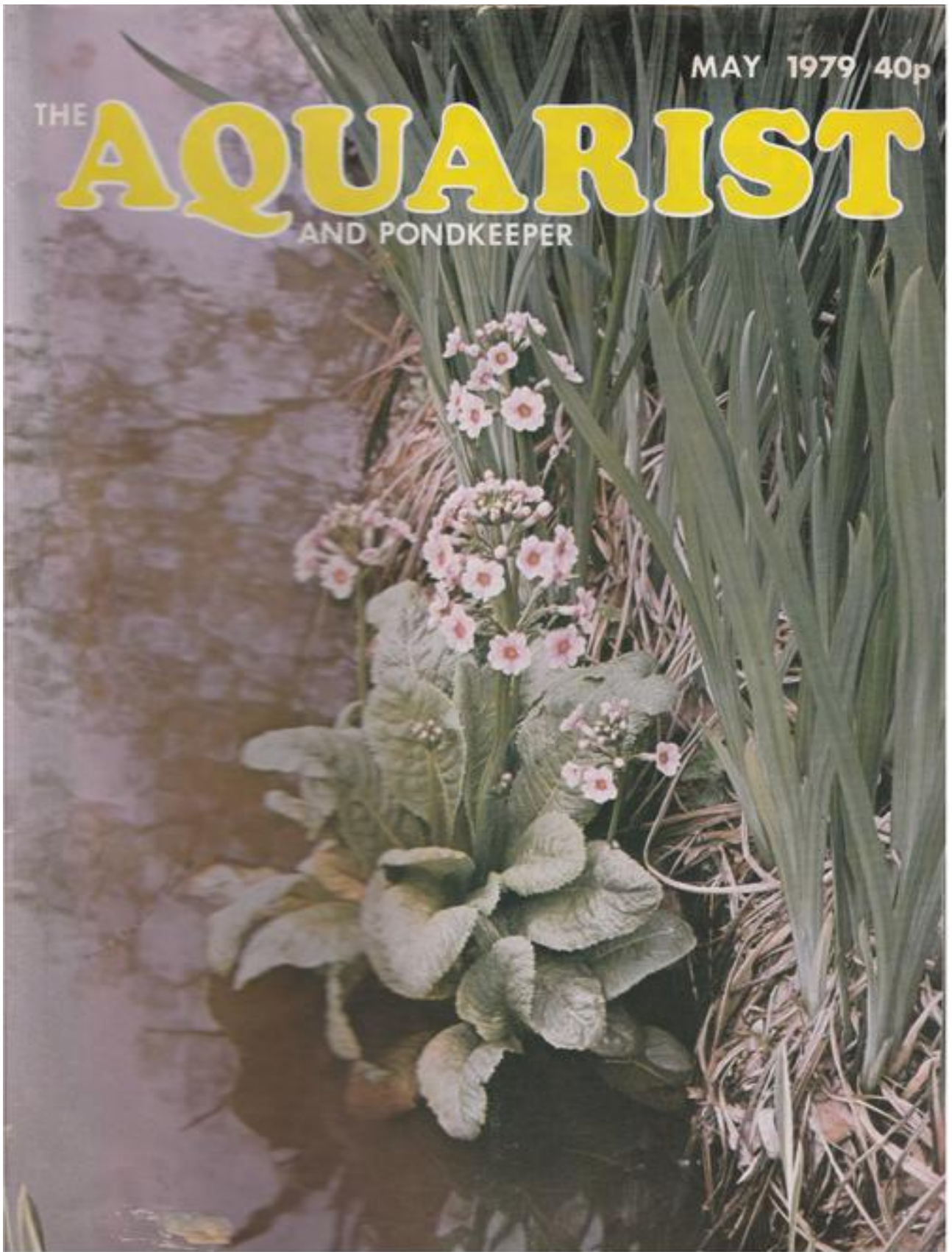


MAY 1979 40p

THE **AQUARIST**  
AND PONDKEEPER





# THE AQUARIST AND PONDKEEPER

The Aquatic Magazine with the Largest Circulation in Great Britain

*Published Monthly 40p*

Printed by Buckley Press Ltd.  
The Butts, Half Acre,  
Brentford, Middlesex.  
Telephone: 01-568 8441

Subscription Rates:  
The Aquarist will be sent by  
post for one year to any address  
for £6.50. Airmail quoted on  
request.

MSS, or prints unaccompanied  
by a stamped addressed  
envelope cannot be returned  
and no responsibility is accepted  
for contributions submitted.

Founded 1924  
as "The Amateur Aquarist"  
Vol. XLIV No. 2, 1979

Editor: Laurence E. Perkins  
Advertisement Manager:  
J. E. Young

Our Cover:  
*Botia modesta*

May, 1979

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## OUR EXPERTS' ANSWERS TO YOUR QUERIES

### READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.

## TROPICAL QUERIES



Pacu

I have bought a fish called a pacu. Can you give me some information regarding its requirements in the way of food, temperature and maximum size?

There are several genera and species of compressed and almost rounded-diamond-shaped fishes popularly known as pacu. They are characids and bear some resemblance (externally) to the avid flesh eaters more widely known as piranha. Pacu, however, are greedy for greenstuff and fruit (various berries in the wild) and, in captivity, should be offered such things as shredded or scalded lettuce, cooked spinach, and the like, swallowable worms, and, of course, a well-balanced flake food. A temperature in the middle to upper seventies (°F) is suitable. Maximum size can range from about 6 in. to a foot or more. Pacu of more than 40 lb. (food fish for the Indians living along the banks of the Amazon and other rivers of tropical South America) are not uncommon.

by Jack Hems

I wish to breed *Corydoras aeneus*. Please provide me with some details about sexing and breeding behaviour.

