristics on film, Mr Horeman eventually made his return. This was by air via Georgetown, in British Guiana, and Bermuda, areas with which he is familiar from an earlier tour.

## Transatlantic TOPICS

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By JIM KELLY

THERE are no routine, non-creative activities of the mind which cannot be carried out by the right kind of machinery and when one thinks of mechanisation, then one thinks of the New World. Yet today's machines, marvellous though they are, are morons when compared with what they themselves are

helping to create for to-morrow's world.

A little of this technical progress has rubbed off on to the aquatic trade and resulted in better equipment for the fishkeeper, but why is it that in the field of self-feeders the prices of these machines should remain so high?

At the time of writing, three types of automatic fish feeder are available in Britain but all so pricey they are usually beyond the pocket of the average hobbyist. Surely the brains that gave the world radar, penicillin and the laser beam aren't beyond inventing a simple, effective

and above all cheap-priced feeder and manufacturing it for the home market?

Until such times I suppose we shall have to go on twisting arms, and using where possible, gentle persuasion to get one's family to assist . . . the other alternative being to raid the lad's Meccano set and build one for ourselves! Any ideas?

\* \* \*

Most of us have collected driftwood for our aquaria from time to time, but though our coastline be long it isn't as prolific in this material as the shores of the Great Lakes. This I learned after reading an excellent account of collecting the wood by Helmut Eppelen, writing in *AQUATICA*, the magazine



of the Northern Illinois Aquarist Association.

One of the problems facing the would-be collector is usually how to 'cure' the wood and on this Helmut has this advice . . .

'A heavy salt brine soaking for at least a week was in order to kill whatever might have been living in the wood, followed by a 24 hour soak in bleach, six cups of bleach to 20 gallons of water; this turned the wood white again (the brine caused the wood to turn dark brown). Constant rinsing follows to rid the wood of its bleach content. After this lengthy rinsing period, the larger pieces will have to be drilled and weighted with lead so that the wood will stay under water.'

\* \* \*

*It is against the law in Britain to send live fish through the mail without special permission. Not so in some States of the Union. A label on such a consignment of fish carried by Uncle Sam raised a chuckle: IF THIS PARCEL ISN'T DELIVERED IN FOUR DAYS—THEN DON'T BOTHER!*

\* \* \*

It seems that the State of Florida isn't all sunshine—at least not for the aquatic trader. The Florida Conservation Department now requires wholesalers to purchase a Seafood Dealer's Licence (cost about £35 per annum), if they intend to stock brine shrimp.

One result of this law has caused many retail outlets to discontinue the sale of marine fishes, because they, too, require the necessary licence. Seems a pity to read of this set-back to the marine section of the hobby, just when it seemed to be growing.

\* \* \*

The word 'Zenith' according to my book of words means the highest point of the heavens above one's head; now an American firm of that name has come to earth with a bump and launched a new range of illuminated ornaments for use in aquaria.

Designs so far include an exact replica of a deep sea diver complete with helmet portholes of clear crystal that top a suit of rubberised silk—all non-toxic and colourfast. Other ornaments include a grinning shark; a sea monster with glowing eyes; a submarine and a jewelled sea chest.

Visitors to the White House in Washington, D.C., are requested to sign the visitors' book and a recent visit from a fish club to this number one tourist spot gave rise to an amusing incident. The young son of one of the club officials, eager to 'place his mark', ran to the front of the queue just as a visiting Nun was about to sign; from the rear of the line came his mother's raised voice: 'Wait until the Nun signs, Shelley! Seems I've heard that line before!'

The electrical supply to the submerged ornaments is guaranteed safe and all come complete with cord and neon bulbs that give out no heat to the water. Now our Minister of Transport has stopped us from getting 'lit up' perhaps this is a suitable alternative!

\* \* \*

On the look out for something to 'get in the cards' with at next year's shows? Look no further than the family Osteoglossidae! One member of this group is not unfamiliar with the U.K. show scene, the *Osteoglossum bicirrhosum* or arowana (see *FFA*, May, 1966), but, growing to a length of 3 feet, it is still a baby compared with its close relative the *Arapaima gigas*.

Hailing from the upper Amazon region, the arapaima or pirarucu has

the reputation of growing to be the largest of the world's freshwater fishes; specimens of up to 15 feet in length have been reported!

Looking like a sausage that has sprouted fins at the rear portion, the fish's noticeable features are the large scales, each broadly outlined with violet in the adult species.

It feeds on small fish, literally engulfing them by snapping its gill plates apart and sucking the fish in via the resultant vacuum. Actions that would surely liven up any show bench? Note that the pirarucu is not to be confused with the pacu (*Piaractus nigripinnis*), the name the Brazilians give to the genus of disc characins (sub-family Myleinae).

\* \* \*

*In the past much conflicting evidence as to how the kuhli eel spawns has appeared in both magazines and aquatic books; some authors have been so forthright as to state that the fish has never been spawned in captivity and have promptly listed them in the 'mystery' fishes, as if to whet the appetite of the would-be breeder.*

*Now from a very reliable source (Western U.S.A.), comes the fact that *Acanthopthalmus kuhli lays green eggs!* These are not to be confused with the reports (also from this area), that we are being spied on from outer space by little green men in their flying machines (not that I am anti-U.F.O., just anti-unreliable fish oratory).*

## In Brief . . .

. . . CLUBS local to Kirkby, Liverpool! A society in the process of being formed could do with some helpful advice. Please see item in main Club News under **HUTTON GRAMMAR SCHOOL A.S.**

. . . **ENFIELD & D. A.S.** held their first auction of fish and equipment and found it a most successful venture, with members and visitors bidding for the articles. The table show of the year, a.o.v., was judged by Mr B. Senior. Mr D. Watts' reed fish was awarded first place, with the red-tailed black shark of Mr J. Wittacker second and Miss Collins' butterfly fish third.

. . . THE LIVERPOOL SECTION of the **FANCY GUPPY ASSOCIATION** raise funds for their Christmas party with an annual bring-and-buy sale. Members did not forget that the 'bring' also included taking fish to the table show and \$5 were benched. The best fish in show award went to the double sword belonging to section chairman, Mr Ken Rigby. Club members enjoyed meeting six visitors from the new **NEWPORT (MON.) SECTION**. Anyone interested in fancy guppies is invited along to the club's monthly meetings. A warm welcome is guaranteed.

. . . **MR H. THOMPSON** won the first prize in the **UXBRIDGE & D. A.S.** home furnished aquarium competition that was judged by show secretary, Mr F. Ginger. Miss

L. Stevens was second and Mr A. Wright third.

... INTERESTED readers who would like to join **HORSFORTH A.S.**, as corresponding members should write or phone secretary Mrs B. Helm, 29 Wellington Road, Leeds 12 (phone 21025). Mrs Helm will also answer queries about ordinary membership and will be pleased to give any help at any time during the day up to 6 p.m. (8 p.m. on Fridays).

... THE highlight of the **NOTTINGHAM & D. A.S.** annual dinner, apart from the delicious meal and convivial atmosphere, was the presentation to past president Mr Harold Lyon of a mounted gold sovereign. Mr Cyril Hill, who made the presentation on behalf of the club, explained that it was given as a token of the club's appreciation for all that Mr Lyon has done for the society over the years. At the same time, Mrs Hill presented Mrs Lyon with a beautiful hand-crochet dressing-table set.

The club's home aquaria competition has also recently been judged by Mr Inman, Mr Huddleston and Mr Skelton. This was won by new member Mrs S. Barber, who had used bark for the main item in the tank decoration. Mrs Barber was awarded a first card, a voucher, the Home Aquarium cup and the Ladies cup. Mrs I. Bullyment was second, Mrs B. Goodfille third and Mr A. Saxton fourth.

... THE LAST of the six club Championship cup contests for members of **CRAWLEY COLLEGE A.S.** has now taken place (judged by Mr D. Ellis, Mr West was awarded first place with 77 points, Mr R. Partridge second with 76 and Mr Phillips third with 75). Mrs J. H. Partridge remains champion for the second year running with 19 points. Runners up were: Mr West, 14 points; Mr R. Partridge, 12; Mr T. Goggin, 6.

