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# Pet Fish

monthly

*The* PRACTICAL FISHKEEPING MAGAZINE





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# PetFish

Monthly 2s 6d

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July/August 1969

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Editor: Anthony Evans

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## Comments and Quotes

- New PFM Manual
- Dealing with the railways
- Underwater tourism in Japan

### Colourful Koi

IN recent years a great deal of interest has been created among coldwater fishkeepers by the introduction of the uniquely colourful nishiki-koi from Japan. This is the ideal fish for the pond-owner seeking colours other than the reds and gold he has always had available; the tameness of koi also has great appeal. There has been a call for information about the varieties of koi and their origins, and for advice on keeping them, which we hope can now be supplied by the new PRACTICAL FISHKEEPING MANUAL from PetFish Publications entitled KOI. Its authors are Colin D. Roe and the Editor of PFM. The book contains colour photographs of the fish as well as a lot of practical information and is on sale this month.

### Oh! Mr Porter

ARPEE writes: British Rail have struck again. A small child transporting home some white mice in a small cardboard box is reported to have been asked to pay a fare for them because they accompanied her in the compartment in which she travelled. It is said that B.R. have rumbled that fishkeepers carry their purchases round in flasks, and that these are now liable to search. My advice to those who may get caught with a flaskful of guppies is to say that this is what you were given when you asked for a fill up with tea at the buffet. It is not recommended that you claim that you take them on medical advice, since you may be requested to demonstrate the fact, and with some varieties this could have far-reaching effects.

### Watery Parks

JAPAN is throwing its technological weight into developing the country's coastal waters for "underwater tourism". The Japanese health and welfare ministry, which is responsible for national parks, designates several underwater parks on the Pacific coast this summer, and has already selected other suitable sites for later designation.

As well as the familiar glass bottomed boats, underwater observation towers are being developed for these parks by Hitachi Zosen, the Japanese ship building firm. The first of these has been ordered by an inn at Shirahama, a hot spring resort on the Pacific, and costs about £110,000. The tower is fixed 100 yards offshore, and is connected with land by monorail; at night, the sea around is illuminated.

The Japanese are already thinking about underwater restaurants, and the country's technical research institute is, for good measure, working on plans for a moving underwater walkway within an airtight tunnel on the ocean floor.—THE TIMES.

THIS issue of PETFISH MONTHLY has been dated July/August to enable us to rearrange our schedule of production. Your next issue of PETFISH MONTHLY, on sale at the beginning of August, will be dated September. Subscribers will have the period of their current subscriptions extended by one month. Owing to increases in costs of printing, paper, block-making and distribution etc., it is regrettably necessary for the price of the magazine to be raised to 3s a copy commencing with the issue dated September.




# LETTERS

## Society Tapes

IN the 'Letters' for May PFM you say you will list names and addresses of people willing to exchange tapes, which I think is a good idea. I myself would be willing to participate at  $3\frac{1}{2}$  inches per second either two or four tracks (Grundig TK140 and TK120).

The speed of  $3\frac{1}{2}$  is more or less standard in tape-ing except for the recording of high fidelity music, and all machines have this speed. 3 in. reels would be quite suitable for a beginning.

18 South Hill Drive,  
Gilstead, nr Bingley, Yorks.

F. W. COLES

## Where Did They Go?

THE other day I observed a curious phenomenon in my freshwater tropical tank which has undergravel filtration. All three sucking loaches in the tank (*Gyrinocheilus aymonieri*) found their way down the air-lift tubes and into the undergravel platform. Two subsequently became trapped and died but the other, the largest of the three, shot out of the tube when the air was turned on, presumably because it was too large to turn the corner into the platform itself. I find it difficult to believe that all three loaches found their way into the tubes by accident and I think that they were prompted by their habit of finding a hiding place in which to retreat when disturbed.

I have no idea whether or not this is a common occurrence, but I hope that this will be of interest to other readers.

Walsall, Staffs.

J. B. COURT

## Marine Tank Equipment

AS an amateur tropical marine hobbyist, I wish to reply to Mr R. P. L. Straughan's letter in your May issue.

Whilst at times cursing mechanical failures in expensive equipment and adding up the cost, I have had far greater success with my fish in a larger set-up. I have yet to see a 10-20 gallon tank furnished as a sea bed with natural algae-covered rock and a thriving colony of inmates looking and feeling at home. What I have seen is a few fish with often weak coloration and garish, scrubbed, dead coral looking like a 'hospital'. Surely there is an environment shock factor? There is the advantage in bigger tanks of keeping larger specimens, which are usually hardier even in the same species.

I consider Mr Straughan's remark 'Invariably the hobbyist with the huge tank, . . . elaborate equipment usually has nothing but problems with his fish' to be a powerful statement. We all know there are a lot of

unknown factors in this hobby; surely a reasonable scientific approach must be made to the many problem in order to get the answers and achieve success keeping our specimens, including live corals, for a lot of time in a balanced closed circuit system.

I am personally amazed that Mr Straughan, as editor of his SALT WATER AQUARIUM MAGAZINE, does not know any marine aquarist using ozone. Does the proximity for collecting specimens have any bearing on this? My personal experiences of ozone over 2 years, used in a system created for me by Mr E. Sander of German has been of great value.

The advantages since changing from a small tank unaesthetic appeal, which I was loath to leave for a length of time owing to the inherent risks of aquarium equipment currently on offer, have been: 1, maintenance of a well-stocked aquarium; 2, better colour and appetite in the fish; 3, fewer losses; 4, total avoidance of fungus and also excellent repair in cuts and fins (but not total avoidance or cure of bacterial infections); 5, a better chemical balance of my water (although I am unable to prove this), as well as having dirt and algae in large tanks with the fish being fed as much protein and spines as they require in active health, and only the glass clean.

A large number of the bulk losses experienced by dealers are due to the equipment, such as overheating causing oxygen deficiency or a faulty airpump, when a small compressor should be used.

I agree with Mr Straughan's final remark that sub-sand filter is the best. Personally I do not use sand and find a stone algae-covered bottom can be very effective.

Knaresborough, Yorks.

R. AK

## Theft of Fish

DURING a recent burglary at our premises, approximately 50 Japanese carp were stolen. The Police have asked us whether this could be mentioned in the hobby and trade magazines as it is very probable that these have been offered in the trade. The fish were 4-5 in., colours varying: tri-colours, metallic shin fishes, gold and yellow shiny fishes.

On a previous occasion Police discovered stolen fish in the hands of people in the Birmingham area and even as far away as Tamworth, Staffs.

C. D. B

Director, Shirley Aquatics Ltd, Shirley, Warwick

## Catching Them Up

IT'S not that I'm trying to be awkward or anything and I realise it was just an odd tip designed to help but surely 'how can I net my fish without causing damage' can only be disagreed with by any, even moderately experienced, fishkeeper (PFM, May).

Anyone who has the ability of inducing such fish as *Botia*, or even common or garden *Corydoras* catfish etc

Continued on page 15

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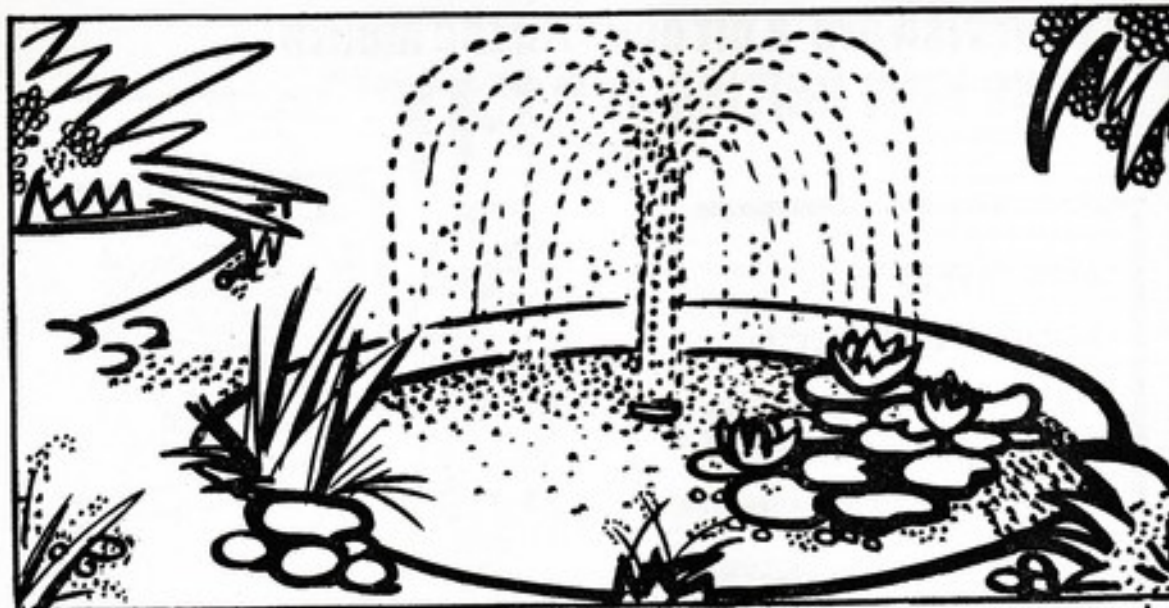
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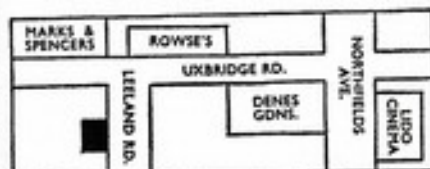
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## LETTERS

Continued from page 146

into a polythene bag or jam jar must surely have the most incredible patience.

Personally, I find that by far the best method is to use a large deep net (doctor a commercial one with net-curtain material if necessary) and slip up to, and under, the fish in question, before it has time to become frightened. If of a difficult type which hides in the plants, a planting stick or similar device is handy to 'entice' it out (two nets I find cumbersome). Once the fish is firmly secured in the bottom of the net, remove from

the water quickly in a smooth upward action, and pinch the net together with your free hand about 2 in. above the probably struggling fish whilst transporting. The fish may then be ejected gently into its required quarters by simply pushing the net inside out and spreading apart fingers and thumb from either side of the fish.

GEOFF FAIRLEY  
Show secretary, Billericay A.S.

*The piece began 'The operative word here is "net"; in answer to the title question. Perhaps it should have had the words 'and fish' added because it is undeniable that when catching techniques are considered there are fish and fish! We would use the bag technique, for example, for large angel fish in preference to netting at all times. However, thanks for the neat description of your own technique Mr Fairley.—EDITOR.*

# Is Your Society Working?

By JIM KELLY

**Scope for greater participation by club members is what is required if the organised hobby is to help meet the future problem of more leisure time for more people**

**I**S your fishkeeping a leisure-time pursuit or has it turned into a job of work? Before you answer quickly, take a long, clear, uninterrupted look at this hobby of ours: after the flush of something new, has it turned as sour as last week's milk? Is what used to be a pleasant activity now a job of work?

That last word merits some consideration first of all. You would have thought that the idea that work can be fun would have been killed off during the Industrial Revolution or pre-war depression. We cannot class our labours as a pleasure when we still find it difficult to convince the majority of aquatic club membership that work was once regarded as being the nearest thing to prayer.

Yet it is no longer the distant future that promises an age when the automaton and the machine free us even more for leisuretime activities. Compare the weekly working hours of just a decade ago with the hours worked in industry today;

like the drip of water on a large rock, the whittling down has seemed an awfully slow process.

Thinking people are already examining the future problem posed by the 'leisure question' and what a switch it will be for most of us brought up and taught to think differently on this subject. To be able to fill the gap of leisure time intelligently may be the final aim of our civilisation. Two decades after the commencement of our calendar saw Seneca, the teacher to the Roman Emperor Nero, saying: 'Leisure without study is death; it is the tomb of the living man'.

Already our children are enjoying entertaining education and both of these words are rapidly merging into leisure; education, no longer boring, is becoming discovery—and that's where we fishkeepers and especially those involved in the running of aquatic bodies must jump on the band waggon.

Our hobby, though boasting many

juniors within its ranks, has never really had a large junior membership. We may make the excuse in the embryo stages of keeping fish that the tank 'is just for the kids', but as with the Christmas train set, it is Dad who gets the biggest kick. Why don't we look at children more seriously? Their natural curiosity, their refusal to involve themselves in things that don't interest them, is a lesson to be learned.

Take the average aquarium club. It is held together by just a handful of 'workers' and a lot of followers. The 'few' change from time to time but, generally, if I could take my pick of half a dozen or so people from each society, all over the British and American scene, I could by removing them wipe out the organised hobby overnight.

And the strange fact is that the fault lies with those doing most of the work! Today folk are crying out for roles that require involvement, not the involvement of jobs (that's too much like work) but tasks of

Continued on page 154

# Prickly Fish



A three-spined stickleback, *Gasterosteus aculeatus*, with the spines on its back half raised.

EVERYONE knows that sticklebacks have spines. The one in the photograph is the common three-spined stickleback and you can see the spines on its back. They can be folded back flat against the body, or swung up into a vertical position; in the photograph they are halfway between these extremes. 'Three-spined stickleback' is a misnomer, for the fish actually has six spines. As well as the three on its back that give it its name it has a spine in the front edge of each of its pelvic fins (which are the fins on the belly, folded flat in the photograph) and a single tiny spine a little behind the pelvic ones, in the front edge of the anal fin.

Most catfishes have spines which are bigger, relative to the size of the body, than the spines of the sticklebacks. There are usually three spines, all in the front edges of fins close behind the head; one is on the back of the fish, in the dorsal fin, and the other two on its sides, in the pectoral fins. Of all catfish, the talking cat is one of the spiniest. Not only are its three spines very big, but they are covered with thorn-like projections, and its body has an armour of spiny plates of bone. Its scientific name, *Acanthodoras spinosissimus*, stresses this spininess. The *acantho* bit comes from the Greek name for a thorny plant and *spinosissimus* is Latin for 'spiniest'.

