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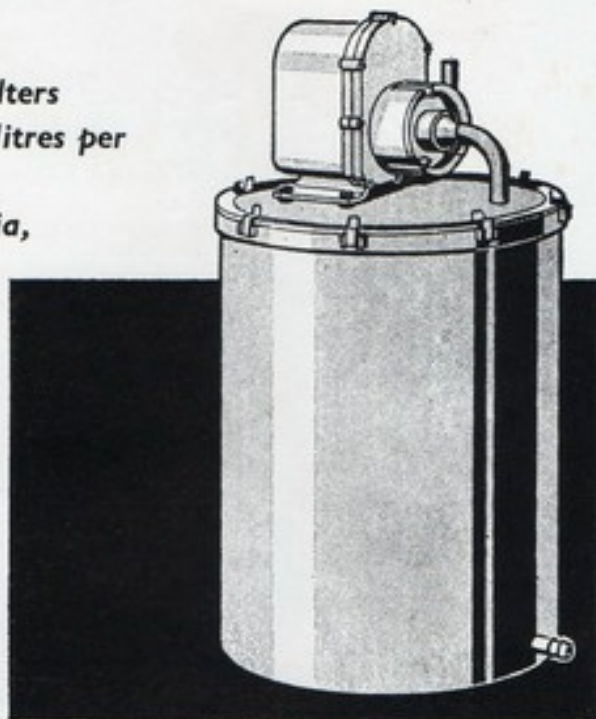
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# PetFish

Monthly 2s 6d

Vol. 3 No. 7

October, 1968

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Editor: Anthony Evans

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## Comments and Quotes

- Good-bye 24-12-15 ● Fish survey ● Raising young fish ● Don't know, don't care?
- Dolphinarium ● Want to buy crispa?

## Going Metric

MOST of us by now will be preparing to cope with decimal coinage, kilograms instead of pounds and metres instead of feet as the adoption of the metric system in Britain proceeds. But have you thought that such old favourites as the '24-12-15' are also likely to disappear? After all, 61 cm. by 30 cm. by 38 cm. is going to seem a bit cumbersome and it won't help much at first to call it a 54 litre tank either!

For the sakes of our tank-makers we hope that the appearance of metric dimensions will not also be accompanied by a demand for a range of tank sizes such as that met with on the continent. One supplier from Holland who we asked about this jotted down in the space of a few minutes no less than 31 different sizes in 'the popular range' between 26 cm. by 16 cm. by 18 cm. and 150 cm. by 50 cm. by 50 cm. that he reckoned to supply.

Oh well! Pass us the 15 cm. net—we've got a barb for the over 76.2 mm. class.

## Check on British Fishes

AN investigation into the distribution of freshwater fish in the British Isles has been started by a senior scientific officer of the Nature Conservancy, to correct inaccuracies in textbooks on the subject. The investigation is expected to be completed with authoritative maps published in 1970.

Dr Peter Maitland, of the Nature Conservancy's office in Edinburgh, is behind the scheme. He said: 'I was stimulated to start this work by the large number of inaccuracies in

the present textbooks. For instance, books I have looked at say that the bullhead is not found in Scotland, yet I know that it is common in Scotland'.

Recorders will be appointed to look after each of the 3,500 10-kilometre squares on Ordnance Survey maps. They will mark in the fish population on special cards prepared by Dr Maitland, and these will be fed into a computer at the Biological Records Centre, near Huntingdon.

To guard against errors in his own survey, Dr Maitland has earmarked rarer species which will have to be verified by the local fisheries officer, or Mr Alwyn Wheeler, of the Department of Zoology in the British Museum, or Dr Maitland himself.

'The results will be extremely useful to many people', Dr Maitland said. 'We have recently been asked what fish are likely to move in quickly if and when the proposed barrage is put across Morecambe Bay. Answering this sort of question will be far easier when the map is produced at the end of our survey, and the answer will be more reliable.'

To protect rare species, only the 10-kilometre square in which they occur will be indicated, and no information will be published until the recorder has given permission.

Recorders are still being appointed for England, Scotland and Wales, and next month a Nature Conservancy biologist will leave for Ireland to build up a network of records there.—THE TIMES.

## How to Rear Fry

AT a conference on river fisheries held the other month at the University of Southampton, one speaker from the Central Electricity Generating Board summarised the essen-

tials for rearing fish fry in commercial hatcheries as cleanliness, knowledge of numbers of fry per container, strict control of growth rate by food supply and a good supply of water. A strict daily routine was also emphasised as necessary to ensure success.

Exactly the same headings could be given as good advice to the would-be home rearer of tropical fishes—certainly a high percentage of the problems that readers write to us about arise through neglect of one or more of these essentials.

However, no one should be worried if from batches of fry numbering hundreds when first hatched only a few score at most of youngsters are finally reared. Successful breeders probably do rather better than the survival rate in natural waters. One illustration of this was given at the fisheries conference with reference to salmon fry: about a million fry (plus or minus half a million) are needed to produce only 150 adult salmon!

## Don't Know, Don't Care?

NOT a single letter has reached us about the charges made against fishkeeping society members in a pet trade publication that we reported in PFM's August issue. This we find all the more surprising because we know from talks with aquarists and from remarks overheard at aquarists' gatherings that the item did in fact provoke some strong reactions and discussions.

Interestingly enough, by no means a majority of the comments we noted were denials of the allegations made. The most usual reaction was that aquatic dealers have no cause to complain about their treatment when buying fish from society members because the dealer always has the final say about price and whether or not he clinches a deal. On the matter of the ethics of societies managing their own 'shops' and offering cut prices it appeared to us that here and there some uneasiness about this was felt by aquarists.

But in PFM we wrote 'Club members—you have been indicted. How say you—guilty or not guilty?' A failure to answer might be held to indicate that in the main a 'don't know' or 'don't care' attitude pre-



NEXT MONTH is the month of THE AQUARIUM SHOW in London. The Editor of PETFISH MONTHLY hopes that readers will bring their families to see this extra special event. Also, please tell your friends! 7th-10th November at the Royal Horticultural Society Old Hall, Vincent Square, London, S.W.1.

vails, or it might less desirably be taken by the trade that the charges have stuck.

## Dolphinarium for Brighton

BRITAIN'S first dolphinarium—to

house dolphins and sea lions—is planned by the directors of Brighton Aquarium. The proposed site is the present Brighton Motor Museum. Plans have been submitted to Brighton council. If approved the dolphinarium would be open by next Easter.—THE TIMES.

## Want to Buy Crispa?

TALES of how foreign water plants have established themselves in British waters after being introduced by naturalists are well known, Canadian pondweed being the most familiar example. Usually the emphasis of the accounts is on the trouble caused when such foreigners multiply excessively and choke waterways with their growth. Recently, however, we saw a report about the so-called 'giant *Elodea*' or 'crispa', a plant that came originally from South Africa, which rather turns the usual emphasis.

It seems that so luxuriant is the crop of *Lagarosiphon major* in the Earlswood Lakes at Reigate, Surrey, that plant collectors have been using the area as their source of the plant for sale to aquarists. It is now reported that the local council has woken up to their commercially valuable asset and tenders have been invited for the rights to gather the plant from these waters.





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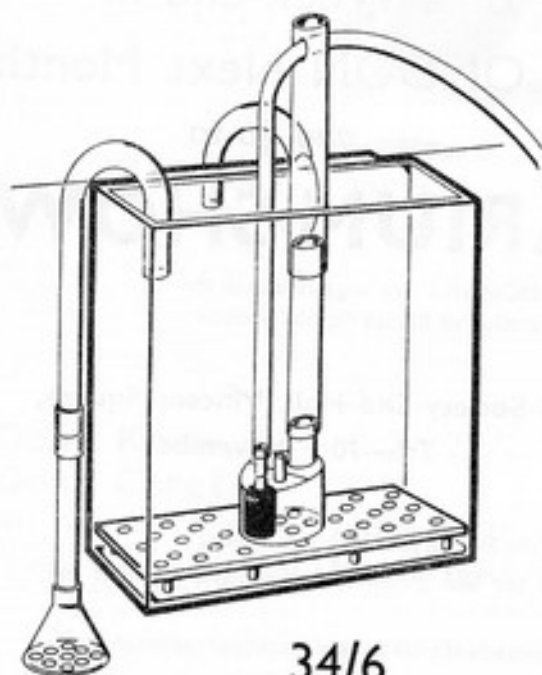
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# LETTERS

## Heat and Evaporation Loss from Tanks

**I**N NEW TECHNOLOGY, number 19, July 1968 (issued by the Central Office of Information), there is an article by H. E. Baum, Capricorn Industrial Services Ltd., describing a method of reducing heat and evaporation losses from tanks of liquid used for industrial processes.

Very simply, it depends on the floating of a layer of plastic spheres on the liquid's surface and I wonder if you know of any work which has been undertaken to discover whether such a method could be applied to small aquaria. There would seem to be a possible problem in such a method if the surface area is significantly reduced, so preventing the ingress of oxygen and the egress of carbon dioxide. Perhaps the surface area could be increased, say, by choosing the sphere diameter and material such that the liquid crept up the surface of the sphere by surface tension. I suppose an aerating pump would cope if the problem was severe.

Lighting could perhaps be another problem—maybe the spheres could be transparent (at least to important wavebands) or translucent so that a point source of light would be diffused. It would seem that floating plants for those who insist on having them, and feeding areas, could be catered for by floating rings with the spheres.

I would be most interested to hear any comments you have and perhaps later try a few experiments—unless the scheme has been already thoroughly investigated and rejected.

Camberley, Surrey

P. H. CUTLER

*We have received some interesting information about the 'Allplas system' from the firm concerned. It appears that whenever balls of the same diameter are used on the water surface the percentage covered will always be the same—91%. The White Fish Authority at Hunterston in Scotland have reported that the system speeds up the rate of fish growth, and it is said to be one of the factors that have enabled the Authority to reduce the maturing time of white fish from about 4 years to 2 years. It is not known whether experiments with the system have been made with small aquaria. The hollow plastic (polyolefin) spheres are highly translucent. They obviously form a most efficient way of decreasing heat and evaporation losses from tanks of water and further tests would be required to discover whether the system can be advantageous to the aquarist.—EDITOR.*

## Plastic Better than Glass

**W**HAT HAS Mr C. Wright used glass for the construction of his breeding trap described in the August issue of PFM? I cannot imagine that this would stand up to the rough and tumble of fish house existence for long without mishap, whereas plastic material would be unbreakable, easier to cut and stick together and not

much more expensive if you buy cheap off-cuts. I am going to try to follow his design but it will be plastic for me, not glass.

Leicester

L. THOMPSON

## No Flowers

**I** ENJOYED reading about flowering plants in the aquarium (PFM, July) but finished up feeling rather puzzled as to why the plants in my own tank seem to produce no flowers at all. I did once buy some *Sagittaria* that had a few flowers on but although my plants seem very healthy and frequently need pruning, they just don't flower. Is there some other secret not revealed in the article? I don't want to propagate them, but I like the thought of seeing a few flowers in the tank occasionally.

Southport, Lancs.

R. BOURNE

*Quite often conditions in display aquaria are unsuitable for the formation of above-water flowers because there is too little space between cover glass and surface. Strong top lighting appears to encourage formation of flowers, but whether this is merely a secondary result of vigorous growth of the plants we cannot say.—EDITOR.*

## Electrical Information Wanted

**H**AVING read PFM for some time now, I would like to say that I find it a great wealth of information but there seems to me to be one facet of the hobby that is very sadly neglected, and that is the supply of electricity to our tanks, without which I think the majority of aquarists would be at a great loss.

I think there is a need for articles to be published concerning wiring procedures, size of wires, earthing if required, etc. I'm sure that quite a few aquarists (not to mention their wives) would be very relieved to know that their aquariums are perfectly safe to handle, or are able to read in your articles how to make them absolutely safe.

Perhaps some of the competent electricians amongst your readers could add their views to mine on this subject.

Stevenage, Herts.

D. C. MASKELL

## Hendon Back Britain

**M**AY I, through the pages of your magazine, inform my fellow enthusiasts about our forthcoming Annual Congress?

We are once again pleased to announce the highly successful Hendon Annual Congress at the usual venue, Whitefield Secondary Modern School, Claremont Road, Hendon, N.W.2 on Saturday, 12th October, commencing at 6 p.m.

As many of you will know, we have been able to obtain the services of the most eminent speakers the continent has to offer. Last year we heard Colonel Jorgen Scheel of Denmark—the world's leading authority on egg-laying toothcarps. Previously we have acted as hosts to Arend van den Nieuwenhuizen of Holland—Europe's leading fish photographer and an expert on fishbreeding. Also Professor H. C. De Wit on cryptocorynes, Herr Vogt of

Germany (editor of DATZ), Mhr De Graaf (curator of Artis Aquarium), Messrs Carels and Wante of Belgium with their superb colour cine of tropical fishes, and many others.

However, we thought the time had now come to present a speaker from our own Isles who is on a par with our European friends. Namely, Mr Tom Horeman. Many of us know Mr Horeman in his role as 'Mr Tachbrook Tropicals'. What may not be so well known is that he is one of the leading authorities in Europe on aquatic plants. He has recently explored the water of the Amazon and has, as a record of his expedition, many illustrations of his finds. One or two of us at Hendon have had the privilege of a preview of Mr Horeman's subjects and his superb colour transparencies on the cultivation and ecology of aquatic plants. We found the programme most absorbing and extremely interesting, and one that is certainly a must for all interested in the hobby of fishkeeping.

Many of the important personalities in the hobby will be in attendance and once again they will be at your disposal to discuss the various aspects of fishkeeping. Mr Anthony Evans of PFM will be the second speaker during the evening, on the modes of breeding shown by fishes with examples on film.

Refreshments are available for early arrivals and once again during the long interval, so there is every excuse to make this occasion a day out in London.

We endeavour to obtain the best brains in Europe.

We are confident that for 1968 our standard will be as high as it has been since we first began the 'Congress' in the 1950's. The occasion will also serve the opportunity to renew friendships with some of the other 400 aquarists who regularly attend this important aquatic occasion. We welcome all members of all societies, but feel that we ought to mention that this Congress is not projected 'just for the expert or specialist' but for all those who keep fish, whether they are 'one tank' aquarists or not. Our welcome also extends to any reader whether a 'clubman' or not.

We advise you to make early application for tickets, which are obtainable from K. Purbrick, 3 Holme Way, Stanmore. Previous visitors need no introduction to the facilities available—easy to reach (almost opposite Hendon Greyhound Stadium—close to the new Brent Cross Flyover) good refreshments and ample parking space for cars and coaches.

Secretary, Hendon & D. A.S.

KEITH PURBRICK

### Ironing Out Troubles

WE keep many creatures at the primary school in which I teach; not least of these are the six goldfish that inhabit a large aquarium in my classroom.

These goldfish, on the whole, lead a fairly quiet life, considering that the class contains 36 inquisitive seven-year olds. Even though it is the children's responsibility to feed and clean and generally administer to their needs, they survived unscathed for 8 happy months.

Then, it happened to be Elizabeth's turn on the feeding rota. I don't know what she gave them on the Monday, but on the Wednesday I caught sight of her sprinkling iron filings from the science cupboard over the water. When the panic had died down, and the fish put in isolation until the aquarium was cleaned, I asked

her why she hadn't given them their usual food. She explained that she thought that they needed a change and she had heard the doctor telling her mother that iron was a good tonic!

Perhaps she was right—the fish are still fighting fit.

Bradford, Yorks.

F. J. DUNPHY

### Life of Filter Carbon

REGARDING 'Aqua-tip' (PFM, August) M. Barrett asks how many of us throw away these carbon filter cartridges after their 30 hours of usefulness is ended. These disposable carbon cartridges, which are made by a very well known manufacturer, cost 2s 6d per pair. I use two undergravel filters in my tank and therefore would require a pair of these disposable cartridges every 30 hours according to M. Barrett. If this is so, it would cost me £36 10s 0d per year assuming I disposed of them every 30 hours. Surely 30 hours is an error?

Incidentally, how does one tell when the usefulness of carbon, say in an outside filter, has come to an end? Never have I seen the hours of usefulness stated by any carbon manufacturer.

