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Comments and Quotes

Unwanted Carp

AMUSEMENT was the reaction to the well-authenticated reports circulating some years ago of cichlids thriving in the warm-water effluent of a northern power station; a very different reaction to the releasing of unwanted fish into natural waters reaches us from Australia by way of a report by Dr J. C. F. Wharton, then Deputy Director of the Fisheries & Wild Life Department, which was originally published in the Department's *FUR, FEATHERS AND FINS* and now finds a place in *PINCHART*, the magazine of The Aquarium Society of Victoria.

The story centres round the vast efforts that have been made to eradicate the European carp (*Cyprinus carpio*) from Australian waters and specifically the rivers and dams of the State of Victoria. Introduced into Australia in 1872 along with the crucian carp and the goldfish, the stocking of European carp in Victoria in public was already forbidden when in 1960 a request was received to import European carp to breed commercially. Some distribution of small carp to farmers to stock farm dams had already taken place by the time an enquiry was held in 1962, at which the opinions of responsible fisheries authorities in most parts of the world were heard stating that 'large carp populations usually degraded the aquatic environment. In feeding near the bottom they roil (make very dirty) the water through their normal feeding habit, and make it unfavourable for plant growth, other fish, fish food organisms and for stock and domestic use. They notoriously destroy aquatic vegetation, compete with other species for bottom food, interfere with the spawning of other species and frequently crowd out other fish'. This led

to the passage in May 1962 of emergency legislation entitled the Noxious Fish Act, requiring any person having any European carp under their control to notify the Department in writing. Operation 'Carp-kill' was also started and over a period of 6 months it involved more than 200 man days, 37 Department officers, a cost of Australian \$50,000 and treatment of 1,300 dams throughout the State.

But the carp have won. In 1963 European carp were reported in a creek flowing into the Yallourn Storage Dam, then in the Dam itself. Chemical poisoning proved abortive and the carp started to breed. By February, 1965 the Yallourn Dam was reported to be 'infested'. Mid-water trawl nets were tried next until in August, 1967 Lake Hawthorn, a salty irrigation drainage lake connecting to the Murray River, was reported to be 'full of carp'. The carp's range has now increased all over the State. Dr Wharton concludes: 'The appearance of European carp in Victorian waters is perhaps the greatest tragedy ever to befall our freshwater environment. The effects of this fish in the areas where it is now established coincide only too well with the predicted destruction of the aquatic environment which we made in our submissions to the State Development Committee of Inquiry'.

Endangered Species

'WHATEVER else the next session of Parliament turns up, it augurs well for conservationists. There are Bills on wild plants protection and the control of zoological gardens, with reptiles and amphibians on the way. And Labour life peer Lord Wynne-Jones is reintroducing his Bill to clamp down on the trade in endangered species of wildlife (both

animal and vegetable'—THE ONSTREIVER.

Named in this Bill are 11 families of fishes that the ban would apply to, and these include ones representing major groups of aquarium species such as the Cyprinidae and Cyprinodontidae. The pet trade estimate that only about 5% of all imported pet animals would escape inclusion in the ban. Livestock importers are therefore understandably worried about the consequences for them if the Bill is passed. As far as the aquarium trade is concerned it looks as if a good case could be made for consideration of 'endangered' fish species as individual species rather than collectively as families, which should certainly decrease the number of aquarium fishes affected by any imposed ban. Large numbers of some fishes that undoubtedly have no future in aquarium life do continue to be imported, and it has been obvious for some time that in the absence of any demonstrated respon-

sibility over such importations there would be the likelihood of imposed restrictions.

In being forced to look at these matters and organise its defences the pet fish trade may very well emerge for the better rather than for the worse, although for many reasons the trade in the future will undoubtedly be different and it is well that this fact should be faced.

Scarce Tubifex

THOSE for whom the tubifex worm as fish live food is not the bogey that others like to fear, have worries about their future supplies. These are getting harder to obtain from the River Thames, probably because the river's sewage deposits have lessened in recent years, with the cleaning-up operations that have taken place, and perhaps also be-

cause of the enormous amounts of the worms that have been collected, with great disruption to the tubifex colonies. As we noted in a Comment in PFM for September 1972, Thames tubifex have even been in demand for the aquaria of Continental fishkeepers, and altogether the numbers of worms required are outstripping production.

We have seen one plea in a newspaper for tubifex collecting to be controlled (the earlier attempt of the Port of London Authority to do this having failed), although this plaintiff appeared to think that only with lots of tubifex worms can we have a cleaner Thames, whereas, of course, the existence of masses of the worms is a symptom of a dirty sewage-polluted river and you just cannot have both clean river and oodles of 'tubi'. Since the continued purification of the Thames is obviously a desirable development the future for live tubifex supplies for aquarists looks bleak.



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

Endangered Fishes

IN your last issue you exhorted your readers 'to perfect breeding techniques for as many species as possible', particularly because fish imports may be restricted if there is a possibility of disease infecting native species.

The Pet Trade Association recently found it necessary to consult its members because of an 'Endangered Species Bill' intended to secure support in the first place in the House of Lords. There are international proposals seeking the support of Governments to protect endangered species. Few fish hobbyists, if any, would oppose these specific propositions and the PTA has declared its sympathetic support.

The proposers of the above-mentioned Bill had confused 'species' and 'families' (1) and withdrew the Bill so that it could be amended. In its amended form it will probably be no more than the Government could decide for itself if it is to support the International Convention. Altogether, we may expect a continued series of attempts to limit, or even to absolutely prohibit, the importation of animals and plants.

There are people who consider that they alone are the experts; that they have no ulterior motives and that they, solely, are entitled to decide on behalf of us all how our lives shall be ordered. It might not be a bad idea if we were to show that we have a worthwhile point of view and are entitled to be consulted.

The image of the Pet Trade may lack some lustre but the fish fancier in Britain depends on professionals to arrange imports of livestock. No imports—no new fishes. To this extent the trader and the fancier have something important in common and there is an understanding among some traders that their organisations could usefully confer with those of the fanciers.

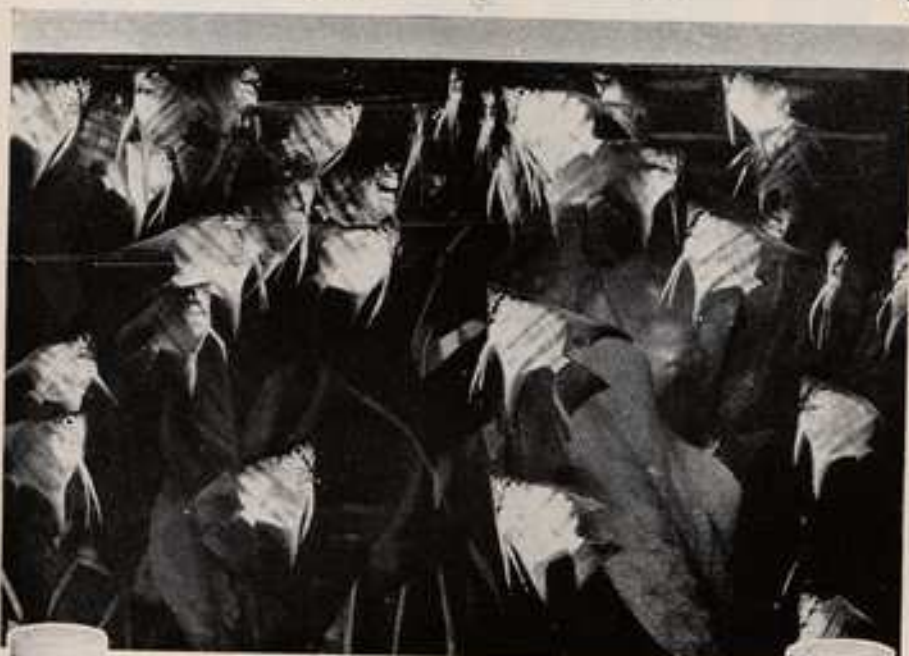
An 'endangered species' could best be protected by the Government responsible for its native habitat. If the Governments concerned can't, or won't, act, then some species may only be preserved by the breeding successes of zoos and fanciers. Many fish species have been bred by

Continued on page 55

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LETTERS

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amateur or professional fanciers. Considerable initial difficulties have sometimes had to be overcome and many techniques remain to be discovered.

How about some public recognition for the person, or persons, who succeed in being the first to breed a species? One or more of the interested organisations could agree to present a diploma. At least it need not cost much. At fish shows those entries which had been locally bred could be publicly noted.

Perhaps the present generation would be interested to read about some of the old hands' achievements in being 'firsts'.

At least, for the record, we could demonstrate that the fancier—and even the trader—is interested in preserving endangered species, is active and is doing something positive about it, without upsetting other people.

London, NW3

FRANK STONE

Cichlid Hybrids

I JUST received PFM for March the other day. Immediately upon opening the envelope, I recognised the fish on the cover: hybrids between a convict (*Cichlasoma nigrofasciatum*) and *Cichlasoma spilargenteum*. I also have some of these fish, resulting from a male *spilargenteum* who insisted upon killing all of the females offered him, and a female convict which was in the left-over cichlid tank he was finally exiled to. They are nice fish, and look rather more like a *spilargenteum* than a convict, except for the vertical stripes that are often present. All of the female *spilargenteum* I have seen have had the dark spot in the dorsal pictured, as have the female convict/*spilargenteum* I've come across. None of the males have, but from the photos accompanying Mr Zukal's article, it is obviously possible. I have never had two of these hybrids spawn, but a female convict/*spilargenteum* did spawn with a male convict/*spilargenteum* in my tanks. I immediately pulled the eggs, but unfortunately the eggs developed fungus after 2 days. Now a female convict has replaced the female convict/*spilargenteum* in the heart of the convict/*spilargenteum*. In the same tank is a

Petenia splendida × *Cichlasoma managuense* hybrid that I'm waiting to spawn with any of the others. Bizarre!

Just to show how bizarre it can get, a friend of mine recently had a male *Cichlasoma salvinii* spawn with female Jack Dempsey. As in most of these pure-strain crosses, the eggs were fertile and hatched. Imagine the possibilities using these Sally Dempseys?

Redonda Beach, California 90278

LARRY JOHN TABACCO

Fancy Goldfish

AT a recent meeting of the Association of Goldfish Breeders the entire aspect of exhibiting fancy goldfish was discussed, with particular attention to current situations regarding standards and competitive classes at open shows. As a result of this discussion, and taking into consideration the articles appearing in the Press, and information obtained both through correspondence and conversation on this matter, it was decided to ask the secretary, Mr George Fleming, to endeavour to convene a meeting of goldfish exhibitors, with a view to attaining order and uniformity.

Mr Fleming is at the moment in contact with other interested organisations, but, as it is imperative to obtain a widespread view on the subject, any organisation or individual goldfish exhibitor not already in contact with Mr Fleming, is invited to express an opinion to him, in writing, at 3 Rutland Road, London, E.11. Further information will be delivered as this becomes available, and we trust this matter meets with the approval of all concerned.

Edmonton, N18 2DQ

R. ELSDEN

Show Secretary, AGB

Low-Voltage Aerators

FURTHER to the comments of Mr Roy Pinks (PFM, January 1974) on aquarium pumps rated at 110 volts, I am sure that any reputable manufacturer or importer of aquarium pumps would undertake to obtain a model of any voltage desired. Our firm frequently supplies pumps with coils wound for 10, 12, 50, 60 and 110 volts. Of course delivery is a matter of weeks or months depending upon circumstances, rather than days, as each pump has to be specially made, but there is no real problem in obtaining a model to one's own particular requirements.

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E. J. SMALL
Hillside Aquatics

Many will be sorry to learn that Caesar, snake-head of T.V. and Aquarium Show fame, has died, having grown from 3 to 37 inches in the care of owner Mrs. S. Hedges. Fuller details of his career will be given next month.

MARINIST'S Notebook

By ROY PINKS

I SUPPOSE that one of the truly unique characteristics of marine fishkeeping is the life-style of the cleaner fishes. No-one who has hitherto remained within the confines of other branches of fishkeeping can but be thrilled when his first cleaner fish go into action, and fortunately for us all, the whole matter is still by no means an open and closed affair. For those unfamiliar with the subject, there are certain fishes which behave to other (usually larger) fishes as though they were continually mouthing over their bodies (and sometimes through the gill openings) in search of some elusive parasite. The motion may be in the form of a light peck, a continuous scything motion suggestive of a Flymo on the front lawn, and sometimes a vicious snap at something particularly attractive.

The cleaner fish most commonly met with are the neon goby (*Elacatinus oceanops*) and the cleaner wrasse (*Labroides dimidiatus*). The former is a diminutive mite that seldom seems to exceed a couple of inches long, and is usually very much smaller when first offered to the aquarist. Its main characteristics are prominent eyes and an impression of electric blue and black which flits around the tank before finally settling on some willing host. The cleaner wrasse is an altogether more considerable proposition. It, too, is distinguished by electric blue and black horizontal markings, but by nature it is a busy creature, and it is constantly boring its way through the water in a bottom-heavy fashion, diligently exploring the possibilities of all it encounters. Every so often it sinks contentedly into the security of the coral and contemplates what it should take in on the next circuit. In size it seems to range from about 2 inches to 6 inches for aquarium specimens, and its price is in the region of £2 to £3. By comparison with the neon goby, which markets at about £1.50, it is rather better value because it tends to be longer lived.

In neither case is there much of a reputation for hardiness, and it is recommended that they should be introduced only to mature tanks. So far as compatibility is concerned, they mix well enough, though neon gobies are reputed to fight bitterly. I find this rather puzzling. Many dealers seem to keep them in numbers without undue

trouble, and there are numerous pictures of these fishes apparently living in harmony with others of their kind, and with divers sorts of other species. It could be that viciousness is something of an individual trait, or else it is a quality which fish develop after they have left a dealer's tank: I have seldom seen them suffering from warring specimens, and perhaps they can suggest the secret to us some time. Experimentation in this direction would be worthwhile for those with a penchant for this type of marine.