Of the two sexes the female is the larger in the body and when she is in breeding condition her lower sides and underparts become noticeably bloated and pinkish in colour. The male follows her around (much more than usual) and adopts the interesting habit of swimming about just over her dorsal surface and head and, in general, showing off. A place or places on the side of the aquarium, on a stone or on broad-leaved plants are cleaned by the fish for the reception of the adhesive eggs. After the very excited male has sprayed or deposited sperm which the female sucks up, she extrudes and carries a few eggs between her pursed ventral fins and sticks them to the chosen spawning place. This performance is repeated several times over a short or extended period of time. Neither the eggs nor the hatched fry appear to interest the parent fish. When the fry are ready to make a life of their own, they drop to the bottom of the tank and make themselves scarce in sediment, thickets of plants or round the base of a stone. They feed on minute live food and very soon are ready for micro worms and powder-fine dried food.



*Hypessobrycon heterorhabdus*

I have bought a pair of *Hyphessobrycon heterorhabdus*. Please tell me the easiest way to tell the sexes apart, and what sort of food and quality of water suits this species best?

Size for size, the male is slimmer in build and, perhaps, more glassy-looking in the less-pigmented parts of the body than the female. The female, if well-grown, has a more shimmery body cavity, rounded posteriorly, than that of the male which is, generally speaking, more depressed and tapered to a point.

Having consulted all my tropical fish books, I cannot find anything about a fish called a pangasius cat. Please can you help me?

There are quite a few species of catfish which are known under the generic name of *Pangasius*. They occur over a fairly wide area of Malaya and Indonesia. The species most commonly seen in dealers' tanks is *P. sutchii*. This lively catfish, that swims in all levels of the water but every now and again takes time off for a rest, is adorned with horizontal stripes of silver and steely blue. The fish has large eyes and, in its smaller sizes, is quite harmless in a community tank. In its larger sizes (about 4 in. and above) it cannot be trusted with other fishes half its size. It can bully them to death. Any food taken by non-faddy fishes suits *P. sutchii*.

Is it possible to cross-breed the honey gourami with the dwarf gourami?

I have never heard of these two species breeding together but I hazard the guess that placed by themselves in a thickly planted tank and fed on livefoods such as gnat larvae, whiteworms and a first quality dried food, spawning would not be out of the question. After all, the honey gourami and the dwarf gourami are roughly the same size, belong to the same genus (*Cobitis*) and are native to lakes, basins and sluggish streams in India.

What can you tell me about the colours and general feeding behaviour pattern of the harlequin shark?

The harlequin or variegated shark (*Labeo variegatus*) from the upper Congo is dark brown above and yellow to pale yellowish grey below. The sides reflect tints of gold, bronzy brown, and the like, in different lights. The scales are adorned with a crimson-red spot. It is a hardy and long-lived fish that should not be kept with timid or non-assertive or weakly fishes because its dominant trait is aggressiveness. It eats a lot and is not a faddy feeder. In other words, all regular live, fresh or dried foods are taken freely. *L. variegatus* flourishes best when given plenty of swimming space in clean, well-aerated water under a bright light. The aquarium should be well-stocked with plants among which it likes to hide.

May, 1979



*Labeo variegatus*

Would a tank measuring 48 in. x 24 in. x 24 in. be suitable for a well-grown *Osphronemus goramy*?

The tank mentioned in your letter would make a good home for a giant gourami with no other fishes present.

What is a coldwater haplochilus?

This is the outmoded name for a small cyprinodont popularly known as the rice fish or medaka. It is commonly found in the inundated paddy fields and drainage ditches of Japan. It has a range of temperature from about the middle fifties to the middle eighties (°F) and is easy to keep because it eats anything and is non-aggressive.

What sort of fish is *Charax gibbosus*?

A characin from the lower and middle Amazon. It looks voracious but is not. It gets on well in a community tank but does grow to about 6 in. It eats anything taken by non-faddy fishes. It is a sort of muddy brown, almost glass-like in places, with rainbow tints, and is characterised by a humped back. It swims in a head-downwards position.



*Charax gibbosus*

## GOLDWATER QUERIES by Arthur Boarder

**I have a batch of goldfish fry two months old and they are still brown in colour. I have read that one can put a chemical in the water to make them change colour quickly. Is this so?**

I have heard of some exhibitors using some form of substance to improve the colour of their exhibition fishes, but not for hastening the colour change in goldfish fry. This colour change can take a long time with some fry but it can be hastened a lot by using warmth for them. Goldfish fry hatched and reared in a garden pond can take a year or two, or even more, to change to the desired colour. A great deal will depend on the type of summer and the warmth of the water. The rate of growth makes some difference but this is not all. If the fry are given a water temperature of 70°-75°F., they can change colour far more quickly. A May hatching can be colouring by the end of August. If this method is used it must be remembered that with the warmer water it may be necessary to provide some aeration and also to give plenty of food. Even with the best conditions it may be found that some fry change colour far more quickly than others of the same batch.