The Meadows, Nottingham

T. J. RADFORD

*Since the life of an absorptive medium such as charcoal depends on the load of absorbable material reaching it in the water passing over it, to give a set period of usefulness is impossible. Water in tanks with very large fishes or tanks crowded to the limit will 'use up' the carbon most quickly. Most aquarists change the carbon when the other media in an outside filter (wool, floss etc.) appears to be dirty on examination, and although it is very likely that the carbon has become useless at a rather earlier stage there is no easy way to assess this.—EDITOR.*

### Hopping Hatchets

A WORD about 'Hopping Hatchets' (PFM, August). I keep these fish and they will indeed hop out of the tank when the hood is open for cleaning. I have overcome this by making a net to cover the open tank at the back, sides and part of the front, leaving myself space to work in. The open space can be watched more easily than trying to watch all round the tank. The net can be made out of lace curtains. My hatchets like dry food, and all live foods, and they chase all over the tank after these.

Portrush, Co. Antrim

G. KNIGHT

### Freshwater Flounders

MAY I endorse the comments of Mr Jim Kelly about flounders in 'Transatlantic Topics' in the August issue of PFM. I have had two of these fish for about a year now and they are a source of great pleasure in the community tank. They are not very often in full view—sometimes first thing in the morning, or in the evening when the room is in darkness, a blob on the glass indicates that they have ventured out of their sand bed (I have set the tank up with a small section of sand, as well as gravel, in case they preferred to burrow in it and, indeed, they do keep in this portion).

These infrequent full views of them indicate that they are growing very well; but their presence is always apparent—a raised blob under the sand fixes their

position and there are very amusing occasions when another fish will spot their eyes sticking out of the sand and will go down to the tank floor to investigate these moving 'dots'. I don't know what the incidence of flounder eye-loss is, but if I see this happening I usually stand by with a planting stick ready to bring this fishy 'investigation' to a timely end.

As for eating up *Tubifex*, they have a really excellent technique. Far from eating up the scraps left over by the other fishes, they mostly deprive the other tank inhabitants of these worms. Once the *Tubifex* has sunk to the sand the flounders place themselves firmly over it, wiggle into their protective covering, and apparently devour it out of sight.

Bromley, Kent

J. WEBB

#### Density in Semi-Natural Tanks

WITH reference to my article on semi-natural marine aquaria that was published in PFM for August, I have been informed that I made no mention in my article to the density of the seawater used in the unit described and I apologise to all who may have read it for this omission.

The density of the natural seawater used was 1.027; that of the 'synthetic' water was 1.029. I find that, unlike

the normal marine tank water, which is 1.023-1.025, semi-natural units fare better at a slightly higher density.

GERALD JENNINGS  
I.M.S.S.

#### Freshwater Shrimps

IT surprised me to see in Personal Comment (PFM, August) that the freshwater shrimp, *Gammarus*, has been said to live only a few hours in captivity. I once bought some plants from a local aquarist, only to find shortly afterwards that the unoccupied tank in which they had been planted was infested with these small creatures. I did not then know their name, nor did I realise they were edible to fish; but thinking them repulsive in appearance and a possible fish enemy, I took great trouble in catching (no mean feat) and destroying them. My endeavours lasted several weeks. Towards the end of this time it was necessary to introduce some fish into the tank, whereupon the *Gammarus* disappeared completely.

Looking back on this incident, it may be that (to my shame) the tank was not over-clean, thus possibly emulating to some extent the conditions under which *Gammarus* thrive.

Leyton, E.10

JOSEPHINE D. COOK

## Sources of Simple Water Tests

By H. J. VOSPER

BETWEEN the clouds from which it descends and the sea into which it finally makes its way, water can take a route which is almost unbelievably devious, for it may sink into the ground and wander for measureless times and over a distance of very many miles before it enters a zone from which it can return to the surface.

During its underground passage water encounters and retains in solution numerous substances which result in making it a suitable medium for the support of living organisms, while having reached the surface it is further enriched by surface run-off containing leached materials and the results of organic decomposition. Consequently the chemistry of aquatic environments, whether fresh or salt, is highly complex. Many of its aspects can be studied, with accu-

racy, only after a suitable training or through the aid of complicated procedures and expensive equipment—yet it is interesting to speculate whether and/or to what degree particular factors influence the maintenance and propagation of fishes and plants in home aquaria.

Some such factors are the presence of the gases carbon dioxide, important as a source of carbon for plants, and oxygen, vital to practically all living organisms; the carbonates, bicarbonates, hydroxides, phosphates, silicates and borates described under the general heading of 'dissolved solids'. In salt water particularly, the 'salinity' (for which the chlorides of magnesium and sodium are of extreme if not the greatest importance) affects the amount of fluid which enters or leaves the bodies of aquatic animals.

These factors also affect the reaction of water, accurately expressed by the term 'pH'.

Since the study of some of these properties of water is, or has the appearance of being, beyond the amateur it might be surmised that perhaps overmuch attention is directed towards those features which definitely are within reach of pockets and amateur understanding. Thus other but similarly important aspects are strictly avoided. Nevertheless, since not all water chemistry is pH evaluation, amateur naturalists who undertake field work do have the means of carrying out both definite and relative tests, even if these are not quite so simply devised as are those for the determination of reaction (acidity or alkalinity), and it is to these tests that the attention of aquarists is now drawn.

Some comparatively simple water tests have been devised which are capable of giving reasonably accurate results and they appear in various forms in literature serving the needs of field naturalists. There would be little point in giving all the details of the tests here, and they are perhaps best studied in the two books detailed below.

Aquarists will be pleased to know that the tests involve techniques which are merely extensions of ordinary pH determinations, solutions being added to the water samples under test and a colour change occurring with further additions of an acid—the main difference being that the amounts of acid required to reach the coloured 'end-points' is carefully recorded and from this information the required details are derived.

**ANIMAL ECOLOGY**, written by W. H. Dowdeswell (Methuen, 1952), concerns mainly the ecology of land habitats but also deals adequately with aquatic communities of both fresh and salt water, and can provide much enlightenment about environmental conditions. Its main, and perhaps only fault, lies in the fact that new readers may find the discursive character of the test descriptions somewhat confusing, but this can be overcome readily by re-writing the formulae in a tabulated manner.

Marine and estuarine conditions are covered on pp. 105-136, freshwater life between pp. 137 and 160, but tests covering the factors mentioned are to be found in Chapter IX (pp. 161-182). The calculations indicated on p. 173, referring to dissolved oxygen, will be found less frightening in practice than they might appear at first glance.

**FRESHWATER BIOLOGY**, of North American origin, is the conjoint work of two professors, James and Paul Needham of Cornell and California Universities respectively (Holden-Day, 1962; distributed in Britain by Constable). This book has a section on water analysis alone (pp. 80-93). The style is most clear but the terms used may be found less than familiar, while the apparatus suggested is perhaps over-elaborate for personal and amateur use.

In both works it will be noted that particular attention is directed to care in the collection of the water samples, since any contamination by agitation in the presence of air

or against the skin etc. must be strictly avoided. The greater the attention paid to such points then the greater the degree of accuracy likely to be produced in the ensuing conclusions.

In **FRESHWATER BIOLOGY** the use of sulphuric acid is advocated in one test and where this, or any other strong acid, is employed the uttermost care must be taken. In fact it is strongly advised that untrained persons should not use such formulae until guidance has been obtained. Doubtless a local dispensing chemist would be found willing to discuss points with the beginner. Acids, by the way, should be added to water—never water into acid, for this can cause explosive spurting and consequent danger to eyes, skin and clothes.

Whenever tests are made it is advisable to take at least two samples, and the results can be averaged out if but minor differences

are recorded, yet since it can be expected that any two such tests taken of the one water source at one and the same time will produce identical results, it is sometimes necessary to determine whether or not any differences are actually of some consequence. There is a simple mathematical calculation known as the 'test for significance', constantly employed by field naturalists, and this will be found in **ANIMAL ECOLOGY** (p. 180).

There is perhaps little to choose between the two works mentioned but, although Dowdeswell's **ANIMAL ECOLOGY** is less clearly set out than is the American work, I recommend Dowdeswell since the processes are best suited to beginners and are adequate in their intentions.

Next month I will summarise the simple methods used to record pH of water and indicate some other aspects of checking water samples.

## Transatlantic TOPICS

**COULD** you think of anything better than a blue bodied, white-finned betta? Though I agree it sounds rather like a tongue twister, it was significant that the first should show itself in the tanks of a charming lady from the American east coast, Josephine White.

One day whilst sorting out her fighters she noticed that one she was transferring to a jar sported a quarter of an inch deep, white stripe down its dorsal fin. Without wasting any time she crossed him with the only female available at the time, a blue fish with slightly clear fins.

The first progeny didn't disappoint her and contained some youngsters that later showed they had inherited Dad's stripe. So far one up to Pop for good conduct!

Taking several of these males, Josephine made further brother-to-sister crosses, also crossing one daughter back to father. By way of

**MR JIM KELLY** has arranged to be present throughout the period of **THE AQUARIUM SHOW** next month and will be glad to assist readers with their fishkeeping problems.



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By **JIM KELLY**

insurance, she also passed some on to fellow fish enthusiasts—she wasn't putting all her eggs in one bubble nest!

Ruthlessly culling the broods, she persevered with this programme, only selecting those fish displaying the necessary white line, feeding the

Continued on page 290

## LINE BREEDING OF GOLDFISH—I

## How to Establish a Line

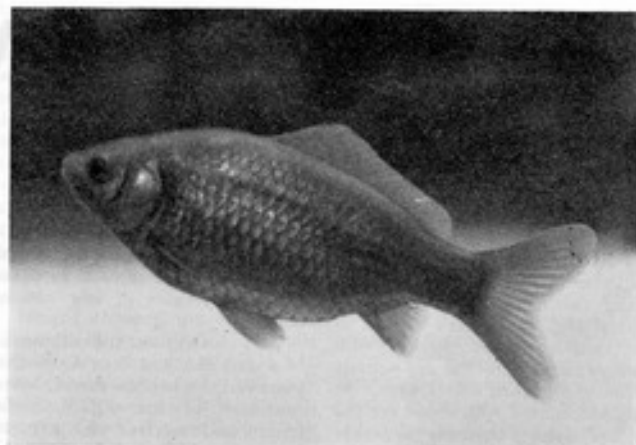
By L. C. BETTS

IT must be recognised that the production of fish to a given standard can no longer be left to chance. Experience over the last 50 years shows that if goldfish are left to their own natural selection, as would be the case in a large pool, after 10 years all that would be left would be wild goldfish, bronze in colour, elongated in shape and with a single tail. Experience also shows that haphazard selection of adults, relying on a 'natural' drive, will produce nothing better than fish with nondescript colouring, and cause the disappearance of recessive characteristics such as divided tail or doubled anal fin and perhaps loss of vitality and vigour. The more highly developed the variety, the quicker the deterioration.

If a high percentage of desirable fish per spawning is required, there is no alternative than a tight control of the factors, which for want of a better name we term 'line breeding'. The object of this article is to discuss what these factors are, how important is each one, and how to proceed.

First and most important is the basic method of maintenance. If fish are not properly reared, fed and maintained from the egg stage, no 'line' can be established, for consistency is paramount; otherwise death or disease will intervene and bring the whole thing to a halt. Enough has been said on the subject elsewhere to prove that biological filtration and the recirculation of the water are standard practices without which success cannot be assured.

Secondly and equally important is the employment of the hand-spawning technique, which gives



Whether for the creation of a perfect 'fancy goldfish' or for the production of specimen common goldfish, breeding methods require to follow a carefully controlled scheme

matings that would not otherwise be possible, ensures the elimination of flukes in the fry and enables the eggs to be hatched under optimum conditions.

Thirdly, the necessity for the remorseless disposal of all fish not conforming to the standard required and not possessing the features which are desired. A healthy well-shaped, well-finned goldfish is an attractive thing but if it fails to reach the standard required of it, then it must be disposed of to make way for one that does.

Fourthly, in the ultimate selection of one fish over another, vigour and vitality must always take precedence if it is to be used for spawning.

### Starting a Line

Adult fishes intended for breeding should always spend the autumn and early winter in the pond. The first of January is a good date to bring them inside. This will ensure maximum fertility of the eggs and will act as a test for vitality by the process of survival. Once inside in stock tanks the temperature should be raised

3°F each week and feeding on live foods commenced when 48°F (9°C) is reached. No plants should be present in the tank but a filter is operated. The stock male and female fish should run together. As far as possible feeding should approximate 70% protein and 30% carbohydrate, one meal a day, six days each week.

By the end of March the 'key' fish to the strain should be decided on. The writer favours this to be a female, for two main reasons: (1) the male is fertile any time after April and (2) there appears to be reason to believe there is a sex linkage between father and daughter and mother and son, i.e. the son will take on many of the mother's characteristics and vice versa.

The female so selected must have no serious defects such as deformed pectoral fins, unbalanced carriage, poor body shape. Lack of colour is unimportant if other features are good. Once selected, this fish must have V.I.P. treatment, because she will be used for the next three generations.

The selection of the male will not take place until the second generation when proof has been gained that the mating is right. So for the first year as many males are chosen as

conform to the vitality test. As far as possible these males should be good where the female is poor, e.g. with better colour or better finnage. All adults other than the selected

males and the selected female are by now removed from the stock tank and forgotten.

*To be continued*

## INTERNATIONAL SCENE

# Guppy Show in Vienna

By **MALCOLM DELINGPOLE**  
(Federation of Guppy Breeders Societies)

**L**EBENDE Fische, Lebende Fische? The cry re-echoed round the Customs Office of the Arrival Hall at Vienna's Airport as the various officers checked with their seniors as to the appropriate action to be taken over a passenger who had arrived with a suitcase full of live fish. Eventually a senior official asked me whether the contents of my suitcase were in fact as reported, and I opened it to reveal a dozen or so plastic bags each containing one-third water and two-thirds air and with three or four guppies apiece. When I explained that these were not for sale, but that I was bringing them into Austria to put in an exhibition, after which

they would be distributed to club members, I was allowed to depart without payment of any customs dues.

This moment was the culmination of a seed that had been sown some years earlier when the then Overseas Secretary of the F.G.B.S. Jim Myers had received an invitation from the Osterreichische Guppygesellschaft to send exhibits on behalf of the F.G.B.S. to Vienna, and ever since that day I had set my heart on going. When an opportunity arose recently for me to visit this magical city I grasped the opportunity with both hands.

Having made my decision to attend the 1968 International Show

I had very little time in which to contact fellow guppy breeders who could possibly let me have exhibits to take over there. Finally Sam Croft and Phil Jinks of my own Birmingham section of the F.G.A. and Mike Richardson of Radlett section let me have entries for the Show. In fact Mike's guppies were waiting for me in a gigantic parcel at the Blue Star garage outside London Airport, where I left my car, and I think the staff were relieved to find that it was not a time bomb that had been deposited with them.

On arrival at Vienna I was informed that a 'Mr Malcolm' was wanted at the Information desk. I duly contacted this latter office to find two gentlemen waiting for me who could speak slightly less English than I could German. However, with the aid of a phrase book they had



Judges of the Austrian Guppy Federation assessing the entries at the Show held in the Natural History Museum, Vienna. Guppies from Britain acquitted themselves well

prepared a number of sentences of welcome, and I was whisked away in their car for the quite lengthy journey from the Airport to the Natural History Museum, where the Show was being held. This latter edifice is a most imposing one, comparing most favourably with our own Natural History Museum in South Kensington, and the gigantic heated corridor which the Museum staff had made available for the Guppy Show made a most fitting exhibition room.

To say that my hosts were delighted to see exhibits from England is an understatement, for although in the past years Denmark and both East and West Germany had supported this Show, there had been none from outside continental Europe, and not only had this Englishman arrived with fish from four different exhibitors, but there was a consignment of show guppies on the way from the United States.

As my fish were being prepared for benching I wandered along to see those already in position, and was immediately struck by the magnificent green triangles, which could only come from Richard Busch of West Germany. In fact not only did he have entries in the green triangle class, but also in the multi-coloured red, blue and half-black triangle classes, and these fish subsequently received very high points, winning all but one of the classes in question.