My own specimens were catholic in the extreme as regards food, and accepted flake food as well as live offerings. The particular favourite of the neon goby was week-old brine shrimp, and the cleaner wrasse took a liking for chopped earthworm. Neither species was very long lived, though, and this was a great disappointment because they seemed tough and independent enough to survive almost anything. In particular, one would marvel at the way in which the neon goby would escape what seemed to be constantly threatening death from the far more sizeable inmates of the tank. Perhaps they just taste nasty or have some other 'keep away' signal which guarantees them a safe passage. Have any readers lost neon gobies through ingestion by other species?

These cleaner species are said to spend much of their time removing 'bugs' of some sort from the fish which act as their hosts. I am not at all clear as to just what these are, and I wonder how these fish actually see these tempting mites when they often ignore such delicacies as brine shrimp.

I have always got the impression that this cleaning is just cover for a particularly pleasing form of massage indulged in by the contracting parties. If you watch some of the contortions assumed by the host fish you may well conclude, as I have done, that there is ecstasy here as well as, perhaps, the removal of the parasites.

The other odd thing about all this is that if it is claimed that the removal of these parasites is beneficial to the host fish, should not the absence of cleaners result in a deterioration of the other fishes? I have noticed no such thing, nor have any of my fishes seemed to die because of a surfeit of parasites, so I, like many other aquarists, am left wondering.

Spawning of a Killifish



Aphyoosemion bivittatum

By RUDOLPH ZUKAL

Photographs by the author

THE representatives of the large family of egg-laying toothcarps or 'killifishes' are nearly all beautifully coloured, mostly peaceful and are firm favourites because of the interest in keeping and breeding them. And *Aphyoosemion bivittatum*, which grow up to 2½ inches (6 cm.), are no exception. Their home is in the shallow waters of the Cameroons and the Niger Delta. They have been known to European aquarists since 1908 and much sought after because of their beautiful colouring. The male's horizontally striped, pike shaped, body is a red-brown colour with a lighter coloured belly. The scales on the side of the body are edged with red and there are dark-red flecks on the gills. Two brown to blue-black stripes stretch along its length. The female is a smaller, inconspicuously coloured fish with rounder fins. The male's dorsal, however, is drawn out to a point, red-brown in colour with a yellow border and decorated with small black spots. The caudal fin is a yellowish red with black edges, the anal fin yellowish with red-brown to black borders. The ventral fins are bright green; only the pectoral fins are colourless. The iris of its eye is coloured gold.

This fish needs fairly warm water and I keep them in a small to medium-sized tank at about 72°F (22°C). Plenty of plants are needed, with floating plants as well. They do well in soft, slightly acid (pH 6.5-6.8) water. They are peaceful and keep mainly to the middle reaches of the tank but have a tendency to jump out of the water and so the tank must be kept well covered. It is, I think,

Translation by F. MARSH



Always active swimmers, these killifish attain a fair turn of speed during the preliminary chases. Here the male is in full pursuit of the female.

best to keep them with their own kind—and they will eat only live foods.

Aphyosemion bicittatum and *Aphyosemion australe* spawn in a similar way. A temperature of 77°F (25°C), a small tank, soft, rather acid water and some fine-leaved plants are required. Since the male can behave very roughly towards the female and can indeed even kill the female, only really 'full' females must be used for spawning, and it is better to use two or three females to one male. During the spawning about 100 eggs are laid.

Spawning is quite a short-lived procedure and the parents are removed when it is ended. If the fish are to be spawned over a period of several days, then it is the eggs that must be removed, with the aid of a glass or plastic dip tube. The eggs are fairly large and quite easy to see, and they can be taken out of the tank and kept in, say, a small, clean basin. The water in the basin must be the same as that in which the eggs were laid; the water taken out of the spawning tank can be replaced with fresh. In the basin the water level should be



The female fish investigates the thicket of plant that will be used for the egg-laying whilst the male stays close by.



The male indulges in quite a lot of harrassment during the courtship procedures that may include buffeting the female quite severely. Care must be taken to make certain that the females used are really 'full' and ready to spawn



Variations in colour and fin shape are found in this species. In this photograph the female is showing the characteristic longitudinal stripes. The male's pointed dorsal fin and lyre-shaped tail can be seen

kept very low (about 1 inch; 2-3 cm.). The basin is covered and put in a dark cupboard, since the eggs are sensitive to the light. White, unfertilised,

eggs must be removed from the basin daily.

As the newly spawned eggs are collected successively from the spawning tank, they should be



by
ARPEE

Personal COMMENT

DURING the power crisis we had plenty of opportunities of thinking dark thoughts. Few of mine were dark as those on the subject of those capricious air lines, about which I and others have at times complained but it is clear that I am not the only one to suffer from the malady of diminishing or fluctuating air supply. There have been many attempts to explain the phenomenon, and most of us will have tried the suggested remedies, but for some odd reason each individual system seems to be a law unto itself. I even began to think there was some physical law, well known to sixth formers but certainly not to me, which explained the whole curious business, and, as a mental exercise, it was all getting quite out of hand.

It was with very great relief, therefore, that I discovered quite by chance that those who, with me, suffer from this affliction, do not do so alone. It so happens that I work in a government building, which, to many, would seem to have been matched when government itself first began, though in harness it is nice and intimate, and this is something to be thankful for in an age of concrete jungles. Now each wing of the building is heated by old-fashioned hot water radiators—those on the right-hand side are served by the outgoing 'leg' of the system, and those on the left-hand side by the return 'leg'. As soon as restrictions on heating were applied—offices were not allowed to get warmer than 60°F—everyone working in the offices on the left-hand side complained that they were frozen stiff! Although this assertion was somewhat exaggerated (I happen to work on that side), there was no doubt that things were badly wrong, as the radiators were only just warm to the touch.

Our colleagues in the Department of the Environment, who were stretched all ways during the emergency, and did wonders, attacked this problem in a determined fashion, but as the weeks went on they had to confess that they were beaten. It is true that there were periods when the battle seemed to have been won, but gradually the radiators regained the initiative from their masters,

and we had to concede their victory. Despite the strongest possible pressure for an explanation which staff would understand, we could only pass on the fact that this was the way the system worked. I had a sympathy for those DoE engineers which perhaps few others shared, unless, of course, they happened to be fishkeepers blessed with eccentric air lines.

After the most exhaustive (and exhausting!) fiddlings with my aerating system during the past few months I have found that the most effective thing is simply to break the airline at some convenient point, let it puff away for a minute or so, and then reconnect. This invariably restores the stamina of the output, though why this should be so, I have no idea. Perhaps a plumbing engineer could throw some light on it! One thing is quite certain, though. When next we have a power crisis, I shall not suggest this as a means of putting our wretched office radiators right, as I can't swim a stroke.



Cliff Harrison certainly stimulated lots of discussion when he postulated that fish are too cheap nowadays, and I have drawn comment from Mr Pillinger of Promin by suggesting that some of the 'dry' products of the trade are too expensive. His letter, published in the March issue, contains much that is of interest to readers of *PFM* on both sides of the counter, and I greatly welcome this sort of initiative in communication because it goes a long way to close up the gaps in our understanding of the difficulties confronting us all. There are one or two points on which I will elaborate, because I may indeed have appeared less than fair to other readers, too.

On the general subject of dried foods I would certainly recommend to aquarists—as I did in the December issue—to shop around for the best overall value. In comparing one over-expensive continental fish food with a possibly under-priced continental fish food, this was not to say that I in any way despised our own products. In fact, my present first choice by a long way is a British derivation, and I have for long used it as my 'second string'. This has been promoted because the competitor has priced himself out of my market but on the other hand there are some tablets from the British stable which I consider to be of poor value, hence I leave them alone. One has to consider, in making one's choice, whether the chosen food is single-purpose or whether it has a wider spectrum of application. Of course, most foods are, in practice, fairly successfully interchangeable, but some excel in this respect more obviously than others.

On the matter of medicaments I think Mr Pillinger has read me wrongly. What I was driving at was the marketing of fish cures under fancy names at greatly inflated prices, somewhat on the basis that certain of them contained mysterious fail-safe additives, the nature of which, of course, remained a trade secret. The one I had particularly in mind was a copper sulphate cure for marine fishes. A 'straight' solution, such as is recommended in several books on marines, costs very little if obtained from a chemist. Several medicaments under proprietary labels cost more by several factors, and there is absolutely no evidence that they are in any sense more effective.

Certainly, I would never suggest that anyone approached a chemist for advice about medicines for fish, and I am sure that the chemists would shudder at the idea. Judging by the time we have to wait for our ordinary NHS prescriptions to be made up at certain local establishments, our fish would almost certainly have succumbed before relief could be brought to bear. Indeed it is right and fair that the aquatic dealer should sell a full range of aquatic supplies, though it would be nice if those who behaved like washing powder salesmen looked twice at their selling methods and made some attempt to act as professionally as do so many others in the trade today.

One point remains, though. It may be considered somewhat comic that we should go to a chemist for a fish cure. But if we did, we should bear in mind that on the bottle we had in our hand on leaving the shop there would be no label. On it would be printed the full details of the vendor, the description and strength of the mixture, and its actual content. It would almost certainly be marked 'Poison' and bear other suitable safety warnings. Just how many chemicals marketed by the aquarium trade suppliers comply with what should be a similar code of conduct? It may well be that some particular cure would be harmless to an adult but fatal to a child or to a dog or cat. Are we not entitled to some form of protection against accidental poisoning from these sources? Remember that Paraquat has become a very lethal adjunct to the gardening medicine chest, and that this was a release from modern research laboratories. It is not unthinkable that all is not well—or at least, I shall continue to assume that every fish cure is a poison to me and my family, and will take appropriate action to isolate one from the other until such time that there is incontrovertible evidence to the contrary.

I hope Mr Pillinger will again take me up on what I have said here—better still, that others in the trade will make their feelings known. It worries me sometimes that the trade in this country is as reticent about its views as it is, and for this

reason it is such a good thing to hear from concerns like Promin who make the effort to put us on the international map. I say 'us', meaning the producers and the consumers of the British aquatic hobby. On the whole we are a lot better than we generally make ourselves out to be, and the greater effort we make to set and adhere to standards of product excellence and consumer satisfaction, the more likely are we to command and retain respect nationally and elsewhere.



As reported in PFM last year, Dr Goldstein, writing in *ADVANCED AQUARISTS' MAGAZINE, U.S.A.*, scorns the dangers of fish collection by poisons and suggests that if our proposed purchases are 'feeding and fighting', there is nothing much wrong with them. Death of such fish shortly after purchase is then attributed to murder by the aquarist.

Whilst it is perfectly true that some aquarists are not fit to keep sticklebacks it is also a fact that the effective majority of us who go on from year to year, learning a little as we progress, are a little more than worried about collection by poisoning because certain fish or batches of fish behave totally differently from the way they should. Compared with other, similar fish, or with fish from other batches, they defy all attempts to rear them, yet post mortems prove non-committal. Bob Straughan long ago pointed out that drugged fish frequently display all the signs of good health, to the extent of eating most greedily, and I do not therefore for one moment accept mere appearances as a real yardstick, though of course they are a good pointer.

What astonished me about the statement made by Dr Goldstein is that whilst I am sure he made it under conditions known and understood by him, it doesn't really make much sense as seen in the practice of buying fish as I and many others know it. For example, when buying a marine fish, how often do you actually know that it has been feeding for so many days on what the dealer has told you? True, it is often a matter of good faith that the vendor will stick to the facts, but just as often others do not, and only the most churlish of us will actually challenge our regular dealers on this. How often, thus, do they (not un-naturally) assume our trust in advance and sometimes stretch a point?

As for seeing fish fighting, I suppose this is common enough in tanks overcrowded with some of the commoner and cheaper species, but how long am I supposed to wait until the boxfish begin to take sides, and the idea of filefish either feeding or fighting in the dealer's tank is really rather fatuous. When it comes to the larger and choicer

specimens of other species, the dealer would be likely to mix specimens into any given tank simply in order that we could test the inmates against Dr Goldstein's criteria.

Whilst the arguments about fish collection by other than conventional means will go on for as long as such means are used, I think one must remember that there is a wide difference between the capture of fish by drugs and the collection of fish by poisons. I am reasonably sure that anaesthesia of fish with certain drugs in the right proportions is more to their good than otherwise. What I am unconvinced of is the need to use sodium cyanide (other than on account of its cheapness) when there are other drugs available: the blanket use of any drug, however, will affect the smallest fry as well as the 12 inch specimen, and until I have had evidence of what this amounts to in terms of life expectation of the captured specimens, I shall remain profoundly suspicious of the marine fish trade—or at least, certain parts of

it. For the good of all concerned a really objective study of the matter would be of lasting interest and value and would help to restore confidence to this new and steadily developing part of the hobby, which would be better occupied with the exchange of facts and information than by the retailing of half truths and suspicion.

Returning to the murder charge, I would say that, given an only averagely healthy specimen of fish caught by conventional means, the averagely able aquarist will know enough of his craft to accord it a reasonable existence. But how to obtain fish of this sort remains an obscure art, and I still regard it as hit and miss as to what you are actually buying. No-one is going to buy a fish, drugged or otherwise, which looks second-rate. Thus we shall all look for 'eating and fighting' fish anyway: what Dr Goldstein now needs to tell us is which of these have been caught with cyanide and which haven't, and that, of course, is a rather difficult matter.