**One of our veiltail goldfish has developed a bump on its left side just above the ventral fin. The bump has a reddish tinge. What is it and can it be cured?**

The lump may be a cyst, a boil or the start of an ulcer. Do not break the skin but wait a while to see what happens. A cyst does not always colour up and usually does little harm, but if the lump is very inflamed it is probable that it will burst. In this case squeeze out any pus and paint with an anti-biotic. It is possible to get Chloromycetin ointment (as used for eyes) with which to treat the wound. This may have to be repeated. If an ulcer forms, this is more dangerous as it may be the result of internal infection. The same treatment can be used to dab the wound but the fish may need some internal medicant.

**Would you inform me how to encourage cold-water golden Loaches to breed?**

I am not sure to which Loach the term "golden Loach" refers. There are three fairly well known coldwater Loaches: The Stone Loach (*Noemacheilus barbatulus*); the Spined Loach (*Cobitis taenia*) and a European Loach (*Misgurnus fossilis*). The Spined Loach must not be kept at a warm temperature and it should never exceed 64°F., and even this is too high for spawning, when about 57°F., is better. The breeding season

is in April to June when the eggs are spread over the sandy bottom. Sand should be used on the bottom and not gravel. Like the adults, the fry feed by sucking up the sand and mulm and remove anything edible before spitting out the sand.

The Stone Loach prefers a gravelly or stoney bottom but the breeding is similar to that of the Spined Loach. A fairly low temperature is required and most spawnings take place at night. The female is much fatter in the body when ready to spawn. Aeration may not be necessary but some water plants should be in the tank to assist in oxygenation. The European Loach (*Misgurnus fossilis*) sometimes referred to as (*Misgurnus fossilis fossilis*) differs from the former two described as it prefers a muddy bottom and plenty of water plants. Aeration is not needed as the Loaches have the characteristic of being able to rise to the surface and take in air if necessary. It appears that one of the main requirements for spawning any of these Loaches is to see that the temperature of the water is kept fairly low. This latter Loach is often referred to as the Weather Fish, said by some to become very agitated when thunder is about.

**How can I stop my goldfish from eating the plants in their tank?**

You can feed them with some soft vegetable matter or try changing some of the plants. I sometimes hear of this happening but the strange thing about it is that I have never found that my fish have eaten the plants. I have kept fantail goldfish in tanks for very many years and have never found that they eat any of the plants. I have often seen them sucking at them to remove any soft Algae but that is all. The plants I use which are not eaten are: Hornwort (*Ceratophyllum demersum*), *Hygrophila polysperma* and *Vallisneria spiralis*. Give your fish some soft cooked vegetable matter and a good type would be boiled green peas. Offer one before the daily feed. Squeeze the soft part out and do not give the skin. If this is eaten you can give a little fairly often and see if the plants are left alone.

**I have a tank, 24 x 12 x 15 inches and would like to know how many fish I can safely keep in it, also which plants and do I need a filter?**

The tank will hold 12 inches of body length of fish and if you keep to this limit you will not need a filter. This is, of course if there are water plants growing in the tank. As you have a goldfish and two shubunkins already I suggest that you add a couple of fantail goldfish and two moors, fantail for preference. For plants

you can use plenty of *Vallisneria spiralis* to partially cover the back half of the base. Some *Lagarosiphon* major clumps to hide the back corners, a little *Ceratophyllum demersum* in a couple of clumps midway and a small clump of *Hygrophila polysperma* near the centre of the base.

**I am setting up a coldwater tank for goldfish varieties. Is it necessary to have rocks in the tank and if so which kind?**

It is not essential to have rocks or coral in the tank. Rocks serve no useful purpose except that they can be very ornamental if chosen with care. For a tank to be placed in an exhibition for furnished aquaria, it is almost essential to have some formation of rocks or perhaps well seasoned tree roots. However, for a tank in the house although rocks may look attractive for a time, they soon become covered with Algae and are hardly seen at all. So for a tank which is likely to be set up for years, there is no need to use rocks. If you think they would be an improvement, then Westmorland rockery stone is very good. Coral should not be used as the tiny holes in it could harbour decaying matter which could pollute the water.

**I have two bull-headed catfish and would like to know if there are any other catfish suitable for my tank?**

There are three species of Bull head in the U.S.A. The Black Bull head (*Ameiurus melas*), the Yellow Bull head (*Ameiurus natalis*) and the Brown Bull head (*Ameiurus nebulosus nebulosus*). The first can grow to 42 cm., the second to 35 cm., and the third to 40 cm. All are voracious carnivores.

**I am going to set up a coldwater tank in a living room and wonder if it will be a good idea to stick a picture of an under-water scene on the back?**

The idea is all right in theory as it can screen off the wall paper showing through. However, the advantage may be short lived as in about a week it is probable that the inside of the glass will green up with Algae and the picture will be hidden. You could keep cleaning the inside of the back but this is likely to disturb the water plants which should be growing there. I have found the best idea is to stick aluminium foil on the back and ends of the tank. At first this gives a fine reflection but this is soon altered when Algae forms. However, this method cuts out any view of wall paper etc., and the back and ends need never be cleaned. An overhead lamp in a cover will give good illumination.