Each exhibit, which had to consist of at least three males only, was housed in its own all-glass 8 in. by 4 in. by 4 in. tank, and a single compressor provided air for every tank. Every entry was pointed independently by three judges and the results were added together and divided by three.

I had not gone too thoroughly into the Austrian guppy standards in advance, and left it to my hosts to tell me in which class each of the fish I had brought should be entered. It turned out that nearly all of them were 'Fächer'. Now the *Fächer* is going to cause quite a bit of soul-searching on the part of the Judges and Standards Committees of both the F.G.B.S. and the F.G.A., for the simple reason that it is the fish that most people are breeding, whether they like it or not, but for which we in England no longer have a class. It is very similar to the old F.G.B.S. fantail (in fact the literal translation of *Fächer* is 'fan'), but

with a much shorter dorsal and slightly shorter caudal fin. However the fact is that Mike Richardson's entry, one of Phil Jinks' entries and both those sent by Sam Croft, were promptly included in the *Fächer Bunt*, which means literally 'multi-coloured fantail'.

Unfortunately both British guppy organisations already have a fantail, which is like a large delta with a very heavy caudal, and a long drooping dorsal. But it strikes me that if we are going to compete on equal terms with the continentals in future we must recognise some similar standard over here and give it some appropriate name, preferably one we have not used before, as words like wedge, veil, triangle and delta are already in use. However, in Vienna there were classes for these fish in red, multi-colour, blue, green, half-black, three-quarter-black, gold and bronze on green.

Having benched my fish on the Thursday at midday, I had ample time to tour the city which I had come so far to visit, and was delighted to find that it lived up to my vague idea of what it would be like. It is, at least to the visitor's eye, still the city of Strauss and the Hapsburg Emperors, and statues to musicians, poets and emperors are everywhere. As somebody had the sense to make a gigantic ring road round the city many years ago and put all the palatial buildings on either side of it, it has not been found necessary to demolish them for road widening, and even though Vienna must have suffered considerably at the hands of British, Americans and Russians in the last war there is no sign of it anywhere, and it is difficult to find a trace of any history later than that of the Austro-Hungarian Empire. However, with the magnificent Schönbrunn Palace, the Opera, the Spanish Riding School, and so many other places of interest, the visitor to Vienna can be kept interested for many weeks.

It was thus that by the time Saturday morning came round I had hardly noticed the time pass, and I returned to the Natural History Museum to see how our entries had fared. Mike Richardson was the most successful British exhibitor, having scored 81 points in the multi-coloured fantail class. Phil Jinks had a fourth in this heavily contested class, and Sam Croft came seventh and twelfth. Phil Jinks scored a notable

victory for British short-tail guppies by taking first equal in the half-black cofer class, and second in the red cofer class.

Incidentally there were no less than three classes for cofer tail guppies, the third one being for flamingo cofer tails. These were in fact, attractively marked little fish with large red spots on a gold background. In this class a local exhibitor named Knaak took all six places. I managed to get a sixth in red triangles, a third in blue fantails, second in half-black fantails, fourth in grey double swords, and first in black veils, pins and spears; unfortunately there was no opposition in these last three classes, but it was pleasant to prove to them that standards they themselves recognised actually exist.

Mr Bertagni had sent from America two magnificently matched teams of blue triangles, each of which merited 88 points and were awarded best in show. This was the only class in which Richard Busch was beaten. Richard was runner up with a red triangle team that took 87 points, and next with a green triangle team that took 86 points.

I was delighted to see a type of guppy which had always been accredited to my host town, but I had doubts about its existence. However, when I asked whether the Viennese green double swords still existed I was delighted to find that there was in point of fact a special class for the *Wiener Smaragd Doppelschwert* or Viennese emerald double sword, and former chairman of the O.G.G. Dr Tritta had come second and third in this class with 77 and 76 points, and I was extremely lucky to be able to bring away with me three young males and one young female of this fish, a gift to me from my host, O.G.G. president Rolf Kaplan. I have promised faithfully that I shall be sending the offspring back next year to compete with them on the show bench!

When Herr Kaplan and his brother-in-law drove me back to the Airport on Sunday afternoon I was quite sad to leave all the new friends I had made on my brief trip, but I feel a number of contacts had been made, and information exchanged, which will benefit both the British and Viennese guppy breeders for many years to come, and has given me, at least, an insight into how other people tackle the guppy hobby.

## Transatlantic Topics

Continued from page 286

newly born fighters on Infusoria but discontinuing this the minute they were tackling newly hatched brine shrimp.

The last report was that the white-finned *Betta splendens* were fixed enough to warrant their inclusion in the growing list of new varieties. One tip she has to pass on: place your fighters in separate jars as soon as possible, and keep the water clean by frequent changing.

As well as being an active fish judge, Josephine was a prime motivator in the formation of the Manhattan Aquarium Society: seems that here is one gal that gets things moving, especially if it's 'new'.

\* \* \*

After mentioning the use of ox heart by aquarists in the New World, my mailbag has been swollen by hobbyists on this side of the Atlantic asking how this food is prepared. Though the treatments are many and varied, this recipe by David A. Ford, seems to be a simple one (you might say one we can 'afford'?).

Ingredients: 1½ lb. ox heart; ¼ lb. fresh liver (any); one-third of a 1-oz. size Tetramin Growth Food; small tin of any high protein baby food.

Cut from the heart sufficient for about one week's supply of food for your fish; this will obviously vary and depend on the number of tanks you maintain. Skin and clean both the heart and the liver, cutting away any tendinous parts or fat. Chop into small cubes.

Add to a food mixer, stirring in a little water and mix thoroughly. Don't overdo the water at this stage or the final mixture will be too sloppy. Pour into a bowl and stir in the dried food and enough of the baby food until the mixture takes on the consistency of thick cream. Spoon out into plastic 'ice cube' moulds or plastic bags and freeze. If you prefer to use screw-top glass jars be sure not to fill them too full otherwise they will burst on freezing.

Feed as you would with any frozen fish food.

David recommends this diet,

especially for fighters and cichlids, his own showing a remarkable increase in comparison with other diets.

\* \* \*

The sweet potato (*Ipomoea batatas*) is a member of the convolvulus family, popular with gourmets everywhere, especially the New World. Now thanks to 'Tropical Topics', it looks as if it is also going to find a place in the hearts as well as the stomachs of aquarists, as it makes a very attractive aquarium decoration.

If a small potato, preferably one that has already started to sprout, is anchored half in, half out of the water in the tank, it will soon develop into an attractive plant, the roots providing plenty of cover for any young fry that happen to be knocking about. The only other instruction needed by the would-be aquatic gardener is to be sure not to totally submerge the complete potato.

*Ipomoea* aren't as popular with British housewives as the lowly Lincoln, King Edward or Majestic, but members of the fair sex tell me they are available.

\* \* \*

*I have often commented in this column about the attempts being made by scientists in trying to crack the fish communication system. That they issue noises is no longer in doubt.*

*Wouldn't it be surprising if some enterprising ichthyologist did manage to overhear the fish in our aquariums talking? Especially if he heard them say: 'Don't you find it relaxing looking at the people watching us?'*

\* \* \*

Like the 'trailers' of films to come, that highlight episodes without disclosing the plot, a long series of personal experiences all over the world have imprinted themselves on my mind. One such 'plot' was revealed during a discourse with an

PLEASE TELL your friends about THE AQUARIUM SHOW in London next month. Even non-aquarists will find it colourful and interesting so let everyone know the dates (7th-10th November) and the place (Royal Horticultural Society Old Hall, Vincent Square, London, S.W.1).

aquarist from Minneapolis, Minnesota.

There can't be more cities aptly named as far as the fishkeeper is concerned because the two words that make up its title are derived from: *Minnie*, the Sioux Indian word for water, and *apolis*, which every classics scholar knows is Greek for city—thus, Water City.

We were discussing fish foods when he recalled in the halcyon days of the hobby when a continental dealer was selling an Infusoria mix around 2s. a packet. He had examined the contents and found it consisted of nothing but algae grass, a simple forage plant, and 24 pence an ounce he calculated manufacturer was getting no less than £3,584 per ton—a nice profit any calculation!

To-day's manufacturer would hardly dare pull a stunt like that, he said. 'Nowadays, firms spend thousands of pounds on research and woe betide any group that attempts to pull the wool over the eyes of a modern aquarist; better educated and having more trained personnel in their ranks, any attempt at such practice would be quickly detected,' he concluded.

But then in the dark recesses of my mind I seem to remember seeing canned 'Loch' water on sale in a New York bar, aimed at the whisky drinker, and if you folks here in Britain are chuckling at that, you've forgotten the tins of 'fresh' water that were a hot seller in London a short time ago?

\* \* \*

'There is nothing new under the sun', certainly wasn't coined by a go-ahead American manufacturer of aquarium equipment. Figures published indicate that from the period September, 1966, to August, 1967, 474 new products hit the dealer's shelves. Of these 81 were completely new ideas and not a new version of something already on sale.

Forming a large percentage of the total were the 28 new books on piscatorial topics; also 11 new pumps and six pumps. Of the total American pet field, which encompassed 17% solely to the aquarist. There's gold in them there fish!



# PRACTICAL



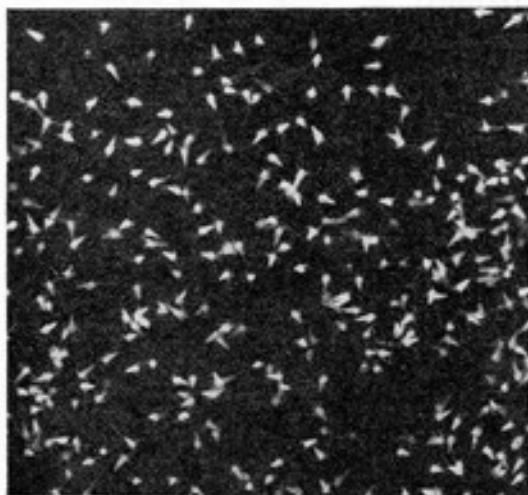
## JOTTINGS

WHEN rearing a large number of fry, brine shrimps can be a tremendous help. Many aquarists do not use them or employ only a few because hatching them on a large scale in a confined space can be quite a problem. To achieve production on a large scale I built a gadget some years ago which is described in this article.

It consists of a container made out of three triangular pieces of Perspex. At the apex of this prism-shaped container is fitted an aerator stone, through which a powerful jet of air is introduced. The container holds about 1½ gallons of brine and can handle three teaspoonfuls of eggs per hatching, if necessary.

Of course, my needs for shrimps do not merit taxing the full capacity of the hatchery and, as a routine, only about a level teaspoonful of eggs is used per hatching.

The drawing off of the brine containing the shrimps is achieved by means of a tube fitted to one side of the container and controlled by a pinch clamp. To collect the shrimps, aeration is cut off to allow the shells and unhatched eggs to settle (a few float). The position of the opening of the drawing-off tube was so designed during the construction of the apparatus that it lies approximately ¼ in. above the layer of deposited shells and unhatched eggs and thus only brine containing the hatched shrimps is drawn off, leaving the shells and unhatched eggs behind.



Newly hatched brine shrimps

A555

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



The author's brine shrimp hatcher, made from three triangular pieces of Perspex

The brine is maintained at approximately 80°F (27°C) by an immersion heater and an externally fitting thermostat. The whole gadget is suspended by chains and hooks under a section of the staging holding the tanks in my fish house.

### Shrimps Drawn off as Required

With this technique it is not only possible to hatch large quantities of shrimp eggs but to keep the shrimps alive for at least 3 to 4 days after hatching (no feeding is required). Hence one is not compelled to use the entire hatching all at once, the shrimps being drawn off as and when wanted.

At the final collection of shrimps all the brine is passed through a handkerchief and the latter can be used subsequently over a long period. The egg shells and unhatched eggs remain behind in the hatchery, from where they can be flushed out with plain water. To

facilitate this the rubber bung carrying the brine shrimp draining-off tube is pulled out. Carrying out these simple manoeuvres takes very little time and brine shrimps are available 'on tap' almost continuously.

For a really continuous supply two such hatcheries

would be needed but I do not like relying exclusively on any one food, however good it is. During the 24-hour period after cleaning out the hatchery, fry carry on with other foods such as micro worms or very finely powdered dried foods.



# GUPPY

## World

**E**VEN if you don't like snakes, they still seem to possess a hypnotic influence over most people and that holds true for the guppies of that name. King cobra, snakeskin or leopard, call them what you will, the attractive body markings and colours of this variety have captured the imagination of breeders throughout the world, but, without too much flavour of the stable door and the runaway horse, may I interject a word of warning to the would-be beginner who fancies this variety? Don't!

With due respect, most aquarists cannot expand their overstretched resources, physical, mental and financial, snake-wise to encompass and digest this mammoth carcass.

I was first introduced to the embryo of this variety some 10 years ago in Britain, then it was clothed in but two colours, green and violet. Today's fish presents as many colours as the rainbow, but in being what it is genetically, it has ruined the self-coloured stocks of too many breeders and the search for the pot of gold has revealed that the nearer one gets to it the further away it actually is.

If you have the tanks and the time, by all means try this variety, but it isn't for the small-set-up man and certainly not for the guppyatic seeking the bubble reputation, because here in Britain it will be benched according to its finnage shape, not its colour, with perhaps

the exception of the 'Colour Class', and that's where most of them seem to be found these days.



There's naught to crosses, at least that is the impression the learned guppyatic creates when he refers to these various methods of breeding. Just in case these systems are not familiar and form your own particular 'cross' here are some explanations.

### By PETER UNWIN

**Cross-breeding:** the joining together sexually of live beings from different races, species or genera; the results from this type of breeding are referred to as hybrids, and any increased vigour over their parents is referred to as heterosis or 'hybrid vigour'.

**Crossing over:** the deliberate mating of related strains and nothing whatsoever to do with 'zebras'. A simple example of this is when the breeder divides an initial brood of guppies, equal males and females, into two strains. After inbreeding each strain together for a few generations (usually five), the best male from strain one is crossed with the best female from strain two. This method has resulted in many guppy show-stoppers in the past.

**Crossing back:** an attempt to fix a trait in a strain that you wish to perpetuate. Achieved by crossing daughter back to her father or son to mother. Favoured for the enhancement of a particular colour or trait.

**Crossing in:** trying to improve an existing strain of guppies by mating either sex with its opposite number from an outside, unrelated strain.

**Cross cross:** inherited factors that are only passed on from a father to his daughter; this may appear confusing because the female of the species doesn't visually express body patterns. The luteus (Lu) yellow form is a good example of this type of inherited traits.

**Cross-eyed:** what I shall be if I don't terminate this quickly.



Writers have spun long novels out of a single metaphor and aquatic authors in particular have had a field day in answer to the question: 'How can I sex my guppies?'. Almost enough words have been written on this simple topic to fill a book the size of a Bible.

Claims have been made that some breeders can sex guppies at one week of age, but why do folk want to know at such tender age the sex of their fry? Could it be that they wish to separate the sexes to ensure a supply of virgin females for future breeding programmes?

In inbred strains, the male cannot fertilise the female until his gonopodium is formed and this takes quite some time. Long before this stage is reached the fish are displaying other characteristics indicative of their gender and should any male inadvertently find itself in your tank of females he can be easily netted out.

For the benefit of any beginners reading this who still wish to sex their fish as soon as possible, try placing a light behind the tank and regard all the fry showing a black spot in their anal region as females. With a little experience, *cherchez la femme* becomes as easy as burning the breakfast toast.



## Personal COMMENT

by  
ARPEE

IN concluding a review of the livebearers one enters an area of minor confusion by speaking of the mosquito fish. To the fancier on this side of the Atlantic there is no question at all that the species under discussion is *Heterandria formosa*, whereas EXOTIC TROPICAL FISHES leads you to *Gambusia affinis*. I have never been able to ascertain how the former got left out of this momentous publication. It hails from the same sort of area—Florida—as the *Gambusia*, and has the added distinction that it is the smallest livebearer of all. The love in America of the ultimate in everything would have theoretically guaranteed *H. formosa* absolute immortality; perhaps subsequent editions to that in my possession may have remedied the sad omission, if not, here is undying shame on someone who assisted in their compilation.