Enlarged view of the fruit-flies inside a well-populated culture jar

ALTHOUGH it has been said and written often enough, many fishkeepers fail to provide the necessary variety in feeding their fishes because they think that aquarium fish can live on dry food alone. However, especially for fishes that live at the surface, like hatchets (*Garnegiella strigata*,

FRUIT - FLIES as Live Foods

By W. A. TOMEY

Photographs by the author

Gasteropelecus sternicla), half-beaks (*Demigonyx paullus*), *Panchax lineatus* and *Epiplatys chapera*, often dry foods are not enough. These animals need, apart from a changing menu, almost individual feeding.

A very useful food, all too seldom used for such fishes, is the fruit-fly (*Drosophila melanogaster*). Originally these flies were winged, but genetics laboratories now culture the so-called wingless fruit-flies, mutants of the original strain, which are unable to fly. This makes them particularly easy to feed to aquarium fishes as they can be tipped on to the water surface, where they will soon be eaten. From the small number of aquarium-keepers who provide fruit-flies for their fishes it might be thought that their culture is very difficult, but this is not so!

All we need are some glass jars (clean, dry jam pots), cotton wool or nylon stockings to use with rubber bands as covers, and materials for the

banana medium on which the fly larvae will feed: water, gelatin, oats, yeast, one banana and some Nipagin (an anti-mould additive available from chemists). First gelatin (about one-third of a sheet) and then breakfast oats are stirred into about a 1½ inch depth of water boiling in a saucepan, and heating and stirring are continued until a strong granular porridge is formed that begins to form a ball in the saucepan. It is then allowed to cool whilst an ounce or so of yeast is suspended in a small volume of luke-warm water and a banana

is mashed in a basin with a fork. A small quantity of Nipagin is now added to offset mouldiness.

When the contents of the saucepan have cooled down, first the yeast suspension is added to the mass and properly stirred and then the mashed banana with Nipagin is added to the mass so that a thick porridge is formed. It isn't difficult to find the right consistency between the extremes of too thick and too thin but you've got to experiment. The mass of feed is put into the pots with a spoon until the bottom of each is covered with a layer of



Left: Oats are stirred into the heated gelatin and water and boiled until a mass is formed as shown, when it is allowed to cool

Below, left: A banana is mashed into a pulp and a suspension of yeast has been made in half a cup of luke-warm water



Below: First the yeast suspension and then the banana mash is added to the oats and gelatin mixture with stirring



Right: Two culture jars containing fruit-flies. The openings of the jars are closed with cotton wool.

Below: About three-quarter-inch layer of the culture medium is spooned into the bottom of each culture jar without the jars being made messy.

Below, right: Fruit-flies being added to a new culture jar, with its absorbent paper above the medium.



about $\frac{1}{4}$ inch, but we must avoid contact between the inside walls of the pot and the mass of feed. The walls must remain clean. In every pot we put a piece of toilet paper or a small wad of woodwool to absorb moisture. After some live flies have been shaken into the jar it is closed with a wad of cotton wool or a piece of nylon stocking and fastened with rubber bands, and put away in a temperature of between 68° and 70°F (20°-26°C). We can use the aquarium cover to put the pots on or some

other light warm position for the jars. The fruit-flies will lay a large number of eggs on a small projection or on the edges of the toilet paper or the woodwool. You can see the larvae after 3 or 5 days; they eat the food mass and grow very fast. When they are fully grown (4 or 5 mm.) they pupate. At first the pupae are yellow-white but in a few days they become light to dark brown and the metamorphosis is complete. The duration of the development depends on the temperature



and the light. The larvae have become flies, totally folded up in the pupa (see the photographs). You have only to wait until the wrapping bursts. This takes 4 to 6 days and suddenly the fruit-flies are released as if by command. At first they are white with bright-red eyes. In a few hours the body shows a beautiful light-brown stripe marking.

Even fish with very small mouths, like *Nannobrycon eques*, can eat the flies and the fishes mentioned at the beginning of this article and those that live in the upper levels of the water can get what they want. New cultures have to be made periodically so that regular supplies of this excellent live food continue to be at our disposal.

What's New?

Oceans of Air

INTERPET (Curtis Road, Dorking, Surrey RH4 1DP) are catering for the fish-house keeper or professional aquarist with two blower pumps in the Oceanair Manufacturing Company's range. These units can pump a large volume of clean, filtered oil-free air, at relatively low pressure, round a fish house or fish room through plastic tubing $\frac{1}{2}$ inch to 2 inches in diameter. The **Oceanair Minor** ($\frac{1}{4}$ h.p.) is a neat unit just 18 inches high, $7\frac{1}{2}$ inches wide and 10 inches long, and is designed to supply up to about 100 airstones at depths up to 18 inches. Including filter this pump retails at £110.00. The **Oceanair Major** ($\frac{1}{2}$ h.p.) supplies air to 30-100 aquaria via about 300 airstones at water depths up to 3 ft. (£121.21).

Fully Submersible

THE advent of an entirely submersible heater/thermostat with an external control knob and dial is likely to be gratefully welcomed by aquarists. Singleton Bros. (Electronics) Ltd. (Truro Hill, Penryn, Cornwall) have re-designed their **Es-Es Control-OMat** heater/thermostat to incorporate a control knob

in a calibrated head. Although the controls are immediately visible and accessible, the instrument is totally submersible. The calibrations, in accordance with accepted technical standards, are in centigrade only. The heater/thermostat comes in a tube range of 8-15 in. at 75-200 wattages. The $12\frac{1}{2}$ in. tube size, for example, costs £1.90 + VAT.

Vacuum Packs

HOWEVER excellent the food produced for your fishes' delight the manufacturers' constant research to improve the products would be useless unless the food reached the customer in first-class condition. With this in mind Vanafex Ltd. (26 Forest Road, Paddock Wood, Kent) have completely re-designed the packaging of the whole range of their **Sera Fish Foods** not only as to shape and colour but also to make certain that the contents stay perfectly fresh. The new drums, gaily coloured to identify their contents, are lined internally with aluminium and have an aluminium vacuum-sealed top inside. This is in addition to the black plastic tightly fitting lid with its special fingerhold for ease of removal.

Marine Plants

NEW to the Metaframe range of plastic plants are the **Marine Aquascapers**, which should fill a great gap in the marine fishkeeper's choice of decorative tank furnishings. These life-like replicas come in four sizes (5 in., 8 in., 12 in. and 15 in.) and include some of the most sought-after species of 'sea-weeds' such as sea ruffle (*Ulva saemata*), baby bows (*Halimeda* species), purple nub leaf, Pacific pod plant,

crimson leaf, dragon's tongue, sea sprite, devil's horns etc. The 8 in. size retail at 54p incl. VAT up to £1.47 for the 15 in. size. Distributors are Keith Barraclough Ltd. (568 Great Horton Road, Bradford 7).

Motor Filter

CORAL fish enthusiasts will also be interested to learn that Metaframe have now adapted the largest of their **Dynaflo** range of motor filters for use with the marine tank. All parts coming into contact with the sea water are now made of completely non-toxic material. With 2 output and 3 intake tubes, the pump has a turnover rate of approximately 100 gallons/hour; retail price is £16.35 incl. VAT. Distributed by Keith Barraclough Ltd. (568 Great Horton Road, Bradford 7, Yorks.).

All-Glass Aquaria

AN interesting development to the triangular-shaped tank that fits into the corner of a room has been made by the makers of **Kristal all-glass aquariums**. The front face of the corner tank in this range is composed of three glass panels, giving a bowed effect and advantageously enlarging the water capacity of the tank. The wood-grain finished hood, hinged for convenience of access, is protected by an internal all-over condensation tray (complete with cut-out for feeding purposes). A lighting recess is to be found above the tray. This tank, 'The Palace', retails at £26.00. All Kristal tanks carry a 5 year guarantee against manufacturing defects. Distributors are Napier Distributors (Napier House, Louches Lane, Naphill, High Wycombe Bucks.).

BREEDING FANCY GUPPYS

'Hybrid Vigour' and Guppies

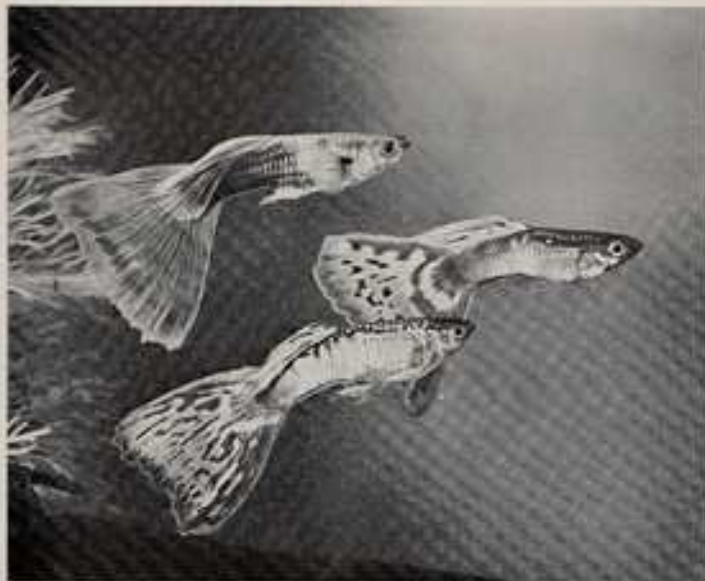


Photo: B. KAHL

A trio of selectively bred male guppies from the collection of Herr Richard Busch in Germany

WHEN man tries to improve on Nature he invariably makes things more difficult for himself. This is particularly true when he is engaged in the production of individuals, whether animal or vegetable, or for pleasure or profit. Improvement is the operative word: he must have the biggest, the fastest, the strongest, the most colourful, the most productive etc., dependent on what he is working.

With this in view he resorts to crossbreeding in an effort to combine desirable traits from two unrelated strains into one individual. Whether the result satisfies him or not he has, knowingly or otherwise, produced a hybrid and hybrids very often possess qualities superior to the parents in the characteristics which have been passed to them. A good example was observed by Gregor Mendel when he crossed the tall pea-plants with the short pea-plants, for in addition to the off-

By F. CAMPBELL

spring all being tall they were about a foot taller than the tall parent. This improvement in the offspring of dissimilar parents has come to be known as 'hybrid vigour', but unfortunately it is not permanent. Inbreeding the hybrids will eventually result in a pure strain but the desirable traits will deteriorate until a point is reached where a further outcross must be made.

In considering hybrid vigour in relation to fancy guppies we are faced with complexities emanating from the fact that owing to the great variety of finnage shapes and colour patterns involved, we are dealing almost exclusively with hybrids. There is nothing more certain to arouse the desire

Below: A plant of *Samolus* in flower grown out of water. Leaves are 2-4 inches long.



Close-up view of the emergent stem of *Samolus* carrying the small white flowers, which produce seeds from which this species is readily propagated.

The plant takes the form of a rosette of fresh green ovate leaves tapering at the base into a very small petiole. The leaves, smooth-edged with clearly discernible veins, are 2-4 inches (5-10 cm.) long; the leaf rosette is up to 5 inches (12-5 cm.) in diameter. Plants grown out of water flower throughout the year, bearing tiny white flowers, and self-fertile produce a great number of seeds that germinate easily. Under water, the plant usually remains in the form of a rosette. In very favourable conditions under water it develops a sparsely leaved stem, up to 8 inches high, on which round runners are formed.

A rich bottom medium, soft water and generous light (preferably daylight) suit it best. In winter it will prosper only if plenty of artificial light is supplied. The addition of a little salt to the tank (about 2 teaspoonsful/22 gallons of water) actually benefits growth.

Propagation of *Samolus*

Samolus is propagated from the runners that develop on the underwater stem. Torn-off stems of plants that have been grown above water can also be rooted by floating them on the water surface. But the leaf rosettes obtained from plants propagated like this, vegetatively, are not regular and therefore not so attractive to look at as the plants cultivated from seed.

The seeds can be sown on moist sand and as soon as the plants have reached $\frac{1}{2}$ inch (1 cm.) in height the water level must be raised. The quickest growth, however, comes from growing the seeds emergently and not placing them in the aquarium (in a light place) before they are fully developed.

Samolus valerandi is also a most useful plant for the terrarium and paludarium.

Fish-Catching

Photographs by



Although only 12 years of age, Oo is adept at twirling the large circular net in the way commonly used by Thais to capture freshwater fishes. He was asked to demonstrate his skill and given a brand new net for the purpose.

Oo prepares his new circular net, which cost about \$2, at Ladda Tongsook's home in Bangkok. He has suspended it so that the chain supplied with it can be attached to the hem of the net. The weight of this chain causes the perimeter of the net to sink quickly in the water, folding the net like a closing umbrella and trapping any fishes beneath it.



With the preparatory work completed Oo spreads his circular net on the grass to show its area. The net measures 30 feet across. Next the net is expertly draped on one arm ready for the fling, accomplished by a twirling movement, over the water.



in THAILAND

LADDA TONGSOOK

First demonstration by Oo is made in the Bangkok garden pond of Ladda Tongsook. Marginal plants create difficulties and the skill is shown in letting the net, whilst the caster stands well back, to obtain the perfect pancake landing on the water. Other pictures on this page show casting in more open waters.



Now Bangkok has been described as the "Venice of the East" and especially in its outer suburbs there are vast bodies of permanent water. The water depicted above and to the right is on the campus of Kasetsart University, Thailand's Agricultural University and here Oo was able to cast his net over a wide area



Right centre: Only a few small fishes are trapped with each cast. However, all are edible even though the majority are gouramies (*Trichopterus trichopterus trichopterus*), varying from silvery white to dark brownish-gray in colour, which generally are deprecated as food. Moonlight gouramies (*T. microlepis*) are also in this catch, with a barb (*Barbus altus*, right of centre) which has flaming red fins when adult and a young snakehead (*Ophicephalus striatus*, upper right).



Marine Experience Hard Won!

By ROBERT SHAW

MY marine aquarium-keeping started with a 10 gallons plastic bow-front tank. This was against the advice of my dealer, who specified a larger tank with a power filter, ozoniser etc., but I tried to do it 'on the cheap'! So instead I used a bubble-up filter and an aerator. Not a great many people had had experience with marines at that time and I was convinced it would work.