The acanthopterygians are a much bigger group of fishes with spines, and their name means 'thorny-finned'. They include the perches, sunfishes, cichlids, labyrinth fishes and many others. Their spines are less stout than the spines of catfishes, but there are more of them. A

By R. McN. ALEXANDER

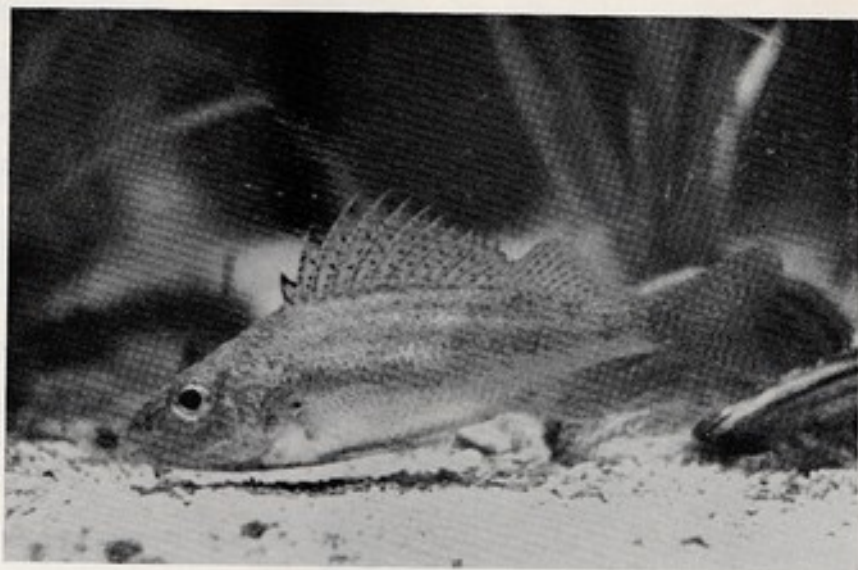
ruffe is illustrated as a typical acanthopterygian. It is a British freshwater fish, closely related to the better known perch. The one in the photograph has its dorsal fin spread showing the difference between the front half of the fin, with 13 slender spines in it, and the back half with ordinary fin rays. There are also two spines in the anal fin and one in each of the pelvic fins.

The difference between spines and ordinary fin rays is shown in the third photograph, which shows the skeleton of the dorsal fin of a tiger barb. There is a single spine at the front of this fin that is not at all conspicuous in life but obvious enough in the photograph. The ordinary rays, behind the spine, are flexible. Each consists of a row of short pieces of bone fixed together by collagen, which is the fibrous material that tendons are made of. Most rays are branched but some are unbranched. The spine is an unbranched ray made of a single piece of bone and is, of course, stiff.

## Uncomfortable for Enemies

All fin spines seem to have the same function: to prick the mouths of predators that try to eat the fish. Spiny fish are uncomfortable to eat. There is plenty of evidence that spines deter predators in the way one would expect, and some of this evidence comes from

Photographs by  
the author



A ruffe, *Acerina cernua*,  
with the spiny dorsal  
fin spread

experiments in aquaria. Pike and perch try at first to eat sticklebacks put into their aquaria, but give up after having their mouths pricked a few times and leave sticklebacks alone thereafter. However, pike and perch that are given de-spined sticklebacks eat them quite happily. In another series of experiments pike were offered choices between pairs of species of small fishes, to see which they would eat. They ate American minnows (which have no spines) in preference to sunfishes (which are acanthopterygians), but when they had to choose

between sunfishes and even spinier catfishes, they ate the sunfishes.

Other evidence comes from the study of wild fishes. The bitterling, the charming little cyprinid that lays its eggs inside freshwater mussels, has no spines. Its close relative the spiny bitterling has a single spine in its dorsal fin, just like the tiger barb. The two species live together in the Amur region, just north of Mongolia. The spiny bitterling seems to be the commoner species there: scientists fishing with seine nets caught twice as many spiny bitterlings as ordinary ones. However, the rarer ordinary bitterling is more often eaten by predatory fish: the scientists opened the stomachs of all the predatory fish they caught and found in them four times as many ordinary bitterlings as spiny ones. This suggests that the predators deliberately choose the ordinary bitterlings to avoid getting their mouths scratched, but it does not prove it. It is just possible that the spiny bitterlings avoid being eaten by hiding better or swimming faster, rather than because of their spines. Again, it is possible that the ordinary bitterlings are really the more numerous species but live mainly in places which the seine net cannot reach. However, it does seem highly probable that spiny bitterlings are being avoided by predators because of their spines.

Two scientists in the United States recently spent a lot of time watching wild herons feeding. They used powerful binoculars and were able to identify most of the fish the herons seized in their beaks before they were swallowed. They saw 239 bullhead catfish caught, and 219 of these got swallowed but the other 20 (8.3%) escaped. Many of them probably got away because their spines made them difficult and uncomfortable to swallow. A similar percentage of eels escaped, by wrapping themselves round the herons' beaks and squeezing themselves off. 2392 of the fishes that were caught belonged to species without spines or other tricks for escaping, and only 13 (0.5%) of them escaped. The



Part of the skeleton of a tiger barb, *Borbus tetrazona*, showing the spine in the dorsal fin. The bones have been made visible inside the corpse by a technique which makes the flesh transparent and stains bone red



Photo:

BARRY PENGILLEY

This marine puffer, inflated out of water, shows prickliness at its prickliest

figures suggest that spines improve a fish's chances quite a lot, if it gets caught by a bird.

If the spines were always kept erect they would spoil the fish's streamlining, but fins with spines in them can be folded flat against the body just like ordinary fins. So folded, they give no protection. Fish erect their spines when in danger, but the muscles used for this are not particularly strong and a predator that could force the spines down flat again could eat a spiny fish without getting hurt. However, sticklebacks and catfishes have special locking devices which can be used to fix their spines. They work on the same principle as a

knot. Friction between the cords prevents a knot from slipping. The harder you pull on it the more tightly the cords are pressed together, and the greater the friction. Provided that the cords are reasonably rough the knot will never slip, even if you pull until the cord breaks.

In just the same way a catfish or stickleback spine is held erect by the friction between rough surfaces at the base of the spine and on a bone in the body of the fish. Pushing on the spine simply presses the surface tighter together and increases the friction. The spine cannot be forced down except by pushing so hard that something breaks, but the fish has a small muscle that can release the lock and lower the spine.

### Warning Grunts

Catfish spines have another rather surprising refinement. Net a talking cat and lift it from your aquarium and it will probably make a noise at you, something between a buzz and a grunt. Though this species is particularly noted for its noises other catfish make similar ones. The noises are made with the pectoral spines. As these spines are raised and lowered the rough surfaces used in the friction lock are rubbed together making the noise. The grunts probably serve as a warning: 'Do not touch me or you will get hurt'.

A predator that seizes a catfish may spit it out as soon as its mouth gets pricked, but the catfish is unlikely to escape entirely unhurt. It is better for the catfish if the predator recognises it straight away for the spiny fish it is and leaves it alone. The noise makes it easily recognisable. The rattle of rattlesnakes and the conspicuous black and white fur of skunks serve similar functions, as warnings to attackers.

Some catfish have venom glands at the bases of their spines, so that wounds made by the spines are poisonous. They include some North American species of the genus *Noturus*, *Schilbeodes* and *Ictalurus*. A few acanthopterygians also have venomous spines. Among them the tropical marine *Pterois volitans* has been in the news lately because accounts of its venom led to a moratorium on its sale in pet shops. *Pterois* probably owes its spectacular appearance to its venom; this is probably another example of a warning to attackers.

## Is Your Society Working?

Continued from page 151

their own making and suited to their own talents.

Those club organisers mollycoddle their membership, with the adage if you want something done properly do it yourself, until so lulled into a sense of false security the bulk of the hobbyists cannot cope when the machinery grinds to a halt.

What happened to all that curiosity we had as youngsters? We become

so wrapped up in our own little local pools, trying desperately to solve our own little problems we forget that these same problems are also common to the larger hobby pool outside.

But then who should blame us? A lifetime of dreary work, boring jobs and bad education knocked it all out of the older generation. Compare the school lesson of today with that of the past, or a modern

aquatic speaker and his host visual aids with the speaker of years ago. Entertainment has become education, work has become learning.

Let the organised hobby be free from it all and let us decide here now to change the face of our life to that of discovery and investigation. The club project must replace the old lesson. The building up of greater membership isn't what's required. Give every member a job to ensure it is something that he/she wants and has the talent to do properly.

Then the organised side of the hobby of keeping fish will hit the top of the charts.



## Personal COMMENT

by  
ARPEE

SOME correspondents take the very ink off the end of your pen, and this happened to me in the April issue when I saw the letter from Mr Eadon of Sheffield on the subject of sunfish and bass. I absolutely agree with him that the members of the Centrarchidae family are well worth much more serious attention from the aquarist than they usually get. Perhaps a little campaigning on our part may help to restore the balance.

It is quite extraordinary how the sunfish in particular has drifted away from the scene during the past 20 years. The bass were never in the front row—quite undeservedly, I think—but the common sunfish featured as much in dealers' tanks at one time as did those wretched little black catfish. The fact that the latter are still in evidence whilst the former is not, is witness to the lack of discrimination which still seems to dog many otherwise intelligent and trustworthy dealers. The peacock-eyed bass, the diamond bass and the rock bass were often obtainable, particularly the former, which are probably still regarded as the élite of the entire family.

What prevented these fish from becoming more popular? I have kept all of them at one time or another and it is only their absence from local retailers' tanks that keeps them out of mine. I cannot really fault them on anything except a bit of temperament when they are being introduced to new surroundings. They do not mix together particularly well, but this is no deterrent to varieties far less attractive.

Whilst, then, they are best given the run of a tank, species by species, one does not regret the experiment when all is set up because great individuality is exhibited and with it comes greater opportunity of learning more about fish that are not all that well known. The aquarist who likes the perch or the tropical glass perch will find common ground with the bass lover. You can set up a tank with a nice gravelly bed, plenty of hiding places and great clumps of *Myriophyllum* and a few broader-leaved plants to add balance. Make sure that the water is alkaline and that it is not too new. Put the tank in a position where it will get plenty of light and not too much warmth, and you have something like the ideal home for these fish. None of them will give you credit for feeding dried food, and that is perhaps where the rub comes. All the same, there are plenty of things they will eat in the worm and insect line, and usually some finely chopped meat will be accepted after the initial uneasy period.

It should not be assumed that terrible things happen during this time, but most of this family seem to be hypersensitive about unfamiliar things and are terribly nervous until hunger spurs them to greater and greater

adventures. Many fishkeepers unfamiliar with the ways of fish always expect them to behave in their own tanks as they saw them behaving in the dealer's, and nothing is usually further from the truth until enough time has passed for the gap to be bridged. Often enough several pounds' worth of fish will glide away to a clump of plants or behind a friendly rock, not to emerge for days. To say the least, this is a little disappointing, and to some the novelty can evaporate very quickly. This is, however, the really critical time, and if you can tempt the newcomers with just the right sort of food when hunger first drags them from their retreats, you are well on the way to establishing that rapport with them that makes all the difference later on.

With the perches and the sunfish and the angels the fishkeeper learns that the hobby is much more of a partnership than the guppy or tetra fan will ever realise. There is intense nervousness and suspicion when the perch takes his first worm from your offering, and it may be weeks before he will feed from your fingers—perhaps never at all. This is something of an art and an understanding, and is distinctly for the patient. I have always thought that the sunfish and bass and perch are the ideal fish for those whose nerves are in greatest need of the solace given by this hobby, since the basic requirements are cheap and simple and the utter dignity of the established tank has to be experienced to be fully appreciated. If you can secure half a dozen little peacock-eyed bass, just try the experiment of training them to feed from your fingers, and I am sure you won't regret it.

As for breeding, I am not at all sure that the prospects are good for the average aquarist, but there is everything to be said for trying. It is quite a problem to sex any of this family, so you will have to take a handful of fish each time if you seriously contemplate their multiplication. The great gaps in our knowledge of the experience of aquarists with these fish since World War 2 prompt me to invite those who can fill them in to do so. I am particularly interested in the size to which aquarium specimens have grown, and their life spans. I suspect that longevity is well established, and that size is in most cases determined by the environment, but details would be read with great interest.



Earlier this year I touched again on the subject of the apparent apathy of the trader and invited members of the trade to give me details of any special facilities that they offered their customers. The response appeared in the March issue of PFM: one solitary letter from Mr Taylor of Exotic Aquaria Supplies of Bradford! I am grateful to him for his consideration for his customers and for his participation in the discussion, but the apathy of his colleagues in the whole of the commercial field speaks volumes. One turns rather sadly away from the issue, regretting that there are so many with so little interest and so lacking in enterprise that they missed a good opportunity of getting some free publicity. Two particular points interested me in the March PFM, however. One was the advertisement from the House of Fishes at Hemel Hempstead, which made it clear that the proprietors are real-time traders, as they state that whilst their hours are such till such, they will be pleased to open at a later hour. That's what I like to see. There

was also an intriguing advertisement under 'Miscellaneous' in which £100,000 was shown for investment in a company associated with the making and selling of products for the home aquarium. I have no inside information on this whatever, but it is coincidental that this appears at a time when a noted entrepreneur in quite another field of leisure is known to be seeking greater opportunities. If it is who I think it is a lot of the present trade will greatly regret their present complacency.



I frequently remind readers of the need for strict quarantine of all fish before they are added to existing collections. It is less often stressed that as near ideal conditions as possible should be provided during the waiting period of 2 to 3 weeks, and it can safely be stated that just any old spare tank is not the entire answer. You should equip the container with normal heating, lighting and furnishing, and it is important that a good scale of feeding should be maintained. This is not to say that food should be overdone, as many importations seem starved and I have seen fish gorge themselves to death after an enforced fast, so that the scale of feeding should be regulated with imagination.