**You have often stated that goldfish and other coldwater fishes need little if any feeding during the winter months. Does this also apply to a goldfish tank kept in a living room?**

The position is quite different as the water in the tank in the house will be warmer than that in an out-

door pond. It is all a matter of water temperature. As long as the water is about 60°F., or near that, the fish will remain active and need feeding. Once the water temperature drops below 50°F., the fishes become sluggish and their metabolism is decreased considerably. With a water temperature of between 40°F. and 50°F., very little food is needed. I am not suggesting that cold water fishes will not eat at all when the water is very cold but it will take the fish a lot longer to digest the food. I have known fantail goldfish to eat garden worms when there has been ice on the pond. Whenever the water is cold it is a good plan to offer the smallest amount of food. If this is not taken at once then no more food should be offered until the water warms up a little. Giving more food than can be cleared up in a short space of time is the cause of more failures than any other cause. Set up a tank and give no food at all for a fortnight and you will find that the water will keep clear, but even one day's over-feeding can upset the condition of the water and trouble will ensue.

**Is a cover glass or hood necessary for a cold-water tank in a living room please?**

A cover glass and a hood are essential for any tank in the house. One important point is that they can keep out much of the dust from covering the water. A cover glass should lie on the top of the tank with a small space at each end to allow air to enter. The cover is to hold a lamp, without which the whole effect of plants and fishes will be lost. The covers are especially essential when there is likely to be heavy smoking in the room. This is bad enough for non-smokers and cannot but do harm to fishes. With regard to the wattage of the lamp. This need not be high and a 25 watt lamp is sufficient for any tank up to 24 inches long. It is surprising how much warmth can be generated by a lamp with such a low wattage and if too much heat is applied it will be found that the fish will spend most of the time at or near the surface and will not swim about very much lower in the tank.

**When is a good time to divide and increase water lilies?**

The spring is the best time when new growth is being made. Remove the lily from the pond and you will probably find that there are several small side shoots on the main root stock. Cut these off near to the main root and then they can be potted up in containers of old turf. When planting these small off-sets, it is important to place them in shallow water. If none is available then the container can be placed on bricks to bring the growing point nearer to the surface. Most water lilies will benefit from a pruning after they have been in the pond for more than three years. Otherwise they may take over too much of the surface and the fishes may not be seen. As the young plants grow their containers can be gradually lowered in the water.

## KOI QUERIES

by Hilda Allen

**I am planning a larger pond, especially for keeping Koi and have followed some of your 'Queries' so as to profit from your experience. Can you please enlarge upon or repeat any golden rules which may help.**

Thank you for your letter briefly quoted above and at first I would advise you to make a part of your pond at least 4-4½ feet deep, a bottom drain is most beneficial and some form of filtration will prove to be a very worthwhile investment. Making a Koi pond is not the same as making an ornamental goldfish pond, that is if you wish to successfully keep and grow Koi over a long period. After the initial purchase of Koi the prime 'golden rule' for success is to quarantine all new stock for as long as possible during which time the Koi will pass through a whole variety of climatic changes with which we are plagued.

Apart from any undetected sickness at the time of purchase, either as a result of long distance transport and changes of water and temperatures before finally reaching your pond; certain diseases may not become apparent for some time, but a long-term quarantine period, including a Winter if possible, should determine whether a Koi is healthy and strong enough to survive.

With the smaller Koi, usually purchased in late Spring and early Summer, it is hoped that by feeding on a good mixed diet in healthy conditions, these will have noticeably grown and increased in bulk by winter. As a guide it can be expected that Koi of 6-9 inches in length by that time should not develop any problems.

**Is it true that most Koi-keepers now heat their ponds throughout the Winter and is this necessary for Koi?**

It is certainly true to say that some people heat their Koi ponds through the winter whilst others take their Koi into the extra warmth of conservatories, greenhouses, garages etc. Such is the affection for Koi that people are prepared to go to extremes either to safeguard them or for the pleasure of seeing and feeding them throughout the Winter. Koi are not truly 'cold water' fish, in the same way as our native species, but with care and attention to their needs most will adapt, especially if rapid changes of temperature can be avoided. There are usually two sides to every argument and allowances must be

made for different viewpoints, especially after last Winter's diabolical weather which was a nasty shock to all of us. It should be relatively easy to transfer smaller Koi (up to 10 inches) indoors, assuming that one is prepared to keep them in healthy conditions for up to 6 months; this means daily attention. It is less easy to provide facilities for Koi from 12 to 20 inches (or more). It must be wildly expensive to heat outdoor ponds throughout a Winter as some undoubtedly do, having the means to keep superb Koi in sumptuous conditions. Koi-keeping is enjoyed by all who like Koi, according to their own views, area, wallets etc. but I have never taken my Koi indoors or heated any ponds outdoors. I have no experience of the benefits gained by doing so, but on balance I would not advise these steps as being necessary to keeping Koi. Most Koi-keepers do not heat their ponds in the Winter and to advocate the desirability of doing so would surely lead to a decline in the popularity of Koi-keeping.

**I am now digging out a pond which I hope will be about 14 feet x 12 feet when completed and I plan to instal an under-gravel filter. However, I am not clear as to how many times per day or week the pond-water should be filtered to provide adequate filtration.**

It is often difficult to give specific answers to questions simply because all the factors involved are seldom given. As Koi grow, or more are added, then their environment is greatly affected and it is hard to be definite, but a useful recommendation is to design the pumping system to change the volume of the pond about 6 times per day, that is, once every 4 hours. You mentioned that the average depth of your pond will be about 2½ feet and therefore the pond will hold some 2,400 gallons of water and thus require a pump output of 600 gallons per hour.

An allowance for friction losses in the pipework and filter-bed should be made on the basis of say one-third reduction in output from the maximum figures usually claimed by the makers. In your case, a pump normally rated at about 900 gallons per hour would be considered desirable.