I purchased all the equipment, including hydro-meter, coral sand, coral, heaters etc. and the tank was set up with synthetic sea salt. Everything was working and going according to plan. I then waited about 2 weeks, as I was told, for the time to introduce my fish. I bought two xanthurus clowns, one domino damsel and one banded coral shrimp. These cost about £9.50.

I floated the animals for about 20 minutes and then let them out into the tank. The clowns went straight down behind the coral, respiring rapidly. The domino swam about freely and wasn't frightened at all. The coral shrimp also acted normally. After a time the clowns came out and started to take food. The domino fed eagerly and so did the clowns. They relished freeze-dried brine shrimp, but they were not too keen on the daphnia I put in occasionally.

All went well for about a month. After this period the clowns' health started to deteriorate. They had the 'dreaded' oodinium disease. It started on the gills and worked all over the body. We tried in vain to cure it but it was obviously too far advanced and the clowns eventually died.

The domino too had quite a covering of oodinium. The coral shrimp, like other invertebrates, does not catch fish diseases.

I think where I went wrong in this first venture can be summed up as inefficient filtration and not enough swimming room (which had the net effect of lowering the fishes' resistance) and pollution from rotting food. All this worsened the effects of outbreak of disease. I was determined that next time I would be successful—it certainly proved to me that you could not skimp on this venture.

A few years later came the chance to try coral fishes again. If things went wrong this time there wouldn't be a next time! So I decided to have a 32 gallons tank with the following equipment: ozoniser, protein-skimmer, power filter, powerful

undergravel filter, external fitting thermostat, three heaters (to allow for emergencies), thermometer; sea salt, coral sand and coral were used with a Gro-lux fluorescent lighting unit.

The tank was set up and left for 2 months for the nitrifying bacteria to build up and become established. These bacteria oxidise and therefore render harmless nitrites and ammonia salts, which are part of the breakdown products by bacteria of organic matter. 'Aerobic bacteria' remove or convert these products into nitrate salts which do not harm marine animals.

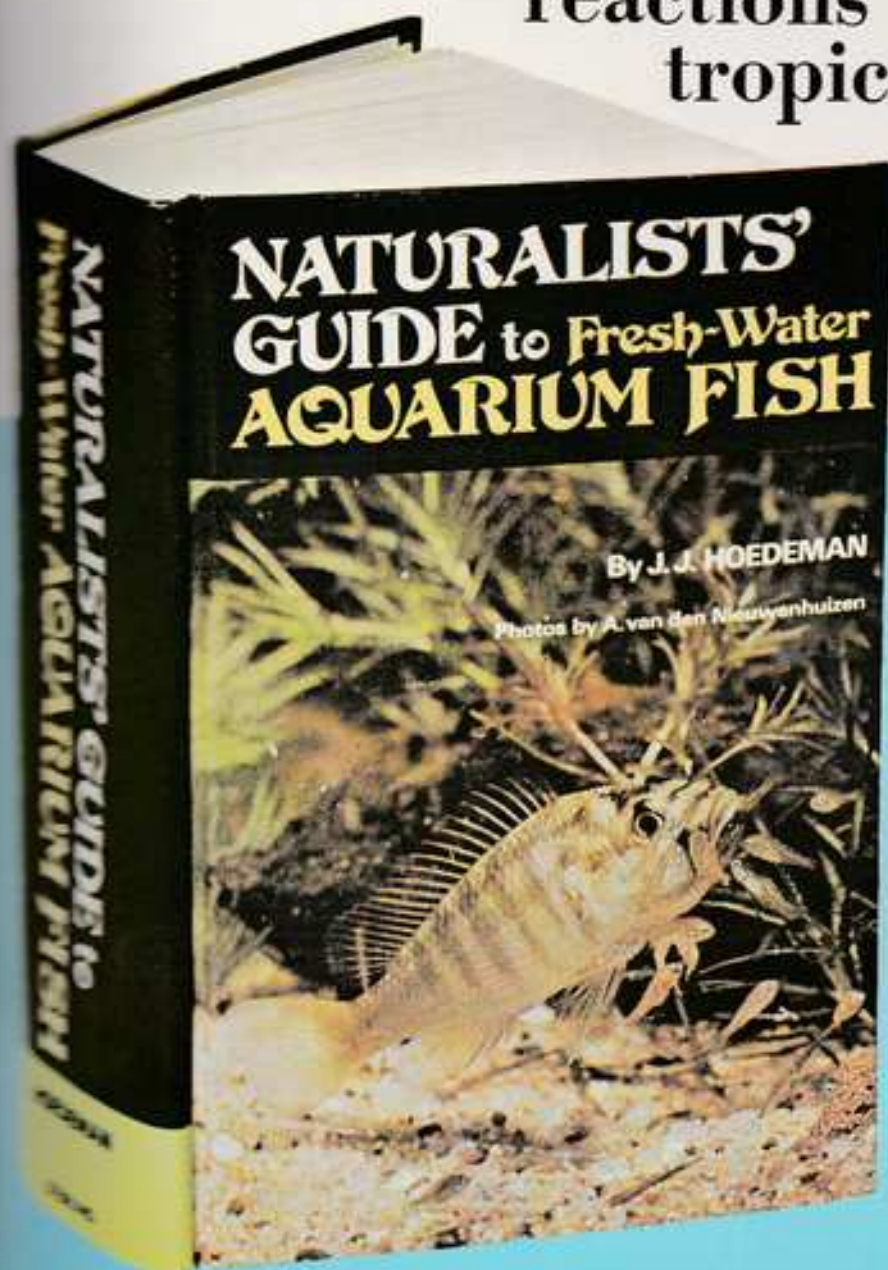
The temperature was maintained at 80°F (27°C). The aerator was a strong vibrator pump and the air diffuser was the long wooden variety made specifically for marine tanks. The power filter had an output of 60 gallons an hour and, coupled with the undergravel filter which did at least 30 gallons an hour, this meant that the total tank water was being filtered three times an hour. This was perfect.

The function of the ozoniser is to pump ozone into the aquarium, either by means of an air diffuser or through a reactor tube. This gas burns harmful bacteria, proteins etc. and, used properly, the ozoniser reduces the nitrite level to nil. The reactor tube collects the urinary constituents and skims off the dangerous proteins.

Algae were allowed to gain a foothold, though the Gro-lux lighting really only encouraged a brown growth. When a 120 watt bulb was installed the tank became covered with green algae. After 2 months the water nitrite reading was nil and specific gravity was 1.022.

The first fish bought were two xanthurus clowns and one rather rare jewelled wrasse (*Macropharyngodon pardalis*). The clowns were the best I had seen in a long time. One, I imagine, was older than the other. The older one was nearly all black, except its tail which was yellow with a bright white band at the base. Its fins were bright orange and so was part of its head. The other two white bands, one just in front of the first dorsal and one at the rear, were edged with blue. It did not lose this coloration. The other clown was similar but had more yellow areas. The wrasse had a brown body colour peppered with bright blue and green spots. On its head a 'crown'-like

Never before has any book gone so deeply into the habits and reactions of tropical fishes



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Seven years in preparation, this magnificent 1152-page book represents a lifetime of research by the famous ichthyologist J. J. Hoedeman, himself the discoverer and classifier of many species and Honorary Life Member of the Dutch Federation of Aquarists Societies and the British Association of Aquatic Societies. All photographic illustrations are the work of the internationally renowned A. van den Nieuwenhuizen, foremost photographer of marine life.

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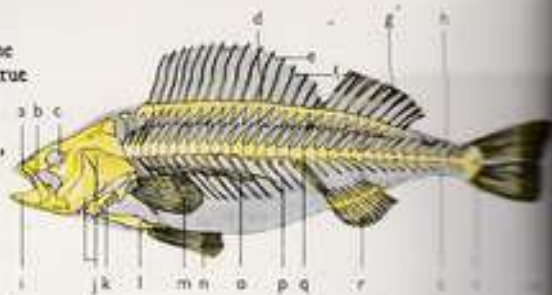


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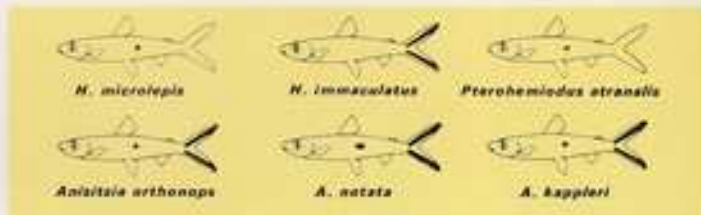
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Feeding habits and needs
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Personal habits
Preference (upper water, mid-water, bottom-dweller)
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effect of silver was present. A sea anemone was also purchased.

Everything went well until one day the quarantine tank they were in overheated and the oldest clown died. The other one was gasping at the surface so, frantically, I put him into the main tank with the wrasse. He sank to the bottom but the next morning he was swimming normally and did well. After my absence on holiday the anemone was dead but the two fishes were thriving.

Later on the tank occupants were brought to quana by the purchase of one copperband butterfly, one regal tang (1 inch), two percula clowns and

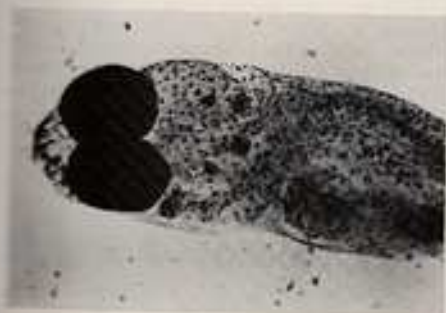
two blue damsels. The copperband lived for about a year. The regal tang, some 3 years later, is now 6 inches; the clown is about 4 years old. An orange skunk clown has been with us more than a year, a koran angel for about 2 years and a pseudochromis for about 6 months. They all feed well on freeze-dried brine shrimp, white worms and adult and newly hatched live brine shrimp.

My advice on achieving success in keeping marines is to read round the subject, not to skimp in initial outlay and to choose the fishes from a reputable dealer. Remember, experience is a very dear school!

Development of Colour in Fishes

By IAN C. SELICK

Photographs by the author



Microscope view of the body of a larval fish soon after hatching. This specimen shows many pigment cells.

In a previous series of articles in *PFM* I described how colour is produced in the adult fish and its significance in the life of the fish. In this article I will describe the development of colour, particularly the black-brown of melanin, in the pigment cells (melanophores) of young fish.

When does pigment first appear? After fertilisation, the fish egg goes through many divisions going successively 2, 4, 8, 16 cells. These form a disc floating on top of the egg yolk below the egg shell or chorion. Gradually this disc grows and expands at the expense of the yolk and, eventually, after about 10 hours in *Fundulus* (an American

killifish, the 'mummichog'), a blastula is formed. This is where there are two distinct layers of cells over the yolk with a space, the blastocoel, between.

About 26 hours after fertilisation, gastrulation occurs—the formation of a multi-layered stage and the *embryonic shield*, a thickened ring in the egg where the embryo will develop. After a further 14 hours, the eyes begin to form, followed by the various parts of the brain. Musculature develops next, and then the embryo forms rapidly up to about 60 hours, when cells from the nervous system migrate out into the body to the future sites of the melanophores. The migrating cells at



A newly hatched specimen of *Gobius niger* shows hardly any body pigmentation.



Pigment cells (melanophores) are to be seen in this newly hatched bullhead (*Cottus*)

this stage, before deposition of pigment, are called melanoblasts.

The melanin appears at about the 66 hour stage, and continues to develop up to and after hatching, more cells differentiating into melanophores. The number of melanophores formed by hatching time (some 200 hours in *Fundulus*), and their position in the body, varies from species to species as described later.

Pigment of the eyes develops later, at about the 130 hour stage, and continues to develop right up to hatching, when the eyes are very dark in nearly all fishes.

Other colour cells, such as erythrophores, tend to develop slightly after melanophore formation, and are found particularly on the underside of the hindbrain and the trunk. However, the main colour of the embryo up until the late pre-hatching period, when the melanophores are often fully expanded, is due to the red blood pigment, haemoglobin, particularly noticeable in small blood vessels in the yolk sac. These vessels also form at about the 60 hour stage, and if visible through the often opaque chorion, may give the embryo a slight pinkish colour.

All the times and details above have been given for *Fundulus* but the stages are the same for other fishes, although rate of development may differ. For instance, in a fish such as the zebra danio, which may hatch in about 24 hours, then colour cell formation will be somewhat quicker. However, it is usually the case that fish which hatch quickly have transparent or little coloured larvae, as the process of formation of melanin itself is a relatively slow one, melanin being formed from the breakdown products of amino acid metabolism. In a fish that is growing very quickly, there will be little amino acid (the building blocks of protein) to spare for melanin formation. The amount of protein in the yolk may also play a part in the rate of melano-genesis.

The amount of pigmentation at hatching varies markedly with species. In the goby, *Gobius niger*, there is hardly any pigmentation at hatching, except as usual around the eyes, although the yolk left in the yolk sac is slightly dark coloured. This is 'transparent' protection against predators; the larval fish becomes more or less the same colour as its background without the complication of a colour control system.

The bullhead, *Cottus* sp., is an intermediate form with few melanophores at hatching. Those that are present are concentrated around the dorsal side of the yolk sac to protect this vital food supply. A few other melanophores are found in the head, and the eyes are darkly pigmented.

The sea horse, *Hippocampus breviceps*, develops melanophores at an early stage after hatching (first stage larva), and these are distributed more or less evenly throughout the body, although with few in the snout. No special protection is afforded to the yolk sac as development occurs in the pouch of the male parent. Release is at some time during the sixth larval stage, by which time pigmentation is almost complete, melanophores forming in the snout between the fifth and sixth stages.