It is always interesting to watch newly released fish in the quarantine tank adapting themselves to the change in environment. Some simply slip into gear straightaway, whilst others sulk behind a rock and do not emerge until days afterwards. Still others begin a wild chase up and down the glass at the rear of the tank and ignore everything else, including mealtimes. The most encouraging sign is from the fish that take food as soon as it is offered, and which seem to disport themselves in their new hunting ground as though they have frequented it for ages. A lot depends on variety, and a lot depends on the temperament of the individual fish, as there is no doubt that not all can be expected to act alike.

A problem that keeps cropping up is the bullying which takes place when just two or three fish are placed in quarantine together and one takes charge. This

results, more often than not, in torn fins, and a minor reign of terror occurs that only passes with the transfer to permanent quarters. This happens with the nicest fish—I have just experienced it with some rosy tetras and some featherfins, neither of which normally come into the quarrelsome category. No amount of cover by way of rockwork or bark seems to make a lot of difference, and I have even introduced spawning mops to provide safe hiding places, but somehow or the other the antagonists get at one another all the same. It is highly inconvenient, and sometimes almost impossible, to go to the extreme of allocating a separate container to every new fish, but this can become obligatory if the scrapping becomes too intense or protracted. At all events the temptation to forego the quarantine period in favour of peaceful relations should be resisted, so never allow yourself to put the warriors in with the rest of your collection, as battered bodies are soon mended but an attack of white spot is not.



I have never been particularly fond of those little round thermometers, as their powers of adhesion to the glass vary greatly and they perpetually fall off. Furthermore, when it took me some three months to get replacement suckers I decided to revert to the conventional tube type, as press stickers are always obtainable for them from one source or another, even if they have to be adapted by rule of thumb methods for the actual purpose. There are aquarists who dislike the tubular thermometers because it is held that they are so ugly when viewed from the front of the tank. However, there is no need to fasten them to the front glass at all. They can be attached to one of the side panels, and if the tube is gently turned towards the front of the tank, the scale suddenly becomes readable as you look, in through the front panel; in some cases the water even gives a slight magnification of the graduations, and this is wonderful help for tired eyes.



In the recently opened coldwater fish section at Queensborough Fisheries, Shepherds Bush, London, Mr D. Larkin has built this aquaterrarium. Tropical fish are shown in the aquarium and above the water level are planted moisture-loving plants in a rockwork and cork bark setting



# GUPPY

## World

OUR hobby is still beset with problems that could so easily be resolved by simple observations made by individuals studying more closely the creatures to whose care they devote so much time. Such studies would also provide an outlet for those fishkeepers getting a little frustrated with the normal round of club and shows.

Questions so often raised by hobbyists, such as: 'Is it harmful to float fish for long periods in sealed plastic bags?', 'does the live-food *Tubifex* worm come in for unwarranted criticism?', and that perennial chestnut guaranteed to enliven any club discussion—'do guppies do better in bare or planted tanks?', could be tackled.

Simple experiments could soon provide the numerical evidence to supply answers to these and many other queries and bring our hobby in line with the constant advancements made in other fields.

An introduction to this work would be the reading of a book (recently reprinted) by Marguerite D. Hainsworth, a lecturer in biology, called *EXPERIMENTS IN ANIMAL BEHAVIOUR*. Though *Poecilia reticulata* are mentioned on but three of its 206 pages, much of the good advice within its pages could easily be applied by the guppy keeper.

For too long guppy breeders have neglected their problems, regarding them rather as one does a bus or streetcar—there will always be another one (answer) along soon. By our efforts let us make sure that guppy breeding keeps to the fore in this 'enlightened' age.

The horror of growing old isn't only the fear of losing sleep, eyesight, teeth and the ability to climb stairs,

§§

certainly not where guppy people are concerned. Their fear is that old age and inactivity will rob them of the energy to cope with the numerous tanks their facet of fishkeeping seems to breed. Not that I recommend large set-ups; they are fine if you can afford the time and necessary cash, but I have so often seen aquarists who have unintentionally created a 'monster' that has gobbled them up.

Shortage of space for one's fish is a topic that has resulted in many humorous cartoons and articles over the years but a story that could have well originated in the pages of *PUNCH*

By PETER UNWIN

actually happened in the States recently and was taken up by a local radio programme. A guppy enthusiast knocked on his neighbour's door and asked if they minded him using their bath—he couldn't use his own because it was full to the brim with an unexpected, extra large brood of guppies!

Talking of baths, with redevelopment on the minds of most local councils these days and demolition becoming part and parcel of city life, many baths from these old houses can often be picked up for a song. They make super aquaria and are especially useful for storing live food.

Just as there seems something wrong about a man driving his own Rolls Royce, the same seems to apply to those aquarists fortunate enough to have the capital to have a fish room constructed for them and to their own specifications, by some professional builder. The do-it-

yourself spirit pervades all walks of life and I've known fishkeepers that have taken more pride in their handiwork than in their fish.

With the do-it-yourselfer in mind, addicts will be interested to read that Dexion is now available on the retail market in kit form. Costing near enough to 70 shillings, each kit contains: six 6 ft. 6 in. lengths of Dexion (125 slotted angle, 1½ in. by 1½ in.); 50 nuts and bolts and a dozen corner plates. Sufficient material to make a strong stand or frame-work 4 ft. by 3 ft. by 2 ft. 6 in.

If you were one of those kids who Freud described as 'repressed' and never did get round to Meccano, you won't be at a disadvantage using this slotted angle steel. It can be cut with a hacksaw and the pieces bolt easily together in a matter of minutes. One advantage is that you can take it down and alter it to suit future plans.

The kits are obtainable from most good do-it-yourself shops.

*A two shilling piece placed temporarily in the aquarium will soon show you whether your male guppies are up to size; the coin measures 1½ in.—the Standards length of the male shoe fish measured from the tip of its nose to the end of the caudal peduncle.*

There are times when I read about guppy folk throughout the world and their reluctance to contribute to the sum total of knowledge and wonder if those club officials supervising the refreshments are putting something enervating in the member's cup of tea! Before you all rush for some notepaper let me clarify that statement.

As a verbal group of aquarists they disseminate information liberally to all, knowledge is handed about unselfishly, and facts as fresh as iced lettuce are discussed at great length into the wee small hours. Let a beginner scream for breeding stock and older breeders become as generous as Doctor Alfred Nobel—but when it comes to putting it all down on paper their efforts remind me of Pop Music that has become a

day-long noise and thus a kind of silence.

There are exceptions, of course, as witnessed in the many good club journals and magazines, and it was one such article from a farmer that made me go back and re-read his words. His farm isn't the normal type agricultural establishment but one for producing earthworms in huge quantities. A reader had

*Did you know that the word Poecilia was first used by Monseigneur Bonaparte, a great nephew of Napoleon?*

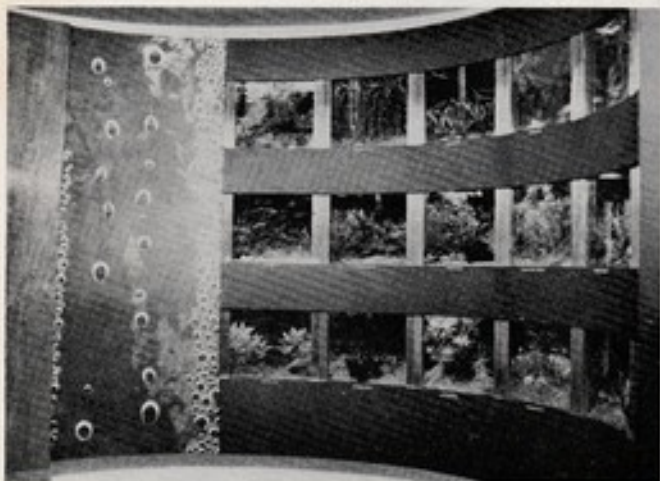
requested that he give a list of foods suitable for feeding to his 'product' so that fishkeepers running their own hatcheries could benefit. Here is the unadulterated list: bread, corn,

cheese, tea leaves and coffee grounds, potatoes, rinsings from milk bottles, weeds, grass cuttings, clover, hay, leaves, most vegetables, bonemeal and, wait for it—a solution of pure soap!

Now I know why most books say that the lowly earthworm has a laxative action for our fish; after all that last-named item is also used as an enema!

## INTERNATIONAL SCENE

# Mansion Houses New Czech Aquarium



In April this year a permanent aquarium exhibition was opened in Brno, Czechoslovakia, in an old mansion house that had been specially renovated. The exhibition, parts of which are shown in the photographs here, forms an aquarists' section of the Brno Zoo and is under the direction of Rudolf Zúkal, well-known Czech aquarist, writer and fish photographer whose work appears in PFM. As well as displaying some of the less common aquarium fishes the exhibition aims to demonstrate to visitors the way aquaria are set up for special purposes and to show fish breeding habits and parental care of the young. Several of the attractive ways in which the aquaria on display are presented are illustrated in these pictures



# Collecting Native Marines

THE first and most important aspect of collecting techniques is personal safety. It is most important that on arrival at the collecting site you check escape routes from the beach, because your life can depend on it. It is all too easy to become so engrossed in collecting that you forget about the tide coming in. It is a mistake that you may have the chance to make only once. I cannot stress enough the importance of knowing exactly how to get off the beach in an emergency, or of keeping an eye on the tide.

An experienced collector soon develops a sort of instinct for tides, as there is a subtle difference in the sounds of receding and advancing waters. There is a distinct change in the tiny currents of the rock pools, and the pools begin to look different as the rocks submerge. Take only what is absolutely necessary for collecting to the pool, and leave everything else above the high tide mark. If you do not take these simple precautions, the least you can expect is wet feet and the loss of gear. Or you might not be so lucky. Having once been almost cut off by the tide myself, I can assure you that it is not by any means an amusing experience. Remember that the tide comes in about ten times as fast as you think it does, and in flat sandy areas matters are worse. As there are fewer reference points, it is much more difficult to detect tidal movements, and once the tide starts coming in, it moves, in most such areas, at the speed the average person can run unladen.

The first and most popular method of capture of fishes is stalking. This involves moving gently through the water and watching carefully. Movements other than those caused by currents are easily recognised, with a little experience. Once a movement is seen one should remain motionless and look carefully until the fish is located. Most fishes are well camouflaged but spotting them also comes easily with experience. Extreme stealth is now called for, as the fish must not be disturbed in any way, and lateral lines are very sensitive. The large net (see last month's article on equipment for collectors) should be placed as near in front of the fish as possible—normally about 6 inches. The fish should then be chased gently into the net from the rear with a small hand net. This method is usually effective in trapping gobies and blennies.

The second method is really a variation on the first. Many fishes hide under rocks, and can be flushed out by turning the rock gently over. This can be repeated until you are in a position to revert to the first method. Please remember to replace the rocks afterwards, as it is so easy to ruin a good collecting area by carelessness. Some rocks will be too heavy to move and the flushing out of the fishes will have to be done by hand. Some collectors, in fact, use their hands for this, and it is the most reliable way, but as one cannot generally see what is under the rock, I consider the method inadvisable. I prefer to use a small hand net or a stick. This avoids crabs large and small, weevils, and other nasties. This

## A survey of techniques for collection of British marine fishes for the aquarium

By T. R. HALL

(International Marine Study Society)

second method usually results in the capture of eels, rockling, gunnels, blennies and *Cottus*.

Both of these methods require clear water, so care must be taken when moving about. Stalking can also be used to great advantage at night with the aid of a torch. The fish is located with the torch, and trapped in the normal way. This is generally easier than daytime collecting, as most fishes go into a trance-like state at low light intensity, and are also to a certain extent mesmerised by the torch. They do not normally, in this state, respond to external stimuli, unless extreme danger threatens. If they do react, they will dart away, and immediately resume their trance state.

### Sweep Netting

The third method is that of sweeping the large net through the water, and usually follows after the first and second methods have been used to the full. Clear water is not necessary, and the method is simpler, and often more productive than the first two. The net may be swept rapidly through the water, either in mid-water or across the bottom. This may produce anything from mullet to pipefish, and rockling to gobies (some gobies, such as the beautiful crystal goby, *Aphia minuta*, swim in mid-water). The net may also be swept along under a ledge, in which case the net should be kept tight against the under side of the ledge. An alternative is to place the edge of the net against the bottom of the pool, about a foot out from, and parallel to, the ledge. The net should then be pushed rapidly forward until it hits the ledge, whereupon it should be dragged sharply upwards, keeping it firmly against the rock. This may also be applied to a rock, wall or breakwater where there is no ledge. The best application for this method is where the ledge or wall is covered with algae. It usually results in the capture of *Cottus*, wrasse, sticklebacks and the interesting juvenile lumpsuckers, *Cyclopterus lumpus*.

The sweep method may also be applied to flat sandy areas to catch flatfishes. For this purpose it is as well to dig the net into the sand while sweeping, or the net is liable to ride straight over the top of the fish. One must also bear in mind the legal restrictions on the removal

of flatfishes under 3 inches long from the sea.

There are five more methods of collecting, which do not really come within the scope of this article, but I will mention them briefly. They are (i) skin-diving, (ii) trapping and trawling, (iii) drugging, (iv) angling and (v) concussion.

(i) *Skin-diving.* There are two basic methods of collecting while skin-diving, the first being with two small weighted hand nets. The fish is trapped between them and transferred to a keep net attached to the diver's belt. The second method is to chase a shoal of fish into a wide drift-type net, which has floats at the top and weights at the bottom, bent into a V shape.

(ii) *Trapping and trawling.* These are really deep-water methods, and the majority of any fishes caught will not be suitable for the home aquarium. Trapping in particular is unsuccessful, as there is very little in the way of suitable bait. Even aniseed does not seem to be very attractive to marine life.