*H. formosa* is an extraordinary little fish, being a sort of mottled brown in appearance and superficially rather dull. This is the mistake the uninitiated always make with this fish, for its habits and deportment are very far from undistinguished and its demands are ridiculously modest. The male hardly ever reaches an inch in length and the female is often twice his size. For all this their sex life is hardly less a feature of existence than that of the guppy, though the output is of an entirely different order.



From the outset you must plan to keep mosquitos on their own, since they get outplayed by those bigger species which are commonly assigned to the community tank. The investment in separate quarters is not a thing one often has cause to regret because a small community of this one fish rapidly becomes something of lasting interest. The female gives birth to just a few fry over a period of days and the relationship between parents and fry is usually quite good. In fact the youngsters can often be seen in close proximity to the mother shortly after emergence, and they always remind me of cow and calf. The young mosquito is impossibly big in proportion to its parents and swims in a wobbly fashion reminiscent of a calf's first uncertain steps on terra firma. Another feature which attracts me to *H. formosa* is its mode of swimming, which is always calm and regulated, with the exception of the flurries which occur when small groups of males enter into quite harmless battles.

There are none of the normal range of foods which they refuse (excepting anything too big for them), and the range of temperature which they will tolerate is astonishingly great. Anything from 60° to 90°F (15-32°C)

will see them in good health, and I have had them in temperatures well below the former figure, though I must admit that under these conditions they slow down very markedly and lose much of their interest.

From the mosquito to the *Gambusia* is a short step, but the difference in temperament and aquarium value is quite tremendous. *Gambusia* is a poor community fish on account of its fin-nipping habits and general aggressiveness, and its overall appearance does little to compensate for these undesirable characteristics. It is not so often met for sale these days but fulfils a useful commercial function in areas where the aerial mosquito has to be cleared by animal rather than chemical means. It seems to be one of the attributes of livebearers in general that they are of great benefit to man where 'wrigglers' have tended to make themselves a nuisance, and you can certainly take this as a pointer to the sort of diet on which they are likely to do best in captivity.



It is as well that *Gambusia* are not often available therefore, but equally unfortunate that the final livebearer I shall mention—the *Limia*—is so seldom seen in this country. The blue *limia* is perhaps the most desirable of these because its beautiful shimmering scales provide an interesting colour combination under normal lighting conditions and presumably something very much out of the ordinary under Gro-Lux; this latter effect I have not yet seen, but I would judge it to be first class. Not many aquarists seem to have had much experience in breeding these fish over here, but it seems that the parents are not altogether trustworthy with the young, so a heavily planted breeding and rearing tank would be advisable. A few importations of this would introduce some welcome new blood to our tanks, and there are several related species to which many would willingly give tank room.

In concluding these comments on the livebearers one might well ask why livebearers exist at all in Nature, and how is their place in it basically determined in relation to the egg-layers. Books on the subject are almost uniformly silent about this, but it could be assumed from the type of waters in which the livebearers most commonly flourish that they have become less amenable to the development of eggs as such, or alternatively that a requirement has arisen in the passing of time for the ready availability of free-swimming largish fry to act as counterbalance to some other form of minute life which would otherwise have achieved local ascendancy.

The evolution of fish is a subject all on its own, and perhaps an expert will enlighten us some time on some of these less obvious points; I am sure that there is a ready-made audience for information about how fish came to assume their present forms because there is a growing interest in pet keeping in our schools. I was asked by a teacher recently which fish I would recommend for some school tanks, and I replied to the effect that I would stock one small tank with some plants and sticklebacks from a local park, and a similar small tank with some mosquitos and plants from a local aquatic dealer. The one would give a passing insight on cold-water habits, the latter on tropical habits, with an absolute minimum of trouble and expense.

My advice was taken rather hard, for I was expected

to support the purchase of several 3 inch goldfish which were due for incarceration in a small, tall accumulator jar. I have an idea that the only way in which my point is likely to be taken is in the form of a donation of the real thing, and I have some sort of feeling that it is a pair of mosquitos that will lead the way to a better understanding!

**Tailpiece.** Preparations for the summer holidays have taken up a lot of time recently, and these have consisted largely of getting into full production any live foods which need feeding to fish whilst we were away, with the added necessity of ensuring that they are working propositions when we returned. An extra couple of micro worm cultures were put down and I double banked the whiteworms in case of any unforeseen calamity in that direction. I hosed some of the vegetable garden liberally to help plump up the new potatoes and incidentally entice to the surface a quantity of young earthworm which should last quite well in damp peat.

I also disposed of a quantity of fish just before I went away to reduce the number which needed looking after, and thereby the number of tanks in actual service. The culling enabled me to clean out two tanks completely, and to fill them with fresh water to mature in the meantime. My habit of exploring every available pet shop while the rain pours down means that I nearly always come home with a bag or two of some fish which I cannot normally obtain locally, and I am glad to see that the new feature in PFM 'Where to Buy' considerably helps the process when I am in unfamiliar territory. This year I was on the lookout for some silver dollars (*Ephippicharax orbicularis*), as I was recently very saddened to lose the second of two which I bought some 5 years ago. This is one silver fish which deserves importing much more frequently than at present, and I hope that somebody will take the hint. I also shop around for plants and fall for the most improbable purchases which I would spurn in normal times. But such is the holiday spirit; it makes a change for us all.

## Tom Thumb Tanks

By W. ALEXANDER

THERE is little doubt that a large, well-kept aquarium is more interesting than a small tank similar in other respects, but I do not agree with the idea put forward in many books that tanks under 24 in. by 12 in. by 12 in. are more difficult to keep healthy than larger tanks. To me, this view is like saying that a large car is better than a smaller one. It may certainly have its advantages, but the smaller one has advantages that equal, if not outweigh, those of the larger.

When I speak of smaller aquaria I refer to sizes in the range 18 in. by 10 in. by 10 in. to 20 in. by 12 in. by 12 in. What are some of the advantages of such smaller aquaria? Well, they cost less to buy, take up less house room, take less time to clean, use less electricity for lighting and heating and cost less to stock with fishes and plants. Certainly the variety and number of fish and plants that can be kept in the smaller aquarium is limited, but with the wide choice of smaller fishes and plants available today, this is no problem.

Such tanks are also ideal for breeding many fishes and are necessary if special water conditions are to be provided. Also, if a filter is to be used, the percentage of tank water that will pass through it in a given time will be much greater than that passed through the same filter when

used in a larger tank. Although filtration may not be necessary in many tanks, its use certainly helps keep any tank clean and healthy.

When choosing plants and fishes for smaller aquaria it is useful to know the size they will reach when adult, and to base one's choice on this knowledge. Don't be tempted by small attractive specimens, which, in a year, could crowd out the occupants of the tank. Slow-growing plants should be chosen, or plants that grow faster but which do not ultimately reach a large size. In such smaller tanks it is often better to confine the choice of plants to only a few different types. A tank planted solely with Indian fern, for example, can look very attractive.

The following are some suggestions for plants that will remain fairly small, or which grow quite slowly: *Cryptocoryne nevillii* (dwarf form), *C. minima*, *Acorus gramineus* var. *pusillus*, *Samolus floribundus*, *Sagittaria subulata* forma *pusilla*, *Rotala indica*, *Eleocharis acicularis*, *Echinodorus tenellus*, *E. grisebachii* and *Bacopa monnieri*. Plants that

grow quite quickly can be included, but they will require regular pruning to keep the tank tidy. Some of such plants that I have used include various other *Cryptocoryne* species, Indian fern, Amazon swords, *Cabomba*, *Hygrophila*, *Elodea*, *Aponogeton* and *Myriophyllum*.

There are many small tropical fishes that are at least as beautiful as any of the larger ones. A tank devoted to one species of fish is very attractive, especially those smaller tropicals which shoal, but a mixed collection can also be very pleasing. An example of a fish that does not swim around in a shoal is the guppy, but a group of fancy guppies, with their multitude of colours in the male, is an eye-catching sight. Possibly the most attractive fish for a small tank are cardinals or neons. Other suitable species include the serpa tetra, glowlight tetra, lemon tetra, beacon, black widow, the smaller species of pencil fish, harlequins, White Cloud mountain minnows etc.

Although one may be inclined to overstock a small tank at the beginning, it is better to leave room for the fish to grow. With only the standard attention, such a tank can be a most attractive feature in any room that has not the space to accommodate the larger aquarium. Don't you agree?

## SEARCHING FOR *ECHINODORUS* IN SOUTH AMERICA

# Known 'Sword Plants' and Where They Occur

First article of a series by a distinguished German botanist specialising in water plants who has made expeditions to South America to collect and study *Echinodorus* in their natural surroundings



The habitat of the cellophan 'Amazon plant' (*Echinodorus Berteroi*) is central and north America

**A**CCURATE differentiation of the diverse varieties of our water plants is very difficult for a number of reasons. Firstly, water and marsh plants are dispersed throughout practically the whole system of the plant kingdom, so that one would be involved with very many plant families, and specialisation into narrow and systematically related units is scarcely possible when one's interest lies in water and marsh plants as a group.

Secondly, there is the great variability, which is a significant characteristic in the differentiation of the species. This variability originates from the mainly amphibious way of living of the plants. Sometimes they live quite submerged, sometimes in shallow water partly submerged and partly above water, and in the dry season they live perhaps entirely out of water. With this constant adaptation to the changing surrounding conditions comes changes in the vegetative parts of the

By Dr JOACHIM SCHULZE

Translation by F. MARSH

plant, and such changes impede identification of the species. One must refer to definitive characteristics such as, for instance, the form of the seeds or the structure of the leaves, which even for a skilled botanist are hard to determine. Here the aquarist is often quite simply at a loss when he wants to identify correctly the varieties in the world of water plants.

In the present-day system of botany the entire plant kingdom is divided into about 1100 families, of which 94 comprise water and marsh plants. These divide further to almost 400 genera. Today there are in the world almost 400,000 known varieties of plants, of which 250,000 are higher plants. Among these higher plants are about 2500 to 3000 water and marsh plants, i.e. only about 1% of the total!

Among the many species of water and marsh plants only a few have much significance for the aquarist. First one must mention the genus *Echinodorus* from the New World and the genus *Cryptocoryne* from the Old World. With about 40 known varieties, these two genera

contain some of the most valuable and beautiful water plants that we can employ in the aquarium.

*Echinodorus* is as yet the most extensive genus in the family Alismataceae. This family contains 12 different genera in all but within these 12, besides *Echinodorus* only *Sagittaria*, with about 20 species, and perhaps also *Lophocarpus*, with about seven species, are well known to aquarists.

When we aquarists wish to further our knowledge with regard to fish and plants, the available hobbyist literature will soon be insufficient. We must dip into the zoological, that is to say ichthyological, scientific literature for the further study of fishes and into the botanical scientific literature to deepen our knowledge of water plants. Not everyone knows that in Kew Gardens in London is perhaps the largest and most important collection of plants in the world, including our most valuable water plants. Botanists all over the world are sent material from Kew Gardens for their taxonomic studies.

The results of research into species of *Echinodorus* of recent times have been set out in three large works—and the phrase 'recent times' has a different meaning in botany than, for instance, in engineering. A botanical publication of 100 years ago can today be as topical as it was then. This is something pleasant in our restless times when the results of other research can already be out of date before they are published.

The oldest work about the entire genus is that of Micheli, contained in a description of the Alismataceae, Butomaceae and Jungaginaceae from the year 1881. It includes 17 different species of *Echinodorus* and is still informative for us today<sup>1</sup>. In 1903 appeared the comprehensive monograph of Buchenau on the Alismataceae, forming one volume in the great collection THE PLANT KINGDOM (*Das Pflanzenreich*), containing a description of 20 different species of *Echinodorus* varieties<sup>2</sup>. The newest work stems from the famous American botanist Norman C. Fassett and was published in the form of three articles in RHODORA (1955), just after the death of Fassett in 1954<sup>3</sup>. Fassett occupied himself continuously with water plants during his prodigious life work. Thus, as is well known, also stems from his pen the unique modern comprehensive work on *Cabomba*<sup>4</sup> as well as a standard work on North American water plant flora<sup>5</sup>.

Now a further comprehensive review of *Echinodorus* by the Czech botanist Karel Rataj from Sumperk-Temenice in Czechoslovakia is imminent. He has published<sup>6</sup> a first report on the results of his years of research work but the entire review is still awaited.

These works deal with the whole genus regardless of the geographic distribution of the separate species. Very often in great works on flora the genera are dealt with to only a limited degree—for instance, how they are distributed geographically within the flora zones dealt with. If one wishes to prepare a comprehensive picture of a certain genus one is compelled to work through the publications on flora of many countries. For example, I would mention the treatment of *Echinodorus* in the N. American work on flora by John Kunkel Small<sup>7</sup> and mention as well the description of the two southern distribution areas of Argentine and Uruguay by Hauman<sup>8</sup> and Arechavaleta<sup>9</sup>, to whom we will return. The region of the heaviest distribution of *Echinodorus* species is in the New World, and it is still debatable whether outside this area *Echinodorus* species arise at all, for example

*E. ridleyi* Steen in Malaya<sup>10</sup>. Recently one is inclined to consider this variety once more as belonging to the genus *Ranalisma* and therefore to discount it. But in the New World *Echinodorus* has a much wider distribution than is commonly supposed.

Frequently one meets the inaccurate idea that Amazon swordplants come from anywhere in the tropical part of America, chiefly from the Amazon basin, especially since these plants were called after this river. In fact, however, although the basins of the Amazon and the Rio Negro yield us the most beautiful ornamental fishes, for instance, the angel fish, discus fish, neon tetra and many others, it hardly has the best water plants. Only a few kinds of *Echinodorus* are found here and the so-called Blackwater region of the River Negro's basin offers us no valuable plant varieties at all. The ideal living conditions for the fishes here appear actually to discourage the plants.

In N. America we have three species of *Echinodorus* which are distributed far up to the north: the large *E. cordifolius* (L.) Grisebach, earlier known as *E. radicans* (Nutt.) Engelm., as well as the beautiful cellophan Amazon sword *E. Berteroi* (Sprng.) Fassett, which flourishes in Illinois up to latitude 40°, and finally the dwarf *E. tenellus* var. *parvulus* (Engelm.) Fassett, which extends in Massachusetts up to the area of latitude 42°.

Although the *Echinodorus* of North and Central America as well as of tropical S. America have been thoroughly collected and described, we have very incomplete and uncertain knowledge of the varieties far south in the once again temperate zones south of latitude 23°. Only specialist botanists as yet know that in these S. American regions exists a vast kingdom of water plants, especially of *Echinodorus* species. The inadequate available data has caused Fassett to leave this flora area out of his report. Recently Rataj has taken up the study of these southerly species with great interest.

In the next article identification features and growth characteristics of sword plants in aquarium use will be described.