After hatching, the increase in numbers of colour cells is very rapid as protection is of vital importance to a young fish. In some fishes, recognition marks need to be developed for schooling or parental care from an early stage; these may be only temporary and disappear in the adult fish, as does the 'tilapia mark' in the dorsal fins of most *Tilapia* species.



Almost complete pigmentation in the fifth stage larva of the sea horse *Hippocampus breviceps*.

COLDWATER SCENE



By FRANK W. ORME

This Month's Work for the Breeder of Fancy Goldfish

THIS season's young fish should now be making good growth and will need culling to provide the much needed space that will ensure the maintenance of growth. In a previous issue of *The Fish Monthly* details of the first sorting were given, and how to make the second culling will now be described. Because of the larger size of the fish the sorting is a lot easier than for that of the small fry. Desirable features are more easily seen so that the poor quality fish are more evident upon close inspection. Depending upon the size of the young fish, the selecting of the better quality young can be commenced as soon as they are large enough for the required features to be discernible, and repeated, at intervals, until only the best fish remain for growing on to adult size. Secondary quality fish can usually be disposed of to fellow hobbyists if they are of a reasonable standard.

A large plastic flour sieve is ideal for catching the young. I find this method hardly ever causes damage to the fins, as can happen if a net is used. A small glass-sided tank is required in which to place the fish for inspection, also two other containers in which to place the desirable specimens and others. Fill all three receptacles with clean water of the same temperature as that in which the fish are swimming and the culling can commence.

With the sieve catch a few fish and release them carefully into the inspection tank: the sieve is immersed and then withdrawn while being twisted sideways so that the young are swirled gently out of the sieve into the water. At this time it is unlikely that the fish will be large enough to compare with any of the Standards for Fancy Goldfish; therefore, if the fish are singletails, look first at the body shape. Remove any fish that has a deformity or bent body; the desired shape should be nicely streamlined, with an even curve from the snout to the tail on both dorsal and ventral surfaces. Next look closely at the fins. Make sure that there is a complete dorsal fin and that none of the other fins is bent or folded.

If the variety being sorted is the shubunkin, either London or Bristol type, then all metallic and pink fish must also be got rid of. However, if it is a scaled variety you will be unable to sort for colour until the fish changes from the drab wild

colour to the desired gold. With this scale type it is advisable to keep and breed from only those fish which make an early colour change.

The twin tail varieties require a much closer inspection than the single tail. When viewed from above the tail should show a full division between the double caudal. Any webbed or singletail fish must be taken out. The body must be much deeper than a singletail fish so that any slim-looking types are not desirable and must join the other rejects. Unless one of the dorsal-less varieties is being bred, which should have a quite smooth back, a complete dorsal fin should be present and this, together with all other fins, must not exhibit any tendency to fold or bend. This fault occurs most often with the front pectoral fins, so pay particular attention to these.

My remarks in respect of colour apply equally to the twintail group of goldfish as to the sorting of singletail varieties.

During this process of culling you will have possibly found that the proportion of rejected fish is far greater than those which have passed your inspection, but do not be disheartened! We all suffer the same problem to a greater or lesser degree. Do not be tempted to retain poor quality fish, for they will not improve. The food and space which is wasted upon them could be better utilised to the advantage of the few decent specimens.

It is by being ruthless in the culling, so that only the best are kept for future selective breeding, that you will improve your stock. A few good quality fish of your own breeding should give far more satisfaction and pride than a tank full of nondescript fish that do you no credit.

Having sorted the young fish the decent ones can be replaced into clean quarters, allowing plenty of growing space, and with a plentiful and varied diet they should continue to make excellent growth.

In a future issue of *The Fish Monthly* the final sorting will be gone into, together with the points to look for. Meanwhile, if you do not have a copy of one of the booklets of Show Standards for Fancy Goldfish I would suggest that you obtain one.

Show Standards are published by the Goldfish Society of Great Britain and the Federation of British Aquatic Societies. Both booklets are

obtainable from the publishers of this magazine and details will be found in the advertising section. Midland aquarists may also wish to obtain a copy of the Standards which are being issued for use by MAAS judges at shows in that area. By reference to these standards it will be possible to assess the potential quality of those fish which are finally chosen as suitable for growing on to adult size.

* * *

The exhibitors' show season is now getting into full swing and many goldfish keepers will be entering fish for the first time. Therefore a few hints and tips may not be amiss. An essential is a copy of the Show Standards and Rules under which the fish will be judged at the particular show you propose entering. Study both carefully and then make sure that the fish is entered in the correct class and staged within the stipulated benching times.

Having decided upon the fish that you wish to show, examine it to make sure that it has no damaged fins or missing scales and is in good health without any blemishment. The judge will down-point for any of these faults no matter how good the fish may be. Helping the fish to deport well can be accomplished with a little training and conditioning. The fish must be taught not to sulk, with fins down, in a corner of the show tank.

Obtain a glass tank, the same size as that in which the fish will be exhibited, and set it up in a position that is well lit for long periods and frequently passed by members of your family. Seven to 10 days before the show place the fish into the tank, and during the next few days encourage your family to tap the tank lightly and place their faces close as they stare at the fish. Change the water in the tank frequently as it becomes dirty. Soon the fish will stop being nervous and come to accept handling, tank tapping and staring faces as part of its everyday scene. Two days before the exhibition cease all feeding; this will avoid droppings in the show tank with the added bonus that, when the judge approaches, the fish will show off in anticipation of food. In other words the fish will deport well and gain points.

Arrive early, before the show closes, to collect your fish and keep an eye on it until it is time to debench—it is not unknown for a fish to disappear—then, having collected your fish, keep it in quarantine to ensure that no disease has been caught.

If exhibiting in an area that has a different water supply from your own, try, if possible, to take sufficient water to fill the show tank. Changing from hard to soft water (or vice versa) and back may upset the fish and undo all the training that you have given it.

Finally, do not be afraid to compete against the big names in the show world. It helps to stop them feeling complacent, and you could have the double pleasure of winning in the class against the fish of a 'big name', which will make you, and your fish, the subject of awed discussion amongst your fellow hobbyists for some time.

* * *

Pond-kept fish may start breeding during the month. If you suspect, from the behaviour of the fish, that a spawning is imminent and would prefer to raise the eggs under controlled conditions, it is possible. Place spawning nests, made from bunches of cleaned plants or nylon wool, in the shallow area of the pool. The fish will spawn in the nests, and this can be checked by visiting the pool whilst the fish are spawning. But do not interfere, in any way, with either the fish or nests.

Later in the day, when most of the spawning activity has ceased, the nests can be removed and swilled gently, under the coldwater tap, to remove any sediment or other unwanted refuse and then placed into a previously prepared tank for hatching. If a heater and thermostat can be installed it is possible, by raising the water temperature to 75°F, to obtain a hatching in 3-4 days, and about 24 hours later the alevins will have used up their yolk-sacs and become free swimming. From this stage brine shrimp can be fed to the young fish until they are large enough to be offered slightly larger food. The procedure is, in fact, the same as described in previous articles for the raising of tank-bred goldfish.

Many more fish will be raised, by using the controlled hatching, than would be the case if the eggs were left in the pool. Non-spawning fish would eat a number of the eggs, and those that survived and hatched would be under continuous threat until they become too large to be eaten by the bigger fish. Very many of the young would fall victim to the cannibalistic instincts of the adult fish and, by the sheer cussedness of Nature, it would be the less desirable fish that would survive.

* * *

Recently I spent an enjoyable evening, as a visitor, with the Coventry Pool and Aquarium Society. This band of enthusiasts hold their meetings at the Binley Hall Hotel on the second Tuesday of each month and they cater for both tropical and coldwater interests. The meeting which I attended was devoted to the coldwater aspect of the hobby and took the form of a question and answer session.

The evening commenced with a show of transparency slides of goldfish standards of the now defunct British Aquarists Association, Federation of British Aquatic Societies and the

Goldfish Society of Great Britain. Various amateur breeders' fish houses were also shown, together with shots of their fish. The questions which followed ranged from the best position in which to site a pool, how to combat blanket weed how many fish to buy to be sure of obtaining a true pair, how to sex goldfish. Will the different varieties of goldfish breed together and would it be advisable to let them do so (needless to say, the answer to that question was yes, they will, and no—for the resulting young would be useless). The question as to why a member's goldfish lost a number of its scales brought forth a number of possible reasons but, of course, this sort of question is impossible to answer correctly without first seeing the fish and the tank in which it is kept. It is rather like asking a doctor to diagnose a patient's illness over the telephone!

* * *

I should like to mention a rumour that was discussed during my visit to Coventry. It was said that certain (un-named) importers were disposing of their losses in koi shipments by selling the bodies to shops dealing in anglers' supplies, for sale to the fisherman as 'dead bait'. If there is the

slightest truth in this rumour then the practice is to be deplored. Whilst the motive is easy to understand (it helps to recover a little of the importers' losses), it nevertheless reflects badly upon the integrity of the offenders. Such unthinking action, whilst good business (?), could spread disease amongst our native species.

I well remember the pictures of dead fish, that appeared some years ago on TV and in newspapers, killed by an unknown disease that rapidly spread across the country and left havoc behind it. Can the profitability of 'dead-bait' koi really be balanced against the potential risk that it entails. Most certainly it cannot!

Pollution takes many forms, and many countries prohibit the importation of foreign fish because they consider that they could present a risk. How little we value our freedom to import fish from overseas is shown by the way it is abused at times. It only requires an epidemic to break out in our rivers and lakes, and for the source of infection to be traced to imported fish, and our importers, both innocent and guilty, could find their businesses in trouble through Government Restrictions on the Importation of Pet Fish.

For the sake of all, I hope that the rumour is just that—a rumour!

Readers' Queries Answered



Dwarf Crypts Fail

*I had a very good growth of *Cryptocoryne nevilli* that gradually spread over the centre of the tank into a 'carpet' but now it appears to be dying. It's beginning to look yellow and no amount of extra light seems to improve it.*

It may well be the extra light that is causing the harm. Too much light is harmful to this plant and too much light can in itself cause the leaves to become paler in colour and look quite senescent. You say that the plant 'gradually spread over the centre of the tank'—possibly from a more protected position which suited it very well? Try a few floating plants to cut down some of the light immediately above the centre part of the tank. It is assumed that you are sure of the

wholesomeness of the tank bottom, if there has been accumulation of uneaten foods or mass deaths of resident tubifex worms the conditions at the bottom could be foul enough to kill off the plants.

Remove one or both

*I have a pair of *P. guentheri* which I hope to breed but I am a little uncertain what procedure to follow if I should get a spawning. Some authorities say that both fish look after the brood—others advise removing one fish. What is the answer?*

The discrepancy in the literature once again illustrates the problems in trying to lay down hard-and-fast rules in fishkeeping to assist the majority of fishkeepers with the

majority of fish. It has been observed that both the male and female *P. guentheri* will assist in brood care. Equally it has been observed that the continued presence of the female after the egg-laying may cause the male to eat the eggs or attack the female. Since either of these developments may occur the only safe way is to remove the female from the tank once spawning is completed. If you are prepared possibly to lose the first spawning, you could try leaving the female in the tank watching closely and being ready to move her if the male shows any tendency towards aggression.

Sick Shark

I have taken over the remnants of a friend's tank and they include a rather small (3 in.) and very hollow-bellied silver shark. Could it have fish tuberculosis and should I destroy it. The tank has been running to seed for a long time now and I would like to think that better conditions will restore the silver shark.

Presumably you have not placed any of the new fishes into your own tanks without due quarantine? We would strongly advocate trying to

restore the fish to robust health provided that you can keep it in a separate tank until you have clear signs that it is putting on weight. Young silver sharks (*Balantiocheilus melanopterus*) are mostly quite robust but the individual fish of this species can occasionally have an appetite problem and require a little bit of coaxing to eat well. Keep the temperature in the higher range, say at 80°F, while the 'experiment' continues and feed with small live foods, daphnia, frozen brine shrimp, live brine shrimp, white worm and tubifex worms. Duckweed, floating plants or a little cooked spinach should also form part of the invalid's diet.

Red-tailed Characins

What would be suitable tank companions for two *Chalceus macropidotus*? They seem very active and I know they are going to get quite big.

A very handsome fish, the red-tailed characin is a shoaling fish, very lively and a splendid jumper, so keep every crack through which it might leap (and even those through which it would seem impossible for it to jump) covered up. It can grow in the aquarium up to 5 or 6 inches and has an excellent appetite, taking, according to its size, dried foods, chopped worms, daphnia, freeze-foods, raw ox heart etc. and it is not unknown for it to eat chunks out of plants. It is usually described as 'peaceful with suitable tank companions' but it is a species that produces a good few exceptions to this rule and these fish can scrap with each other and with other more timid tank mates. It must be housed in a large tank with plenty of swimming room. *Anostomus anostomus* would be suitable as tank mates, as would *Abramites microcephalus*, *Leporinus*, *Prochilodus* and possibly *Eodon paradoxus*.

Tubular visitors

In the shallow end of my pond there are a very large number of tubular, speckled light and dark brown 'things' on the bottom. These little 'pipes' move but the insect seems to be inside the tube. Are these harmful to my pond fish?

These are almost certainly the caddis worm, the larval stage of the caddis fly. There are a number of genera and many of them make some sort of portable case in which to lie until pupation. According to the

particular species, the cases might be made of a variety of substances: leaves, twigs, sand or little bits of stone, lined with a 'silk' produced by the salivary gland. The type to be found in still water such as ponds has a life cycle that lasts up to a year, with the eggs being laid in spring or summer, hatching into the larva stage that may last all winter in pupation in early summer to emergence as the adult fly. They will not harm your fish. The caddis 'worms' living in the portable case are mostly vegetarian.