I suppose you have determined the area of the filter-bed, but in the small or medium size ponds it is always better to provide the largest area possible and if you slightly exceed the rule of one-third the

pond surface area, then the resultant area of 60 square feet will meet the optimum rate of flow through a pond filter of 10 gallons per square foot per hour.

Again, I would remind readers that it is essential to keep a biological filter system working continuously and to allow 3 to 4 weeks for the bacterial action to develop after the system has been put into operation.

**My concern is about water, what it contains and what is meant by water-changing.**

Good, healthy water is all-important to Koi and attention must be given to keeping water in good condition at all times. As usual, the size and numbers of Koi will affect what may be considered necessary or advisable. Large Koi, and their requirements of heavy feeding during warmer weather, will quickly produce conditions that look and smell like a sewer unless steps are taken to remove the waste products. Filtration is always advised, bottom drains are extremely useful in taking out the dirtiest water and any settled sludge. Other pond cleaning may include going over the pool floor with a siphon pipe, (if a lower outside level allows this) or by using a swimming-pool type of vacuum cleaner.

Water removed must be replaced and this is usually by hosed tap-water. Some water authorities add fluoride to the water, others do not; but fluoride is usually present in water and there is no evidence to suppose that this is harmful to fish. Chlorine is ever-present and can be dangerous if new tap-water is used to excess. By fitting an aerator nozzle to the hose and by creating as much turbulence at the water surface as possible, some of the chlorine gas will be dissipated. Chlorine has a definitely harmful effect on the useful bacteria of biological filtration, after all, chlorine is added to our drinking water to destroy bacteria.

I do not advise anyone to change more than about 10% of the pond water at any one time, this can be monthly, weekly or even daily if circumstances such as large numbers of Koi, large sizes of Koi or hot weather demands.

The Koi are always the best indicators of good, or bad, conditions and sensible steps, taken in moderation, are usually better than sudden, violent changes.

**When I introduced some small Koi into my established, planted, gold-fish pond it was not long before everything disappeared into a murk of mulm and suspended algae almost like pea-soup. The pond is 10 feet by 8 feet by 2½ feet deep and I built an under-gravel filter measuring 20 square feet. An outside pump rated at 800 gallons per hour was used to draw water through**

**the filter-bed and returned via a waterfall. This worked very successfully in keeping the water crystal-clear for about three months but then the output flow was reduced and air appeared to be mixed with the discharged water.**

Suspecting a blockage in the filter-bed, or leaks in the outside pipe-work, the system was back-flushed and the pipe-joints carefully checked. Everything seemed in order and on re-starting the throughput was good, but over the next few days the water gradually reduced and again an amount of air gurgled out from time to time.

This trouble happened several times at decreasing intervals and when the pump was switched off, bubbles appeared to come up from the filter bed. Being at a loss what to do I then substituted a submersible pump of about 500 gallons per hour in the pond, and after starting with a 'clean' system this operated successfully for about two or three weeks but gradually the old trouble of reduced output occurred together with the frequent discharge of air-bubbles. There cannot be any air leaks into the present system as it is entirely submerged and I would appreciate your help in my dilemma.

Your long letter contained a great deal of other useful data and at least your experiments with two different types of pumps do prove that air was not leaking into any joints of the original external pipework.

The volume of water in your pond is about 1,000 gallons and for the filter area of 20 square feet, both the pumps you mention are too large. It would seem that they were working under severely restricted conditions and could not possibly pass their designed rates of flows through the ¼ inch filter pipes and depth of gravel.

The relatively high velocity of pond water passing through the filter bed, which acts as a simple mechanical filter in the early stage, would cause this to become partially choked and further increase friction losses to starve the pumps of water.

This would happen more quickly with the larger capacity outside pump and explains why its effective 'working life' was less, and in the case of both pumps that they were trying to work under starved conditions. It is possible for air to be generated as a result of cavitation due to the pump impeller seriously slipping in a reduced flow of water. Also, it would be possible for air to be generated in the filter pipes and to escape up through the filter bed as you describe, when the pump is stopped.

I would suggest that for the forthcoming winter months you only need a small pump capable of about 250-300 gallons per hour. If you wish to use your existing submersible pump next summer then the filter pipes and overall system should be of 1½ or 1¼ inches diameter and not the ¼ inch presently in use.





# MARINE QUERIES

by Graham F. Cox

## READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.

I will be shortly setting up a 60 gallon marine tank. I will be using high turnover U/G filters, plus a D.E. power filter. I have read several books on setting up marine aquaria, but none have been very descriptive on how actually to mature the gravel bed.

I have been told many varied ways of attaining a healthy mature bed, from using pieces of potato and garden soil to commercial brands of chemicals.

I may add that I am in no hurry to get my first fish into the tank. I wish to start my aquarium in the correct and proved manner. Any advice you could give me on this subject would be greatly appreciated.

Is it true that anemones can be introduced into the aquarium as soon as it has been set up?

You should mature your filter bed initially until the evidence of nitrite toxicity (using a nitrite test kit) disappears to less than 0.125ppm. At this stage purchase two or three non-aggressive damselfishes of different species, e.g. one Saffron-blue Damsel (*Pomacentrus melanochis*) from Manila, one Electric-blue Damsel (*P. caeruleus*) and one Humbug Damsel (*Dascyllus aruanus*). The latter two fishes also originate from the Filipino Archipelago and are much more docile than similar fishes from the remainder of the Pacific and Indian Ocean areas.