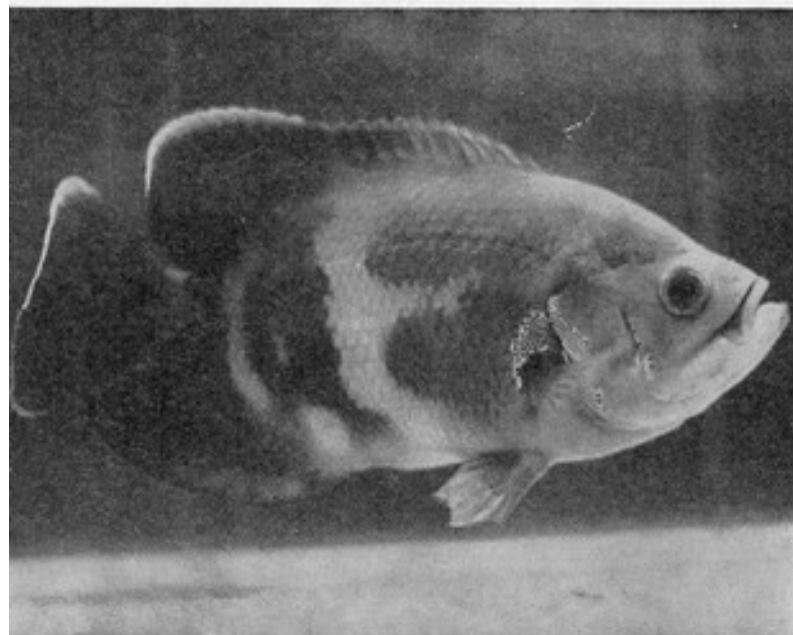
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# PFM Photo COMPETITION



Giant danio. Photograph entered by Mr Russell Firth, Barnsley, Yorks., who receives one guinea for the inclusion of his picture in this month's selection



**Final prize-winners will  
be announced in next  
month's issue**

'Oscar'. This fine-looking marbled cichlid was photographed by its owner, Mr F. J. H. Morgan, London, N.8, who also receives one guinea for his entry

## THE AQUARIUM CATFISHES—6

# Glass Cats

By BRAZ WALKER

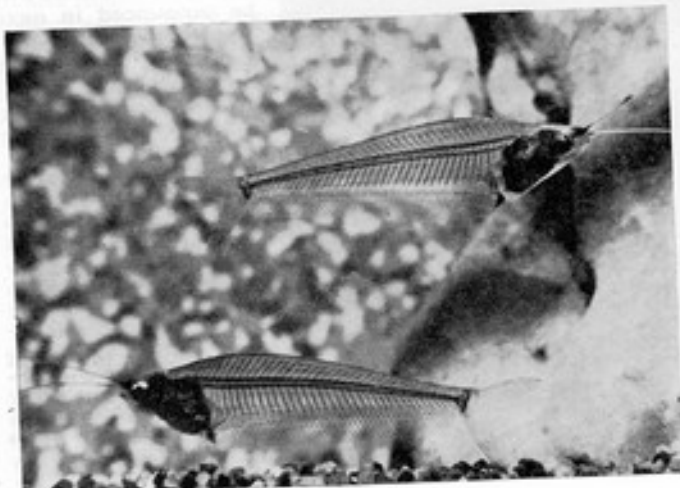
Photographs by the author

Among the most fascinating of catfishes from a number of points of view are several rather popular members of three families (Siluridae, Schilbeidae and Pangasiidae) which are often lumped by aquarists together under the term 'glass catfishes'. While some approach the transparency of crystal glassware, others are decidedly un-glasslike in appearance but have fallen into the glass catfish group by mere association with relatives who preceded them on the aquarium scene.

By far the most glasslike of these handsome creatures is a member of the Family Siluridae. This is the Indian or ghost glass catfish, *Kryptopterus bicirrhis* from Thailand and other nearby countries in the Far East. So transparent is the flesh of this delicate-looking little beauty that the first time one sees him up close it is almost embarrassing. Everything including bones, blood vessels and spinal column are exposed through his crystal body with the exception of the vital organs which are tucked neatly away in apparent modesty in a small opaque sac which lines the walls of the abdominal cavity.

There are several aspects to the extraordinary beauty of this fish, not the least of which is the fact that the ghost glass catfish and a number of his relatives have forsaken the retiring attitude of most other catfishes, preferring instead to form shoals or schools in mid-water and in plain view. Even while the school is at 'rest', the anal fins of the component members are in a constant state of rippling motion. Perhaps the most unusual facet of the ghost glass catfish's charm is a subtle and fleeting beauty which requires co-operation of the sun's reflected light. Under the proper conditions, however, the entire spectrum flashes softly from the scaleless sides of the fish.

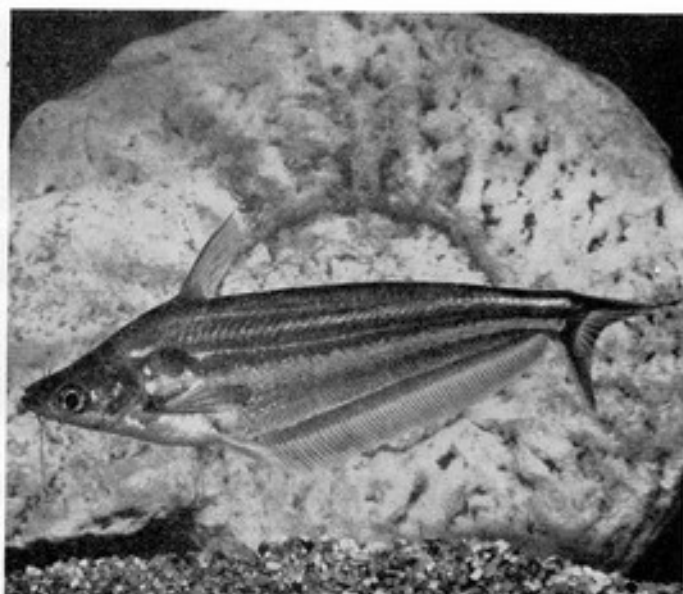
There was a time when the Siluridae encompassed the bulk of catfishes. Now the fishes included are European and Asian in scope,



Indian or ghost glass catfish (*Kryptopterus bicirrhis*), from Thailand and the far east, a popular aquarium representative of the glass cats and perhaps the most transparent of all the 'glass fishes'



Striped glass catfish (*Schilbe mystus*) from the Congo Basin of Africa. Aquarium specimens grow to about 6 inches but double this length has been reported for fish caught in the wild



with the giant *Silurus glanis* or 'wels' of Europe leading in size and weight. The anal fin of all is the chief organ of propulsion and is unusually long and almost eel-like. Several species of *Kryptopterus* and *Ompok* are among those of primary interest to the aquarist.

*Ompok* species are generally larger than *Kryptopterus* and although one or two species are rather glasslike the dorsal fin is more obvious, whereas on *Kryptopterus* it is either very small or absent. *Ompok* also has longer barbels. *Siluroides hypophthalmus* is similar to *Ompok* and has been sold in the U.S. as '*Ompok bimaculatus*'.

### Family Schilbeidae

A family of rather similar fishes that are found in Africa as well as the Far East are the schilbeids, members of the family Schilbeidae. Because of their similarity, the name 'glass catfish' is also associated with many of them although they are certainly less worthy of the name than their silurid counterpart.

Certainly as far as the average fishkeeper is concerned the most outstanding of the group is the little African glass catfish, *Etropiella debanasi*, from the Congo region. Although most of the others reach sizes large enough to swallow many of the standard aquarium species and possess the inclination to do so when opportunity permits, this handsome little black and white creature is too small, reaching only about 2½ inches in length. After becoming accustomed to aquarium life, this is one of the most active of aquarium catfishes. There are reports of occasional spawnings in captivity, and in general this is a very satisfactory companion for smaller aquarium fishes.

Two other small and handsome but less frequently available African schilbeids are *Parailia longifilis* and *Physailia pellucida*.

From Thailand come one or two *Eutropiichthys* species or relatives, but the bulk of schilbeids of concern

to the aquarist are from Africa. *Schilbe mystus* is very similar in appearance to the silurid catfishes of the foregoing family. This attractive fish has the same general form as the other glass catfishes, and although the flesh of the creature is opaque and adorned with lateral stripes, there is somehow a rather glasslike quality to the appearance.

*Schilbe mystus* is found through most of tropical Africa and has a close relative, *Schilbe uranoscopus* from the Nile, which is similar in appearance but is more brownish and may lack the lateral bands entirely or have only one which is less distinct than in *S. mystus*.

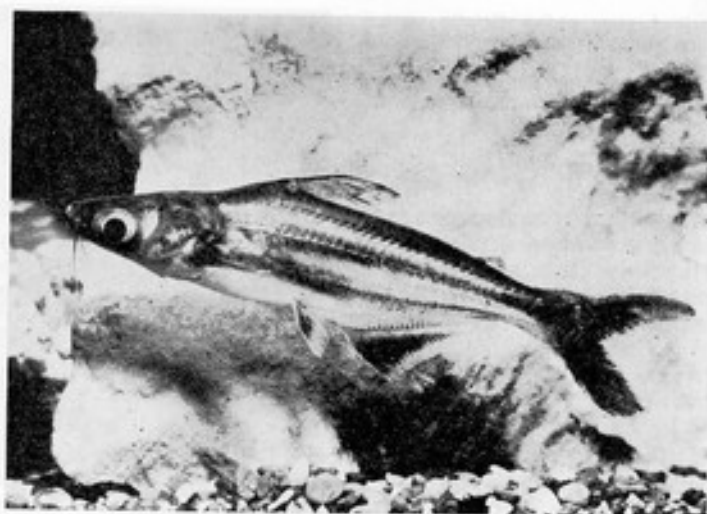
While a length of about 1 foot is reported in Nature for *Schilbe*, as is often the case anything more than half this is unlikely in the aquarium. There may be several reasons for this; among them the fact that we know little about natural life spans of such fishes. Catfishes seem especially often to have the capability for exceptional longevity. Age and growth may or may not be related, depending on species. In *Corydoras elegans*, which I have kept in excess of 10 years, growth apparently ceased after 2 or 3 years, whereas *Clarias* and *Synodontis* which are even older grow progressively larger, although growth is less rapid. In any case, a 6-inch *Schilbe* has the capacity to and will swallow adult mollies and swordtails.

The supply of handsome schilbeid catfishes from the Dark Continent has hardly been touched as far as potential aquarium fishes are concerned. Although *Eutropius* and similar fishes are occasionally available, the future will probably see a number of new African Schilbeidae on the scene.

### Family Pangasiidae

Although some authorities have included *Pangasius* and its near relatives in the family Schilbeidae, latest revisions separate them into another family, the Pangasiidae. Among their ranks are two of the world's

An attractive black and white catfish is *Pangasius sutchi* from Thailand



largest catfishes, one of which almost incredibly is a toothless vegetarian. There is, however, the possibility that the lack of dentition is a by-product of extreme age and that one of the 'other species' from Thailand that has the standard complement of dental equipment is in reality the young of *Pangasianodon gigas* (*Pangasianodon*—'toothless *Pangasius*').

Several *Pangasius* species have been seen in the aquaria of Europe and the U.S., but possibly the most outstanding is the handsome *Pangasius sutchi*, a very active and beautiful black and white fish that will hardly molest even the tiniest species. Generalisms of this sort, as

always, should be applied with a certain amount of horse-sense since any fish large enough to swallow any other fish easily may do so upon occasion.

Feeding the pangasiids should cater at least partially to their apparent vegetarian needs. Oatmeal is eagerly accepted by these as well as most other tropicals, whether it is simply cooked and cooled or combined with other ingredients such as shrimp meat or spinach.

In summary, all the 'glass catfishes' should ideally have companions of their own kind, plenty of room for swimming and shelter available if they should want retirement.

## Readers' Queries Answered



### Artificial Insemination

*I have a pair of red hi-fin lyre-tail swordtails. They are both fairly large fish and the male is persistently courting the female but I have not seen the male successfully impregnate the female yet. This variety has an unusually long gonopodium, but this male's is bent over at the end and this seems to be interfering with sperm transference. Would it be advisable and safe to artificially inseminate using a fine pipette?*

Many aquarists confuse the gonopodial thrust with a successful mating

but, during research in this field, the late Dr Myron Gordon found that even after over 100 male 'thrusts', no spermatozoa were observed in the female oviduct. One problem with some of these new varieties is that

**HAVE YOU** marked the dates 7th-10th November in your diary? Make sure you don't miss **THE AQUARIUM SHOW** at the Royal Horticultural Society Old Hall, Vincent Square, London, S.W.1. It's easy to get there—have a day out!

many of the fish, though phenotypically healthy, are sterile. Artificial insemination is possible and the technique was first described by Dr Zander. The male is placed on his back in a wet net and the gonopodium rotated gently backwards and forwards. If slight pressure is made on the belly alongside, sperm will well up and can be collected in a pipette and transferred into the female oviduct.

However, it would be as well to establish the sterility or otherwise of both fish by putting them with other *Xiphophorus* species. This crossing of the female with an ordinary sword will not 'spoil' her as the mating will affect only that brood and new sperms will quickly establish the original genetic message.

### Gene for Coloured Tails

*I realise that genetics is a complicated subject, but perhaps you could*

clarify one small point for me? In an old copy of PFM I came across the term 'CP gene' and as it seems all Greek to me, perhaps you could explain. The reference, by the way, was to broad-tailed guppies.

As the saying goes, the Greeks had a word for everything, but not in this case. The letters CP simply stand for caudal pigment, and when it is present it produces those beautiful pigments in the dorsal and

caudal fins of the female guppy. The presence of the 'CP gene' in the male can be identified by his caudal colours, usually blue to black. The gene is attached to the X chromosome.

## Round the Bulletins

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PetFish Monthly, October 1968

the spawning, but was given the eggs. As he says, anyone can get a spawning it is the rearing that is difficult. The first eggs hatched in about 3 days and all the eggs had hatched in a week. The fry were black and rapidly grew on a diet of duckweed.

Since the fry are doing so well, Jim asks why they can not be entered in the East London, Thurrock, Basildon and Southend series of table shows. He explains that all he is asking for is a class for tadpoles!

The May 1968 COLORADO AQUARIST contains an article entitled 'Mini-New' by Eleanore Meyer. Apparently

a new type of aquarium is on the market in the States. It is called a 'Miniarium' and it is described as a tiny self-sufficient aquarium.

The tank is supplied with a slide-on glass top, and comes complete with sand, artificial plants, filter and aerator. The filter is operated by a 9 volt transistor battery using electrolysis to power it and supply oxygen.

Eleanore does not state the size of the tank but gives an indication when she says that at different times she has kept some neons and a male fighter in it. She suggests that it could be used to house small turtles

(terrapins), or frogs.

In the same issue of the Colorado magazine Brent Meyer describes his formula for 'Liquid food for fry'. His recipe is half a cup of evaporated milk, one tablespoon of powdered shrimp meal, one tablespoon of powdered fry food, and five drops of cod-liver oil. This is mixed well; it looks like glue, and is kept in the refrigerator until required. Sodium benzoate solution is suggested as a preservative if the food is to be kept for any length of time. Unfortunately Brent does not tell us how much and what strength of sodium benzoate to use.

## Twenty-fifth 'MIDLAND OPEN'



Ring Around the World was the title of the Birmingham Telephone A.S. exhibit above, coloured lights on the map showing the habitats of fishes in the tanks in the foreground. North Warks A.S. windmill scene (right) was the winning Society entry

THE SHOW organiser's nightmare became a reality during the preparations for the MIDLAND OPEN SHOW at Bingley Hall in August—scaffolding failed to arrive on time and when frantic telephone calls produced delivery it was found that the wrong lengths had been sent. But the accumulated experience of the MIDLAND AQUARIUM AND POOL SOCIETY, and the enthusiasm and determination of the show team under the guidance of show secretary Mr J. Witts, was more than equal to the occasion. The



A group of Midland Show officials (left to right): Mr A. M. Thomson, Mr S. E. Thorp, Mr Phil Jinks, Mr J. Witts and Mr J. S. Harbon





Mr C. H. Barrett received an armful of trophies at the presentation: as well as the Championship Cup he was awarded four firsts, a second, two thirds and three fourths, obtaining the P. Smith Cup, the Graham Keys Cup and the Butler Cup

25th MIDLAND OPEN was ready, as ever, on time.

A fine selection of fish were on view this year and notable successes were achieved in both the coldwater and tropical classes. Mr H. T. Jago received both the Raven Cup for the best common goldfish and the Keeling Cup for the best veiltail bred in 1968 by the exhibitor. To Mr C. H. Barrett went the Graham Keys Cup for the best veiltail in the Show, the P. Smith Cup for a.v. fancy goldfish (twintails) and the Butler Cup for a magnificent moor. The Eversden Cup for the best coldwater entry went to Mr A. E. Roberts. The Gilbert Cup for the best tropical entry in the show was awarded to Mr G. C. Wyse, who also received the tankard for the best novice's fish in this entry.

The FEDERATION OF GUPPY BREEDERS' SOCIETY, MIDLAND SECTION, mounted the Midland Open Guppy Show (breeders teams only), and it was to the secretary of the South Midlands section, Mr M. H. Delingpole, that

the Jim Edwards Memorial Trophy for outstanding service to the hobby was awarded this year.