(iii) *Drugging.* Anaesthetics may be poured into rock pools, but the fishes are then difficult to find, as there will be no movements to identify them. My main objection is, however, that this method is likely to destroy the invertebrate and algal life present, and ruin the whole area as far as collecting is concerned. The most common drug to be used is urethane.

(iv) *Angling.* This usually produces larger fishes than can be accommodated in home aquaria. Furthermore, the fishes are damaged around the mouth, and the risk of infection is greater in aquaria than in the sea. They will also be suffering greater shock than fish do after netting, and this too will have an adverse effect on their chances of survival.

(v) *Concussion.* This is carried out by detonating explosives under water. On no account should this method be used, even if you think you are an expert with explosives. It will kill or injure all the fishes, and may do the same for you, or bystanders. It will undoubtedly ruin the collecting area for a long time to come, and will achieve nothing else.

### After Capture

To return to the more acceptable methods of collecting that were described above, one must realise that once the fish is in the net, it is only the beginning, not the end. For the first, second and fourth netting methods, specimens may be removed from the net and placed at once into shallow storage trays.

With the third method, however, it will be necessary to tip the entire contents of the net into a tray for sorting. It is very easy to miss such things as young pipefish and wrasse amongst the rest of the debris when it is still in the net. The storage trays should be kept covered, as seagulls are not averse to free meals. The water in the trays should not be too deep—just enough to cover the fishes—or layers of high carbon dioxide concentration may build up rapidly.

It must be remembered that most marines eat other marines, so be careful which species and sizes are put together. *Cottus* are remarkable for their capacity. If collecting is carried out on a sunny day, the storage trays must be kept in a shady spot, because the temperature of a small volume of water quickly rises to more than the fish will withstand if left in the sun.

When collecting is finished, the fishes must be bagged

up. Polythene bags are ideal for this, as there is less likelihood of bruising than with hard-sided containers. Do not use water from the storage trays as this will have become comparatively foul. Collect the coolest, clearest water that can be found in the pools into the bags. Use only sufficient to cover the fishes, as the air in the bag is more important than the water. Place a very small amount of pure borax in the water, as this will help to maintain a high pH. Place the fishes in the bags, bearing in mind the species and size relationship. A good guide to the number of fishes to pack is 1 inch of fish to 1 inch width of polythene bag, but, of course, this is an average figure, which will vary considerably according to species. The bag must be closed, trapping as much air as possible. This must never be less than twice the volume of water. The top of the bag should be twisted together and either knotted or folded and fastened with a rubber band. When packing *Cottus* it must be remembered that they have vicious opercular spines, capable of inflicting severe wounds on unarmoured fishes. They are also likely to puncture polythene bags, so it is customary to place the first bag inside a second.

Before leaving the collecting area, the specific gravity of the water should be tested, as it is inadvisable to subject any fish to a change of more than 0.003 either way. Most fishes will stand much more than this, but it does not do their body chemistry a lot of good for them to suffer it.

The quicker that the fishes are transported home after packing, the better the results will be. The fishes should be removed from the bags, and placed in the tank as soon as possible. Heavy aeration is advisable for the first few hours. If the water temperature in the bag is low, and that in the tank is high, it will be necessary to float the bags for about 15 minutes before release. The reverse, however, is not true, and the fishes will accept a sudden cooling without trouble.

The collecting of your own native marine specimen is a very rewarding aspect of the hobby, and the fishes are more interesting than most people think.



'Bring it back, he said,  
if it gets too big!'

## Readers' Queries Answered



### Newts in the Aquarium

*Would it be quite safe to keep newts in with my goldfish in their tank? Will either harm the other?*

Goldfish may very well eat newt tadpoles, and newts can certainly be tempted by goldfish fry. But in any case, it would be much better to provide a separate tank for the newts and set it up specially for them. April to June is the time of year when they can most suitably be kept in an aquarium. It is the breeding season and they must return to the pond for this purpose. In the pond, newts breed in quite deep water, but they will breed in an aquarium and it is not difficult in the spring to acquire a pair—in the common species the males are more colourful and carry a crest along the top of the back and tail. The tank can contain a substrate of gravel or sand, a good supply of pond weed and a rock platform or floating cork platform upon which the newts can get out of the water. Above all, a net covering or very close-fitting cover must be supplied as adult newts are adept at escaping from a tank, whereupon, inside a house, they quickly become desiccated and die.

After the spawning, when the female lays her eggs on the water plants, adult newts leave the water quite soon. In the pond, this will take place in June. The larvae hatch out in 2 or 3 weeks and metamorphosis is complete within 3 or 4 months when the young newts will also move out on to the land.

### Cosby Gourami

*I have recently bred from a pair of three-spot gouramis (Trichogaster trichopterus). Amongst the offspring is one Cosby. Could you tell me the odds of throwing this sport, please?*

We do not know of any data that would enable the odds of the Cosby variety appearing in a blue gourami

stock to be calculated. However, the likelihood of mixed ancestry in aquarium stocks is now very high and the Cosby variety turns up much more frequently than might be expected.

### Kasenga

*My dealer has some fish called 'kasenga', which he says were so named by his importer. I cannot trace this name in my books.*

This is an African word signifying fish that are too small to be used for eating. It is likely that your fish could be species of *Neolebias* or *Nannaethiops*.

### Preserving Fish

*Can I preserve fish that die, by some simple procedure?*

You will find the booklet published by the British Museum of Natural History of most help to you: INSTRUCTIONS FOR COLLECTORS NO. 3: FISHES. It can be bought at the Museum in London or ordered by post. It provides all the techniques and information you will need.

### An Unusual Plant

*My aquatic shop is selling a plant that looks rather like what I used to call 'creeping jenny'. We did once have a great supply of this on our rockery. Can it really be grown in the aquarium?*

Yes it can. *Lysimachia nummularia* (also known as moneywort) grows widely in damp earth but does produce a submerged form if kept beneath the surface. It makes a most attractive plant, with its pale, bright green leaves, in a goldfish or fancy goldfish tank. In tropical tanks it tends to deteriorate gradually and become spindly because the heat is excessive for its requirements, but as replacements are easily acquired it will serve quite well as decoration in the tropical tank.

### Curly Body

*One of my scissortail rasboras has developed what is best described as a corrugated effect seen on looking down on the fish from above. The zig-zag effect is severe, shortening the fish to about two-thirds its normal length. No other fish are affected in this way and this particular fish is quite lively. Can you tell me what this condition is?*

The corrugated appearance that the fish has developed is almost certainly due to a muscular or spinal deformity. This is not a rare occurrence in tank-bred fishes. It could be due to the intensification of a malformation at birth, to poor conditions suffered in its early existence, to hereditary factors—there are many possibilities. The fish could continue to live for a reasonable time and need not be destroyed provided that it remains lively and feeds well.

### Malayan Sword Plants

*Although Malayan sword plants are easy to obtain I seem to have no success in growing them. Either the plant stays the same height or the leaves fall off the stalk. Does it require special conditions?*

Malayan sword plants (*Aglaonema simplex*) are tropical bog plants. When imported, they have probably been growing emerge and do not swiftly adapt to growth in a submerged condition. They will adapt but require a lengthy adaptation period. Give them all possible assistance by planting in a small pot of rich loam (covered with gravel) placed in a good light.

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*WHEN Mr Bernard Bromfield, known to members of COVENTRY P. & A.S. as 'Coventry's Coldwater King', spoke to the Society recently he explained that when he spawned his favourite shubunkins and veiltail goldfish in indoor tanks, thick nylon mops were suspended from the surface of the water by attaching them to polystyrene tiles. No plants were used. Most of Mr Bromfield's fish are wintered indoors and their varied diet includes dried food, biscuit crumbs and scraps of ham and bacon.*

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**P**ART of the secret of success of the American Way Of Business has been the abilities of those it employs to think big—to plan and put into production, for consumption by the world's markets, goods that would never have passed the suggestion stage in the credit-squeezed boardrooms of their European counterparts.

One U.S. company famous for its 'status' products won a large Press coverage last year when it announced 'His' and 'Her' aeroplanes for sale. Perusing the latest catalogue from Neiman-Marcus shows that they haven't stopped at flight but have now entered the fish business with dual aquariums suitably labelled.

Measuring 13½ in. by 15½ in. by 11½ in. (the last figure referring to the depth) the two complete set-ups can be purchased for around £900! Most aquarists will accept the fact that saltwater tanks require more skill to maintain than freshwater, so by advertising 'Hers' as the former, the firm seems to indicate that the ladies make better fishkeepers than we mere males—a fact my wife has been telling me for years.

Just in case any of our readers are so hypnotised by the status ladder, and wealthy enough to no longer care where it leads to, the catalogue also lists fish tanks with cultured pearls instead of the conventional gravel. These start from £9,000 upwards!

Cleaning the drains at homes with these aquaria installed would prove to be at least a profitable if still not a pleasant task!

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Many of the dissertations by scientists working for doctorates are sources of valuable knowledge to the

## Transatlantic TOPICS

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By JIM KELLY

fishkeeper and lucky is the group that can persuade such a scientist to tell them about his work. Such was the case when Dr Arthur A. Myrberg from the Miami Institute of Marine Sciences, an expert in fish behaviour, addressed the South Florida Aquarium Society. His findings concerned his work with three types of cichlids whilst employed at the Marine Institute of California. The three fishes were *Hemichromis bimaculatus* (jewel fish), *Cichlasoma biocellatum* (Jack Dempsey) and *C. nigrofasciatum* (the Congo or convict cichlid).

Dr Myrberg, discussing the various aspects of cichlid behaviour, said it was pretty evident from the findings that these fishes behave and act similarly to human beings—the cichlid was the only other animal apart from man that kills for the sake of killing. Charts illustrating the various times required for their eggs to hatch out showed that these varied from 50 hours at high temperatures to 3 days at the low.

The sounds these fishes made had also been studied and the speaker claimed that, in most of the *Cichlasoma*, noises were caused by both the pharyngeal teeth in the throat and by muscular contraction and expansion of the swim bladders of the fishes.

\* \* \*

If you are contemplating building a large marine set-up then here is a source of some advice for you. 'Some Guides to Designing, Building and Operating Salt Water Aquarium Systems' is a 36-pages publication by Triton Aquatics that has brought together under one heading most of the requisite information on the subject found in a dozen other books. If you are interested, and I once more stress it, in building a large set-up of, say, over 100 gallons minimum capacity, then write for a copy of the booklet to: Triton Aquatics Inc., 1435 Haines Road, Levittown, Pa., 19057, U.S.A. It is advertised as free to those domiciled in the States, but readers elsewhere

should send an International postal coupon towards the postage.

\* \* \*

Those of us fortunate enough to have received a present from aquarist friends abroad know that to help us to avoid paying any customs duty the sender thoughtfully marked the parcel: 'unsolicited gift'. On the surface that word gift seems harmless enough but not apparently amongst the German speaking populace of the Swiss town of Zurich.

Claiming that someone in America was trying to poison her, an irate woman rushed into the local police station brandishing a parcel she had just received—her proof was that the package plainly bore the word 'gift', which also happens to be the German word for poison! Those fishkeepers contemplating sending fish to German shows this year please note!

\* \* \*

'Everyone has a job to do', seem to be the battle cry of the organise hobby in the Americas. Apart from the normal list of officers, some U.S. groups list a very impressive number of committees all geared to providing the membership with brighter and more interesting programmes.

Committees that include the taking care of auctions, table show outings, bye-laws, programme planning and monthly magazines. Chairmen, whose sole task is to concern themselves with the welfare of the members and look to their need from history, hospitality and refreshments, not even neglecting the odd occasion when a Sergeant-at-Arms is required to oust a member who starts to get obstructive.

An excellent article by K. Prince entitled: 'Clubs Can Be Fun' appeared in the now defunct *AQUARIUM ILLUSTRATED*, and posed the question—'What is your aquarium club offering its membership . . . evening of recreation or a night school?'

To be successful I should imagine you have to provide both. A whilst providing, don't forget the who have palmed at winning trophies and those whose education has long since gone beyond the 'Beginner's Guide' type of lecture.

# The Leopard Danio



An egglayer for community and breeding tanks

NEVER has there been such a furore as there was over the naming of this fish, in the worlds of both the ichthyologists and amateur fishkeepers. Many believed it was a species from India; others were convinced that it was a mutation from *Brachydanio*, or even a cross between *Brachydanio rerio* (the zebra danio) and *Brachydanio nigrofasciatus* (the spotted danio).

The facts are that the species appeared for the first time in Prague in 1961 in a dealer's tanks and was bred in Prague; it was named *Brachydanio frankei* by Herr H. Meinken in honour of the eminent biologist, Hanns-Joachim Franke. The progeny showed and retained the characteristics of the parent fish and it was found that these characteristics reproduced, without any other colouring becoming noticeable, in the descendants. *B. frankei* is similar to the spotted danio in colouring but its body shape is closer to that of the zebra. Herr Meinken established that the fish is closely related to *Brachydanio tweediei* Britton (1958) but

By RUDOLPH ZUKAL

Photographs by the author

is not identical with it. Earlier specialist literature reports that various hybrids are reproducible and that *B. frankei* crosses well with *B. rerio*; the progeny from this crossing can be reproduced. *B. frankei* is known to British, German and American aquarists as the leopard danio and to the Czech aquarist as the golden danio.

It is an ideal fish for the average aquarist to keep for it is undemanding, peace-loving and sociable. In a medium-sized well-planted tank, with plenty of clear swimming space and a water level that is not too high, the fish keeps well and happy, though, as a shoaling fish, it prefers to be in the company of a number of its own species.



The male leopard danio (left) chases the female and displays in front of her whenever she ceases swimming. As can also be seen from the picture on the preceding page, the female is considerably plumper than the male.

At a temperature of 68°F (20°C) it is a varied feeder.