... ALTHOUGH the winners will have to await the presentation of their awards until the annual dinner at the end of January, the results of three club competitions have been announced by **RUGBY & D. A.S.** The competition for the Bennett Shield (juniors) has been won by Miss C. Boneham who has gained 255 points over the year. Mr R. S. Lindsay is second with 230 points and Master B. Malin third with 225. The Pleasance cup (breeders) goes to Mr R. Fox (450 points); 2, Mr B. V. Woolberton (370); 3, Mr A. Boneham (50). Mr R. Fox has also been awarded first place in the

## Badge of the Month



Reigate and Redhill  
Aquarist Society

home aquaria competition, with Mr B. Deacon second and Mr K. Mullis third.

... THE appointment of a new Association librarian is announced by the **FANCY GUPPY ASSOCIATION**. She is Mrs Irene Ball, 68 Edgemoor Drive, Thornton, Liverpool, 23.

... THE SECRETARY of **SWILLINGTON A.S.** is now Mr G. H. Nash. All correspondence should be sent to him at 105 Beacroft Road, Castleford, Yorks.

... FRIENDS and members of **CLAPHAM A.S.** are advised that the club's new headquarters are Friendship House, Springfield Methodist Church, 200 Wandsworth Road, London, S.W.8 and old and new friends will be very welcome at the next meeting on 2nd January and fortnightly thereafter. At the annual general meeting, the following were elected: chairman, Mr A. Kemp; secretary, Mrs M. Denbow (26 Tillotson Court, Landsdowne Green, Wandsworth Road, S.W.8, phone 622 5095); treasurer, Mr A. Doerner.

... NEW SOCIETY IN **MALDON, ESSEX**. Anyone in the Maldon and district area who is interested in the formation of an aquarist group should contact Mr E. N. Gee of Park View, Chelmsford Road, Puteigh, Chelmsford, Essex (phone Purleigh 243). A nucleus of 12 prospective members has already been obtained so that plans are expected to go forward.

... **GOSPORT & D. A.S.** have a new secretary. Mrs L. J. Wright (20 Pridcaux Brune Avenue, Bridgeman, Gosport, Hants.) now holds

this position and will be very pleased to supply details of society activities to all enquirers. Old and new members will be made welcome at club meetings (these are held on the first and third Thursday of each month). Results of the October table show were: Class a.v.: 1, Mr K. Clough (upside-down catfish); 2 and 3, Mrs Wright (moonlight gourami, spanner barb); 4, Miss J. Courtney (sucking loach).

... A red-tailed black shark won for its owner, Mr F. Gates, the trophy of the month at the November meeting of **PONTEFRACT & D. A.S.** Mr D. Carr of Bradford, who had entertained members with a slide show, judged the table show with the following results: a.o.v.: 1 and 2, Mr F. Gates; 3, Mr T. Tranter. Toothcarps: 1 and 2, Mr G. P. Nash; 2, Mr D. Cohen. Novelty: 1, Mr B. Cohen; 2, Mr T. Tranter; 3, Mr Piper and Mr Goodall. The Society has also now acquired a good collection of books that will be used to start a library for club members.

... IT TOOK judges Mrs Barbara Helm and Miss Jane Helm two evenings to visit the homes of fellow members of **HORSFORTH A.S.** who had entered the home furnished aquaria competition. Tanks were down-pointed for cloudy water, small fishes, poor planting and unoriginality. Mr Ray Hampson's tank, which won the competition and was awarded 75 points, was very clean, well laid out with large plants and looked really well established with fishes of exceptional quality. Mr Paul Kirby was awarded 71 points and Mrs Pauline Hall 68.

... MEMBERS of **MID-HERTS A.S.** have been fortunate in receiving a great deal of expert and practical advice recently. Several owners of discus pairs were delighted to hear the lecture by discus expert Mr Roy Skipper on the keeping and breeding of these fine fish and now have high hopes of success with their own fishes. At the second November meeting a panel of experienced aquarists answered questions on all aspects of fishkeeping put by other club members.

... THE FIRST two meetings of the newly formed **WEST LONDON SECTION** of the **FANCY GUPPY ASSOCIATION** have been highly successful with 40 and 60 fish respectively benched at the two table shows. At the first meeting a talk on the aims and intentions of the F.G.A. was given by the chairman, Mr John Thorne; at the second a slide lecture was given by Mr Jim



Kelly on general guppy breeding. The Section meet on the third Sunday of each month at the Community Centre, Clifton Road, Isleworth, Middlesex and anyone interested in this specialist side of the hobby, either experienced aquarist or beginner, is welcome to attend a meeting or to contact Mr Thorne (10B The Grove, Isleworth; tel. 01-568 0727) for further information.

... **SOUTHEND, LEIGH & D. A.S.** members should have a wide range of aquatic knowledge if they have attended all the lectures put on for them by their committee during the summer and autumn months. There has been a slide show and talk on marines by Mr Michael Willis, and one later in the season on toothcarps. Mr Dave Cheswright spoke on characins, Mr John Mason on filter systems and Mr Willis on plants. Table shows and inter-club shows have been

well attended, and a mini-tank competition produced some ingenious exhibits including one from Mr John Cooper in a pale ale bottle complete with fishes and plants. The club celebrates its thirtieth anniversary this year and to mark the occasion Mr P. F. Capon, who edits the club magazine, intends to publish every 2 months, instead of quarterly as at present.

... **THE INTERNATIONAL MARINE STUDY SOCIETY** announce that they will be holding a competition for the best club magazine this year. The competition will be decided upon a single issue of outstanding merit of any competing magazine and a Diploma of Merit will be awarded to the winner. The competition is open to all. The Society has also now put into operation its plan to give the pages of its journal a filing code number

so that each page can be separately filed under subject and topic sections.

... **THE HOME AQUARIUM** competition held by **COVENTRY POOL & AQUARIUM SOCIETY** was judged by Mr Ted Sheehy and Mr E. Leggett. Out of the tropical tank entries, Mr T. Grant was awarded first place with 92½ pts; 2, Mr and Mrs Thomas (85½); 3, Mr B. Scally (82); 4, Master S. Woodbridge (81½). Coldwater: 1, Mr B. Bromfield (86); 2, Mrs Manning (69½).

The coming of the darker nights means film and slide shows for club members (lack of facilities for blacking out the meeting room prevent these being shown during the summer months). A series of shows on the breeding of the killifish has been arranged and the first of these, the breeding of killifish for beginners, covered topswitch spawners,

## Lively Show at BLACKPOOL

IT WASN'T only the town illuminations that were lit up when **BLACKPOOL & FYLDE A.S.** held their highly successful open show. Says secretary Mr Howard: 'We could have had the brightest neon and high-tension catfish in any show' when, late on the evening before the show opened, the cable leading to the illuminated flowers outside the Solarium came into contact with the drainpipes and caused the whole of the scaffolding inside to become 'live'. 'Possibly', suggests Mr Howard, 'what might be called real Flower Power in action'. However, the illumination department soon came to the rescue and the scaffolding for the stands running down both sides of the 100 ft.-long hall were completed. Palm trees and tropical birds made a welcome sight for the rain-drenched visitors and a charming setting for Miss 'Wai Momi', who presented the prizes. There were 546 entries benched and the show was supported by 38 clubs with competitors travelling from as far away as Nottingham and Birmingham.