By daily use of your nitrite test kit, use these two or three super-hardy little fishes to learn the critical arts and science of feeding without creating nitrite toxicity and organic pollution of the aquarium. It is very probable that during this final running-in period you will overfeed (99% of all beginners do so!) and the resulting seawater pollution will create disease conditions which would kill marine showfishes (i.e.

angelfishes, butterflyfishes, wrasse, surgeonfishes, tangs, etc.) but which, with the use of medication appropriate to the disease (YOU MUST OBTAIN A DISEASE DIAGNOSIS CHART!), the tough little damselfishes will survive.

Thus, by about two to three months after the maturation of the aquarium, the precise period depending very much on your aquatic aptitude, you should be in a position to care adequately for your first few showfishes. Before buying these can I recommend that you read as many colour-illustrated books on marine aquaria as you can lay hands on and draw up a list of those fishes you most admire, to a maximum combined nose-to-tail length of 14 in. **DO NOT EXCEED** 1 in. of fish to each 4 gallons of seawater until you have had at least 12-18 months experience of marine aquarium management. Even then you must approach the ultimate maximum stocking level of 1 in. of fish to each 2 gallons of seawater only with great circumspection.

Now approach your local marine livestock dealer with this fish list and ask him would he kindly:—

- (1) Delete any fishes which are unsuitable for you on grounds of aggression or delicacy or difficulty.
- (2) Re-arrange the remaining species in the best order of purchase for you, i.e. so that you purchase the more retiring, shy species first and so on down the list until you buy the more boisterous and confident species last of all.

I would **NOT** recommend you to purchase an anemone (even the hardy species which can survive nitrite and organic pollution) until your aquarium is fully-matured, i.e. until you have kept the damsels successfully for at least a month.

# THE INCUBATION OF REPTILE EGGS

by Chris Mattison

As the keeping of reptiles becomes more popular, and the number of these animals in the wild decreases due to habitat destruction, over-collecting and so on, it is encouraging that the interest in captive breeding is growing. Apart from the financial advantages in encouraging reptiles to reproduce, its achievement is a yardstick by which the herpetologist can measure his or her success in providing a good environment for the animals.

All Crocodylian and Chelonian species are oviparous, as are the majority of snakes and lizards, and since the requirements for the successful incubation of reptile eggs differ in several aspects from those of birds, many clutches are lost, especially by newcomers to the hobby.

There are two ways in which one is likely to come by a clutch of eggs—firstly, a recently purchased animal has mated in the wild before capture, and is gravid when received (in the case of North American and European species this is likely to occur during May, June and July), or alternatively a pair of captive animals mate and subsequently produce eggs. In either case it will almost certainly be found preferable to remove the eggs and incubate them artificially since, with the exception of a handful of species (notably the Pythons), the female, having selected the most suitable place to deposit the eggs, will take no further interest in either them or the resultant young.

In order to hatch, reptile eggs must be maintained within certain limits of temperature and humidity. In order that these parameters can be reliably controlled, it is recommended that the eggs are kept in a fairly small container. I use the polythene boxes in which ice-cream is sold for deep freezes, but plastic sandwich boxes, bait boxes, etc., are equally suitable provided that they are clean. At least one zoo uses polythene bags, half filled with the incubation medium, inflated, and sealed with an elastic band so allowing observation and display of the eggs during incubation and hatching, but the drawback here is that the young reptiles may use the egg-tooth with which they are born to slit the bag after having used it to cut their way out of the shell, and so it would be advisable if this method is employed, to place the bag inside another escape-proof container.

All snake eggs, and most other reptile eggs, are covered with a supple, permeable shell the purpose of which is to allow the developing embryo to take up water during its development and incidentally causing the egg to swell, sometimes considerably, during the incubation period. Therefore the egg must be situated in such a way that free water is available at its surface, but without creating an atmosphere in which mould will develop. In nature this is achieved by depositing the eggs in a rotting tree-stump, pile of decaying vegetation, damp sand, etc., and various simulated media are used successfully by herpetologists such as sawdust, sand, vermiculite, peat, or sphagnum moss. My own favourite 'recipe' is a one-to-one mixture of peat and sharp sand. This is thoroughly soaked and then all excess water is drained away until the mixture is at a consistency where it will roughly retain its shape if squeezed in the hand and released.

Whatever medium is used it is helpful if it is sterilised before use, a pressure cooker being ideal for this purpose. It is then spread over the bottom of the container to a suitable depth, usually one to two inches, and the eggs placed in it. It is advantageous to prevent the eggs from touching one another in order to prevent contamination should mould develop on one or more, but in the case of snakes which lay adhesive eggs in a cluster, this is sometimes not possible. It is not necessary to completely bury the eggs, but may be useful to make a small depression for each one to prevent it from rolling around when the container is moved (fig. 2). In the case of lizard and turtle eggs, there is strong evidence to suggest that once incubation has started the eggs should not be rotated, otherwise the embryo may perish, so it is a good rule that *all* reptile eggs are moved as little as possible, preferably never, once they have been laid. If necessary the top of each egg may be lightly marked with a soft pencil prior to removal from the cage. Another technique which I have successfully employed with Wall lizards, Green lizards, and other species, is to provide a container full of the incubating medium in their cage, and they will usually dig down into this to lay their eggs. It can then be removed, the lid replaced, and the eggs are ready for further treatment



Fig. 1. Snake egg hatching

with the minimum of disturbance. The purpose of the lid, of course, is to prevent evaporation from the medium, and ventilation holes are unnecessary provided that the boxes are inspected frequently as the anticipated hatching time approaches.