Trade stands displayed a great variety of fishes and the reptile display of Wolverhampton Aquatics was a focus of public interest, particularly when the snakes were being handled. New equipment on display included a demonstration of the full range of Nuova products.

The merits of the two entries in the inter-society competitive display were judged by the public and the winner was the delightful windmill scene built by NORTH WARWICKSHIRE A.S. The sails outlined in lights and the country scene shown made the corner where it stood a very attractive spot. The runners-up, the BIRMINGHAM TELEPHONE A.S., had arranged an ingenious exhibit linking tanks of various fishes to a large world map and the public were able to test their knowledge of the natural habitat of the fishes by pressing buttons that brought the lights up when the correct selection had been made.

Details of the show results are as follows.

## Results

**Coldwater classes.** Judges, Mr F. Close, H. T. Jago, Mr L. Emery, Mr R. Biddle. Moon goldfish, single fish: 1 and 3, Mr F. Jago (Raven Cup); 2, Mr B. W. Forster. Breeders' class, a.v. fancy goldfish (single fish): 1, Mr C. H. Barrett (P. Smith Cup for best breeders' entry); 2, Mr R. V. J. Jones; 3, Mr A. E. Roberts. Breeders' class, fancy goldfish (singletails): 1, Mr T. L. Stock; 2, Mr R. Berry; 3, Mr K. C. Speaks. All shubunkins: 1, Mr E. A. Mason; 2, Mr K. C. Speaks; 3, Mr T. L. Stock. Veiltails, single fish: 1, 2 and 3, Mr C. H. Barrett (Grayham-Keys Cup for best veiltail); 2, Mr H. J. Whiting; 3, Mr R. Oxenham. Scaled veiltails, single fish: 1, Mr T. Young. Twintails (other than calico veiltails), bred 1968 by exhibitor, single fish: 1 and 3, Mr A. E. Roberts; 2, Mr T. L. Stock. Bristol shubunkins, bred 1968 by exhibitor, M.A.P.S. members only: 1 and 3, Mr H. J. Whiting (Rowatt Cup); 2, Mr H. T. Jago. Calico veiltails, bred 1968 by exhibitor, single fish: 1, 2 and 3, Mr H. T. Jago (Keeling Cup). Bristol shubunkins, matched pairs: 1, Mr K. C. Speaks; 2, Mr E. A. Mason; 3, Mr R. Berry.

Orandas, single fish: 1, Mr A. E. Roberts; 2, Mr E. A. Mason; 3, Mr R. Berry. Telescopes (other than moors), lionheads, celestials, bubble-eyes etc.: 1 and 2, Mr H. Stock; 3, Mr S. T. Tibble. Moors: 1, Mr C. H. Barrett (Butler Cup); 2 and 3, Mr A. E. Roberts. Bristol shubunkins, 3 in. body limit, single fish: 1, Mr R. Oxenham (Taylor Cup for best shubunkin in show); 2, Mr

H. J. Whiting; 3, Mr L. Ford. Calico fantails and calico rymphs: 1 and 3, Mr C. H. Barrett; 2, Mr S. T. Tibble. Scaled fantails, single fish: 1, Mr E. A. Mason; 2, Mr B. Hall, jun.; 3, Mr R. Berry. A.v. pond or river fish, 7 in. body limit: 1, 2 and 3, Mr B. W. Forster.

**Individually decorative coldwater aquariums:** 1, Mr B. W. Forster; 2, Mr E. Leggett; 3, Mr T. Young. **Inter-society decorative coldwater aquariums:** 1, Coventry & P. A.S. Bristol shubunkins (novices); 1 and 3, Mr T. Young (Webb Cup); 2, Mrs E. Leggett.

**Tropical classes.** Judges, Mr R. Cook, Mr W. Devison, Mr A. Smith, Mr G. Haines, Mr L. Stokes.

Barbs (*tetraodon, oligolepis* and *caesioides*, true pairs): 1 and 2, Mr A. W. Skinner. Barbs (*tetraodon, nigrofasciatus, nico* and *conchomus*): 1, Mr R. J. Hough; 2, Mr D. L. Edwards; 3, Mr R. Trippas. Barbs, any other barbs: 1, Mr K. J. Harvey (Dodge Cup); 2, Mr B. Taylor; 3, Mr E. J. Sheehy. Danio, brachydanio and White Cloud Mountain minnows: 1 and 2, Mr B. Woodward; 3, Mr P. Skinner. Any rasboras: 1, Mr D. L. Edwards; 2, Mr E. Leggett; 3, Mr J. D. Fellows. Characins (*Hypomelinotus, Hemigrammus* and *cardinalis*): 1, Mr K. N. Wells; 2, Mr J. B. Colwell; 3, Mr D. L. Edwards. Any other characins: 1, Mr B. Woodward; 2, Mr R. J. Hough; 3, Mr E. J. Sheehy.

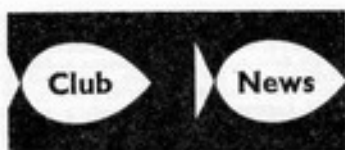
**Male fighters, single fish:** 1, Mr J. D. Fellows; 2, Mr K. N. Wells; 3, Mr I. Ford. A.o.v. male anabantid, single fish: 1, Mr M. Boulton (Mrs Gilbert Cup for best anabantid entry in show); 2, Mr K. N. Wells; 3, Mr D. Andrews. Cichlids, up to 3 in. body limit, single fish: 1, Mr T. G. Jones; 2 and 3, Mr S. Green. Cichlids, 3 in. or over, single fish: 1, Mr K. G. Pearce; 2, Mr R. J. Hough; 3, Mr K. J. Harvey. Cichlids, angelfish, single fish: 1, Mr P. Massey; 2, Mr C. J. Nightingale; 3, Mr S. Dean.

**A.v. male guppy, single fish (judged to F.R.A.S. standards):** 1, Mr T. A. Nason (T. G. Sutton Cup); 2, Mr R. Grove; 3, Mr R. Trippas. A.v. mollies, true pairs: 1, Mr M. Boulton; 2, Mr J. Wain; 3, Mr R. J. Hough. A.v. platys, true pairs: 1, Mr R. Trippas; 2, Mr J. Wain. A.v. swordtails, true pairs: 1 and 3, Mr R. Trippas (Coleman Cup for best Poeciliid entry in show). A.o.v. tropical fish, single fish: 1, Mr S. Dean; 2, Mr E. Leggett; 3, Mr R. J. Hough.

**Breeders' class egg-layers, 6 fish bred 1968:** 1, Mr A. W. Skinner (Fanday Cup); 2, Mr J. B. Colwell; 3, Mr K. J. Harvey. **Breeders' class livebearers, 6 fish bred 1968:** 1, Mrs M. Skinner; 2, Mr R. J. Hough. A.v. *Corydoras* catfish, single fish: 1, Mr I. Ford (J. C. Froggatt trophy); 2, Mr F. Bolton; 3, Mr R. W. Walker. A.o.v. catfish, single fish: 1, Mr D. Highfield; 2, Mr E. Leggett; 3, Mr D. Hemmings. Egg-laying toothcarps, true pairs: 1 and 3, Mr J. K. Fellows (Carrington Memorial trophy); 2, Mr K. N. Wells.

**Any characins, true pairs, novices:** 1, Mr G. C. Wyse (tankard for best novice's fish and the Gilbert Cup for best tropical fish entry in show). Any danio, brachydanio or White Cloud Mountain minnow, true pairs, novices: 1, Mr R. Grove; 2, Mr T. Young; 3, Mr A. J. Jones. Any barbs, true pairs, novices: 1, Mrs E. Leggett; 2, Mr C. W. true pairs, novices: 1, Mr J. Wain; 2, Mr A. J. Jones. Any male anabantid, single fish, novices: 1, Mr C. J. Nightingale; 2, Mr S. Green; 3, Mr S. P. Fellows.

**Individual decorative tropical aquariums:** 1, Mr S. Dean (Water Life Cup); 2, Mr M. King; 3, Mr T. Young. **Inter-society decorative tropical aquariums:** 1, Tipton; 2, Coventry; 3, North Warwickshire. A.v. aquarium plant: 1, 2 and 3, Mr E. G. Leadley (P. W. Jinks trophy). A.v. reptiles or amphibians: 1 and 2, Mr E. Leggett (lizard and black axolotl); 3, Mr C. Hill (terrarium). **Results of the Midland Open Guppy Show, organised by the F.G.B.S., were:** Breeders' males: 1, Mrs J. Croft (tankard); 2, Mr P. W. Jinks; 3, Mr M. H. Delingpole. Breeders' females: 1 and 2, Mr D. Bennett (silver pin award); 3, Mr M. Reynolds.



AT the GOSPORT & D. A.S. second open show the best fish in the show award was made by judges Mr J. Stillwell, Mr W. Ryder and Mr R. Matley to Mr I. Perman for his fish entered in the a.o.v. cichlid class. Detailed results were as follows:

**Tropical.** Male guppy: 1, Mr B. Poole; 2 and 3, Mr C. Beets. Female guppy: 1 and 3, Mr C. Beets; 2, Mr Walker. Platy: 1 and 3, Mr S. Cook; 2, Mr B. Poole. Swordtail: 1, Mr Sainsbury; 2, Mr Scott-Morgan; 3, Mr N. Gregory. Mollie: 1, Mr Scott-Morgan (best livebearer); 2, Mr A. Blake; 3, Mr Sainsbury. A.o.v. livebearer: 1, Mr A. Blake; 2, Mr M. Ellick. Characin: 1, Mr T. Walker; 2, Mr Sainsbury; 3, Mr M. Skinner. Barbs: 1 and 2, Mr I. Perman (best barb); 3, Mr Lawrence. Danio, minnow or rambora: 1, Mr D. Harding; 2, Mrs J. Wright; 3, Mr N. Gregory. Siamese fighter: 1, Mrs J. Wright; 2, Mr K. Clough; 3, Mr A. Blake. Labyrinth: 1, Mr N. Gregory (best labyrinth); 2, Mr S. Cook; 3, Mr A. Blake. Dwarf cichlid: 1, Mr D. Jones; 2, Mr D. Beigden; 3, Mr A. Blake. Angel: 1, Mr M. Ellick; 2, Mrs J. Forward; 3, Mrs J. Wright. A.o.v. cichlid: 1, Mr I. Perman (best fish in show, best cichlid); 2, Mr Scott-Morgan; 3, Mr J. Jeffery. Egg-laying toothcarp: 1, Mr T. Walker; 2, Mr D. Jones; 3, Mr B. Poole. Corydoras catfish: 1, Mr A. Blake; 2, Mr W. Sherwin; 3, Mr McKeever. A.o.v. catfish: 1, Mr K. Clough (best catfish); 2, Mr I. Perman; 3, Mr Rawlings. Loach or botia: 1, Mr M. Ellick; 2, Mr A. Blake; 3, Mrs J. Wright. A.o.v. shark: 1 and 3, Mr K. Clough; 2, Mrs J. Wright. A.o.v. tropical egg-layer: 1, Mr Marks; 2, Mr I. Perman; 3, Mr C. Beets. Breeders egg-layer: 1, Mr B. Sandfield; 2, Mr K. Clough; 3, Mr D. Jones. Breeders livebearer: 1, Mr Scott-Morgan; 2, Mr C. Beets; 3, Mrs J. Wright. Breeders pairs: 1 and 2, Mr I. Perman; 3, Mr B. Coombes. **Coldwater.** Common goldfish: 1, Mr V. Voysey; 2, Mr D. Harding; 3, Mr B. Brown. Shubunkin: 1 and 2, Mr B. Coombes; 3, Mr V. Voysey. Fancy goldfish: 1, Mr V. Collins; 2 and 3, Mr G. Howell. Pond, river, native or foreign: 1, Mr V. Collins (F.B.A.S. Championship trophy, best coldwater fish); 2 and 3, Mr V. Voysey. Breeders coldwater: 1, Mr V. Collins.

IT has been some time since BRACKNELL & D. A.S. were in the news. Recently members have enjoyed a social evening with READING & D. A.S. at the Black Boy, Shinfield, and illustrated talks by the B.K.A. and Mr Katritzky have proved very successful in bringing new blood into the club. Mr Brian Johnson was voted Aquarist of the Year and the mini-aquaria Cup won by Mr Rod Norris. The club's monthly newsletter, The Bracknell Harlequin, edited by Mr Les Jordan and family has proved very successful with the other Three

Counties clubs (copies available from Mr L. Jordan, 62 Fernbank Place, Ascot). Printing costs are entirely covered by the Spot the Fish competition, devised by Mr Morris Carter, that appears in the newsletter each month. Also featured monthly is a report from Mr Bill Jordan, resident in Washington U.S.A.

Mr Ken Phillips, chairman/show secretary of the Society, reports that although entries at the Three Counties open show for which Bracknell were hosts this year were slightly down, the show went off without major hitches. The host club were delighted to win the Three Counties Cup for the club with the highest points and Mrs Natalie Jordan won the M & D Trophy for the competitor with the highest average points. The best fish in

*WE HEAR from John Hutchinson (Pets) Ltd. of Sheffield that they have available a new 8 mm. colour film called 'Marie's New Hobby' produced on their premises. This shows a small child of about 12 years old taking an interest in the hobby of tropical fishkeeping. The film lasts for half-an-hour and shows the complete setting up of an aquarium in a house. It can be hired and a projector and projectionist are available. Please contact John Hutchinson (Pets) Ltd., 39/41 Wicker, Sheffield 3, who will be pleased also to arrange for society visits on Sundays.*

show award went to Mr M. Davies for a *P. fasciatus* and the best breeding achievement award to Mr R. Armstrong for his copper tetras.

**A CHANGE OF venue for TONBRIDGE & D. A.S.** From September all meetings are being held in the Forresters Arms, Quarry Hill, Tonbridge. New officers have also been elected to replace the chairman, who has left the area, and the show secretary, whose resignation is due to pressure of work. Vice-chairman Mr D. Allin is now chairman until the next annual general meeting and Mr John Bellingham is now vice-chairman. Mr T. Amos has been co-opted on to the committee.

The Society have recently been greatly entertained and instructed by a lecture from Mr John Bryden of Ilford, Essex, who is described by the club's secretary as 'a gallant crusader for marine tropicals'. Mr Bryden's main theme was that marines were neither more difficult nor more expensive than freshwater

tropicals when the costs of gravel, plants and the larger number of fish needed in the latter case were considered. In addition to covering all details of setting up a marine aquarium, Mr Bryden answered general queries on diseases and judged the table show, a.v. barbs, with the following results: 1, Mr R. Taylor (chequer); 2, Mr J. Bellingham (cherry); 3, Mr C. Banning (albino tiger). Mr Bryden made some helpful comments on the fish shown and explained that many of the fish, while in good condition, were too small as specimens of their species.

**MERSEYSIDE A.S.** now number 80 members and it seems that almost everyone was anxious to help the committee in their task of staging the Society's exhibition at the Liverpool Show. In fact, so many names were submitted of members who had rendered exceptional assistance (and who therefore qualified to receive the Liverpool Show Committee's shield on behalf of his society as the club gaining most points at the show) that a draw had to be made and Mr P. Clarke was the winner. Results were as follows.

The Liverpool Cup for best furnished aquaria, Mr T. G. Wayles; the Coronation Cup for the best livebearer, Mr W. Kelly; the M.A.S. trophy for the best labyrinth, Mr P. Clarke; the M.A.S. trophy for best characins, Mrs V. Parkes; the M.A.S. trophy for best barb, Mr K. Parkes; the M.A.S. trophy for best cichlid, Mrs V. Parkes; the M.A.S. trophy for best top minnow, Mr D. Thomalla; the M.A.S. trophy for best rambora and danio, Mr D. Thomalla; the M.A.S. trophy for best catfish and loach, Mr K. Parkes; the Mersey Cup for a.o.v., Mr D. Thomalla; the M.A.S. breeders trophy, Mr N. Petersen; the M.A.S. Junior shield, John Cobb; the Liverpool Aquaria trophy for best fish in show, Mr Ken Parkes for his tinfol barb.