One of the biggest draws was the marine section, where two furnished tanks and the large Imperator that was a single entry drew much admiration. The coldwater section was also very well supported this year. Judges were Mr C. Walker, Mr A. Lindley, Mr L. Baxter and

Mr G. Hammett (all F.N.A.S.) and the best fish in show award had to be re-judged between two fish that had equal points. After another look at both fish, the verdict went to the shubunkin belonging to Mr B. Brothwell (N.G.P.S.). The Jessie Fletcher Memorial trophy for the best fish in show entered by a lady went to Mrs H. Dornie of Workop. The Peck trophy for the best fish shown by a member other than the best fish trophy winner went to Mr C. Jones of Blackpool. Mr Jones was also awarded the Newton trophy for gaining the most awards. Lewis's (Ranella) trophy for the club gaining most points overall was taken by Merseyside (five firsts, five seconds, three thirds). Mrs H. Dornie of Workop was awarded the Eheim filter for gaining the highest number of points overall (three firsts, two seconds and one third), and the runner-up was Mr D. Thomalla of Merseyside who was presented with a copy of D. McInerney's book **ALL ABOUT TROPICAL FISH**. Detailed results were:

**Furnished aquaria.** Members' furnished tropical aquaria (Councilor Cross trophy): Mr J. Taylor (Blackpool, 79). Open individual coldwater furnished aquaria (Blackpool & Fylde A.S. silver Challenge trophy): Mr B. Simmons (Blackpool, 70). Open individual tropical furnished aquaria (silver Challenge trophy, Corporation of Blackpool): 1, Mr F. Reynolds (Swillington, 82); 2, Mr J. Taylor (Blackpool, 79) (The



Miss 'Wai Momi' presented the prizes and is pictured here with trophy winner Mr B. Brothwell

Fletcher trophy): Mr J. Taylor (Blackpool, 79). **Coldwater fish.** Jackson trophy, Mr B. Rothwell (N.G.P.S.). Common goldfish: 1, Mr J. Butterworth (Valley, 70); 2, Mr R. Simmons (Blackpool, 66); 3, Mr Rae (Blackpool, 64). Shubunkin: 1, Mr B. Rothwell (N.G.P.S., 81); 2, Mr N. S. Farrell (N.G.P.S., 80); 3, Mr C. Hill (Nottingham, 74). Fancy goldfish: 1, Mr Walsh (Accrington, 82); 2, Mr Eason (Sheffield, 78); 3, Mr B. Rothwell (N.G.P.S., 83). A.o.v. coldwater fish: 1, Mr C. Hill (Nottingham, 78); 2, Mr Day (Nottingham, 72); 3, Mr Eason (Sheffield, 70). **Livebearers.** Blackpool & Fylde A.S.



trophy, Mr Ledger (Huddersfield), Swed-tails: 1, Mr Ledger (Huddersfield, 28); 2, Mr T. Hallet (Clitheroe, 76); 3, Mr J. Wright (Alfreton, 73). Plaques: 1, Mr Thomalla (Mersey, 76); 2, Mrs C. Crook (Glossop, 73); 3, Mrs Betty (Swillington, 73). Mollies: 1, Mrs H. Derris (Workshop, 77); 2, Mr Fleming (Stockport, 76); 3, Mr C. Jones (Blackpool, 68). Guppies: 1, Mr R. Boothwood (Leigh, 73); 2, Miss C. Boothwood (Leigh, 74); 3, Mr A. Middleton (Gorton, 73). A.N.V. livebearers: 1, Mr P. Reynolds (Swillington, 73); 2, Mr Hodgkinson (Gorton, 74); 3, Mr L. Kaye (Huddersfield, 66).

**Characins.** Robinson trophy, Mr Thomalla (Mersey). Sins up to breeding hour: 1, Mr Thomalla (Mersey, 76); 2, Mr G. Brown (Wigan, 78); 3, Mr W. Parkin (T.A.B., 72). A.N.V. characins: 1, Mr N. Hill (Alfreton, 78); 2, Mr F. Mulla (Mersey, 76); 3, Mrs H. Derris (Workshop, 73).

**Labyrinths.** Blackpool & Fylde A.S. trophy, Mrs H. Derris (Workshop). 1, Mrs H. Derris (78); 2, Mr E. Price (Gorton, 78); 3, Mr W. Parkin (T.A.B., 72). **Fighters.** Hadley trophy, Mr Kelly (Mersey). 1, Mr Kelly (69); 2, Mr E. McKay (Oram, 67); 3, Mr H. Craswick (Featherstone, 65).

**Minnows and barbs.** Parlington trophy, Mr K. Parkes (Mersey). Minnows: 1, Mr Thomalla (Mersey, 77); 2, Mr E. McKay (Oram, 73); 3, Mr W. Smith (Mersey, 73). Labiosa and sharks: 1, Mr W. Taylor (Oram, 70); 2, Mr W. Taylor (Valley, 78); 3, Mr W. Parkin (T.A.B., 70). Barbs up to 2 1/2 in.: 1, Mr E. McKay (Oram, 75); 2, Mrs M. Thomalla (Mersey) and Mr J. Wood (Bury), 70. A.N.V. barbs: 1 and 2, Mr K. Parkes (Mersey, 84, 76); 3, Mr W. Parkin (T.A.B., 73).

**Killifishes.** Childs trophy, Mr H. Craswick (Featherstone). 1, Mr H. Craswick (Featherstone, 76); 2 and 3, Mr A. Wood (Barnoldswick, 73). **Cichlids.** Eboracaster trophy, Mr W. Matthews (Lytham). Dwarf: 1, Mr D. Sutton (Wigan, 79); 2, Mr B. Turner (Blackpool, 78); 3, Mr Thomalla (Mersey, 77). Angels: 1, Mr C. Jones (Blackpool, 74); 2, Mr F. E. Gregory (Oram, 77); 3, Mr Hurley (Nelson, 75). A.N.V. cichlids: 1, Mr W. Matthews (Lytham), 80; 2, Mr R. Moorcroft (Mersey, 79); 3, Mr M. Fidler (Glossop, 78).

**Catfish and loaches.** Carfax: 1, Mr W. Parkin (T.A.B., 82); 2, Mrs H. Derris (Workshop, 78); 3, Mr L. Kaye (Huddersfield, 74). Loaches: 1, Mr W. Taylor (Oram, 78); 2, Mr F. Mulla (Mersey, 76); 3, Mr K. Parkes (Mersey, 78). **A.N.V. tropical.** Lynton trophy, Mr L. McCourt (Glossop). 1, Mr L. McCourt (81); 2, Mr P. Reynolds (Swillington, 78); 3, Mr Brown (Mossden, 74).

**Pairs classes.** Pearson trophy, Mr W. Parkin (T.A.B.). Livebearers: 1, Mr J. Roberts (Bramley, 76); 2, Mrs H. Derris (Workshop, 69); 3, Mr C. Jones (Blackpool, 67). Equiverts: 1, Mr W. Parkin (T.A.B., 71); 2, Mr B. Rodwell (N.G.P.S., 70); 3, Mr Hodgkinson (Gorton, 64). **Breeders classes.** Fylde Cinema rose bowl, Mr W. Taylor (Oram). Goldwater (4 fish): 1, Mr B. Rodwell (N.G.P.S., 81); 2, Mr N. Fawell (N.G.P.S., 77); 3, Mr W. Parkin (T.A.B., 74). Livebearers (6 fish): 1, Mrs H. Derris (Workshop, 78); 2, Mr R. Boothwood (Leigh, 73); 3, Mr Fleming (Stockport, 71). Equiverts (6 fish): 1, Mr W. Taylor (Oram, 81); 2, Mr L. McCourt (Glossop, 81); 3, Mr Smith (Glossop, 79).

**School and schoolchildren's classes.** Schools furnished aquaria: silver Challenge trophy and 2 B. furnished aquarium. Herwade school (Blackpool). 1, Herwade school (75); 2, St. George's School (Blackpool, 72); 3, Waterloo Road School (Blackpool, 71). Schoolchildren's individual furnished aquaria (tropical or cold): Challenge shield, Miss Twinnlow (Blackpool). 1, Miss Twinnlow (74); 2, Master D. Clarke (Blackpool, 73); 3, Master D. Taylor (Blackpool, 72).

**Marine tropic.** Open individual tropical marine furnished aquaria—the Arizona Faber trophy, Mr A. Harper (N.M.A.). 1, Mr C. Jones (Blackpool). Single tropical marine fish, special prize—Mr M. Fidler (Glossop, 78).



A YEAR ago, 7 people in Hucknall decided to form an aquarist society. None of the seven had any previous experience of running such a society and no very great response was expected. Instead, at the end of its first year, HUCKNALL & BULWELL A.S. has a total membership of 64; the committee that was formed, and that has done such a fine job of making the society a success, has provided members with a year's varied and interesting programmes. A table show has been held at every fortnightly meeting together with the added attractions of slide shows, lectures and a three-leg competition with MANSFIELD and RAINSWORTH aquarist societies.