AquaGLOSSARY

No. 17

A PFM guide to the meanings and accepted pronunciation of the scientific names of aquarium subjects, arranged by word-roots in alphabetical order

Hypo (Greek): under. Pronounced 'hi-poh'. Used in names as a prefix to indicate position of a structure; e.g. the plecostomus catfish *Hypostomus plecostomus* ('hi-poss-stom-uss plek-oss-stom-uss') with its underslung suckermouth (*stom*, Greek: mouth), the catfish *Silurodes hypophthalmus* ('sill-yew-roe-dees hi-poff-thal-muss') having eyes very low down.

Lorica (Latin): leather armour. Pronounced 'lor-ee-kah'. In the 'armoured catfishes' of the family Loricariidae overlapping cuirass-like bony plates or scutes give rise to the family name and to the name of the genus *Loricaria* ('lor-ee-kah-ree-ah').

Sterno (Greek): breast. Pronounced 'stern-oh'. For example, in the generic name of the long-tailed knife fish *Sternopygia macrurus* ('stern-oh-pig-uss mack-rur-uss') the conspicuous 'chest' outline, displaced well to the rear of the body (*pyg*, Greek: rump), is referred to, and in the gymnotid *Sternarchus* ('stern-ark-uss') the forward position of the vent is indicated (*arch*, Greek: rectum, anus). The trivial name of the hatchet fish *Gasteropelecus sternicla* ('gas-ter-oh-pel-ee-kuss stern-ick-lah') reinforces the genus name in emphasising the 'chesty' outline.

Meetings and Changes of Officers

BRIGHTON & SOUTHERN AS. Meetings: 1st Monday of month, 8.00 p.m., the K & T Social Club, Franklin Road, Portslade. Further information: Mr S. Feek (35 Newmarket Road, Brighton).

CHESTERFIELD & DAS. New show secretary, Mr J. Tomlinson, 14 Bradbury Drive, Wingerworth, Chesterfield S42 6SL.

EAST LONDON A & PA. New show secretary, Mr F. Vuker (13 Iron Way, Romford, Essex).

GOLDFISH SOCIETY OF GREAT BRITAIN. Chairman, Mr J. Bundell; new secretary, Mr R. Dodkin (107 Colham Road, Seven Kings, Ilford, Essex); associate, Mr G. Herring; new show secretary, Mrs M. Dudley (141 South Park Road, London, S.W. 19).

GRIMSBY & CLEETHORPES AS. New show secretary, Mr S. Snelley (216 Stanley Street, Grimsby, S. Humberside); New venue, The British Legion Club, Clancy Lane, Grimsby, South Humberside.

HASTINGS & ST LEONARDS AS. Chairman, Mr G. Fossell; vice-chairman, Mr L. Smith; treasurer, Mrs G. Pollard; secretary, Mr P. Martin (20 Silverlands Road, St Leonards-on-Sea, Sussex); editor, Mr B. Fossell; P.O. Mrs C. Reed; show manager, Mr M. Penfold; show secretary, Mrs S. Tate.

LITTLEHAMPTON & BOGNOR AS. New secretary, Mr J. Morgan (99 Anthonys Drive, Bognor Regis, Sussex).

OSRAM AS. New secretary, Mr H. Purnell (19 Grims Road, Shaw, Oldham, Lancs.).

SANDGROUNDERS' AS. President, Mr M. D. Murphy; chairman, Mr R. C. C. vice-chairman, Mr T. Tucker; secretary, Mr S. Boston (82 Radlow Drive, Chesham, Southport); phone 34743; treasurer, Mr R. Howard; show secretary, Mr G. Waterhouse.

Diseases in Water Plants

IN a recent report of the Florida Water Resources Center (publication no. 23) authors Freeman, Charudattan and Zettler describe methods and attempts to control four common tropical freshwater plants that have gone wild in Florida, reaching epidemic proportions. Yet these are ones that we have great difficulty in growing in our home ponds and aquaria: *Myriophyllum*, *Hydrilla*, *Alternanthera* and the water hyacinth, *Eichhornia crassipes*. It is reported that some 10-15 million dollars (£4-600,000) are spent annually on control of these plants, some introduced only since World War two.

To avoid the usual pollution outcry, biological control using fungi, bacteria and viruses was tried and a relatively large number of aquatic plant diseases, particularly of *Eichhornia*, were found. Many of these diseases do not kill the plant, but no less than five serious diseases are reported.

It is interesting to speculate how many of our common aquarium plants may thus be diseased (regardless of certificates of good health) when brought in from abroad. Could this be the cause of our inability to propagate them efficiently in the aquarium?

'Aquatic nurseries specialising in the importation and growing of plants for the aquarium trade were checked periodically for diseases . . . the most significant one found was a disease of the Amazon sword plant caused by *Aphanomyces euteiches* (an aquatic fungus). This disease causes skeletonised areas to appear in the leaves, the foliage yellowing as the tissue degenerates.

Although one could not attempt to blame all lack of growth in aquarium plants on disease, it does seem that disease may be more widespread than usually is realised.

IAN SELICK



MR Ken McCall of the **AQUARIUM AND TERRARIUM SOCIETY OF QUEENSLAND** writes to us with news from Australia: 'I thought you would like to know that here in Australia we have a nation-wide breeders' competition and have a series of badges for the number of species bred, e.g. 20, 25, 30, 75 or 100. One of our club members, Mr Ray Legget, has just bred his hundredth species—this, I believe, is only the second person to achieve this in Australia. Several of the club have bred over 50 species, so you can imagine that 100 is a terrific effort. It is necessary to keep the spawning alive for 60 days and have these judged by a club official.

Once again, at the last Hobby Show, we won the Chairman's Trophy for the fourth time for the best display. This Show, which takes over the City Hall for a week, is to raise funds for subnormal children and this year over \$25,000 were raised. Nearly all hobbies are represented: model trains, model

boats, planes, pottery, painting etc. and everybody does their best to put on a good show, and since the competition was so intense you can imagine that we were very pleased to win.'

MR T. Green, P.R.O. of **HIGH WYCOMBE AS**, reports on the Society's activities since the beginning of the year. 'In January the club treasurer gave what everybody thought to be a very good discourse on the subject of genetics as applied to fishkeeping, and an excellent quiz, compiled by the vice-chairman, was also held in January. This caused much amusement and verbal repartee on the part of both teams. Mr A. Tufts visited High Wycombe in February to talk on the drug MS.222 and its use in killing and anaesthetising fish. This listener at least was fascinated, but worried lest it prove

to be the thalidomide rather than penicillin of fishkeeping. The round in the Three Counties Quiz League held at High Wycombe under the chairmanship of Mr B. Bissoon of Basingstoke was won by Reading.'

MR M. Graham of **WELWYN GARDEN CITY AS** reports: 'Our first ever Open Meeting for the general public was managed throughout the evening by the junior section, and especially by D. Collis, who gave a comprehensive talk and demonstration on setting up a tank. Mr A. Margrove made a successful debut as auctioneer disposing of members' surplus equipment and fish, and both were aided and abetted by Miss S. Fitts, who not only accomplished her normal task of catering, but fetched and carried all that was needed throughout the evening. It is anticipated that the membership may well expand as a reward for these endeavours and it was very successfully shown to the general public that a goldfish bowl is a very poor beginning for a fine hobby. The second March meeting saw the return of Mr Pearson, Mr Vickers and Mr Dodkins, who in turn gave a full programme by lecturing on 'Labyrinth in general', 'Breeding Fighters', and by judging the table show. Mr Pearson especially laboured on magnificently despite being indisposed. The Society meet

CALLING club secretaries in the London, Home Counties or Bristol areas. Mr Ian Selick is now sometimes available for lecturing on fish coloration and fish communication at society meetings. If possible, transport should be provided if there is no convenient railway station nearby. Enquiries should be directed to Mr Selick (i.a.s. please) at 280 Northridge Way, Hemel Hempstead, Herts. HP1 2AU.

on the 1st and 3rd Mondays of each month, at The Scout Hut, Great Dell, Welwyn Garden City. Guests and potential members are always welcome.

AT the Society's AGM, members of **SANDGROUNDERS' AS** were happy to hear that, since moving to new meeting rooms, the membership has expanded until the total now exceeds 70. The treasurer was happy to announce the the Society's bank balance was very healthy, with a large sum in the Ladies' account. A special vote of thanks was given to the ladies for their year's work—for they financed a free hot pot supper for each member who took part in the treasure hunt held last summer, as well as putting on a wonderful party for the juniors at Christmas. The Society held its third and most successful Open Show with over 500 entries and no less than 700 visitors. This year members were able to view behind the scenes at the aquarium in Liverpool Museum at the invitation of their president, Mr D. Murphy. Recently, the Society held an inter-society table show with the Blackburn Aquarist Waterlife Society (Sandgrounders 38 pts., Blackburn 16 pts.). The Sandgrounders look forward to another successful season of fishkeeping and extend a warm welcome to other aquarists to join them at their next meeting. All enquiries to the secretary Mr S. Hooton, 81 Radnor Drive, Churchtown, Southport; phone 24741.

EAST LONDON A & PA have found it necessary to change the date of their annual Open Breeders' Show. This will now be held on 21st September. The new show secretary is Mr F. Vicker, 13 Irons Way, Romford, Essex. Recent activities have included acting as hosts to Thurrock, Southend and Romford societies for the inter-club competition, when Thurrock had a convincing win, followed by Southend, Romford and East London in that order. A talk/slide show by Mr H. White of Hendon and a talk by Mr Cook on 'Water and its Components' have been enjoyed. The annual dinner dance has also been held and voted an immense success by the 117 guests who attended, and thanks were recorded to Mr and Mrs John Boss for all their hard work in arranging it.

A **PANEL** of three committee

FEDERATION



NEWS

Championship Classes Show Dates

Forthcoming Championship Class Shows

| | | | |
|----------------|------------------------|------|-----------------------|
| 2nd June | Sudbury AS | K | Danio & WCMM |
| 8th June | Havant & DAS | Yb | Coldwater marines |
| 8th June | Llantwit Major | Q | Swordtail |
| 9th June | Brighton & Southern AS | G | Tropical catfish |
| 16th June | Salisbury & DAS | Da | Angels |
| 23rd June | Taunton & DAS | O | a.v. Male guppy |
| 29th June | Dunmow & DAS | No-t | Pairs (livebearer) |
| 30th June | High Wycombe AS | Mz | |
| 6th July | Basingstoke AS | Db | Dwarf cichlids |
| 4th August | Tonbridge & DAS | T | a.o.s. Livebearer |
| 17th August | Amson AS | Cb | Characins |
| September | Plymouth AS | Ma | Labeos |
| 1st September | Newbury & DAS | R | Platy |
| 1st September | Bethnal Green AS | W | a.o.s. Coldwater |
| 1st September | Wellingborough AS | U | Singletailed goldfish |
| 8th September | Harlow AS | P | Guppy female |
| 14th September | Bracknell AS | Ba | Barb |
| 14th September | Hounslow & DAS | V | Twintail goldfish |
| 22nd September | Torbay AS | Ya | Tropical Marines |
| 29th September | Northampton AS | W | Native & Foreign |
| 5th October | East London A & PA | Z | Plants |
| October | Hampstead & DAS | S | Mollies |
| 6th October | Ealing & DAS | Bz | Barbs |
| 22nd October | North Kent AS | F | Egg-laying toothcarps |
| 10th November | Walthamstow & DAS | Xu-w | Breeders (coldwater) |

members of the **DORCHESTER & DAS**, Mr A. Billington, Mr M. R. Christopher and Mrs M. Fox, provided some very helpful information when answering members' queries on all aspects of tropical and coldwater fishkeeping. Table show results were: Siamese fighters, class 1: 1 & 2, Mr M. Cleall; 3, Mr R. Christopher; Class 2: 1, Master A. Fox; Platys, Class 1: 1 & 3, Mr R. Christopher, Class 2: 1, Master A. Fox. Platys, Class 1: 1 & 3, Mr R. Christopher; 2, Mr T. Hutton. Class 2: 1, Mr G. Fox; 2, Voss family; 3, Mrs M. Fox.

April proved to be a very busy

month for members. A visit to Yeovil AS to watch a number of films relating to the hobby was followed by a trip to Weymouth for the inter-club competition at which Dorchester won the Cup by only a few points. About 40 members attended the Society's own meeting when Mr Jones of Southampton gave an interesting talk on fish disease. Table show results were: swordtails, Class 1: 1, 2 & 3, Mr R. Christopher; Class 2: 1, Mr G. Fox; 2, Mr S. T. Payne; 3, Mrs D. M. Payne. Characins, Class 1: 1, Mr T. Hutton; 2 & 3, Mr R. W. Taylor. Class 2: 1 & 3, Mr G. Fox; 2, Mr N. Derrick.

20 Catfish, Class 1: 1 & 3, Mr T. Hutton; 2, Mr D. Norman. Class 2: 1, Mr A. F. Light; 2, Master R. Cook; 3, Miss K. Fox.

SOUTH PARK AQUATIC STUDY SOCIETY express their thanks to all coldwater enthusiasts who participated in their recent successful Fourth Annual Invitation Table Show. 88 coldwater fishes were judged by Mr W. Leach, Mr R. D. Eason and Mr C. A. T. Brown to G.S.G.B. Standards. While the judging took place the well-known goldfish breeder, Mr J. Linsale, gave an interesting informal talk on his preparation and breeding techniques. Awards were presented by Mrs I. Brown to the following:

London shubunkins, Tropaeus Cup: 1 & 3, Mrs P. Whittington (also trophy for best fish in show); 2, Miss F. Leach. Singletails, Stan Freeman trophy: 1 & 2, Miss D. Morris (also G.S.G.B. trophy for best basic variety); 3, Miss F. Leach. Veiltails, Daphne Morris Cup: 1 & 2, Mr T. Longstaff. Bramblehead, Sorbiton Aquaria Cup: 1 & 2, Miss D. Morris. Pearlscales, Marguerite Dudley trophy: 1, Mr T. Wyman; 2, Mr J. Pollard; 3, Mr M. Cluse.