Club members are fortunate in having been able to attend the course of six 2-hour lectures that Mr M. D. Murphy of the Vertebrate Zoology Department of the Liverpool Museum has been giving every Thursday since the 5th September. Mr Murphy, who is the Society's vice-president, commenced the lectures with a guided tour of the Museum Aquarium, during which the daily routine of feeding fish, cleaning tanks and filters and the purpose of quarantine sections as well as information on the many different species of fish on exhibition was given.

THE value of the aquarist society as a source of knowledge in the hobby is clearly shown when a thriving club's programme is considered over a period of some months. In the space of 4 months members

of **SOUTHEND & D. A.S.** have had the opportunity of listening to lectures on many facets of the hobby. Mr Gerald Jennings of the I.M.S.S. spoke about marines, and won some converts for this side of the hobby. Mr Ed Niccol of Thurrock talked about the fishes he had bred and described in particular a spawning of *Corydoras auratus*—the fry are absolute replicas of their parents and propel themselves round the tank before they become free-swimming by bouncing. Mr Dave Cheswright and Mr Michael Willis demonstrated how to set up a furnished tank and Mr P. F. Capon has spoken on labyrinths and took along newly hatched *leeri* fry for members to see. Coldwater enthusiasts were able to fire questions at ex-president Mr Stan Halsey and receive much sound advice by an expert in his replies.

A club outing was made to Kew Gardens and members have been very active at inter-club meetings at Basildon and Thurrock. Southend are themselves hosts at the inter-club meeting on 1st October, when the guest speaker will be the Editor of **PETFISH MONTHLY**, but, to date, club positions and points are: Southend, 40; Thurrock, 31; East London, 27; Basildon, 2. Fishkeepers in the area who would like to join in such activities should contact secretary Mr M. J. Willis, 17 Arundel Gardens, Westcliff-on-Sea, Essex (phone Southend 42498).

**HARWICH & D. A.S.** have, for the second year, mounted a public show at a local hotel; its success and the public interest shown make it likely that the exhibition will become an annual event. Two evenings of hard work were needed just to get the 27 furnished tanks ready for the 350 fishes of 53 species that were on show. Shoals of guppies, zebras and neons were on view with tiger cats, Malayan angels, marble cichlids and clown loaches (all heated very successfully this year by space heaters). A popular addition to the tropical tanks were three coldwater ones containing orfe, bronze carp, moors etc.

Some of the club's trophies and shields were on view, including the Three-Way Quiz shield that had been won in competition with Witham and Ipswich societies. A catalogue was issued listing the fish in each tank by their common names and giving measurements to which a good specimen could grow and the country of origin. The public were very appreciative of the display and club members were well satisfied that the new members gained justified all their efforts.



This eye-catching display of killifishes has been seen at several shows this season. The unit folds neatly for convenience of transport by the B.K.A. exhibitors

ALTHOUGH all officials and members at **HENDON & D. A.S.** are engaged with the mammoth task of preparing another Congress (12th October) they have still been able to relax on every Thursday evening for the weekly programme. Hendon make special play of their own annual home furnished aquaria competition and recently one programme was devoted to the reports of the judges (Mr Ray Maynard and Mr David Finch) on their verdicts. The photographer that had accompanied them (Mr Alan Stevens) highlighted the aquaria that were judged, and the judges gave, pictorially, their critical appreciation. First prize and the Pegley trophy were awarded to Mr Keith Purbrick. Second prize went to Mr Charlie Spencer, just 2 points behind with 85 points, and third prize to one of the many juniors,

IT'S NOT too late for your Society to arrange a party visit to London next month to see **THE AQUARIUM SHOW** at the Royal Horticultural Society Old Hall, Vincent Square, London, S.W.1. The dates to note are 7th-10th November.

Master Stephen Smith. The club was also recently pleased to receive Dr G. Cust of B.A.S.S. who gave a most interesting lecture on fishes.

Hendon is fortunate in the fact that it has many able and proficient lecturers and fish photographers among its members and has no problems in arranging 52 programmes a year. A programme that highlighted yet another photographer from the club's membership was held in August when Mr Joe Gorman (show secretary) showed his colour transparencies as illustrations to a talk by Mr Keith Purbrick. One of the Society's most experienced members (Mrs Betty Robertshaw) lectured on a subject other than her beloved characins, namely rasboras, and enthralled members with recounting her experiences in the keeping of these fishes and her success in breeding harlequins. Although outside the scope of the lecture, Mrs Robertshaw also recounted her recent success with breeding ember barbs.

A number of Hendon's members recently visited their friends at **MID-HERTS A.S.** to present to one of its members (Mr Bill Davidson) the special trophy for best fish in the show at Hendon's open show. The evening was greatly enjoyed

and both clubs maintained their kudos when the final result was an honourable draw.

Any person interested in the keeping of fishes is most welcome at Hendon, whether a beginner or an experienced aquarist. Meetings are held every Thursday at 8.0 p.m. at the Brotherhood Hall, Edgware Road, West Hendon, London, N.W.9. Secretary Mr Keith Purbrick, 3 Holme Way, Stanmore, Middlesex will be pleased to supply other details.

IN the midst of preparations for their annual show eight members of WARRINGTON & D. A.S. yet found time to stage a show of fish at the invitation of a local firm. The eight members each set up a 24 in. tank, which was then judged by a representative of the hosts. Mr P. Norris was awarded first place and Mr M. Nadin second. Noteworthy recent lectures have included a talk of breeding and caring for Siamese fighters by Mr A. Addison and a talk on standards by guest speaker Mr W. Kelly. Table show results at these two meetings were:

A.O.V. anabantid: 1, Mr A. Addison; 2 and 3, Mr B. Worrall. Fighters: 1, Mr B. Bewick; 2 and 3, Mr A. Addison. Sharks: 1 and 3, Mr D. Healey; 2, Mr P. Norris. Louches: 1, Mr R. Tench; 2, Mr W. Healey; 3, Mr B. Worrall. Catfish: 1, Mr R. Tench; 2, Mr A. Addison; 3, Mr B. Worrall.

## Salford Open Show Results

RESULTS of the SALFORD A.S. open show have now been received. The best fish in show award went to Mr R. Moorcroft of Merseyside and the society award to Salford A.S. Other results were the following:

Mollies: 1, Mr and Mrs Standen (75, Lloyne); 2, Mr S. Harrop (73, Ouzam); 3, Mr G. Howard (71, Blackpool). Swordtails: 1, Mrs M. Cobb (73, T.A.B.); 2, Mr J. Degnen (72, Sunnybrow); 3, Mr J. Shepherd (69, Salford). Platys: 1, Mr W. Naylor (76, Aireborough); 2, Miss B. Kaye (75, Huddersfield); 3, Mr S. A. Foley (72, Salford). Guppies: 1, Mr J. Shepherd (78, Salford); 2 and 3, Mr W. Orton (76, 75, Salford).

Large barbs: 1, Mr J. Murray (73, Belle Vue); 2, M. & W. (71, Sunnybrow); 3, Mr J. Whiteley (68, Aireborough). Small barbs: 1, Mr and Mrs Grimshaw (74, Sunnybrow); 2, Miss B. Kaye (71, Huddersfield); 3, Mr A. Beasley (70, Ouzam). Large characins: 1, Mr J. Whiteley (84, Aireborough); 2, Mr J. Murray (78, Belle Vue); 3, Mr S. Harrop (76, Ouzam). Small characins: 1, Mr and Mrs Standen (78, Lloyne); 2, Mr and Mrs Grimshaw (77, Sunnybrow); 3, Mr L. Allison (75, Halifax). Dwarf cichlids: 1, Mr B. Wombell (78, Rotherham); 2, Mr R. Moorcroft (77, Merseyside); 3, P. & H. (76, Gorton & Openshaw). Angels: 1, Mr G. Edwards (77, Salford); 2, Mrs McLean (75, Sunnybrow); 3, Mr R. Tomkinson (73, Glossop). A.O.V. cichlids: 1, Mr R. Moor-

**FURTHER** details of HORSFORTH A.S.'s AQUARISTS CONVENTION have now been received. The Convention will be held on Sunday, 8th December 1968 at the College of Technology, Leeds University, Woodhouse Lane, Leeds 1 (entrance by ticket only). Tickets obtainable from Mr W. Audsley, 1 Springfield Walk, Horsforth, Nr Leeds, Yorks, price 3s 6d for adults and 2s 6d for juniors. Mr Gerald Jennings will be giving a slide show on marines, showing how to keep them, set up tanks and a general view of some of them. Mr Norman Mason-Smith will give a two-hour long programme of films including 'Fighting Fish of Siam', 'Blue Gouramis' (the complete spawning procedure) and 'Safari to Treetops' (the famous game-watching post in Kenya).

**LOUGHBOROUGH & D. A.S.** have held their second annual general meeting and officers elected were: chairman, Mr A. Chapman; secretary, Mr P. Hopewell (61 Morley Street, Loughborough); treasurer, Mr M. Farndon; show secretary, Mr I. Purdy; librarian, Miss P. Hayward; public relations,

Mr C. Roberts. Additional committee members: Mr D. Hill, Mr G. Bonbridge, Mr S. Purdy; social committee, Miss P. Hayward, Mr M. Jarram, Mr M. Farndon, Mr D. Woods, Mr D. Halford. After the treasurer had given his report the chairman commented on the favourable financial position that the society found itself in after only 18 months of existence, particularly as several expensive items had already been purchased. The devoted and extremely hard work of the secretary was singled out for mention.

Several newcomers turned up for this meeting and although annual general meetings can sometimes seem rather tedious all present showed extreme interest. Results of the table show, a.o.v., were: 1, Mr F. Hopewell; 2, Mr N. Vesey.

**ROCKS** and minerals in the aquarium is a subject that is often mentioned only briefly in aquatic textbooks, so members of **LEEK & D. A.S.** found the talk given to them by their show secretary, Mr R. Billing, on this subject most illuminating, particularly as Mr Billing linked the talk to localities within easy reach of members where attractive specimens of rock could be obtained for safe use in the aquarium. The month's show for tetras contained 22 entries and resulted in first place being awarded equally to Mr R. Billing and Mr M. Mannish, with Mr Billing also taking second place and Mr K. Thompson third.

**MEMBERS** of **YORK & D. A.S.** are very evenly divided upon the subject of the need for live foods in aquarium tanks. This was one of the topics debated at a recent meeting and the motion that 'Live foods are not necessary in the hobby' was only just defeated by 20 votes to 10. Supporting the motion, Mr M. Cooper spoke on the value of different non-living foods that he feels produce very healthy, large fish. Opposing, Miss H. Renwick maintained that live foods were essential in rearing fry and were therefore essential to the hobby. The second item—'Are table shows of value in improving show standards' was supported by Mr G. B. Hawksby, who pointed out that as standards improved at table shows, better fish were shown at open shows. Mr P. Carey, opposing, felt that the continual disturbance of fish taken to shows could not be beneficial either to the fish or the tank balance. However, a majority (23 to 14) felt that table shows were of value in

croft (87, Merseyside); 2, Mr Greenwood (84, Gorton); 3, Mr and Mrs Standen (80, Lloyne).

Corydoras catfish: 1 and 2, Mr A. G. Esteves (77, 75, Top Ten); 3, Mr R. Potts (70, Top Ten). A.O.V. catfish: 1, Mr B. Phillips (78, Ashton-u-Lyne); 2, Mr P. Hodgkinson (76, Salford); 3, Mr L. Kaye (74, Top Ten). Loach: 1, Mr and Mrs Webb (74, Salford); 2, Mr W. Booth (72, T.A.B.); 3, P. & H. (71, Gorton).

Rasbora: 1, P. & H. (75, Gorton); 2, Mr W. Naylor (75, Aireborough); 3, Mr and Mrs Standen (70, Lloyne). Danios: 1, Mr S. Harrop (74, Ouzam); 2, Mr D. Grundy (72, Leigh); 3, Mr P. Hodgkinson (71, Salford). Sharks & flying foxes: 1, Mr Bichenough (76, Sunnybrow); 2, Mr W. Gray (75, Sunnybrow); 3, Mr Moorcroft (73, Merseyside). Bettas: 1, Mr A. Beasley (75, Ouzam); 2, Mr J. Shepherd (73, Salford); 3, Mr P. Hodgkinson (70, Salford). Anabantids: 1, Mr L. Kaye (76, Top Ten); 2, Mr Green (74, Gorton); 3, P. & H. (71, Gorton). Toothcarps: 1, Mr and Mrs Grimshaw (77, Sunnybrow); 2, Mr A. Beasley (76, Ouzam); 3, Mr A. G. Esteves (75, Top Ten).

Pairs livebearers: 1, Mr and Mrs Grimshaw (75, Sunnybrow); 2, Mr W. Orton (73, Salford); 3, Mr B. Thompson (69, Glossop). Pairs egglayers: 1, P. & H. (82, Gorton); 2, Mr A. Beasley (80, Ouzam); 3, Mr W. Booth (78, T.A.B.). Team livebearers: 1, Mr W. Orton (78, Salford); 2, Mr S. A. Foley (77, Salford); 3, Mr R. Potts (73, Top Ten). Egglayers breeders: 1, Mr A. Beasley (70, Ouzam); 2, Mr and Mrs Standen (78, Lloyne); 3, Mr J. Shepherd (75, Salford). A.O.V. 1, M. & W. (78, Sunnybrow); 2, Mr W. Booth (76, T.A.B.); 3, Mr Greenwood (75, Huddersfield).

improving show standards. Finally, 33 members present, against only 4, supported Mr G. Waudby's belief that 'Large tanks are more beneficial than small ones' although Mr G. A. Thiel put forward many reasons in favour of small tanks.

**BEST fish in show trophy at the GORTON & OPENSHAW A.S.** fourth open show was won by Mr P. Barritt, who was also awarded a large p.v.c. fish tank presented by Rochdale Aquarium Specialists. The Westhead Trophy was won by Mr Price and Mr Hodgkinson (P. & H.) of Gorton & Openshaw, who also achieved the Chairman's trophy. Detailed results were as follows.