Members of the society have stocked and maintained a tank in the local Old People's Home, where

**COVENTRY POOL & A.S. committee have put forward a proposal to M.A.A.S. for a change in the judging system. They believe that no judge can judge every type of fish and that the range of necessary expertise required deters people from taking the judges' courses and adding to the members of judges to share round the work. They suggest that judges should specialise in groups of fishes. This, they feel, would encourage more enthusiasts to take the judges' courses and would enable each judge to become an expert on a few fishes.**

there is a great interest in the fish. Twelve tanks were also installed and stocked by members at each of two public exhibitions held in conjunction with the Hucknall Cage Bird Society. The highlight of the year was the annual dinner, which was attended by 50 members and their friends. Mr G. Wanless was presented by the chairman, Mr T. Power, with the annual shield awarded to the member who has attained the highest number of points in the year's table show.

At the club's annual general meeting all the members of the committee who wished for re-election were returned. Mr L. Simpson, a very active member, was elected president. The committee is as follows: chairman, Mr T. Power;

secretary and show secretary, Mr M. T. Harrington (5 Greenwood Vale, Hucknall, Notts); assistant secretary, Mr J. Foster (15 Sandringham Road, Sneinton Dale, Nottingham); treasurer, Mr K. Whitaker; assistant treasurer, Mr Vickers; librarian, Mr B. Kirk; and, in a new post of fund-raiser, Mr J. Johnson. Committee members: Mr T. Smith, Mr Garrett, Mr Howe, Mr G. Richardson, Mr A. Reid. Mr Foster asks us to express the thanks of the club's secretaries to all who have made the society such a success by their help and support, to Mr L. Simpson and Mr T. Smith for all the prizes given over the year, and to extend a warm welcome to anyone who is interested in the hobby. The table show programme for the coming year has been devised with the novice in mind, to keep up newcomers' interest. Also included in the programme are evenings laid aside for the sale of fishes and equipment, taken along by members.

MR F. E. GREGORY of Oram won the best fish in the show award with a pair of albino barbs at the second open show held by VALLEY A.S. at the civic Hall, Ramsbottom. Details of the results are:

Guppies: 1, Miss C. Boothwood (Leigh); 2, Mr Preston (Belle Vue); 3, Mr M. Goodchild (Valley). Plaques: 1, Mr A. E. Gardner (Haywood); 2, Mr Beasley (Oram); 3, Mr A. Quiston (Valley). Swordtails and mollies: 1, Mr Preston (Belle Vue); 2, Mr M. Goodchild (Valley); 3, Mr A. Chapman (Valley).

Small characins: 1, Mr P. Bone (Huddersfield); 2, Miss B. Kaye (Huddersfield); 3, Mr F. E. Gregory (Oram). Large characins: 1, Mr Whitaker (Huddersfield); 2 and 3, Mr M. Jones (Valley). Small barbs: 1, 2 and 3, Mr F. E. Gregory (Oram). Large barbs: 1 and 2, Mr D. Ledger (Carnbrook); 3, Mr M. Jones (Valley). Angels: 1 and 2, Mr P. Bone (Huddersfield). Dwarf cichlids: 1, Mr W. Taylor (Oram); 2, Mr A. Chapman (Valley); 3, Mr Brown (Mossden). Large cichlids: 1 and 2, Mr M. Jones (Valley); 3, Mr Preston (Belle Vue). Anabantids: 1, Mr H. Willan (Valley); 2, Mr D. Ledger (Carnbrook); 3, Mr R. Ellis (Valley). Fighters: 1, Mr J. T. Sutton (Oram); 2, Mr Beasley (Oram); 3, Mr A. Chapman (Valley).

Rainbows: 1, Mr K. Ashworth (Oram); 2, Miss D. M. Sutton (Oram); 3, Mr A. Chapman (Valley). Danios: 1, Mr M. Goodchild (Valley); 2, Mr F. E. Gregory (Oram); 3, Mr G. Kershaw (Haywood). Toothcarps: 1 and 2, Mr Beasley (Oram); 3, Mr F. Bishon (Valley). Loaches: 1, Mr Taylor (Oram); 2, Mr J. Butterworth (Valley); 3, Mr A. Chapman (Valley). Catfish: 1, Mr F. Bishon (Valley); 2, Mr G. Kershaw (Haywood); 3, Mr M. Jones (Valley). Labiosa: 1, Mr H. Willan (Valley); 2, Mr G. Kershaw (Haywood); 3, Mr Taylor (Oram).

Fancy goldfish: 1, 2 and 3, Mr Eden (Sheffield). Common goldfish: 1, Mr J. Butterworth (Valley); 2, Master A. Kaye (Huddersfield); 3, Mr R. Ellis (Valley). A.N.V. goldwater: 1, Mr Eden (Sheffield); 2, Master A. Kaye (Huddersfield).

Pairs equiverts: 1, Mr F. E. Gregory (Oram); 2, Mr and Mrs Bewick (Warrington); 3, Mr Brown (Mossden). Pairs livebearers: 1, Master A. Kaye (Huddersfield); 2, Mr P. Bone (Huddersfield); 3, Mr

**KINGSTON & D. A.S.** were recently proud hosts to Mr George Canadale, who was paying a return visit to the club. In addition to taking a number of his 'pets' along, he gave a most interesting talk, with colour slides, on zoos and public aquaria. Club members were, however, very disappointed at the lack of response from other societies. Although some two dozen clubs had been invited only one other organization, the B.K.A., was represented. Kingston members felt that the other clubs, by this apparent apathy, had missed the opportunity of a most interesting evening spent with such a distinguished figure as Mr Canadale.

Mr George Canadale watches whilst Kingston members Miss P. Greenhalf and Mrs Greenhalf examine one of his pythons

(Photo: D. Ellis)



Pewton (Belle Vue). Breeders egg-layers: 1, Mr Bosley (Oxram); 2, Mr Brothwood (Leigh); 3, Mrs Bone (Huddersfield). Breeders livebearers: 1, Mr Bosley (Oxram); 2, Master L. Nightingale (Valley); 3, Mr and Mrs C. Ellis (Valley), Junior class: 1 and 2, Master J. Grady (Valley); 2, Master D. Atsworth (Valley).

**ILFORD & D. A. & P.S.** have been enjoying a varied programme with more yet to come. An auction of fish and plants provided club funds with 10% of the proceeds. A most useful programme, of great practical help to new members, was the forum on the subject of tropical aquaria conducted by Mr Skilton of Chelmsford when the discussion ranged from temperature control to composts and planting. A tape and slide show, a film show and a talk or film for January have also been arranged.

Table shows have been very well supported recently. Mr Braham (1 and 3) and Mr Berger (2 and 4) took the shubunkin awards between them. Guppy results were: males: 1, Mr Phillipson; 2, Mr Aldridge; 3, Stephen Hattam; 4, Mr F. Hattam. Females: 1 and 2, Mr J. Hattam; 3, Mr Ruth; 4, Stephen Hattam. Some very good entries were submitted for the breeders class, tropical or coldwater fish. Mr Woodley took first place with orandas (2, Mr Braham; 3, Mr Reade). Mr Braham also won an award for his entry, a black moor, in the twin-tailed goldfish class. Nearly 100 entries were judged by Mr John Bryden in the society's annual All Classes table show. Certificates were awarded for the 1st, 2nd and 3rd in each class, and three plaques are to be presented to Mr W. Rowe (fantail goldfish, best egg-layer); Mr Sheehan (black lyre-tailed mollie, best livebearer); Mr Sampson (paradise fish, best junior entry).

Anyone interested will be welcome at future meetings which are held

on the second Monday evening of each month at St. Laurence's Church Hall, Donington Avenue, Barkingside. Further details will be willingly supplied by secretary Mr R. Ruth (15 Dunkeld Road, Dagenham).

**MEMBERSHIP** of the **EAST-BOURNE A.S.** now totals twenty and with a full programme planned for the winter, it is hoped that some old members who have been absent from the club for some time will be tempted to return and give their support towards making club meetings a great success.

The mammoth task of taking over the stocking and maintenance of the local aquarium—The Blue Grotto—has placed quite a strain on club funds and various schemes have been put forward to improve this state of affairs. The members who took an interest in the Grotto last year all agree, however, that the effort and work has been worthwhile and that they have all learned a great deal. With all the problems of looking after tanks varying in size from 3 ft. to 12 ft. square now sorted out, it is hoped that a show of plants and fishes will be put on this year equal to anything in southern England.