Breeding presents hardly any problems. It is very easy to recognise the sexes in the adult fish: the male is slim and somewhat smaller, the female more rounded and the brighter coloured. A glass tank can be prepared with bunches of fine-leaved plants but without sand. This is important; the leopard danio must not be allowed to spawn over a sandy base. Ordinary tapwater should be left to stand and brought to a temperature of about 78-80°F (26°C). The male can then be placed in the tank, and the female added on the following day.

It is often advised that more than one male should be present, but personally I do not agree with this. I did once put in another male but the first male was so bothered about the presence of its invading rival that their interest in the female was considerably lessened. I also noticed that with two males many of the eggs were not fertilised.

Spawning usually takes place in the early morning. At first, the fish swim through the tank and settle themselves in. Then the male tries to get alongside the female, after displaying in front of her and spreading his fins. At this stage the female holds off the male and repels him but in the next phase the male adopts the aggressive position and drives the female. This is a very important phase, because during this chase and the fast swimming involved the female's vent is relaxed. The male draws closer until contact is made. The female selects the spawning site and the male follows her to it. Everything then happens very quickly. For just a split second the bodies of the two fish cling together, the male embraces the female with his caudal fin and the actual spawning takes place. The fish separate and the eggs fall to the bottom or sometimes as the fish twist

around each other, in the swirl the eggs float free in the water. The spawning position is varied and can be quite near the tank's base.

Once spawning is completed the parent fish must be removed, as they are spawn-eaters. The eggs are comparatively large and the young hatch within 36 hours and are free swimming on the sixth or seventh day. From then on the fry will take any kind of fine food.

From spring until autumn the fish will spawn



Before the spawning embrace the male gently bumps the female, who selects the site at which spawning will take place.

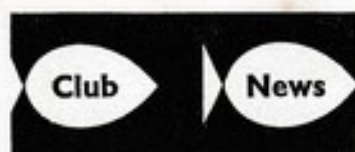
about every 14 days, and it is a process that should be allowed to take its course even if one does not particularly wish to propagate them at that time. If they are not encouraged to spawn the female may become egg-bound and then cannot be used for breeding later. For this reason, young 6 months-old fish are the most suitable and the most productive spawners.



In the picture above the pair are seen in the embrace well above the tank bottom; in the picture to the left the embrace is about to occur immediately over the compost

Below: the eggs sink as they are deposited but as shown in this picture they are often swirled about in the water by the movements of the pair after the embrace





PIES and peas provided by the Society to all attending made the second anniversary meeting of **ROTHERHAM & D.A.S.** a very pleasant occasion, when the Society's annual trophies were presented. Mr A. Ward received from Mr C. Turner the Harrison Rose Bowl for the most entries and most points collected during the year. Mr Turner himself received two plaques to replace the trophies he had received last year. The All Winners trophy was awarded to Mrs C. Raybould for the best fish shown during the past 4 months.

The club has enjoyed a show of slides taken of members' tanks and of the 1967 B.A.F. and a plant quiz and tape lecture on plants and propagation arranged by Mrs A. Harrison.

**HONORARY** secretary of **HENDON & D.A.S.**, Mr Keith Purbrick, writes to fellow hobbyists as follows: 'Hendon are pleased to see that many other societies are following in our footsteps by producing tape and slide programmes for fellow clubs. We are pleased to announce that, beside our current programme for hire, we have produced some more that are now available. Please write to our Services Secretary for details: Mrs Patricia Gorman, 341 Honeyput Lane, Stanmore, Middlesex. Pat loves to receive and write letters, so write soon.'

'Pat's husband, Joe (our ex-show secretary) has just succeeded in spawning his discus, and also photographing them in colour actually spawning. Joe, to boot, is a brilliant photographer, and we are currently producing a new tape and slide programme in which some of these superb pictures will be shown.'

On the competitive side of the hobby, Hendon recently visited **HAMPSTEAD & D.A.S.**, who were host for the first round of the year of the North West London Group of Aquarist Societies Competition. We were pleased that we did very well. The pointing for the evening was Hendon 22, Independent 13, Brent 13, Riverside 9, Hampstead 6.

'If you are coming our way on any Thursday evening we would be pleased to see you at our meetings (venue as for open show at the Brotherhood Hall, Edgware Road, West Hendon—just past the premises of Schweppes, if travelling towards London from the north)—we love

people and talking about fish! We meet every Thursday and take great pride in the fact that at each of our 52 meetings a year a full lecture on fishes or on some aspect of the hobby is given. If you are old or new to the hobby and are in accessible reach to us, please come along—we would be pleased to see you.'

AT the **THURROCK A.S.** open show Mr A. McCarthy of Catford was presented with the F.B.A.S. trophy for rasboras. The Nicoll trophy for the best breeder's team went to Mr T. Gillman (Bethnal Green) and the Essex Cup for best livebearer to Mr D. Cheswright (Southend). Mr A. J. Clack of Medway was awarded the Durrant Cup for best catfish or loach and to Mr R. Kerridge of Harlow went the President's shield for the best characin. The best labyrinth (Apple- yard trophy) belonged to Mr J. D. Wilson and the best in show award (Thurrock Cup) and best egg-layer award went to Mr P. Todd of East Dulwich. Thurrock themselves won the Tops trophy with 45 points (2, Southend A.S. 42; 3, Catford A.S. 27). Class winners at the show were:

Guppy, female, 13 entries: Mr L. Goff (F.G.A., 79). A.o.s. livebearer, 13 entries: Mr M. Clarke (Kingston, 81). A.o.s. cichlid, 12 entries: Mr D. C. M. Durrant (Thurrock, 79). Guppy, male, 15 entries: Mr S. T. Norris (Southend, 78). A.s. rasbora, 22 entries: Mr A. McCarthy (Catford, 85). A.v. fighter, 11 entries: Mr D. C. M. Durrant (Thurrock, 79). A.s. barb, 16 entries: Mr J. E. Bellingham (Tonbridge, 86). A.v. angel, 8 entries: Mr P. Todd (E. Dulwich, 86). Egg-laying toothcarps, 16 entries: Mr D. C. M. Durrant (Thurrock, 84). Dwarf cichlids, 16 entries: Mr B. G. Dunn (Southend, 80). Mollies, 25 entries: Mr D. Cheswright (Southend, 87). A.o.s. tropical, 17 entries: Mr A. W. Collings (B.G.A.S., 88).

Swordtails, 21 entries: Mr F. E. T. Smith (Catford, 80). A.v. platy, 13 entries: Mr R. Steenbergen (B.G.A.S., 79). A.o.s. catfish/loach/oel, 20 entries: Mr A. J. Clack (Medway, 87). Characina, 47 entries: Mr R. Kerridge (Harlow, 84). Breeders egg-layers, 21 entries: Mr G. Eaton (Thurrock, 74). Breeders livebearers, 14 entries: Mr T. Gillman (Bethnal Green, 75). Furnished aquaria, 12 entries: Mr K. Appleyard (Thurrock, 73). A.o.v. labyrinth, 40 entries: Mr J. D. Wilson (Catford, 84). Corydoras catfish, 21 entries: Mr S. G. T. Stamp, 79. Danio and minnows, 16 entries: Mr C. Waldock (Blackwater, 86). Sexed pairs, 25 entries: Mr J. D. Wilson (Catford, 82).

*AN invitation is extended to all aquarists in the South Wales area by HARLECH A.S. to attend the lecture by Dr. J. Neville Carrington, Managing Director of Inter-Pet, on 'Modern Techniques in Fishkeeping'. The meeting is being held on Tuesday, 15th July at the Gabalfa Junior School, Colwill Road, Cardiff at 7.30 p.m. To facilitate seating and refreshment arrangements, secretary Mr M. J. Parry would be glad if those interested would contact him at 57 Caerou Court Road, Ely, Cardiff.*

**FISHKEEPERS** in the Guildford area who would like to learn more about their hobby in a pleasant, friendly atmosphere are invited to obtain details of the **GUILDFORD & D.A.S.** from secretary Mr J. D. Cole, 16 Weydon Hill Close, Farnham, Surrey. The Society meets on the second and fourth Wednesday of each month and at recent meetings much information has been imparted to members on a variety of subjects. Three club members themselves gave short lectures on the lighting, heating and filtration problems most likely to be encountered and at the talk by Mr Katritsky, the well-known plant expert, much advice was sought after and freely given. Mr Katritsky illustrated his lecture with many slides of plants of a size and condition few had seen before and the 'tour' of Mr Katritsky's greenhouses and garden left the viewers full of admiration and envy. Another well-attended meeting was the inter-club show with **WOKING** and **FARNBOROUGH** clubs at which Woking gained the most points and Farnborough came second. During the judging there was a lively and amusing discussion on the advantages and disadvantages of using tap water in community tanks. Opinions were freely given, though these did not result in any conclusions being drawn.

**THE BEST** fish in show award at the **BURY & D.A.S.** open show went to Mr A. Beasley of Ostram for a fighter. 256 entries were received from a wide area and the Society's vice-president, Mr R. H. Baker, presented the awards to the following class winners:

Guppies: Mr W. J. Orton (Salford). Platys: Mr I. Wood (Bury). Mollies: Mr and Mrs J. Heap (Belle Vue). Swordtails: Mr R. Wilkinson (Halifax). Small characins: Mr R. Wilkinson (Halifax). Large characins: Mr N. Turner (Mixenden). Small barbs: Mr N. Valentine (Independent). Large barbs: D. and R. Standen (Loyne). A.o.v. cichlids: D. & R. Standen (Loyne). Dwarf cichlids: Mr and Mrs M. Brown (Mixenden). Fighters: Mr A. Beasley (Ostram). A.o.v. labyrinths: Mr and Mrs M. Brown (Mixenden). Rasboras, danios and minnows: Mr and Mrs P. Webb (Salford). Egg-laying toothcarps: Mr W. Chapman (Valley). Sharks & flying foxes: Mr S. Harrap (Ostram). Pairs, livebearers: Mr R. Wilkinson (Halifax). Pairs, egg-layers: Mr and Mrs M. Brown (Mixenden). Breeders, egg-layers: Mr D. Whitehead (Blackpool). Breeders, livebearers: Mr W. J. Orton (Salford). A.v. aquatic plant, rooted: Mr A. Beasley (Ostram). A.v. aquatic plant cutting: Mr T. Hardman (Bury). A.v. tropical: D. & R. Standen (Loyne). A.o.v. coldwater: Mrs K. Buckley (Bury). Angels: Mr A. Moy's (Leigh).

**ONCE AGAIN** the problem of finding a suitable date for a society's open show in the crowded open-show calendar has resulted in the hurried re-arrangement of show



dates. This time **HEYWOOD & D.A.S.** found that another society in the same area had also decided to hold their open show on the date that Heywood had chosen. The Society apologises for any inconvenience that may have been caused by this alteration and regret that it was entirely unforeseen and beyond their control. However, although their own date had to be brought forward by 2 weeks, their show was well supported and included an excellent showing from the juniors. Mr Eddie Hopkinson, the Bolton Wanderers and ex-England International footballer, presented the awards.

The Curator of Belle Vue Zoo, Mr Taylor, has recently given a very entertaining talk to the Society and the club is also looking forward to a lecture by the northern inspector of the R.S.P.C.A. The committee is at present investigating the possibility of installing an aquarium in the foyer of the town library which, as well as giving pleasure to the library's users, might well act as a source of new membership to the club.

**CLASS winners at the STOCKTON-ON-TEES A.S. open show were as follows:**

Furnished aquaria: Mr L. Collins. Furnished jars: Mr G. Scarth. A.V. fighter: Mr D. Keighley. A.O.V. labyrinth: Mr K. Dodd. A.V. cichlid, large: Mr W. Bowman. A.V. dwarf cichlid: Mr and Mrs Clemmet. A.V. barb: Mr and Mrs Clemmet. A.V. characin: Mr C. Beck. A.V. platy: Mr L. Collins. A.V. swordtail: Mr B. Walls. A.V. mollie: Mr J. Turnbull. A.V. guppy: Mr K. Hickford. A.V. scavenger: Mr L. Collins. A.V. egg-laying toothcarp: Mr G. Scarth. A.V. rasbora-danio: Mr B. Walls. A.O.V. fish: Mr D. Keighley. A.V. breeding pairs (egg-layers): Mr B. Walls. A.V. breeding pairs (live-bearers): Mr T. Walls. Breeders class (egg-layers): Mr G. Scarth. Breeders class (live-bearers): Mr J. Turnbull. A.V. coldwater: Mr K. Hickford. Junior class: Mr M. Black.

The best fish in the show was judged to be the *Callichthys callichthys* shown by Mr L. Collins.

**THE CHAIRMAN OF NEW FOREST A.S.** reported on a year of steady progress at the club's A.G.M. The annual award winners were: Mr A. Williamson (Tropical Points trophy); Mr D. Letts (Coldwater Points trophy). Mr D. Hare (Champion Tropical); Mr M. Lee (Breeders trophy). Mr L. Menhennett (Champion coldwater); Mr A. Williamson (tropical furnished aquaria); Mr A. Williamson (coldwater furnished aquaria).

Mr A. Williamson was elected the new chairman, and Mr D. Tuckwell the new treasurer. Other members of the committee are: vice-chairman, Mr C. Knapp; secretary, Mr R. Travers (Aukland Avenue, Brockenhurst, Hants.); show secretary, Mr D. Harding; assistant, Mr R. Mosley; committee members, Mr M. Lee and Mr K. Hinton.