Certain gecko species lay hard-shelled (calcareous) eggs, usually in pairs, and attached to a piece of bark, rock, etc. and these eggs do not need to absorb water although a fairly high degree of humidity should be maintained around them. It is best if the eggs are removed from the parents' tank (together with the item to which they are attached) and placed in a separate small cage so that the eggs or young cannot be molested.

Incubation temperatures are a subject of much debate, but a temperature which ranges between 75 and 85 F usually brings success in the case of temperate species, whereas tropical species probably require a slightly higher average. It is always far better to place the box containing the eggs in a warm place than to attempt to heat it from inside, a large cupboard fitted with an electric light bulb, soil-warming, cable etc., wired to an aquarium thermostat in a jar of water being one method, if one is not fortunate enough to have a position in the house maintained at the correct temperature, in which case it is only necessary to place the box in a position where it can remain undisturbed.

The time taken for the eggs to hatch varies widely from species to species and is strongly linked to temperature, in some cases being as long as four months. As an indication, eggs incubated by me in recent years have hatched in the following times: Grass snake 40-42 days, Californian Kingsnake and

Yellow Ratsnake 72-80 days, 42 days for small Wall lizards (*Podarcis muralis* and *Podarcis melisellensis*), and 45 days for Green lizards. Many Field Guides dealing with reptiles, as well as other herpetological reference books, give notes on the normal incubation period for the species dealt with (if known), as well as details of clutch size, size of hatchlings, and so on, whilst the International Zoo Yearbook often records detailed breeding data for various reptile species bred in captivity. Since so little is known about the reproduction of many species, it is important to keep accurate notes on egg-laying, incubation, etc., should the occasion arise.

Fig. 2.