Club secretary, Mr C. George, asks £750 on behalf of the society to thank all the fishkeepers who donated fish to the Aquarium where they were a great help in filling up empty spaces.

A hearty welcome awaits all aquarists who would like to go along to meetings of the club, held on the first Monday of each month at the society's clubroom—The Blue Grotto, Eastbourne. Mr Colin George (6 Hurst Road, Eastbourne, Sussex) will be pleased to supply all further information.

AMONG the friends and guests present at their twelfth annual dinner, **LLANTWIT MAJOR A.S.** were delighted to welcome their president, Alderman P. J. Smith, C.B.E., representatives from Barry, Bridgend and Newport societies, and Mr and Mrs John Wheeler of Trowbridge, who travelled over 80 miles to attend this social event. Mr John Wheeler is held in very high esteem by Llantwit members; he has been judging at their show each year since 1960.

Mr K. Farrant was presented with the Wing Commander Smith cup as member of the year by the president's daughter. The president's own trophy and the Mr and Mrs Steer guppy cup were presented to Mr R. S. Wigg and the Stampton cup to Mr A. Rogers. Mrs J. Wheeler presented the Miles Thomas Points cup to Mr A. Ibbertson, who also received the J. Holmes Memorial cup from Mrs K. Farrant. Last year's winners received replica cups from the chairman.

Other club activities include participation in an inter-club table show for which **BRIDGEND A.S.** were hosts. This was won by Llantwit A.S. with Mr A. Rogers taking a first for his platy (varianus). Meetings are held on the second Tuesday in each month at the Lesser Hall, Llantwit Major at 7.30 p.m.

**MEMBERS OF UXBRIDGE & D. A.S.** have been active over a very wide area recently. Successes at open shows have resulted in prizes being won at shows held by Amersham, Kingston, High Wycombe, Hounslow, Redhill, Mid-Herts, Bracknell and Haslingstoke Societies. At home, table shows have been well supported and a three-sided table show held with **WILLESDEN** and **HOUNS-**



LOW clubs resulted in a narrowly won victory for Willesden A.S.

At this meeting, while judging was in progress, members and visitors were entertained by a brains trust, the panel for which was drawn from the three clubs present. Other very well attended lectures were given by Mr Peters of Highland Water Gardens and by Mr Mason-Smith, who spoke about tropical fish breeding and described a safari he had been on in Kenya.

A recent visit by coach to the London Zoo proved to be very enjoyable in spite of the bad weather.

AT THE beginning of November members of **HORSFORTH A.S.** were watching a very interesting slide show of the B.A.F. Before the complete collapse of the fishkeeping world with astonishment, however, Mrs J. Dickinson, the club's social secretary, hastens to explain that the slide show featured the 1966 Belle Vue Festival, though chairman Mr Ray Hampson has a set of transparencies of last year's show and club members look forward to seeing them shortly. Slides of the furnished aquariums entered by members in the home furnished aquarium competition were also on view and were used to illustrate how points can be won or lost.

The monthly table show was very well attended, with about 30 entries. Results were:

Specified breeders: 1, Master S. Elzab; 2 and 3, Master P. Kirby, A.O.V.; 1 and 2, Mrs J. Dickinson; 3, Master P. Kirby, Junior class: 1, Master A. Jobbins; 2, Master H. Plass; 3, Master P. Kirby.

**AQUA-NEWS**, the 'official' organ of the **HUTTON GRAMMAR SCHOOL A.S.** has undergone a transformation. From a monthly single foolscap sheet it has blossomed into a 16-page publication to appear each term, and the first issue promises well for its readers. Numbered pages, an index, club news and local news and a competition are all well arranged beneath a most attractive cover designed and executed by the school's art department.

The club's new chairman is Mr J. S. Hancock, who has succeeded Dr R. Tomlinson. The following have been elected to serve on the show committee: show chairman, Mr J. S. Hancock; show secretary, D. J. Radcliffe (serving a third year in this position); show treasurer, R. J. Stringer; together with J. H. Bradley, G. D. R. Bridge, K. L. Gregson and J. K. Williamson.

The society is proposing to introduce a series of table shows during the coming year, for which a trophy has been presented by the secretary. Results of the first show, for live-

bearers, were: 1, J. H. Bradley (75); 2, C. B. Lees (64); 3, R. J. Stringer (60); 4, J. K. Williamson (58).

Members are at present helping Mr K. R. Bliss to form an aquarist society at Brookfield School, Kirkby, Liverpool, where he teaches. Mr Bliss would greatly appreciate any help that local societies are able to give him to make a success of this.

IT TOOK judges Mr Ken Ferrant and Mr Richard Wigg over 6 hours to tour the entries in the **NEWPORT A.S.** home furnished aquaria competition. Accompanied by show secretary, Mr Michael Parry, they found the task a long and difficult one because of the many fine entries submitted. Final results were: aquariums under 2 ft. in length, 1 and 2, Mr L. J. Bannerman (3, Mr I. G. Phillips). Aquariums over 2 ft. in length, 1, Mr J. Lowndes (2, Mr P. Tiddball; 3, Mr F. G. James; ladies section, Miss B. Brown).

Club member Mr J. Overland won the 'Knockout competition' held at a society meeting, with Master B. Edwards as runner-up. The judging competition results were: 1, Master A. Williams; 2, Master A. Smith; 3, Mr L. Bromham.

**BOURNEMOUTH AQUARIST CLUB** members enjoyed a varied programme at their November meeting. A film show, made up of three films, took up the first part of the evening. A film entitled 'Upstream' told the story of the salmon's struggle up rivers to spawn; an Australian film showed some of the more unusual creatures to be found in that country; and a third film described the composition of water.

During the interval the table show was judged by Mr R. Matley, with the following results:

A.O.V. tropical: 1, Mr D. Hagg (*Betta lockata*, 8r 90); 2, Mr D. Hagg (*C. malawiensis*, 80); 3, Mr H. East (White Cloud Mountain minnow, 78). Woodward breeders cup: 1, Mr H. East (tiger barb, 75); 2, Mr R. Poole (travels plays, 60); 3, Mr Gardiner (thicklip gourami, 50).

The raffle prize was a magnificent pair of dwarf gouramis which were won by Mr Gardiner.

The meeting was concluded with a short but informative talk by the chairman, Mr Coombes, on 'Glass in the Aquarium'. He illustrated his talk with samples of glass and showed how different thicknesses should be cut.

Visitors and members are always welcome at meetings, which are held at Kinson Community Centre, Pelhams Park, Kinson, at 7.30 p.m. on the first Monday in each month.

**HOUNSLOW & D. A.S.** have now completed their competitive season culminating in the final Shield event for all fish that have received card awards at the regular table shows. The trophies for the winners will be presented at the Club's annual dinner and dance in the New Year, but the results have been announced and are:

A.V. catfish and loaches: 1, Mr Clive Walker (jubli loach); 2, Mr John Thorne (Clarion); 3, Mr John Thorne (C. Juli). Labryrinth: 1, Mr John Thorne (Dovey gourami); 2, Miss Rosa Brewer (Glasgow gourami); 3, Mr Dave Lowe (combtail). Characins: 1, Mr Eric Sheppard (Norman's headstander); 2, Miss Rosa Brewer (A. autumnalis); 3, Mr Eric Sheppard (red-eyed tetra).

Pairs: 1, Mr John Thorne (*M. anomala*); 2, Mr Clive Walker (jubli loach); 3, Mr Eric Sheppard (tiger barb). Livebearers: 1, Mr Eric Sheppard (red swordtail); 2, Mr Eric Sheppard (blue platy); 3, Mr Bill Saunders (guppy). Barbs: 1, Mr Derek Woodward (chequer barb); 2, Mr Ray Bush (chequer barb); 3, Mr John White (tiger barb).

Coldwater: 1, Mr Bill Saunders (common goldfish); 2, Mr Gary Woodworth (shubunkin); 3, Mr Gary Woodworth (dace). Goldfish: 1, Mr Eric Sheppard (*Haplochromis viviparus*); 2, Mr John Thorne (orange chromide); 3, Mr John Thorne (C. aureus). A.O.V.: 1, Mr Derek Woodward (*Aphyoseion nigricauda*); 2, Mr John Thorne (*Rasbora borapetensis*); 3, Mr Derek Woodward (*Aphyoseion australis*). Best fish in show: the *M. wingarti* belonging to Mr Eric Sheppard.