Dukeries A.S. president, Mr J. Hutchinson (left) congratulates Mr Eadon of Sheffield on winning the Best Fish in the Show award at the Society's first Open Show



27 **AQUARIST** societies were represented at the first open show held by **DUKERIES A.S.** 274 entries were received and judges Mr A. Linley, Mr B. Winter, Mr P. Moorhouse and Mr A. Abdy gave the best fish in the show award to the fancy goldfish entered by Mr Eadon of Sheffield. First award winners in each class were:

Sweettails: Mr and Mrs Burnap (section winners, Aireborough). Guppies: Mr Thickbroom (Castleford). Molliés: Mr and Mrs Burnap (Aireborough). Platy: Mr Kennedy. Small barbs: Mr and Mrs Buxton (section winners, Barnsley). Large barbs: Mr J. A. Whiteley (Aireborough). Small characins: Mr and Mrs F. Buxton (section winner, Barnsley). Large characins: Mr J. A.

Whiteley. Egg-laying toothcarps: Mr D. Wras (section winner, Alfreton). Danios, rasboras and minnows: Mr S. Gerard (section winner, Alfreton). Labias, flying foxes: Mr Scarff (section winner, Selby). Dwarf cichlids: Mr D. Jackson (Dukeries). Large cichlids: Mr Kennedy (section winner, Bradford). Angels: Mr A. Hudson (Wakefield). Catfish and loach: Mr Ellis (section winner, Independent). Loach: Mr R. Walker (Sheffield). Anabantids, fighters: Mr Kennedy (section winner, Bradford). A.V. anabantids: Mr M. Woodley (Dukeries). A.O.V. tropical: Mr D. Jackson (Dukeries). Pairs, egg-layers: Mr D. Jackson (section winner, Dukeries). Pairs, livebearers: Mr Walker (Leicester). Breeders, livebearers: Mr J. Linzey (Stocksbridge). Pairs, egg-layers: Mr Brailsford (section winner, Sheffield). Juniors: Stephen and Janet Buxton (Barnsley). Coldwater fancy: Mr Eadon (section winner, Sheffield). A.O.V. coldwater: Mr Hamnett (Ashton).

**THE ANNUAL** convention and open show of the **MIDLAND ASSOCIATION OF AQUARISTS' SOCIETIES** that was staged by the **MIDLAND AQUARIUM AND POOL SOCIETY** proved to be the most successful in the Association's history so far. Over 400 entries were benched from societies and individuals from all over the Midland area. Added attractions were the separate show staged by the **BIRMINGHAM SECTION** of the **FANCY GUPPY ASSOCIATION** and the display put on by the **BRITISH KILLIFISH ASSOCIATION** showing many varieties of killifish bred by Association members. During the proceedings the assembly was addressed by two very well-known aquarists. Mr Roy Skipper lectured on the breeding and rearing of discus and Mr T. J. Horeman, just returned from an extensive Far Eastern tour illustrated his lecture with actual specimens of new varieties of aquatic plants and with colour slides of many others.

The block and gavel award for the society gaining most awards was made to the Midland Aquarium and Pool Society, who obtained five firsts, two seconds, four thirds and two fourths. Mr and Mrs Cox of Nuneaton & D.A.S. won the M.A.P.S. Cup for society members gaining most awards. The M.A.A.S. Memorial Rose Bowl for the best tropical exhibit was awarded to the

*Abramites microcephalus* belonging to Mr and Mrs Pearson (Rugby & D.A.S.) and Mr T. L. Dodge of M.A.P.S. won the Convention Cup for the best coldwater exhibit. First award winners were:

Decorative aquaria: Wolverhampton A.S. Aquatic plants: Mr and Mrs Cox (Nuneaton). Breeders tropical egg-layers: Mr J. B. Colwell (Wolverhampton). Breeders tropical livebearers: Mr R. Trippas (N. Works.). Breeders - coldwater: Mr T. Young (M.A.P.S.). Coldwater, goldfish: Mr A. C. Emery (Haden A.S.). Coldwater A.O.V.: Mr T. L. Dodge (M.A.P.S.). Anabantids: Mr J. Fellows (M.A.P.S.). Barbs: Mr J. Fellows. Barbs, A.O.V.: Mr L. G. Wilkes (H.A.S.). Characins over 3 in.: Mr J. Pearson (Rugby). Characins under 3 in.: Mr K. Edkins (Nuneaton). Rasboras, danios, White Cloud minnows: Mr D. T. Davies (Bedworth). A.V. toothcarp: Mr G. Steed (Tamworth Killifish Society). Dwarf cichlids: Mr B. Edwards (Northants.). A.O.V. cichlids: Mr R. J. Hough (North Works.). *Corydoras* catfish: Mr S. Dean (Tamworth K.S.). A.O.V. catfish and loach: Mr T. Gregory (Haden A.S.). Guppies, Mr and Mrs Cox (Nuneaton). A.O.V. livebearers: Mr Tedds (Bedworth). A.O.V. tropical fish: Mr Woolbridge (Coventry).

**THERE** was a 'full house' in the club rooms when **KEIGHLEY A.S.** held their annual inter-society show. The home club tied with Bradford A.S. to win 19 points and joint first place (second, Aireborough, 17; third, Mixenden, 15; fourth, Bold Privateers, 8). Mr Greenwood of Bradford won the best fish in the show award. Other first-award winners were:

Livebearers: Mr Bickle (Keighley).

Barbs: Mr and Mrs Brown (Mixenden). Characins: J. & R. Robinson (Aireborough). Cichlids: Mr Kennedy (Bradford). Anabantids: Mr Fairclough (Bradford). Catfish and loach: Mr Holdsworth (Privateers). Carp and minnows: Mr Monk (Aireborough). Sharks and foxes: Mr White (Keighley). Toothcarps: Mr Dixon (Mixenden). A.o.v.: Mr Greenwood (Bradford). A.v. breeders: Mr Dixon (Mixenden). A.v. pairs: Mr and Mrs Brown (Mixenden). Coldwater: 1, 2 and 3, Mr and Mrs Moorhouse (Bradford).

A TEXAS cichlid won the best fish in the show award for Mr I. J. Perman of Gosport A.S. at the WINCHESTER & D.A.S. open show. This was the Society's second show and the successful first-award winners were:

Angels: Mr A. G. Cox (Weymouth, silver angels). Platys: Miss C. Littleproud (Gosport, red platy). Mollies: Mr M. Mansbridge (Southampton, black). Swordtails: Mr P. H. Halliwell (tuxedo). Guppies (male): Mr C. Beets (Portsmouth). Guppies (female): Mr C. Beets (Portsmouth). Labyrinths: Mr D. V. Jones (Winchester, leeri gourami). Characins: Mr A. G. Cox (Weymouth, *Abramites microcephala*). Barbs: Mr A. G. Cox (Weymouth, *B. arvalis*). Danios, rasboras, minnows: Mr P. Tee (Brighton, yellow-tail rasbora). Egg-laying toothcarps: Mr R. N. Wynd (Farnborough, *Aphyosemon australe*). *Corydoras*: Mr G. T. Horton (Weymouth, *C. julia*). A.o.v. catfish: Mr D. Rogers (Weymouth, *Synodontis alberti*). Loaches, botia: Mr P. Tee (Brighton, *B. lacustris*). A.o.v. tropical: Mr M. J. Ellick (Gosport, spotted *goby*).

Common goldfish: Mr V. Voysey (Salisbury). A.v. shubunkin: Mr V. Voysey (Salisbury). Doubletails: Mr D. Stokes (Portsmouth, oranda). A.o.v. coldwater: Mr V. Voysey (Salisbury, tench).

Tropical egg-layers, breeders: Mr T. Walker (Guildford). Tropical livebearers, breeders: Mr P. Tee (Brighton, mollies). Tropical pairs: Mr T. Walker (Guildford, *Aphyosemon gardeni*). Furnished tropical aquaria: Winchester A.S. Furnished tropical individual, Mr J. Rowe (Southampton).

The Society meet every other Friday at the Cricketers Inn, Bridge Street, Winchester, and new members and friends are assured of a warm welcome.

A HAND-CARVED wooden shield is the trophy competed for by YEOVIL & D.A.S. and TAUNTON & D.A.S. at their annual inter-club table show. This is held each year on a home-and-away basis and this year Yeovil were the hosts. Two entries from each club are submitted in each of 16 classes. This year Yeovil retain the trophy (37 points against Taunton's 25). First-place award winners who contributed to this result were:

Fancy coldwater: Mr V. Collins (Y). Coldwater, 7 in. limit: Mr S. Langdon (Y). Swords: Mr F. Bilton (Y). Cichlids: Mr A. Cavill (T). Platys: Mr C. Milton (T). Mollies: Mr Gaylard (Y). Labyrinths: Mr T. Perry (Y). Guppies: Mr J. Hulbert (Y). A.o.v. egg-layers: Mr A. Cavill (T). Characins: Mr N. Stainer (Y). Barbs: Mr A. Cavill (T).

MR R. WALKER of Sheffield was the competitor who obtained the highest number of points at this year's YORK & D.A.S. open show.

**We regret to report the death of Mrs H. Dornie, of Worksop. The Association of Yorkshire Aquarist Societies wishes to extend their deepest sympathies to Mr Dornie and members of the Dukeries A.S. and in this we know they are joined by aquarists from all parts of Britain.**

The best fish in the show was judged to be the orange chromide entered by Mr and Mrs J. & H. Dornie (Dukeries), which was awarded 86 points. Class winners were:

Guppies: Mr G. Thickbroom (Castleford). Mollies: Mr T. Collinswood (Hull). Swordtails: Mr and Mrs Burnap (Aireborough). Platys: Mr and Mrs Dornie (Dukeries). A.o.v. livebearer: Mr P. Haigh (Swillington). Barbs up to 3 in.: Mr F. Buxton (Barnsley). Barbs over 3 in.: Mr M. Allison (York). Characins up to 3 in.: Mr F. Buxton (Barnsley). Characins over 3 in.: Mr J. A. Whitely (Aireborough). Carps and minnows: Mr P. Reynolds (Swillington). Rasboras and danios: Mr Rimmer (Hull). Sharks & flying foxes: Mr Scull (Selby).

Siamese fighters: Mr R. Walker (Sheffield). A.o.v. anabantids: Mr E. Whitlock (Tadcaster). Cichlids, dwarf: Mr and Mrs Dornie (Dukeries). Cichlids, a.o.v.: Mr and Mrs Hargreaves (York). *Corydoras*: Mr Sutcliffe (York). Catfish, a.o.v.: Mr P. Carey (York). Loach: Mr M. Allison (York). Egg-laying toothcarps: Mr Curle (Independent).

Breeders livebearers: Mr G. Monk (Aireborough). Breeders egg-layers: Mr F. Buxton (Barnsley). Matched pairs livebearers: Mr G. Thickbroom (Castleford). Matched pairs egg-layers: Mr R. Taylor (Aireborough). A.o.v. tropical: Mr P. Carey (York). Coldwater a.v.: Mr Eadon (Sheffield). Furnished show jars: Mrs Hardman (Cleveland).

AT the SWILLINGTON A.S. second quarterly members' show Mr and Mrs Stringer received the W. R. Gawthorne trophy in the a.o.v. catfish and loach class, their entry being judged best in the show. Mr D. Dickson received the Whiterose trophy for anabantids, and Mr G. Binks was awarded the A. F. Gawthorne trophy (*Corydoras* catfish) and the Ladies trophy (characins). While Mr Skinner was judging the entries, club members were enjoying the talk on the golden tetra (*Hemigrammus armstrongi*) given by Mr R. Stringer.

At other recent club meetings a varied programme has been prepared for members. Mr W. Gawthorne presented a quiz, a breeders' panel was set up to answer questions and problems on breeding fish and at a short talk on several unusual and rarely-seen fish examples of these fish were taken to the meeting and were on view.

SUNNYBROW A.S. recently held their first open show at the Festival Hall, Denton, Manchester. The best fish in the show was judged to be the tiger scat entered by Mr R. Moor-

croft of Merseyside A.S. and it was Merseyside A.S. who obtained most points at the show.

The winners of the classes were:

Guppies: Mrs V. Parkes (Merseyside, 75). Swordtails: Mr N. R. Gibson (Huddersfield, 75). Platys: Mr B. Thompson (Gorton & Openshaw, 75). Mollies: Mr and Mrs Slater (Sunnybrow, 72). A.o.v. livebearers: Mr A. Middleton (Sunnybrow, 73). A.v. labyrinths: Mr P. A. Devine (Ashton, 78). Fighters: Mr D. Trace (Ashton, 78). Small barbs: Mr Brankin (Oldham, 74). Large barbs: Mr K. Parkes (Merseyside, 81). Dwarf cichlids: Mr J. V. Hill (Ashton, 75). Large cichlids: Mr K. Parkes (Merseyside, 80). Angels: Mr W. Grey (Sunnybrow, 74). Small characins: Goodwin Bros. (North Staffs, 77). Large characins: Mr S. Parkes (Merseyside, 82). Killifish: Mr R. Hughes (Gorton & Openshaw, 75).

*Corydoras* catfish: Mr A. Newall (Glossop, 78). A.o.v. catfish: Mr G. Hammett (Ashton, 81). Loaches: T. & W. (Sunnybrow, 77). Labeos, sharks and foxes: Mr F. Mullis (Merseyside, 78). Danios, rasboras and minnows: Mr G. Hodgekisson (Gorton, 80). A.o.v. tropical: Mr R. Moorcroft (Merseyside, 84).

A.v. goldfish: Miss E. Bone (Huddersfield, 73). A.v. coldwater: Mr G. Hammett (Ashton, 77). Pairs livebearers: Mr J. Groaty (Sunnybrow, 78). Pairs egg-layers: Mr G. Hammett (Ashton, 77). Breeders livebearers: Mr A. Middleton (Sunnybrow, 72). Breeders egg-layers: Mr F. Mullis (Merseyside, 75). A.v. juniors: Mr D. Moorcroft (Merseyside, 82).

EALING & D.A.S. were the victors in the three-cornered match against Riverside A.S. and Runnymede A.S. The club was well placed in most classes and the final score was: Ealing, 40 points, Riverside 34 and Runnymede 34 also. At a home match with Bracknell A.S. the club were also successful, winning the competition by 906 points to 777. Members continued their winning strain by achieving three seconds and two thirds at the Uxbridge open show.