Common goldfish, Ron Dudley Cup: 1, Mr S. Herring; 2, Mr F. Pinder; 3, Mr D. J. Mackay. Fantail, Wimbledon Aquaria trophy: 1, Mr V. Hunt; 2, Mr F. Pinder; 3, Mr B. Collins. Broadtail moor,

Syd & Denis Pearson trophy: 1, Mr G. Fleming; 2 & 3, Mr R. Whittington. Comet, Comet Cup: 1, Mrs M. Dudley; 2, Mr V. Hunt; 3, Mr D. Herman. Koi, Fantasy Cup: 1, Mr D. Herman; 2, Mr R. Herman; 3, Mr F. Pinder. Native & Foreign, Gerrys of Wimbledon trophy: 1, Mr D. J. Mackay (gudgeon); 2, Mr V. Hunt (bitterling); 3, Mr E. Lough (bullhead). Centrarchidae, Peacock trophy: 1, Mrs M. Dudley; 2 & 3, Mr T. Longstaff. Breeders, Stuart Cup: 1, Miss D. Morris; 2 & 3, Mr T. Longstaff.

Secretary Mrs M. Dudley (01-540 5662) will be pleased to hear from 'clubless' coldwater addicts; monthly meetings are held in Wimbledon.

In Brief . . .

Mr H. Casey of the Freshwater Biological Centre, Wareham gave an informative talk to members of **BOURNEMOUTH AS**, who, at the end, had a very much better idea of what to expect of the local water. Mr Casey also demonstrated how to use a pH meter and measure the conductivity of water. He stressed that measurement of water is expressed in different terms from country to country. Table show results were: mollies: 1 & 2, Mrs Bobb; 3, Mr Middleton. Fancy goldfish: 1 & 2, Mr B. Coombe; 3, Mr Fradley; av Plant: 1 & 2, Mr Jeffery; 3, Mr Greenhalge.

GUEST speaker Mr Pye was making a welcome return visit to **ILFORD & DA & PS** when he lectured on the shape, size, camouflage and habits (and the reasons why) of fishes. Mr Pye's talk was accompanied by a large number of very good colour slides.

FISH house management, from building the fish house to breeding the fish, was the topic covered by Mr E. Rundle when he lectured to members of **PLYMOUTH AS**.

WHEN Mr C. West judged the coldwater and catfish classes at the monthly table show of **BRIGHTON & SOUTHERN AS**, he commented on the well-fed look of the prizewinners. Whilst the judge was pointing the fish, Mrs L. Todd answered question on general fish-keeping. The first leg of the 'Over

the Downs inter-club competition with Mid-Sussex AS was won by Brighton by 1194 points to 1132. Whilst members waited anxiously for the results from judge Mr A. Blake, Mr J. Burtles gave an informal talk encouraging members to show fish.

MR M. Cluse gave a talk to members of the **ASSOCIATION OF GOLDFISH BREEDERS** on Goldfish Standards followed by a discussion on colouration in singletails with examples from fish of his own strain. Table show results were: twintails: 1 & 3, Mr R. Elsdon; 2, Mr H. Bence. Young fish: 1 & 2, Mr I. Fleming.

LITTLEHAMPTON & Bognor AS are holding their annual exhibition and inter-club show on Saturday and Sunday 14th-15th September at the Marquee, Bognor Regis. This will be open to the public on both days and the inter-club competition will commence on Sunday at 12 noon.

BUXTON & DAS had an enjoyable and often hilarious evening solving the quiz devised and presented by one of the junior members, many-times show winner Janis Gullane.

THE interest in the coldwater side of the hobby was well evidenced by the questions put to Mr W. Ryder of Portsmouth at his lecture to members of **NEW FOREST AS** on coldwater fishkeeping. A golden tench, put up to auction by one of the members fetched £1.05 (for club funds) after a fierce battle for it between the chairman and secretary of the club. The class for characins was won by Mr Jeffries

(2 & 3, Mr Barnes) who also won in the class for fighters.

THE final result is now announced of the **BIRMINGHAM SECTION OF THE FANCY GUPPY ASSOCIATION** Points Cup Trophy 1973-74. 1, A. C. & J. Truman, (Bristol, 207 points); 2, Mr & Mrs D. Phillimore, (London, 204 points); 3, Mr G. Steadman, (Kingwinford, Staffs., 167 points). The Section welcomes visitors and new members. Meetings: 4th Sunday afternoon of each month at The Glebe Farm Community Centre, Stechford, Birmingham. For further information please contact secretary Mr G. Bescham, 34 Frankton Close, Matchborough, Leicestershire.

NINE tropical fish and three coldwater fishes were entered by each club when **WEYMOUTH AS** were hosts to **DORCHESTER AS** for their annual inter-club table show (judge, Mr J. Jeffries FBAS). Weymouth were narrowly defeated by 867 points to 860. Mr J. Hodder of Weymouth was first with a red-finned shark. In the coldwater section first and second place went to Mr R. Christopher of Dorchester. Monthly table show results have been: danios & minnows: 1, Mr A. Billington; 2, Mrs J. Grundy; 3, Mr M. Cleall. Rasboras: 1, Mrs J. Manels; 2, Mrs E. Hart. Furnished aquaria, 1, Mr D. Mullen.

SUFFOLK A & PA very much enjoyed a talk on plants by Mr B. Pye at their meeting place at the Central Conservative Club, Ipswich.

MEMBERS who attended the AGM of the **GOLDFISH SOCIETY OF GREAT BRITAIN** were very pleased that the afternoon

was by no means devoted only to Society business; instead Mr R. Esson gave a most interesting 2-hour-long lecture entitled Cosmic Clocks. As members discovered these were in no way connected with astronauts, but referred to moon phases. The numbers of the fish breeders who are convinced that there is a link between the moon phases and the spawning of goldfish were swelled after this talk by Mr Esson.

... COLDWATER hobbyists among the members of **COVENTRY P & AS** particularly enjoyed the Society's March meeting. First Mr D. Easingwood showed a selection of slides on coldwater fishes, pools and fish houses. Then a panel of experts composed of Mr Frank Orme, Mr Graham Freer and Mr Andrew Hinit answered questions largely upon coldwater fishkeeping and provided some very interesting and informative answers. Table show winners were: anabantids, Mr E. Keeble; barb, Mr A. Nash; livebearer pair, Mr F. Hirst; loaches, Mr P. Hinde.

... AT the March meeting of **BRISTOL AS**, Mr S. Lloyd was very successful in the table show winning in the classes for goldfish, orandas and fantails. Mr E. Bowden won in the cichlid class and Mr W. G. Ham in that for characins. Whilst the judging took place members had a general question and answers session on pH meters.

... TWO members of **NAILSEA & DAS**, Mr R. Parsons and Mr W. Holland, greatly entertained their fellow members with an interesting talk on guppies. The Society's first table show was held at this meeting; results were: platys, open and novice: 1, Mrs P. Genge; 2, Mrs A. Hughes. Guppies, open: 1 & 2, Mrs P. Genge; 3, Mr W. Holland. Novice: 1 & 2, Mrs P. Genge; 3, Mr P. Stamp. Details of the Society can be obtained from the secretary Mr M. J. Ellick, 3 Burrington Close, Nailsea, Bristol, BS19 2JX; phone Nailsea 4158.

... THE attended date for the **BILLINGHAM AS** Open Show is 7th July.

... **LEAMINGTON & DAS** have decided to hold an Open Show for limited classes. Details are still being finalised but the classes will be cichlids, barb, catfish, livebearers a.o.v., anabantids, loaches and characins.

THE Annual General Meeting of THE BRITISH KOI-KEEPERS' SOCIETY will be held at the *Post House Hotel, Braunton Lane, Leicester on Sunday 23rd June, at 2.00 p.m.* After the AGM, Mr R. Seal will talk on his recent trip to Japan made to establish contacts and finalise a suitable route for the proposed visit of the Society in April, 1975. Chairman Mr E. A. Allen will be showing slides dealing with the construction of concrete ponds, underground filtration and a water-charging system. Other systems of filtration will also be illustrated by more recent slides of the Japanese scene. The hotel is situated about 1 mile from the M1 Junction no. 21 towards the city. Refreshments and meals will be available at the Hotel for those who require them either before or after the meeting but members requiring lunch are advised to book in advance (Leicester 896688).

... THE June meetings of **BRADFORD & DAS** will include a talk by Mr Hemmingway on 5th June and a general discussion on foods and feeding on 19th June.

... **TORBAY AS** had a most enjoyable film night when they viewed the film made by Mr K. Barraclough and Mr G. Holmes of King British Ltd. in their recent trip to the Far East. A second film on pond life made by Mr H. M. Allies included a detailed microscopic study of hydra. At a following meeting a very well-formed slide

lecture on fish biology by Mr John Haynes provided members with a great deal of new information.

... 20 members of the **PETERBOROUGH FISHKEEPERS ASSOCIATION** much enjoyed the film of a Journey to the Far East by Mr K. Barraclough. There were 27 entries in the table show and the results were: 1, Mr J. Butler; 2, Mr K. Fox; 3, Mr R. Walden. 28 members attended the April meeting when a slide show on Cichlids was shown. The novice class table show was won by Mr B. Paiechids; (2, Mr D. Fincham; 3, Mr C. Coe).

... **WINNERS** of the annual competition held by **LINCOLN & DAS** for the Renshaw trophy were: 1, Mr J. Goldson; 2, Master G. Borrell; 3, Mr H. Kuhn. Judge was Mr F. Toyne of Sheaf Valley AS. After the competition Mr G. Rodger gave a demonstration on glass tank-making.

... OVER 90 members on their books and a very successful year was the pleasing news for members of **HASTINGS & ST LEONARDS AS** at their AGM. Retiring chairman Mr G. Pryke made the annual awards. Mr Charles Reed, who had attended every meeting for over 5 years was the Member of the year. The Chisell Cup was presented to Mr T. Adams, who also received the Corydoras Cup. Mrs C. Reed won the Singapore Bowl and the 'Home Aquaria' Challenge Cup. Andrew Reed the Christine Reed Cup and Mr C. Pannell the 2.0.0. Cup.

Dates for Your Diary

1st June, **FBAS ASSEMBLY**, Conway Hall, Red Lion Square, Holborn, London WC1, 2.30 p.m.

1st June, **LSGK General Meeting**, Conway Hall, Red Lion Square, Holborn, London WC1, 2.00 p.m.

2nd June, **LOUGHBOROUGH & DAS** Open Show. Schedule: Mr I. Pardy, 10 Cleveland Road, Loughborough, Leics. LE11 2SP (phone Loughborough 61712).

2nd June, **SUDBURY AS** Open Show, St Andrew's Hall, Sudbury, Wembles, Middlesex. Details: Mr L. Beaman, 66 Ormsley Way, Keston, Middlesex (phone 01-204 2174).

2nd June, **CHILMSLEY AS** Open Show, Town Hall, Colindale, Birmingham. Schedule: Mr J. Cox (phone 021-742-1410).

8th June, **LEANTWIT MAJOR AS** 21st Anniversary Open Show, The Town Hall, Leantwit Major. Superior celebration awards

for all classes. Schedule: Mr J. J. Edwards, Glasfryn, Mill Park, Llanborthlan, Cwmbran, Glamorgan, CF7 7BQ.

8th June, **HAVANT & DAS** 4th Open Show, St George's Hall, Waterlooville, Hampshire. Schedule: Mr V. B. Hunt, Craglan, 120 London Road, Witley, nr. Portsmouth, Hants. PO1 2EW.

9th June, **BISHOPS CLEEVE AS** Open Show, TA Centre, Arle Road, Cheltenham, Glos. Schedule: Mrs D. Ross, 22 Bellmore Road, Bishops Cleeve, Cheltenham.

9th June, **GSN POND & AQUARIUM SOCIETY** Open Show. Details: Mr K. E. Hill, 35 Richard Street, Darlington, South-Wh10 1AL.

9th June, **BRIGHTON & SOUTHERN AS** Open Show & Fishkeeping Exhibition, St Barnabas Church, Hells, Sackville Road, Hove. Details: Mr S. Park, 57 Newmarket Road, Brighton, phone: 02037.

9th June, **MIDDLETON & DAS** Open Show, Hells High School, Hells Lane, Middleton. Details: Mr K. Quinn, 40 Marlfield Street, Manchester, M11 1BA. Please note: members of recognised amateur society only may exhibit.

9th June, **NORTHWICH & DAS** 6th Open Show, Harford Secondary Boys School, Chester Road, Harford, Northwich. Details: Mr N. R. Thompson, 54 Grimsom

Road, Frodsham, via Warrington, Lancs. Wals 710; phone Frodsham 3745.

10th June **SALISBURY & DAS** Open Show, City Hall, Salisbury, Details: Mr E. Gifford, 186, Cranborne Way, Salisbury, Wilt, phone 25451.

10th June **SPILLINGTON AS** Open Show, John Stenaton School, Barwick Road, Spillington, Leeds.

10th June **SALISBURY & DAS** Open Show, The City Hall, Fisherton Street, Salisbury.

7th June **LANCASTER SECTION FANCY GUPPY ASSOCIATION** Open Show, St. Margaret's Hall, Tag Lane, Ingleton, Details: Mr D. Ormerod, 95, Raven Avenue, Rosemount, Rosemount, Leeds.

29th June **ALFRETON & DAS** Open Show, Adult Education Centre, Alfreton Works, Alfreton, Details: Mr B. Hickling, Parkside, 13 Coppice Drive, Eastwood, Nottingham; phone Langley Mill 5104.

22nd June **SOUTH SHIELDS AS** Open Show, Billingham Hall, Darlaston, Mr W. Scott, 49, Linton Road, South Shields, Co. Down.