The social side of club activities also continues to flourish directed by the ever-efficient Mr Bob Nelhams. The most recent outing was to a large dealer's in the Cambridge area. As this was combined with a most enjoyable coach trip, a good lunch and a visit to the Wild-Fowl Trust at Peterborough all the members attending had a very enjoyable day.

THERE WAS nothing theoretical about the talk Mr John Kail gave to fellow members of **BRIGHTON & SOUTHERN A.S.** on the subject of the spawning of angels. He had successfully spawned a pair that produced some 500 fry. These had been raised for 4 weeks, and Mr Kail took along to the meeting about a dozen jars each containing six youngsters for sale to other members. The chairman suggested that a competition might be held at a later date to decide the champion fish-raiser.

At a later meeting, a table show for novices was held specifically designed to encourage the beginner to show. A pump offered by one of the members as a prize was won by Master D. Lunsden with a cardinal tetra. At the same meeting a furnished jar competition was held for the Does Bryan trophy. There were six entries for this and it was won by Mr T. Croucher.



The fortunes of the club are improving all the time and membership is increasing rapidly. Meetings are held every other Wednesday evening and new members are always welcome. For further details please contact the secretary, Mr R. Shelton, 45 Coventry Street, Brighton.

THE AQUARIUM SOCIETY of the NATIONAL ENGINEERING LABORATORY (N.E.L.A.S.) were so pleased with the success of their first-ever attempt at running an open show that they hope to make it an annual event. 280 entries were received from 14 societies from all over Scotland and the club wish to thank everyone who contributed to its success including the manufacturers and distributors who kindly contributed to the raffle. The fish were on show in the Canteen Hall of the National Engineering Laboratory and while judging was in progress a Walt Disney nature film 'Peril' was shown in the lecture theatre.

Prize winners were: guppies: 1, Mr J. Jack (Falkirk); 2 and 3, Mr N. Love (Lanarkshire); Plaeta: 1, Mr T. Cochran (Aberdeen); 2 and 3, Mr R. Rossiey (Scottish); Swordtails: 1, Mr D. Jamieson (Lanarkshire); 2, Mr P. Haggarty (Lanarkshire); 3, Mr A. McDonald (Lanarkshire); Molies: 1, Mr P. Haggarty (Lanarkshire); 2, Mr S. Jamieson (Whithorn); 3, Mr R. Paterson (Lanarkshire); Characina A: 1, Mrs J. Copland (Scottish); 2, Mr R. Paterson (Lanarkshire); 3, Mr T. Abbot (Whithorn); Characina B: 1, Mr A. Watt (Aberdeen); 2, Mr W. Frazer (N.E.L.A.S.); 3, Mr R. Ferguson (Falkirk); Characina C: 1, Mr O. Sharkey (Lanarkshire); 2, Mr W. Southam (Falkirk); 3, Mr L. Wood (Scottish); Barbs A: 1, Mr A. Watt (Aberdeen); 2, Mr P. Haggarty (Lanarkshire); 3, Mr D. McConnell (N.E.L.A.S.); Barbs B: 1, Mr J. Goodwin (Scottish); 2, Mr A. Mackay (N.E.L.A.S.); 3, Mr W. Frazer (N.E.L.A.S.); Labrets: 1, Mr D. Jamieson (Lanarkshire); 2 and 3, Mr J. Drummond (Wain); Rasbora, danio and minnow: 1, Mr D. Gillespie (Wain); 2, Mr J. Young (N.E.L.A.S.); 3, Mr J. Graham (Ayrshire); Bolas (Gourami): 1, Mr D. Copland (Scottish); 2 and 3, Mr G. McKeehan, Croydon; catfish: 1, Mr G. Steel (Lanarkshire); 2, Miss J. Bannan (Aberdeen); 3, Mr R. Ferguson (Falkirk); A.O.V. catfish: 1, Mr S. Thompson (Scottish); 2, Mr O. Sharkey (Lanarkshire); 3, Miss Joan Copland (Scottish); Egg-laying toothcarp: 1 and 2, Mr T. Cochran (Aberdeen); 3, Mr R. Jamieson (Whithorn); Gourami: 1, Mr E. Watson (Lanarkshire); 2 and 3, Mr J. Graham (Ayrshire); Siamese fighters: 1 and 3, Mr S. Allan (N.E.L.A.S.); 2, Mr W. Low (Scottish); Dwarf cichlids: 1 and 2, Mr R. S. Watt (N.E.L.A.S.); 3, Mr D. Polson (Scottish); Large cichlids: 1, Mr P. Haggarty (Lanarkshire); 2, Mr J. Young (N.E.L.A.S.); 3, Mr D. Copland (Scottish); A.O.V. angelfish: 1, Mr J. Govan (N.E.L.A.S.); 2, Mr O. Sharkey (Lanarkshire); 3, Mr W. Mathison (N.E.L.A.S.); Breeders livebearers A: 1, Mr H. Kerr (Edinburgh); 2, Mr J. Faele (N.E.L.A.S.); Breeders livebearers B: 1, Mrs R. Goodwin (Scottish); 2, Mr G. Steel (Lanarkshire); 3, Mr R. Paterson (Lanarkshire); Breeders angelfish A: 1, Mr D. Young (N.E.L.A.S.); 2, Mr J. Edmondson (Moray); 3, Mr A. Watt (Aberdeen); Breeders angelfish B: 1, Mr D. Young (N.E.L.A.S.); 2, Mr R. Watson (Lanarkshire); 3, Mr G. Reid (Aberdeen).

RESULTS of the M.A.A.S. Judges' Course have now been announced and we join in offering congratulations to the following: Two B Class judges who gained A Class certificates were: Mr D. Thompson (M.A.P.S.) and Mr F. Bolton (G.K.N.); New B Class judges are: Mr R. Daldry (Rugby), Mr B. Scally, Mr J. Skidmore, Mr R. Teds (Bedworth), Mr E. Woods (Tawmorth), Mr R. Heap, Mr A. Nicholson (G.P.O.), Mr K. Tiltier (Loughborough), Mr R. Hill (G.K.N.) Mr D. Bennett, Master A. Jones, Mr R. Shakespeare, Mr and Mrs Skinner, Mr P. Weller (North Wark).

AN INVITATION show for cold-water fish, recently held by the SOUTH PARK AQUATIC (STUDY) SOCIETY attracted 80 entries from the following societies: the GOLDFISH SOCIETY OF GREAT BRITAIN, REIGATE & REDHILL A.S., PORTSMOUTH A.S., WEYBRIDGE A.S., HENDON A.S. and the host society. Whilst judging went on Capt. L. C. Betts spoke to visitors on the origin and meaning of goldfish standards. A number of exhibits of pond life and amphibians were arranged by South Park members.

Detailed results were: Singletails: 1, Mr W. Leach (82 pts); 2, 3 and 4, Miss D. Morris (81, 79, 78); Guppy: 1, Miss C. V. Smith (76); 2, Mr J. South (71); 3 and 4, Mr R. Dudley (69, 68); Twintails: 1, 2 and 3, Miss D. Morris (75, 74, 64); Bramblehead: 1 and 2, Mr R. Whittington (77, 62); 3, Mr F. G. Glynn (69); 4, Mrs M. Dudley (66); Calentails, poor poms, bubble eyes, pearl scales: 1 and 2, Mrs C. V. Smith (pearl scale, 79, 72); 3, Mr A. Sutton (bubble eye, 67); Common goldfish: 1, Mr R. Dudley (83); 2, Mr W. Leach (82); 3, Mrs P. E. Whittington (81); 4, Mr F. G. Glynn (77); Fantails: 1, Mr R. M. Whittington (79); 2 and 4, Mr A. R. Sutton (79, 68); 3, Mr S. Isles (69); Orandas: 1, Mr Ryder (69); 2, Mr R. Dudley (64); 3, Mr F. G. Glynn (62); 4, Mr S. Isles (57); London shubunkins: 1, Master D. Dudley (79); 2 and 3, Mrs P. E. Whittington (77, 75); 4, Mr W. Leach (75); Comets: 1, Mr R. Dudley (73); 2, Mr W. Leach (66); 3, Mr Hunt (60); 4, Mr Ryder (60); A.O.V. bass, sunfish: 1, Mr V. P. Voysey (speacock-eyed bass, 23); 2 and 3, Mr Stillwell (sunfish, 20, 27); 4, Mr Hunt (sunfish, 23); A.O.V. native and foreign: 1 and 2, Mr V. P. Voysey (golden orfe, 20; pike, 21); 3, Mr R. D. Smith (rainbow carp, 28); 4, Master D. Dudley (dogfish, 27).