On the lighter side, a recently held social and dance proved to be so popular with the 'fish widows' that the social committee have had hurriedly to arrange a repeat performance! Fishkeepers are asked to make a date for the club's first open show on 14th September. Members hope that visitors will be able to get along for a family day, since it is on a Sunday and there will be special amusements for the children. It is hoped to include a special class for reptiles and amphibians.

JUDGES Mr M. Jones, Mr D. King and Mr L. Weller were confronted with 89 entries benched by 17 exhibitors at the show held by the EDMONTON SECTION of the FANCY GUPPY ASSOCIATION. Mr Fowles and Mr Vinal received the best fish in the show award and also that for best breeders. Best opposite sex award went to Mr A. R. F. Fish. Detailed results were:

Fantail: Mr S. Duckworth (silver award, 75). Long dorsal veil: Mr Fowles and Mr Vinal (74). Superba: Mr and Mrs Phillimore (74). Short dorsal veil: Mr and Mrs Phillimore

... Top sword: Mr P. Bailey (68). Colour male: Mr and Mrs Phillimore (68). Bottom sword: Miss L. Curry (71). Double sword: Mr W. Holmes (68). Cofer: Mr W. Holmes (68). Experimental males: Mr W. Holmes (68). Breeders males: Mr A. R. F. Fish (76). Scapular female: Mr Fowles and Mr Vinall (74). Scallop: Mr and Mrs Phillimore (68). Colour female: Mr Fowles and Mr Vinall (72). Wedge: Mr Fowles and Mr Vinall (75). Experimental, female: Mr Fowles and Mr Vinall (75). Original veil: Mr S. Duckworth (70). Pintail: Mr and Mrs Phillimore (68). Breeder's females: Mr Fowles and Mr Vinall (gold award, 73); later breeders: Mr A. R. F. Fish (silver award, 75). Speartail, Mr S. Duckworth (65). Landed pairs, Mr Fowles and Mr Vinall (gold award, 78). Metropolitan: Mr and Mrs Phillimore (72).

**LEIGH A.S.** open show attracted 350 entries of which the oranda entered by Mr C. Eastam (Leigh) was judged to be best fish in the show. Class winners were:

Seedlings: Mr and Mrs Wild (Salford). Small: Mr J. Gresty (Sunnybrow). Small: Mr Baker (Warrington). Large: Mr Adamson (Independent). Small: Mr F. Gregory (Otram). Large: Mr F. Mulla (Merseyside). Dwarf cichlids: Mr D. Thomalla (Merseyside). Large cichlids: D. & R. Standen (Loyne). Angels: Master A. Moyle (Leigh). Goldfish: Mr A. Middleton (Sunnybrow). Goldfish: Mr D. Stooton (Wigan). Goldfish and danios: Mr D. Thomalla (Merseyside). Fighters: Mr A. Beasley (Loyne). Loaches: D. & R. Standen (Loyne). Goldfish: T. & W. (Sunnybrow). Sharks: B. R. Bewick (Warrington). A.O.V. Mr D. Hancock (Merseyside).

Fancy goldfish: Mr C. Eastam (Leigh). Common goldfish: Mrs Davies (Heywood). Coldwater: W.P.S.C. (Oldham). Moorcroft (Merseyside). Breeders: Mr G. Pelling (Leigh). Breeders: Mr W. J. Orton (Salford). Agglayers: D. & R. Standen (Loyne). Breeders: Mr J. Gresty (Sunnybrow).

**GROUP secretary of the THREE COUNTIES GROUP OF AQUARIUM SOCIETIES**, Mrs J. Jordan, writes: 'The activities of the Three Counties Group are going very well in year. We have a six-best-fish league, a Quiz League run by Mr and Mrs Carter of Bracknell, and a series of Teach-ins. There have been 10 rounds of the six-fish League so far, the first round being won by Bracknell and the second by High Wycombe. So far Bracknell are in the lead on aggregate. There has been only one round of the Quiz... and it was won by Reading.'

The Teach-ins have been very popular and there have been two so far, one at Basingstoke and one at Bracknell. Mr C. A. T. Brown spoke at Basingstoke and Mr Jack Stillwell at Bracknell. 'The Teach-ins are a great help in showing people how to look for in their fish when buying, showing and also buying.' The Three Counties Group hold a committee meeting on the second Wednesday of every month at the Grange Arms, Reading. The Committee consists of two delegates from each member club who have voting powers, but as many members as possible may attend, and the meetings are most enjoyable.

## In Brief . . .

... **MR M. MATTHEWS** is the new secretary of **BLACKPOOL & FYLDE A.S.** and will receive communications at 80 Sandgate, Blackpool, Lancs.

... **THERE** was a good attendance of **ERITH & D.A.S.** members at the first meeting in their new premises at Hurst Community Centre, Hurst Road, Bexley to hear Mr T. Jessopp talk on tropical aquarium plants. A warm welcome is extended to prospective new members to attend a meeting, held on the first and third Wednesday of the month. Details from secretary Mrs S. M. Roberts, 55 Rowan Road, Bexleyheath, Kent.

... **OFFICERS** of **SCARBOROUGH & D.A.S.** for the coming 12 months are: chairman, Mr R. L. Ingamells; secretary, Mrs B. Moore (44 Dale Edge, Eastfield); treasurer, Mr E. W. Dickinson; committee, Miss S. Greenstreet, Mr T. Gilfoyle, Mr F. Trotter, Mr R. Doody. The Aquarist of the Year award was won by Mr Brunt.

... **AT** the A.G.M. of **ISLE OF WIGHT A.S.**, officers elected were: chairman and resident judge, Mr D. Crisp (F.B.A.S.); vice-chairman, Mr S. Stevens; treasurer, Mr I. Salter; secretary, Mr E. Davison (The Aquarium Cafe, 89 High Street, Shanklin); show secretary and P.O., Mr J. F. Nolan; curator (Puckpool), Mr J. Woods; committee, Mrs O. Davison, Mr R. Chapman, Mr R. Norman, Mr G. Simmonds. At the Society's annual dinner, Mr T. Glass was guest of honour and presented trophies to: Mr E. T. Davison, Mr J. F. Nolan and Mr W. Bradley (I.O.W. Challenge Cup); Mr E. T. Davison (Characin and Guppy Cups); Mr J. F. Nolan (best tropical

fish); Mr S. Stevens (best coldwater fish and best effort awards); Mrs B. Hobbs (Ladies Cup); Mr I. Salter (Hors Shield for furnished aquaria and Novice Cup); Mr E. T. Davison, Mrs Hobbs, Mr J. F. Nolan, Mr R. Norman, Mr S. Stevens (medals).

... **OFFICERS** elected at the **BISHOPS CLEEVE A.S.** first A.G.M. were: chairman, Mr N. E. Binding; vice-chairman, Mr K. Burton; secretary, Mr N. W. Dooley (57 Welch Road, Cheltenham, Glos.); treasurer, Mr P. L. K. Treadgold; committee, Mr T. Evans, Mr D. Stevens, Mr A. Atherton. The club has 25 members and meets on the third Thursday of each month at Bishops Cleeve W.I. Hall, Station Road.

... **33 MEMBERS** of **AMESBURY & D.A.S.** attended the club's third meeting at the Dunkirk Club, Amesbury. The slide and tape lecture on top and switch spawners was followed by a bottle show. Members have recently enjoyed a visit to the New Forest Tropical Fisheries at Lyndhurst and the first issue of a monthly newsletter has been brought out by editor Mr P. Camus.

... **FREELANCE A.S.** has moved its H.Q. to Lady Margaret's Hall, Chatham Street, London, S.E.1. The club meets every Wednesday at 8.30 p.m. and any aquarist is welcome to attend.

... **A NEW** secretary for **WINCHESTER & D.A.S.** The position is now held by Mr M. E. Miller, 63 Yardley Road, Hedge End, nr Southampton, Hants.

... **BURTON & D.A.S.** enjoyed an unusual and interesting evening when Mr J. Foden, previously curator of reptiles and fish at Dudley Zoo and now headkeeper at Drayton Manor Park, spoke on 'Reptiles' and took along many live specimens. The table show for anabantids was won by the moonlight gourami belonging to Mr T. Bowler. Meetings are held on the second Thursday of each month at the Fox and Goose, Bridge Street, at 7.45 p.m.

... **AT** the **SUFFOLK A. & P.A.** first A.G.M., Mr W. Card was elected president. Chairman, Mr V. Green; secretary, Mr K. Fellingham (33 Peacroft Road, Ipswich); assistant, Mr W. Chapman; show secretary, Mr A. Cook.

... **CHAIRMAN** Mr Gilbert explained to club members that he had already contacted the troubled reader in question when a letter from the local paper about disappearance of

*MR J. HAYNES, P.R.O. of TORBAY A.S., thinks that the Society's Open Show this year is the first-ever to be held in the south west and certainly the first in Torbay. The Show will be in two parts: first an invitation-only Furnished Class (both tropical and coldwater) and second a one-day Open Show for single fish entries. Friday, 12th September is the date for setting up the furnished classes and the 13th for the single fish Open Show. Details from Mr M. Matthews, 13 Langridge Road, Paignton, Devon.*

goldfish from a garden pond was discussed by members of **SOUTHAMPTON & D.A.S.** at a recent meeting. At this meeting Mr J. Jeffery gave an illustrated lecture on barbs as well as judging the table show for that species at which Mr and Mrs Russell and Mr Gilbert won all the prize cards.

... **GUEST** speaker Mr J. R. Bateman, Keeper of Zoology, National Museum of Wales, gave members of **HARLECH A.S.** many useful tips for extending their hobby beyond the bounds of the home aquaria when he lectured on collecting in freshwater environments with special emphasis on freshwater inhabitants such as newts, frogs, toads, great diving beetles etc. Mr Colin Lewis of Newport judged the table show for characins, in which Mr A. Ward won first and second places and Mr J. Spencer third.

... **MEMBERS** of **WARRINGTON A.S.** awarded the 'palm' to club member Mr J. Wooton for his talk on genetics, a difficult subject which the speaker succeeded in making very clear to the layman.

... **ELECTED** officers for **HUDDERSFIELD T.F.S.** are: chairman, Mr B. Robinson; vice-chairman, Mr J. Blamires; treasurer, Mrs B. Flynn; show secretary, Mr E. Kaye; secretary, Mrs M. Bone (1 Bradshaw Drive, Honley, Huddersfield, HD7 2EU); news editor, Mr D. Milnes; committee, Mr N. Gibson, Mr P. Bone, Mrs M. Kaye, Mrs P. Robinson.

... **COVENTRY P. & A.S.** still hold first place at the end of the third heat in the M.A.L. competition, at which they were also the host club.

... **CHAIRMAN** of **HARTLEPOOL A.S.** for the coming year is Mr J. Williamson; vice-chairman, Mr J. Chamberlain; secretary, Mr D. Fields (38 Sandringham Road, Hartlepool); show secretary, Mr J. Watson; treasurer, Mr S. Hays; press secretary, Mr R. Foreman; committee, Mr F. Patterson, Mr W. Payer, Mr D. Eggerton. The Society meets every other Tuesday in the Zetland Hotel Club Room, Church Street, Hartlepool. New members are very welcome.

... **MR J. HOWARD** (67 Woolley Colliery, Darton, nr Barnsley) is the new show secretary of **BARNESLEY T.F.S.** Club funds have recently profited from a bring-and-buy sale at which Mr Howard acted as auctioneer. Mr Duncan won in the table show for pairs of egg-layers at this meeting.

## Badge of the Month



**SHEFFIELD & D.A.S.** was founded in 1937. Disbanded during the war years, it was re-started in 1946 and some of the founder members are still active in the Society. Secretary is Mrs J. Mitchell, 1 Nelson Road, Stannington, nr Sheffield. Our picture, unfortunately, does not do justice to the club's badge, which shows a fancy goldfish and is of a very bright silver that is difficult to photograph.

... **WALTHAMSTOW & D.A.S.** members have enjoyed talks by Mr B. Senior of Enfield A.S., who imparted a great deal of information on the requirements for successful breeding and rearing of Lake Malawi cichlids, and by Mr B. Pye on growth requirements for the successful propagation of many tropical aquarium plants. Details of future meetings from secretary Mr A. R. Chandler, 68 Uplands Road, Woodford Bridge, Essex.

... **HORSFORTH A.S.** officers for the Society's fourth year are: chairman and editor, Mr Ray Hampson; treasurer, Mr Mike Pollard; secretary, Mrs Barbara Helm (29 Wellington Road, Leeds, Yorks.); show secretary, Miss Jane Helm; committee, Mr Jim Girdham, Mr Dennis Corns, Mr Steve Elvy, Mr Walt Audsley, Mrs Joyce and Miss Joan Dickinson. The A.G.M. was followed by a very interesting hour of slides sent by the Queensland Cold & Tropical Fish Society, Australia, showing the inhabitants of the Great Barrier Reef.

... **AN** illustrated talk on genetics was given by Mr J. Stillwell of Portsmouth A.S. to members of **BOURNEMOUTH A.C.** in May. Mr Armitage, also of Portsmouth, judged the table show and awarded first to Mr Greenhalgh in the common goldfish class and to Mr J. V. Jeffery in the characin class for a *Nannostomus trifasciatus*.

... **BRADFORD & D.A.S.** members have been very active lately. A behind-the-tanks trip to the Bell Vue Aquarium proved most interesting; a trip by 25 members to the Keighley A.S. inter-society show was most rewarding—four firsts, three seconds, a third and best in show awards were gained. Lectures have included talks on marines by M. Moorhouse, on coldwater and native species by Mr Cawthra and on fish photography by Mr B. Pengille that he illustrated with samples of his fine work.