Guppies: 1, Mr B. Thompson (Glossop); 2, Mr W. Booth (T.A.B.); 3, Mr S. Harrop (Osram). Platys: 1, M. & W. (Sunnybrow); 2, Mr and Mrs Bone (Huddersfield); 3, Mr W. Grey (independent). Swords: 1, Mr Grimshaw (Sunnybrow); 2, Mr Taylor (Bradford); 3, Mr Hogarth (independent). Mollies: 1 and 2, Mr W. J. Orton (Salford); 3, Mr P. Duffy (F.G.A.).  
Anabantids A: 1, Mr P. Hodgkinson (Salford); 2, Mr B. Taylor (Aireborough); 3, Mr B. Taylor (Aireborough). Anabantids B: 1, P. & H. (Gorton); 2, Mr F. Mulla (Huddersfield); 3, Mr and Mrs Bone (Huddersfield). Barbs A: 1, Mr and Mrs Buxton (Barnsley); 2, Mr Tonge (Oldham); 3, P. & H. (Gorton). Barbs B: 1, Mr G. Kershaw (Heywood); 2, M. & W. (Sunnybrow); 3, Mr and Mrs Webb (Salford). Barbs, C: 1 and 2, Mr K. Parkes (Merseyside); 3, Mr Grimshaw (Sunnybrow).  
Cichlids, A: 1, Mr P. Barritt (Aireborough); 2, Mr A. Gardner (Heywood); 3, Mr G. Howard (Blackpool). Cichlids, B: 1, Mr R. Moorcroft (Merseyside); 2, Mr A. Newsome (Gorton); 3, P. & H. (Gorton). Cichlids, C: 1, Mr P. Barritt (Aireborough); 2, Mr R. Moorcroft (Merseyside); 3, Mr K. Parkes (Merseyside). Characins, A: 1, Mr Taylor (Glossop); 2, Miss Kaye (Huddersfield); 3, Mr P. Moorhouse (Bradford). Characins, B: 1, Mr S. Harrop (Osram); 2 and 3, Mr F. Bishon (Valley). Characins, C: 1, Mrs Parkes (Merseyside); 2, Mr F. Mulla (Merseyside); 3, Mr R. Moorcroft (Merseyside).  
Labees, sharks: 1, Mr R. Hughes (Gorton); 2, Mr N. Kirkby (Merseyside); 3, Mr P. Barritt (Aireborough). Killiefish: 1, Mr Grimshaw (Sunnybrow); 2, Mrs Bulleyment (Nottingham); 3, P. & H. (Gorton). Rasboras: 1, P. & H. (Gorton); 2, R. Moorcroft (Merseyside); 3, Mr P. Redmond (Sunnybrow). Danios etc.: 1, Mr K. Harrop (Osram); 2, Mr Selby (Hucknall); 3, Mr F. Bishon (Valley). Catfish, A: 1, Mr G. Kershaw (Heywood); 2, Mrs Bulleyment (Nottingham); 3, Mr P. Edmond. Catfish, B: 1, Mr F. Mulla (Merseyside); 2, Mr Tench (Warrington); 3, Mr A. E. Gardner (Heywood). Catfish, C: 1, Mr B. Parkin (Huddersfield); 2, Mr Gardner (Heywood); 3, Mrs Bulleyment (Nottingham). A.o.v.: 1, M. & W. (Sunnybrow); 2, Mr P. Moorhouse (Bradford); 3, Mr M. Taylor (Huddersfield).  
Coldwater: 1 and 2, Mr P. Moorhouse (Bradford); 3, Mr S. Walsh (Accrington). Breeders, A: 1 and 3, Mr P. Duffy (F.G.A.); 2, Mr W. Booth (T.A.B.). Breeders, B: 1, Mrs Bulleyment (Nottingham); 2 and 3, Mr and Mrs Buxton (Barnsley). Pairs, A: 1, Mr W. J. Orton (Salford); 2, Mr F. Bishon (Valley); 3, Miss Kaye (Huddersfield). Pairs, B: 1, Mr B. Parkin (Huddersfield); 2, Mr G. Hammett (Huddersfield); 3, Mr J. Greenwood (Huddersfield). Juniors, A: 1, N. Kirkby (Merseyside); 2, B. Seabright (Gorton); 3, P. Hodgkinson (Gorton). Juniors, B: 1 and 2, Mr P. Hodgkinson (Gorton); 3, Miss Kaye (Huddersfield).

## In Brief . . .

... 'KILLIEFISH' was the subject of the talk by Mr Peter Battista of Cardiff at the August meeting of **NEWPORT A.S.**, and an illuminating insight was provided into the various species available to the hobbyist. Table show results, judged by Mr Norman Counsell and Mr E. Townsend of Cardiff A.S. were: A.o.v. egglayer: 1, Mr I. G. Phillips; 2, Mr D. C. Bishop; 3, Mr M. J. Parry. Swordtails: 1 and 3, Mr A. J. Payne; 2, Master A. Berry.

... **CLAPHAM A.S.** have a full programme of table shows and activities to offer new members and visitors, whom they would welcome at their meetings held twice monthly on a Tuesday evening at Friendship House, 200 Wandsworth Road, Vauxhall, London, S.W.8 at 8.0 p.m. Further details from secretary Mrs M. J. Denbow, 26 Tiltson Court, Lansdowne Green, S.W.8.

... **EDITOR of the LEAMINGTON & D. A.S.** newsletter, Mr D. G. D. Lucas, reports that his anticipated exploration of continental lakes and streams proved to be a dismal failure on a recent trip abroad. 'The only real success as far as fish were concerned,' he writes, 'was the consumption of the local blue trout while passing through Switzerland.'

... **SHASTON A.S.** report that in future they will be known as the **SHAFTESBURY A.S.** Commenting on 14 months' activities since their formation, secretary Mr K. Forward (7 Pill Meadow, Kington Magna, Gillingham, Dorset) expresses the society's deep appreciation of the assistance given to them by Mr R. Matley, Mr I. Andrews, Mr B. Coombs of Bournemouth A.C., by Mr J. Stillwell of Portsmouth A.S. and by Mr Brown of Salisbury. He writes 'Their willingness to travel the distance they do to give one the benefit of their knowledge is something that I think wants mentioning publicly.'

... **TWO members of NEW FOREST A.S.** were highly successful in the table show for tropical plants and fancy goldfish. Mr D. Hare achieved first, second, third and fourth places in the former, and Mr D. Letts similar placings in the fancy goldfish class. Club members en-

joyed a quiz presented by Mr Earl and Mr James of Bournemouth A.C. Mr B. Poole of Poole A.C. judged the table show entries.

... **RESTING** from more strenuous labours, members of **HORSFORTH A.S.** recently enjoyed a picture quiz in which various articles photographed from unusual angles had to be identified. Table show results were—specified class, barbs: 1, 2 and 3, Mr Gernham. A.o.v.: 1, Mrs J. Dickinson; 2, Mr W. Audsley; 3, Mr K. Shaw. A.o.v. junior: 1, 2 and 3, Master D. Shaw.

... **RAINWORTH & D. A.S.** report that judges Mr Bowers, Mr Inman, Mr Sibson and Mr Deakin had a good selection of fine quality entries to judge at their open show in August. The best fish in the show award went to Mr Binns of Nottingham. Over 300 visitors attended.

... **WHEN** the expected speaker failed to make an appearance at the **YATE & D. A.S.** August meeting, club member Mr F. Brown very kindly stepped in at the last moment and gave an impromptu talk on fish showing and judging. The table show was for a.v. catfish and sharks, loaches and botias and there was such an enormous response that it took the secretary an hour to deal with all the entries. Results were: A.v. catfish, open: 1, Mr P. Wright (C. julii); 2, Mr M. Calway (Pimelodus); 3, Mr F. Brown (C. aeneus). Novice, 1, 2 and 3, Mr M. Calway (Pimelodus, Clarias). Sharks, loaches and botias, open: 1 and 2, Mr P. Wright; 3, Mr F. Brown. Novice: 1, Mr S. Green; 2, Mr A. Potts; 3, Mr D. Tippet.

... **THE FIRST** meeting of the newly formed **WREXHAM TROPICAL FISH SOCIETY** was held at the Church House, Regent Street, Wrexham (secretary, Mr E. C. J. Wadson, 113 Ruabon Road, Wrexham, Denbighshire), when members were officially welcomed, were given an outline of the programme for the coming year and then enjoyed a slide show and lecture by a member of Chester A.S.

... **SEVERAL** members of **BRISTOL A.S.** exhibited recently at the Midland Open Show with some success and club members Mr H. Jago and Mr L. Emery were invited to judge there. The Society looks forward to a return visit from M.A.P.S. members at their own open show at the end of September. Points gained by the two Societies then decide the winners of the



annual competition for the Shirley Aquatic Shield.

... **BRADFORD & D. A.S.** members have been enjoying a variety of lecture subjects at recent meetings covering furnished aquaria and killifish (from Mr Jeff Skinner) and egg-layers (by Mr Alec Firth). Talks on ecology and mollies are planned, a members' show is to be held and a trip made to Chester Zoo. The society meetings, starting at 7.30 p.m., are held on the first Wednesday of the month in Room 5 and on the third Wednesday of the month in Room 4 in Unity Hall, Rawson Square, Bradford. New members are very welcome and should contact the secretary, Mr L. Haley, 13 The Oval, Allerton Road, Bradford 8 for further details (phone 46319).

... **HASTINGS & BEXHILL A.S.** are full of praise for the slide lecture supplied by Highlands Water Gardens describing the construction and siting of all types of pools. The slides show many established ponds and the written script gives helpful comments on their suitability or otherwise to their surroundings. At this same meeting the guppy table show attracted a good many entries and judge Mr Barry Funnell made the following awards: 1, Mr A. McCormick; 2 and 3, Mrs Martin. The club hope to organise an outing to the Aquarium Show in London and future plans include a visit to a fish-breeding establishment. Details from joint secretary, Miss V. M. Rogers, The Memory House, 780 The Ridge, St Leonards-on-Sea, Sussex.

... THE placings in the **DUNDEE A.S.** Scott trophy competition are now: Mr J. McGeoghe, 9 points; Mr F. McNaughton, Mr G. Mitchell, Mr D. Towns, 8; Mr G. Yule, 6. Latest positions for the Junior trophy are: G. Yule, 14 points; L. Urquhart, 11; D. Miller, 2.

... **RIVERSIDE A.S.** announce a win for the home team in their interclub competition with **CROYDON A.S.** by a small margin of 10 points. Croydon took first place with a festival platy awarded 80 pts and Riverside took second, third and fourth with a *Barbus ophoides* 79, male guppy 78 and a rosy barb 77, giving Riverside 903 points to Croydon's 893. A film show completed the evening's enjoyment.

## Dates for Your Diary

27th-28th September. **BRISTOL A.S.** Open show. Bishopstone Parish Halls, Gloucester Road, Bristol. Schedules from Mr R. Berry, 120 Fouracre Crescent, Downend, Bristol.

20th September. **HUCKNALL & BULLWELL A.S.** first Open Show. A. R. Marshall & Sons Ltd. Works Carreen, Forest House, Hucknall Lane, Bulwell, Notts. Benching 12 a.m.-2 p.m. Judging 2 p.m. Schedules from Mr M. Harrington, 5 Greenwood Vale, Hucknall, Notts.

20th September. **BLACKPOOL & FYLDE A.S.** eighteenth Open Show. Harrowside Solarium, South Promenade, Blackpool.

6th October. **HEYWOOD & D. A.S.** Open Show. Ambulance Hall, Barnford Road, Heywood. Benching 11 noon-2.0 p.m. Schedules from Mr K. Hill, 29 Chadwick Lane, Heywood.

12th October. **CHELTHENHAM & D. A.S.** Open Show. Ambulance Headquarters Hall, 86 Gloucester Road, Cheltenham.

12th October. **THE HENDON CONGRESS (HENDON & D. A.S.).** Whitefield

Secondary Modern School, Claremont Road, Hendon, London, N.W.2. Commencing 6.0 p.m. Tickets from Mr Keith Purbrick, 3 Holme Way, Stanmore, Middlesex.

26th-27th October. **BRITISH AQUARISTS' FESTIVAL** at Belle Vue Gardens, Manchester. Enquiries to Mr G. W. Cooke, Spring Grove, Field Hill, Batley, Yorks.

3rd November. **MIXENDEN T.F.S.** Open Show. Mixenden Community Centre, Clough Lane, Mixenden, Halifax Yorks.

10th November. **HALIFAX A.S.** seventh Open Show. Smith Bulmer & Co. Ltd., Holmfild Mills, Halifax. 4 A-class judges. Schedules from Mr A. G. Whyte, 11 Rothwell Drive, Halifax.

### THE AQUARIUM SHOW

7th-10th November. At the RHS Old Hall, Vincent Square, London S.W.1. Schedules available from the Show Organiser, PetFish Monthly, 554 Garratt Lane, London, S.W.17.

10th November. **HARTLEPOOLS A.S.** tenth Open Show. Longear Hall, Hartlepool. Schedules from Mr J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham.

23rd November. **THE HACKNEY SHOW.** Details from Mr Len Smith, 2 Mercers Road, Holloway, London N.19.

23rd November. **G.S.G.B.** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London. 2.30 p.m. Details from Mr W. L. Wilson, 57 Constable Gardens, Edgware, Middlesex.

21st December. **AIREBOROUGH & D. A.S.** seventh Open Show. The Town Hall, Guiseley, Nr Leeds, Yorks. Schedules from Mr G. E. Walker, 2 West End Terrace, Guiseley.

8th December. **AQUARISTS' CONVENTION** sponsored by **HORSFORTH A.S.** College of Technology, Leeds University, Woodhouse Lane, Leeds 1. Commencing 2.0 p.m. Tickets from Mr W. Audsley, 1 Springfield Walk, Horsforth, Nr Leeds, Yorks.

23rd February 1969. **THE KINGS HALL OPEN SHOW.** Lower Clapton Road, London, E.9. (Sponsored by Hackney Borough Council). Details from Mr Len Smith, 2 Mercers Road, Holloway, London, N.19.

9th March. **HUDDERSFIELD T.F.S.** Open Show. Drill Hall, St. Paul's Street Huddersfield.

16th March. **TOP TEN AQUARISTS Tropical Fish Show and Exhibition.** Huddersfield Town Hall. Details from Mr L. Kaye, 6 Totter, Holmfirth.

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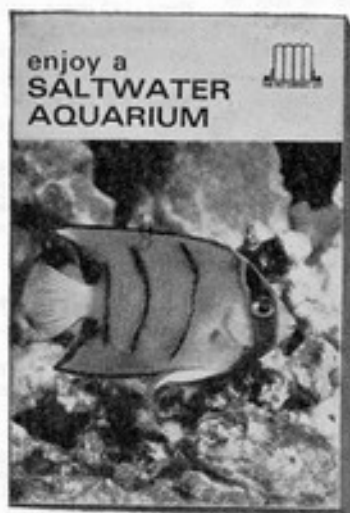
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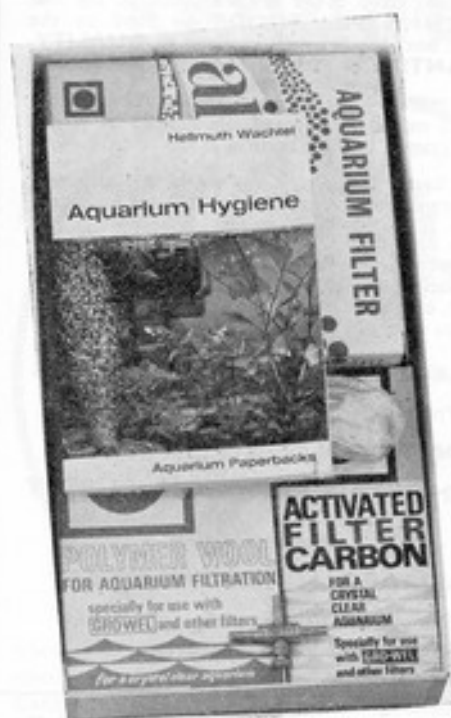
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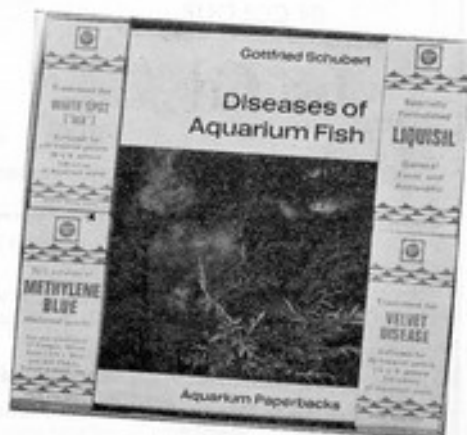
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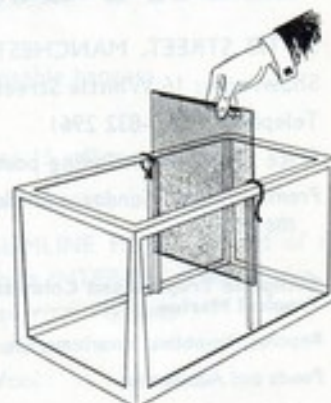
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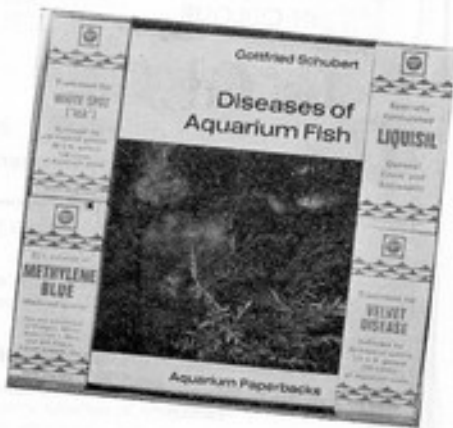
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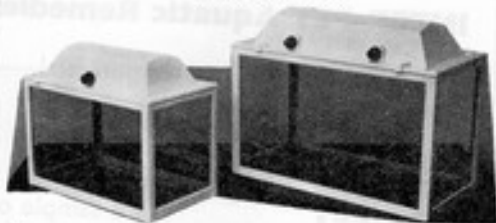
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