The best fish in show award went to the twintail owned by Miss D. Morris.

HALIFAX A.S. had a very successful sixth open table show. It was held in the Works Canteen of Smith, Balmer & Co. Ltd., Holmfild,

Halifax and the judges, Mr B. Pengilly and Mr F. Taylor (both F.N.A.S.) were faced with 237 entries from 18 societies to place in order of merit. The best fish in show award went to the rigger barb (81 points) belonging to Mr M. Stray. Details of the results are:

Guppies: 1, Mr R. Brothwood; 2 and 3, Mr W. J. Gynn, Swindon; 4, Mr F. Ledger; 5, Mr J. Whitley; 6, Miss B. Kaye, Mallow; 7, Mr G. Garforth; 8, Mr T. Cummings; 9, Mr J. Whitley, Pirbright; 10, Miss B. Kaye; 11, Mr J. Longbottom; 12, Miss S. Barry.  
Characina, small: 1, Mr B. Middleton; 2, Mr P. Barrett; 3, Mr A. B. White.  
Characina, medium: 1, Mr B. Winter; 2 and 3, Mr A. G. Whyte, Characina large: 1, Mr J. Whitley; 2, Mr R. Wilkinson; 3, Mr A. G. Whyte, Barbs, to nigger: 1 and 2, Mr M. Stray; 3, Mr F. E. Gregory, Barbs, over nigger: 1, Mr A. G. Whyte; 2, Mrs E. Wilkinson; 3, Mr R. Wilkinson.  
Rasbora, danio and minnow: 1, Mr P. Barrett; 2, L. & R. Taylor; 3, Mr P. E. Gregory, Sharks and flying fish: 1, Mr P. Barrett; 2, Mr M. Stray; 3, Mr J. Whitley.  
Fighters: 1, Mr A. E. Whitlock; 2, Mr M. Jones; 3, Mr A. Beasley, A.O.V. anabantids: 1, Mr A. E. Whitlock; 2, Mr C. Govan; 3, Mr P. Barrett, Catfish: 1, Mr P. Barrett; 2, Mr A. Beasley; 3, Mr C. V. Brothwood, Loaches: 1, Mr R. Robinson; 2, Mr S. Leatham; 3, Mr A. B. White.  
Angels: 1, Mr W. Rush; 2, Mr J. Longbottom; 3, Mr H. G. Naylor, Dwarf cichlids: 1, Mr P. Barrett; 2, L. & R. Taylor; 3, Mr M. Stray, A.O.V. cichlids: 1, Mr L. Thompson; 2, L. & R. Taylor; 3, Mr D. Shields, Toothcarp: 1, 2 and 3, Mr L. Greenall, A.O.V. tropical: 1, Mr J. Brown; 2, Mr R. Brothwood; 3, Mr and Mrs W. C. Ellis.  
Breeders livebearers: 1, Mr R. Wilkinson; 2, Mr R. Brothwood; 3, Mr W. J. Gynn.  
Breeders angelfish: 1, Mr A. Beasley; 2, Mr M. Stray; 3, Mr R. Brothwood.  
Fancy goldfish: 1 and 2, Mr E. W. Edson; 3, Mr R. M. Fairbridge, A.O.V. coldwater: 1 and 2, Mr E. W. Edson; 3, Master A. Kaye, Furnished jar: 1, Mrs S. Barry; 2 and 3, Mr D. Shields, Juniors: Master A. White; 2, Master L. Leatham; 3, Miss S. J. Robinson.

THE second open show held by the SOUTH LONDON SECTION of the FANCY GUPPY ASSOCIATION attracted 187 entries. Cup and first award winners were:

Short dorsal veil: Mr W. Holmes (78 points); long dorsal veil, Mr T. Coocher (77); dials, Mr R. Isherwood (75); fan, Mr M. Brock (74); flag & scarf, Mr M. Brock (70); top sword, Mr J. Chambers (61); bottom sword, Mr W. Richardson (61); double sword, Mr Frothero & Mr Turner (58); a.o.v. male, Mr R. Bush (72).  
Colour, Mr R. A. Clark (75); rosette, Mrs V. Hibbert (76); superba, Mr Goodall & Mr Parks (77); wodge, Mr G. Bass (74); scallop, Mr M. Brock (75); original, Mr W. Coocher (77); a.o.v. female, Mr B. Hawkins (76).  
Breeders matched pairs, Mr Goodall & Mr Parks (78); breeders matched females, Mr T. Coocher (77); breeders matched males, Mr G. Bass (76); master breeders, Mr W. Holmes (73.5).  
Junior a.o.v., S. Knight (78); Junior breeders, S. Knight (72); ladies a.o.v., Miss P. Carr (70); ladies breeders, Mrs V. Hibbert (75); non-members class, Mr G. Warner (74).  
4 in. by 4 in. furnished, Mr D. J. Soper (82); best male, Mr H. Brock; best female, Mr Goodall & Mr Parks; best entry, Mr H. Brock; points cup, Mr Goodall & Mr Montilla.

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*Continued on page 428*



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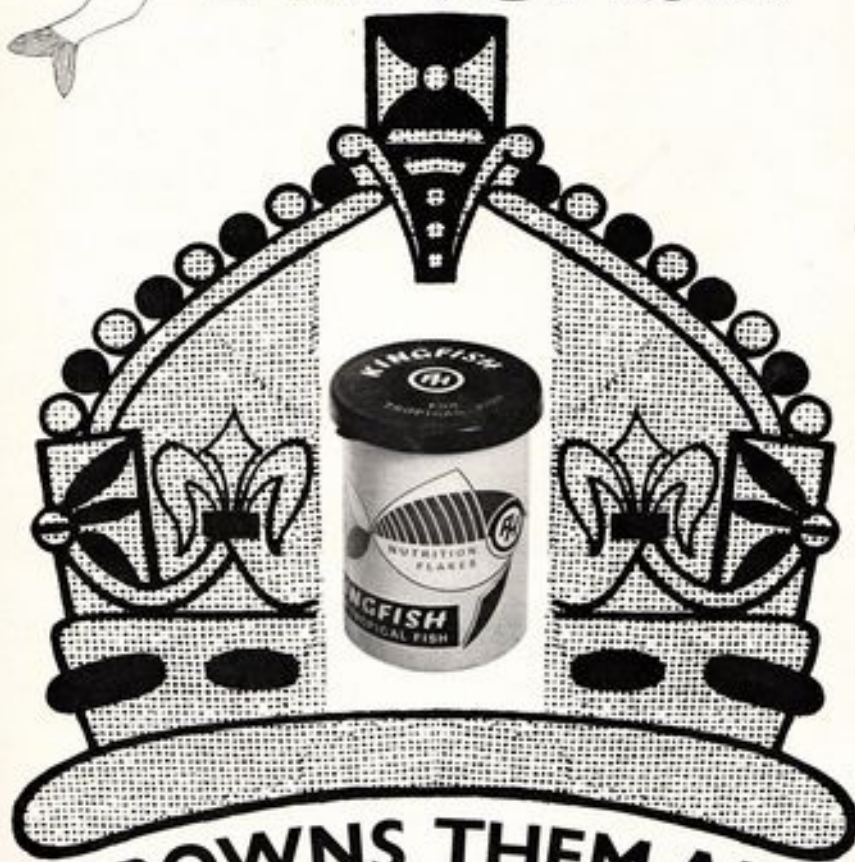
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24x12 in.	£1 9 6
30x12 in.	£1 16 0