20th June **NARISEA & DAS** 1st Open Show, Details: Mrs P. Grogan, 13 Danvers Gardens, Newton, Bristol.

20th June **HIGH WYCOMBE AS** Open Show, Lane End Hall, High Wycombe, Bucks. Details: Mr R. Lucas, 29, Meadows Walk, Tyler's Green, Bucks. HP10 8DG; phone Peter 4386.

19th June **LEAMINGTON & DAS** Open Show, Trinity Hall, Trinity Street, Leamington Spa, Warwick.

20th June **LINCOLN & DAS** Open Show, Venue to be announced. Details: Mr S. Hill, 14 Hartley Street, Lincoln.

30th July **RASINGSTOKE & DAS** Open Show, Central Hall, Rasingstoke, Hamtonton, Mr B. Bach, 95, Pinkerton Road, Rasingstoke, Hamtonton.

7th July **LYTHAM AS** Open Show, Lytham Institute, Woodlands Road, Ansdell Lane, St. Anne's, Lytham, Lancs. Schedules: Mr P. Mann, 1, Weyland Grove, Froxfield, Wiltshire; phone Froxfieldton 63112.

10th July **BILLENHAM AS** Open Show, Details to follow.

12th-14th July **ROMFORD & BEACON-TREE AS** Diagonham Tross Open Show, South Gate, Mr A. V. Walters, 71, Marlow Road, Rainham, Essex.

21st July **THE SANDGROUNDERS' AS** Open Show, Mole's Copp Secondary School, Southport, Details: Mr T. Tucker, 44, Kensington Road, Southport.

21st July **USGB** General Meeting, Conway Hall, Red Lion Square, Holborn, London WC1, 2.00 p.m.

20th July **ELY & DAS** Tropical Fish Exhibition, Bedford House, St. Mary's Street, Ely, Open 10-6. Details: Mr S. Porter, 34, Cambridge Road, Northam, Ely, Cambs.

20th July **AIBERBROUGH & DAS** Open Show, Manton Community Centre, Manton House, Manton, Details: Mr W. Clarke, 29, New Street, Bakerscross, nr. Bardon, 577 92; phone Parkway 34489.

4th August **TONBRIDGE & DAS** Open Show, Details: Mr J. T. Matheson, 10, Norman Way, Five Oak Green, Tonbridge, Kent.

10th August **NEWPORT AS** Open Show, St. John's Hall, Victoria Avenue, Maudon, Newport, Mon. Details: Mr W. Gibson, 63, Chancery Road, Newport, Mon.; phone 7610.

11th August **GRIMSBY & CLEE-THORPES AS** 1st Open Show, Memorial Hall, Cleethorpe, Schedules later.

7th August **ANNON AQUATIC CLUB** Open Show, Kings Hall Community Association, 175, Hatfield Road, Willodan, Leicestershire, NW16.

10th August **BEDWORTH AQUARIST & POOL SOCIETY** Open Show, Nicholas Chamberlaine School, Bullington Lane, Bedworth, Schedules: Mr J. Salisbury, 261, Gables Street, Nuneaton.

10th August **STROUD & DAS** Open Show, Bristol Subscription Rooms, Details: Mrs D. Cook, Avignon, The Hill, Radwick, Stroud, Glos.

London's Seventh Annual Exhibition of Fishkeeping The AQUARIUM SHOW '74

Presented by the Federation of British Aquatic Societies

Friday 25th October to Sunday, 27th October

at the Royal Horticultural Society's Old Hall
Vincent Square London S.W.1

Sponsored by PETFISH MONTHLY

Enquiries to: Show Organiser,

PFM, 554 Garratt Lane London SW17 0NY Phone 01-947 2805

10th August **HUDDERSFIELD TFS** Open Show, Paddock Youth Centre, Booth Street, Huddersfield, Details: Mr H. Ackland, 51, Weymouth, Deighton; phone Huddersfield 37997.

25th August **CASTLEFORD AS** Open Show, Castleford Civic Centre.

25th-26th August **GT YARMOOUTH & DAS** Tropical Fish Exhibition, Youth & Adult Centre, St. Nicholas Road, Great Yarmouth, Tropicals, marine, coldwater, farmed aquaria, trade stands. Details: Mr P. Watson, Penne, 31 Common Road, Henny, Great Yarmouth, Norfolk.

31st August **PLYMOUTH AS** Open Show, Y.M.C.A., Plymouth, Schedules: Mr M. Lundy, 3 North Devon Gardens, Keyham, Plymouth.

1st August **WESTON-SUPER-MARE & D TFC** Open Show, St John's House, Oxford Street, Weston-super-Mare.

1st September **NEUBURY & DAS** 2nd Open Show, The Plaza, Market Place, Newbury, Berks. Schedules: Mr G. Foster, 19 Jubilee Road, Newbury, Berks.

1st September **BETHNAL GREEN AS** Open Show, The Institute, 229 Bethnal Green Road, London E2. Schedules: Mrs B. Hudson, Kot Koran, 150 Ashburton Avenue, Hford, Essex.

1st September **PETERLE & DAS** Open Show, Schedules: Mr Southampton, 40 Marlborough Road, Hastings Hill, Sunderland, Co. Durham.

1st September **WELLENBOROUGH & DAS** Open Show, Queensway Hall, Goldsands Road, Wellenborough, Northants. Schedules: Mr P. Wallis, 11 Cherry Walk, Raxwold, Northants.

7th September **FRAS ASSEMBLY**, Conway Hall, Red Lion Square, Holborn, London WC1, 2.30 p.m.

8th September **BRACKNELL, DIDCOT & READING AS** Combined Open Show, Students Union, Reading University. Details: Mr J. Harvey, 4 Rickman Close, Woodley, Reading, Berks. RG5 3TT; phone Reading 46917.

8th September **CLEVELAND AS** Open Show, Details: Mr B. Wolford, 1, Railway Terrace, North Skelton, Southon, Yorks.

8th September **HARLOW AS** Open Show, Mount Hall, The Green, Harlow.

8th September **SLEIGH & DAS** Institution Show, The Rotunda Club.

13th-14th September **BRISTOL AS** Open Show, Bathampton Parish Halls. Details: Mr E. Barlow, 12, Scoutish Walk, Knowle, Bristol BS4 2RL.

14th-15th September **LITTLEHAMPTON & BOGNOR AS** annual Exhibition, The Marina, Bognor Regis. Open to public both days. Inter-club competition 12 noon Sunday.

14th September **HOUNSLOW & DAS** Open Show, Youth Centre, Cecil Road, Hounslow, venue to be confirmed. Details: Mr H. Pratt, 23 Woodrow Drive, Feltham Middlesex; phone 91494 0923.

15th September **NELSON AS** Open Show, Civic Centre, Stanley Street, Nelson, Lancs. Details: Mr B. Ellingworth, 94, Barrowford Road, Colne, Lancs.

21st September **EAST LONDON A & PA** Open Show, Ripple Road School, Ripple Road, Barking, Essex. Details: Mr F. Vicker, 13 Iron Way, Romford, Essex.

22nd September **BUXTON & DAS** Open Show, Pavilion Gardens, Buxton, Schedules: Mr A. Holland, 8 Milford Terrace, New Mills, via Stockport, Cheshire.

22nd September **HASTINGS & ST. LEONARDS AS** Open Show, Details to follow.

22nd September **TORBAY AS** Open Show, Torquay Town Hall.

29th September **HUCKNALL & BULLWELL AS** Open Show, Details to follow.

29th September **CHESTERFIELD & DAS** Open Show, Clay Cross Social Centre, Chesterfield Road, Clay Cross, Chesterfield, Derbyshire. Details: Mr J. Tomkinson, 16, Broadway Drive, Wingerworth, Chesterfield S42 6NL.

7th October **HAMPSTEAD & DAS** Open Show, Buckfield Hall, The Priory, Southampton Road, London NW9. Details: Mr T. Woodley, 20 Coppits Close, N. Finchley; phone 01-468 4876.

7th October **CARDIFF AS** Open Show, St. Margaret's Church Hall, Road, Cardiff. Details: Mr C. Tomar, 148, Arvan Street, Roath, Cardiff.

25th-27th October **THE AQUARIUM SHOW '74** at the Royal Horticultural Society's Old Hall, Vincent Square, London SW1. Presented by the Federation of British Aquatic Societies. Admission: society fish-keeping exhibits invited. Details from the organiser, PFM, 554 Garratt Lane, London SW17 0NY 01-947 2805.

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27th October **DONCASTER & DAS** Open Show, Bradwell House, Welfare, Welfare Road, Woodlands.

2nd November **GSGE** General Meeting, Conway Hall, Red Lion Square, Holborn, London WC1, 2.00 p.m.

10th November **HALIFAX AS** Open Show, The Forest Cottage Community Centre, Conisbrough, Ilkley, Halifax. Details: Mr D. Sharda, Cabblesstones, Gaiwest, Kings Cross, Halifax; phone Halifax 90116.

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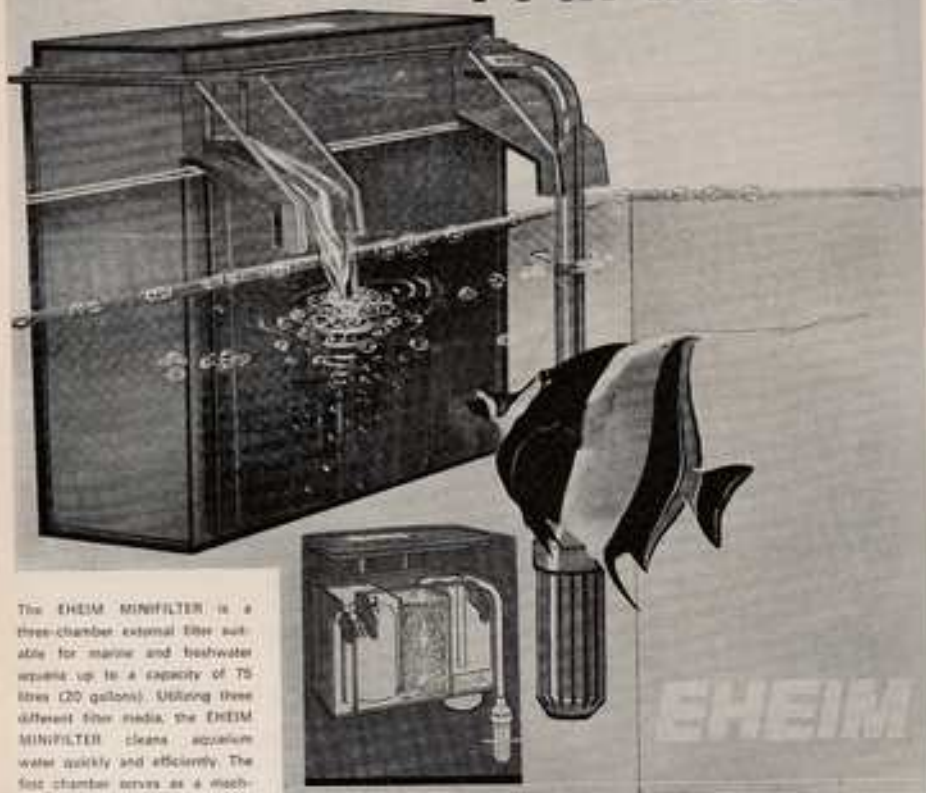
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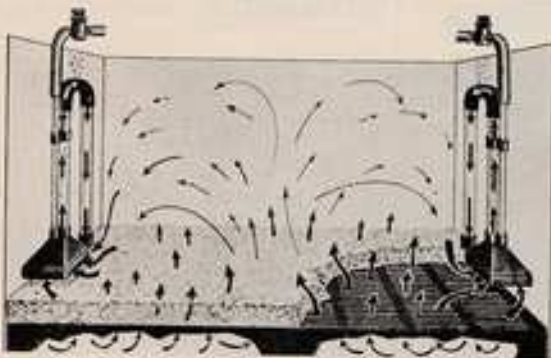
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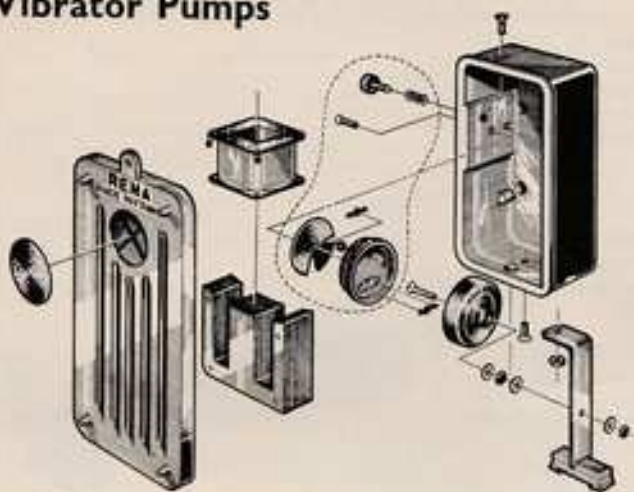
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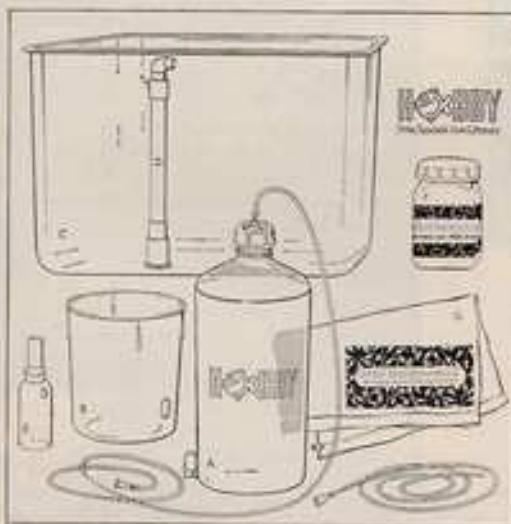
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