... **18 MEMBERS** and friends of **LEAMINGTON & D.A.S.** enjoyed the trip to Anglesey to collect marine specimens. One of the finest obtained was a 6 in. dahlia anemone, found by Mr Phil Taggart. Graham Muddiman drew out the first catch of the day (a young eel) and young Dunca Beard reversed the record by falling in!

... **MERSEYSIDE A.S.** report the steady increase in membership continues. The Society now has 11 members, and enthusiastic members at that. Table shows are attractive entries of over 100.

... A 10% commission meant a tidsum for the Society's funds when **THURROCK A.S.** held their sale and exchange auction. The debt was in which president Mr Ron Nicholl wielded the gavel suggested that he had missed his true vocation. The talk by Mr D. C. M. Durrant on fishes he had bred raised many interesting queries from members who appreciated the informative replies that the speaker gave.

... A **SHOW** competition and social league has been formed between Roehampton, Hounslow, Kingston and Runnymede societies and is to be known as the **R.H.K.R. LEAGUE**. At the first meeting Hounslow were the host club and Kingston won (1 the competition with 14 points (2 Hounslow, 7; 3, Runnymede, 6; 4 Roehampton, 3). At the second meeting Kingston A.S. won (2 Roehampton, 9; 3, Runnymede, 6 4, Hounslow, 2).

... **WORK** on the arrangements for their open show did not prevent members of **BRIGHTON & SOUTHERN A.S.** from mustering one of their periodical Bring-and-Buy sales for which bidding was enthusiastic. Mr Derek Riley's lecture on fish-breeding techniques also proved very popular.

... **WHEN** it was the turn of **ENFIELD & D.A.S.** to entertain the **NORTH-EAST LONDON GROUP** recently a panel of expert answered queries while the judging took place. The panel was composed

of Mr K. Knutt (Tottenham), Mr A. Smith (Bethnal Green), Mr W. Collins (Walthamstow), Mr J. Coleman (Enfield). Although Mr A. Stanway of Chingford won in the cichlid class with a blue acara (85 points), members of Bethnal Green were very successful in the other classes. Class winners were all from that Society; a.o.v., Mr A. Collings; catfish and loach, Mr P. Arnold; labyrinths, Mr G. B. Martin.

... OVER 40 people attended the first meeting of the newly-formed **HEMEL HEMPSTEAD A.S.** The Society would welcome enquiries from interested fishkeepers in their area and the secretary, Mr L. Banfield (telephone Hemel Hempstead 59709) will be pleased to give further details.

... A CLUB auction of fish, plants and equipment benefitted both the Society and individual members of **ILFORD & D.A. & P.A.** At the table

show held at this meeting a very interesting selection of fish were on display and winning entries were: a.v. characin, Mr A. Hunt (penguin); a.v. platy, Mr D. Seaman (comet); a.v. fancy goldfish, Mr D. Woodley (pearl scale). The club looks forward to a lecture by Mr Albert Villiers, professional aquarist, on 14th July at St Laurence's Church Hall, Donington Avenue, Barkingside, Ilford and anyone interested will be welcome to attend.

## Dates for Your Diary

4th July. **HIGH WYCOMBE A.S.** Open Show, Bovington Green Hall, Nr Marlow, Bucks. Schedules from Mrs S. Thomas, Finnermore Wood Camp, Lane End, Nr High Wycombe, Bucks (Lane End 892).

4th July. **LEAMINGTON & D. A.S.** Open Show. Trinity Hall, Trinity Street, Leamington. Details from Mr P. Thomas, 199 Brunswick St., Leamington Spa, Warks.

6th July. **LYTHAM A.S.** Open Show. Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

7th July. **NORTHWICH & D. A.S.** first Open Show. The Scout Hall, Cuddington, Nr Northwich, Cheshire. Details from Mr C. Davies, 70 Hayburst Avenue, Middlewich, Cheshire.

8th July. **TADCASTER A.S.** Open Show. St Josephs School, St Josephs Street, Tadcaster, Yorks. Details from J. W. Holmes, Newsagents, Collingham, Wetherby, Yorks.

12th July. **BASINGSTOKE & D. A.S.** Open Show (incorporating the **THREE COUNTIES AND THREE COUNTIES** Section F.G.B.S. shows). Carnival Hall, Basingstoke. Details from Mr A. Blake, 20 Bounty Road, Basingstoke.

12th July. **CROYDON A.S.** Open Show. Stanley Halls, South Norwood Hill, South Norwood, London, S.E. 25. Schedules from Mr D. T. Smith, 25 Cumberland Road, South Norwood, S.E. 25.

20th July. **BARNSELY A.S.** Open Show. Woodmoor Sports Centre, Carlton, Barnsley, Yorks. Schedules from Mr K. Scothern, 9 Osmond Drive, Worsbrough Bridge, nr Barnsley, Yorks.

20th July. **GOSPORT & D. A.S.** third Open Show.

2nd August. **STROUD & D. A.S.** Open Show. Archway School, Paganhill, Stroud.

2nd August. **HULL A.S.** Open Show (as part of the **HULL SHOW**) East Park, Holderness Road, Hull. Details from Mr P. M. Shepherdson, 11 Beech Grove, Beverley Road, Hull.

4th-9th August. **AQUA '69** Open Show (I.F.A.S.). Wellington Hall, Belfast.

9th August. **EAST LONDON A. & P.A.** Open Show. Ripple Road School, Barking, Essex. Schedules from Mr G. Green, 70 Barton Avenue, Romford, Essex.

9th-16th August. **PORTSMOUTH A.S.** Open Show. Portsmouth Community Centre, Twyford Avenue, Portsmouth. Schedules from Mr J. Stillwell, 34 Salcombe Avenue, Copnor, Portsmouth, PO3 6LD.

11th-16th August. **MIDLAND OPEN SHOW (M.A.P.S.)**. Bingley Hall, Broad Street, Birmingham. Schedules from Mr J. Wits, 120 Franklin Road, Kings Norton, Birmingham 30.

17th August. **BEDWORTH A. & P.S.** first Open Show. St James Parish Hall, Bulkington, nr Nuneaton, Warks. Schedules from Mr M. Lee, 57 Grant Road, Exhall, Coventry, Warks.

17th August. **BLACKPOOL & FYLDE A.S.** Open Show. Harrowside Solarium, South Promenade, Blackpool. Programmes from Mr B. Simmons, 18 Wanstead Crescent, Blackpool.

24th August. **OSRAM A.S.** Open Show. The Recreation Hall, Refuge Street, Shaw, Oldham, Lancs. Benching 12.0-2.15 p.m.

30th-1st August. **HARLOW A.S.** third Open Show. (Harlow Town Show). Schedules from Mr J. Jarvis, 143 Carters Mead, Harlow.

6th September. **F.R.A.S.** General Assembly. Conway Hall, Red Lion Square, Holborn, London, W.C.1.

6th September. **RHONDDA A.S.** Open Show. Details later.

6th-7th September. **MID-HERTS A.S.** Open Show. Show secretary, Mr C. S. A. Withers, 15 Charmouth Road, St Albans, Herts.

7th September. **MIDLAND AQUARIST LEAGUE** Show (Open Classes). St James Parish Hall, Bulkington, Nuneaton, Warks. Schedules from Mr M. Lee, 57 Grant Road Exhall, Coventry.

7th September. **REIGATE & REDHILL A.S.** Open Show. Details from Mr S. Perham, 5 Bolsover Grove, Merstham, Surrey.

12th-13th September. **BRISTOL A.S.** Open Show. Bishopston Parish Halls, Gloucester Road, Bristol. Enquiries to Mr S. Lloyd, 4 Curlew Close, Frenchay, Bristol.

13th September. **SOUTH PARK AQUATIC (STUDY) SOCIETY** Open Coldwater Show. Sutton Adult School, Benhill Road, Sutton. Details from 163 South Park Road, Wimbledon, London, S.W.19.

14th September. **EALING & D.A.S.** first Open Show. Schedules from Mr R. Barrett, 8 Grove Court, The Grove, Ealing, W.5.

14th September. **OLDHAM & D. A.S.** Open Show. The Study Centre, Werneth Park, Oldham, Lancs.

20th September. **HOUNSLOW & D. A.S.** Open Show (to be confirmed). Youth Centre, Cecil Road, Hounslow. Schedules from Mr F. Smith, Anafra House, 7 The Greenway, Hounslow, Middlesex.

27th-28th September. **CAMBRIDGE & D.A.S.** Open Show. Guildhall, Market Square, Cambridge. Schedules from Mr L. Geogerson, 16 Leys Road, Cambridge, CB4 2AT.

28th September. **NORTHAMPTON & D.A.S.** Kingshorpe Community Centre, Northampton. Schedules from Mr R. Memory, 121 Booth Lane South, Northampton.

28th September. **MEDWAY A.S.** Convention. Details later.

4th October. **ASSOCIATED SOUTHERN AQUARISTS' SOCIETIES** Convention. Portsmouth Community Centre, Twyford Avenue, Portsmouth.

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

29th October-2nd November. **THE AQUARIUM SHOW '69** at the Royal Horticultural Society's Old Hall, London, S.W.1.

8th-9th November. **HEYWOOD & D.A.S.** Open Show (joint event with Heywood Horticultural Society).

14th December. **HORSFORTH A.S.** first Open Show.

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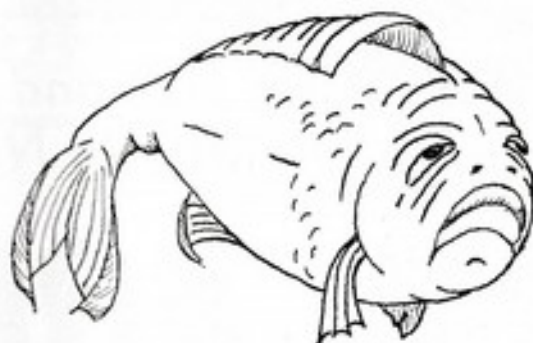
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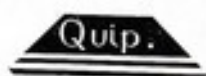
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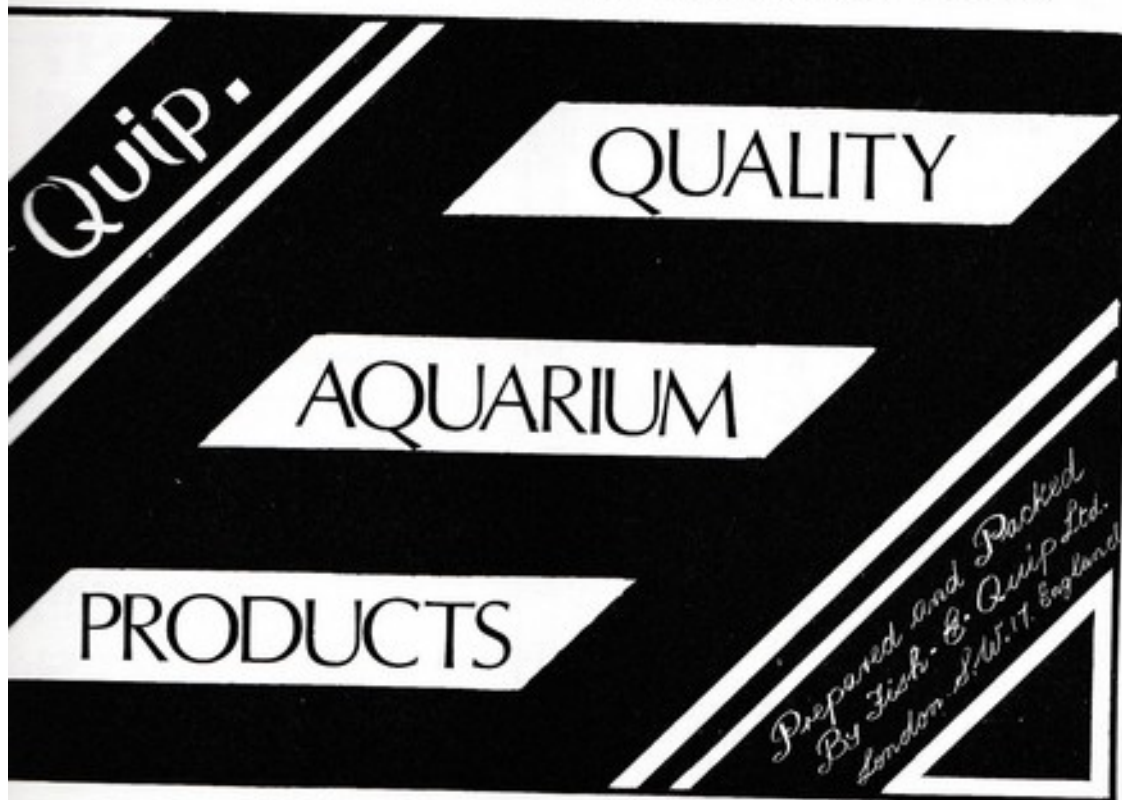
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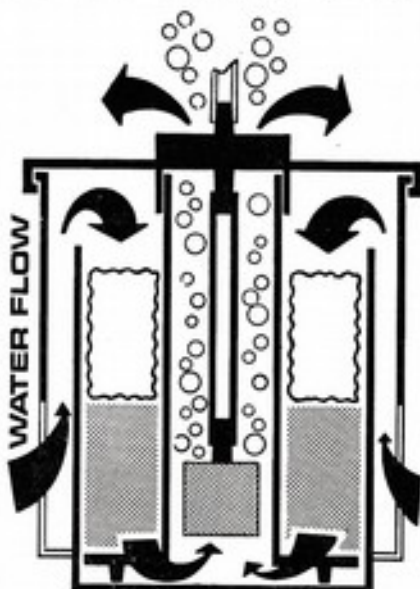
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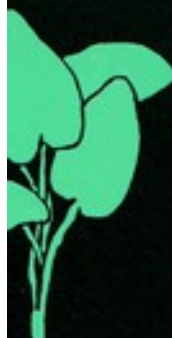
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