## METAFRAME FULL HOOD

16x8 in.	£2 4 4
20x10 in.	£2 8 1
24x12 in.	£2 14 9
30x12 in.	£3 5 7

## STOW-A-LITE

20x10 in.	£3 19 4
24x12 in.	£5 4 6
30x12 in.	£5 15 8

## BOW FRONTED BOOKCASE SETS

36x15x12 in.	£23 17 6
48x15x10 in.	£34 17 6

## BOW FRONTED WITH PLAIN STANDS

24x15x12 in.	£13 2 6
30x15x12 in.	£15 15 0
36x15x12 in.	£17 10 0
48x15x10 in.	£25 0 0

## TWO TIER STANDS

18x10x36 in.	£1 17 6
18x12x36 in.	£2 2 6
24x12x36 in.	£2 7 6
30x12x36 in.	£2 15 0
30x15x36 in.	£3 2 6
36x12x36 in.	£3 5 0
36x15x36 in.	£3 10 0
48x12x36 in.	£4 5 0
48x15x36 in.	£5 0 0

## VICTOR ALL OVER SHADES

18x10 in.	£1 2 6
18x12 in.	£1 5 0
24x12 in.	£1 7 6
30x12 in.	£1 12 6
30x15 in.	£1 17 6
36x12 in.	£2 0 0
36x15 in.	£2 5 0
48x12 in.	£2 12 6
48x15 in.	£3 2 6

## ARBE PLASTIC AQUARIUMS

Bow fronted	6 0
18x12x11 in.	£8 6 0
23x12x11 in.	£9 19 0
24x15x12 in.	£12 19 0
36x12x14 in.	£16 19 0
36x15x14 in.	£22 10 0

## FANTASY GRAVEL

Mottled Lavender	4 0
Mottled Green, Mottled Red, Mottled Primrose, Mottled Blue, Gloss Black, Matt White.	4 0 per 2 lb.
4 0 per 2 lb.	4 0

## 3-D BACKGROUNDS

For 18x12 and 18 in. tanks	14 7
For 24x12	19 0
For 36x12 and 36 in. tanks	30 0

## PUMPS AND FOUNTAINS

Stokes Gdn. Fnt.	£7 19 6
Float Assembly	£1 10 0
Eheim 388 Compact	£9 0 0 complete
S/W	£9 15 0 complete
Eheim 386 Single	£12 0 0 complete
S/W	£13 0 0 complete
Eheim 387 Double	£15 0 0 complete
S/W	£16 10 0 complete
Otter with fountain or waterfall kit	£9 17 6
Hipp Fountain	£4 10 0
Hydraulic pump & filter	£7 16 0

## AIR PUMPS

Summit	£1 1 0
Super Summit	£1 5 0
Montrose Minor	£1 1 0
Montrose Major	£1 4 0
Quiko Pump	£1 6 0
Fairy Pump	£1 5 0
Star	£2 0 0
Jnr. Zoobeko	£2 6 0
Zoobeko	£2 14 0
Biko (twin outlet)	£5 5 0
Rena	£2 15 0
Rena 100	£1 19 0

## AIR PUMPS ACCESSORIES

Nylon clamp	1 0
Tubing clamps	1 6
T-pieces	1 0
3-way pieces	1 3
Small oblong diffuser stone	1 3
Finelife diffuse stone	1 0
Diffuser stems 12 in.	5
15 in.	4
24 in.	10
P.V.C. flexible non-toxic air tubing	per ft. 3
Rubber air tubing	per ft. 3
P.V.C. air tubing	60 ft. coil 7 6
Hyflo regulator valve	5 0
Hykro gang valves	3 6
Air Line Valves	2 3

## AIR PUMP SPARE PARTS

Fairy Diaphragms	1 3
Fairy Air Chambers	1 9
Zoobeko Diaphragms	3 0
Biko Diaphragms	3 0
Silents	2 6
Montrose	1 6
Rena Diaphragms	2 for 4 0
Summit Diaphragms	6

## RUBBER SUCKERS

Knob type	3
Shank type	4
Double sided	4
Hykro Plastic	6

## FILTERS

Windmill Premier Biological Filters	12 6
(S) 18x10 in.	15 0
(L) 24x12 in.	10 0
Windmill Regent	19 6
Windmill Consort	4 6
Internal Corner Gro-Wel Bottom	9 9
Bubble-up	5 0
Hykro Jar, Bottom	13 6
Hykro De Luxe	6 17 6
Dynafo	6 15 0
Super Dynafo	25 0
Slim Jim External	37 6
Klear King External	37 6
Gro-Wel Bubble up	37 6

## FILTRATION ACCESSORIES

Brosiam Glass Wool	1 6
Brosiam Activated Carbon	2 0
Jaynor spun glass	1 6
Jaynor filter carbon	1 6
Datum glass wool	1 3
Datum filter carbon	1 3
Datum Aq. peat	1 6
Nylon filter medium	5 3
Datum Filter Pads	1 6
Inter Poly wool	1 6
Hornby's Clear-View	5 0

## CLEANING EQUIPMENT

Windmill Air Rejector	10 0
Windmill Super Air Rejector	15 6
Windmill Hand Rejector	15 0
Aqua Vac Standard (Battery)	53 11
Aqua Vac Super (Battery)	63 4
Spare bags 5 for	4 0
Windmill Hand Rejector spare bags	1 6
Windmill Air Rejector spare bags	1 6
Windmill Hand Rejector spare bulb.	2 6
Windmill Rubber Algae Scraper	3 6
Windmill Blade Algae Scrapers	3 0
Aluminium Algae Scraper	2 0
Hykro 3-in-1 scraper	3 0
Windmill Fishtail Syphon	2 0
Rubber tubing for syphon per ft.	9
Windmill Dip Tube 15 in.	3 6
Hykro take-apart sediment remover	3 9
12 in.	4 0
15 in.	4 6
Secca Tonge	2 6
Planting Sticks	2 6

## STRAIGHT BOOKCASES

36x15x12 in.	£15 10 0
48x15x12 in.	£22 5 0

## HEATER HOLDERS

Windmill Heater Holder	1 6
Heater Bracket	2 0
Uno Uni-clip Heavy Moulded Plastics	1 6
Spare Knob Suckers for heater holders	3

## WHITEWORM CULTURE

Small 3 0	Large 5 0
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## NETS

Round Nylon nets:	
3 in. 1 2	4 in. 1 3
Green cotton nets:	
3x2 1 3	5x6 2 0
3x4 1 6	6x7 2 6
4x5 1 9	7x9 3 9
Breeders short wooden handles:	6x9 4 6
Comet Nylon nets:	
3x4 2 0	5x6 3 0
4x5 2 6	4x6 3 9
Brine Shrimp or Daphnia nets:	
3x2 1 9	4x5 2 9
3x4 2 6	5x6 3 0
Wooden handles 7x9	6 3

## BREEDING TRAPS

Windmill combined breeding and rearing	19 6
Hykro 3-in-1	7 0
Reliant 3-in-1	15 0
Gro-Wel 5-way American	21 6
Hykro fish breeders, fine and coarse	6 0

## AQUAMASTIC

1 lb. tin 2 9+p.&p. 2 6	
2 lb. tin 4 4+p.&p. 3 0	
4 lb. tin 7 0+p.&p. 4 6	
7 lb. tin 10 9+p.&p. 6 0	
14 lb. tin 19 9+p.&p. 9 0	

## DUROGNOST

Water hardness testing kit	17 6
Spare tablets Pkts. of 10 Strength N.I. or N.S.	2 0
Indicators each	6 0

## COLORMETER PH

pH testing kit	37 6
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## MISCELLANEOUS

Hykro Aquas Sealer	2 0
Hykro Leak Stopper	1 3
Aquastop	2 6

## OTHER FISH FOODS

Chlorella meal 2 6 and 5 3	
Shrimp Meat, Medium	2 3
Turtle Food, Large	2 3
Infusoria Powder	3 6
Conditioning Goldfish Food Large	2 0
Glow Tablets (30 tabs.)	3 6
Treat Packs (7 different foods)	8 0
Baby Food Egglayers	2 6
Brine Shrimp Packs	8 6
Miracle freeze-dried worms	4 6
Miracle freeze-dried brine shrimp	4 6
Miracle Liver Treat	6 6
Miracle Fish Nip	4 6

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