THE AQUARIST

# AGGRESSIVE BEHAVIOUR OF DAMSELFISH

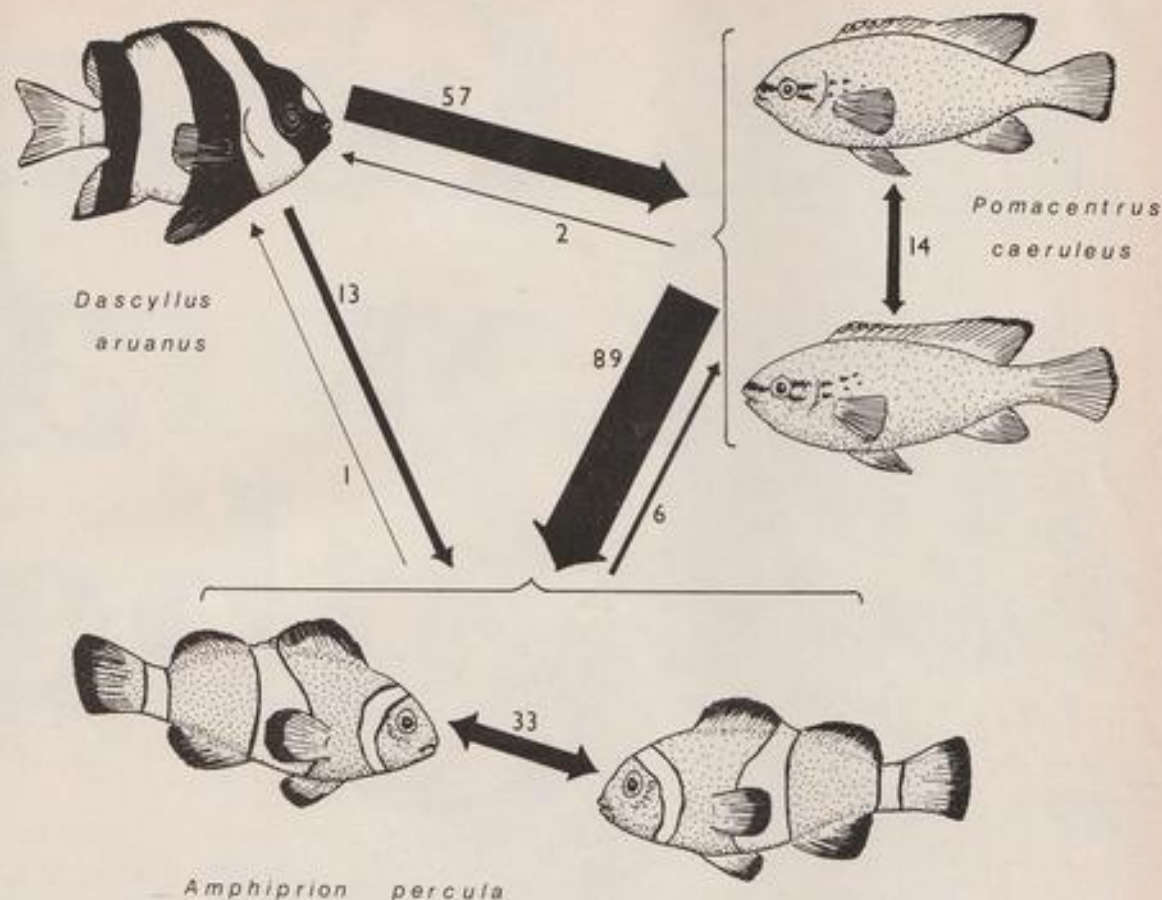
by Chris Lerwill

FISH ARE FAVOURITE subjects for students of animal behaviour. In fact, two of the three ethologists who received the Nobel prize in 1973 for their work in animal behaviour have at various times studied fish in aquaria and to some extent in the wild. Niko Tinbergen made a now famous study of stickleback behaviour, investigating mainly territorial and breeding habits. Konrad Lorenz has made a number of studies, particularly of territorial and aggressive behaviour, of both freshwater and marine fish in aquaria and in the wild. Lorenz came to similar conclusions in his studies of both coral fish and cichlids. He suggested that the individual fish have inborn aggressive drives which they will expend on other fish. A male cichlid, for instance, will attack another male of the same species if possible. If such a male is not available, he will attack a male of a closely related species, and if this is not possible he will then attack a female. In general, Lorenz found that fish are most aggressive towards members of their own species, and if this is not possible, then they will expend their energy on individuals which provide similar stimuli such as colour or pattern. There are considerable differences in the strengths of aggressive drive between species. Some species are notorious for their high levels of aggression, others may be of a very mild disposition.

My own observations have been on small groups of marine damselfish and clown-fish (family Pomacentridae) in aquaria. In the observations described here, I recorded every instance of aggressive behaviour for periods of ten minutes at various times and in various groupings of fish. In these species aggressive

behaviour consists of a rapid approach by the aggressive individual with dorsal and ventral fins held erect, and in some cases this behaviour may be followed by butting and biting of the victim's fins or body. For the first group of observations the tank contained one Humbug Damselfish (*Dascyllus aruanus*), two Electric-blue Damselfish (*Pomacentrus caeruleus*), and two Common Clown-fish (*Amphiprion percula*). The results of three ten-minute observations are shown in the diagram. It can be seen that the Clowns showed more aggression between themselves than towards either other species. The Electric-blues, however, showed little aggression between themselves, but directed a large amount towards the Clowns. The Humbug, belonging to a species notorious for aggression, was indeed more aggressive both in terms of frequency and intensity than any other individual and directed this aggression almost entirely towards the Electric-blues. Why this should have been so is not clear, unless the more active movement of the Electric-blues acted as a greater stimulus than the apparent similarity to the Humbug of the pattern of the Clowns. These results would appear to indicate a hierarchy of aggressive drive and a displacement of this aggression towards less aggressive individuals. Thus the Humbug was most aggressive and vented this aggression on the Electric-blues who in turn vented their aggression on the least aggressive species, the Clowns. These, with no less aggressive species present, discharged their aggression towards each other.

In another series of observations three more fish were added to the above group. Before the introduction, however, the Humbug was confined to a



Frequency and direction of aggressive behaviours shown in a total of 30 minutes in a tank containing the individuals shown in the diagram. (Drawing by Laura Lerwill)

trap to allow the new individuals time to settle. The new specimens were two Cloudy Damsel fish (*Dascyllus carneus*) and one Saffron-blue Damsel fish (*Pomacentrus melanochir*). The behaviour of the group over a few days showed that the Electric-blues were now the dominant individuals, showing aggression towards the others and receiving none in return. The Clowns continued to vent their aggression on each other, and the Saffron-blue seemed to dominate the Cloudies. After a few days the Humbug was released from the trap. The immediate response of the Electric-blues was to be very aggressive towards the Humbug, seeming to resent its intrusion into what they now regarded as their exclusive territory. After half an hour, however, the Humbug had re-established itself and received no further aggression from the Electric-blues who started to displace their

aggression mainly onto the Saffron-blue which closely resembles the Electric-blue. The Humbug initially showed a little aggression towards all other individuals but later concentrated its aggression on the Electric-blues.

The final situation was that the Humbug was the overall dominant individual, then the Electric-blues, and the remaining individuals more or less equal at the bottom of the hierarchy. It would seem that "like attacks like" is not necessary the rule and that a dominance hierarchy of species may develop in a specific situation; in this case, perhaps, due to the presence of the single highly aggressive Humbug Damsel fish. A study of this kind can provide an intriguing addition to the keeping of fish and may well lead to the discovery of behaviour patterns not previously documented.

# From a Naturalist's Notebook

by Eric Hardy

BY THE TIME this article appears we shall know more of the big frost's effects on delaying fish-spawning and aquatic insect-hatches, killing beds of young shellfish exposed during the low tides, and checking plant-life. Tremendous seas on the Norfolk coast in mid-February, backed by north-east gales, deposited high up the beach at Weybourne masses of dahlia sea-anemones, starfish, sunstars, egg-cases of ray still with embryos in them and many crabs with eggs. At Hunstanton, thousands of razorshells were washed up with the crabs.

A common toad was dead on mid-January's ice at Ainsdale nature reserve's pools, when 44 lb 8 oz. of chub caught in the Welsh River Banwy were obviously feeding in the frost, for water keeps its warmth longer than the land outside. By early March, old rain-pools on waste land near our Merseyside docks, which had earlier been frozen, were full of caddisfly nymphs, as were rainpools by a tip miles inland, so there was no mass mortality of these during the hard frost. But these western regions fared better than the east. The water also teemed with Cyclops and ostracods, tiny freshwater crustaceans.

## Cruelty to Pets

The law seems not to be active over what constitutes cruelty among pets. After a successful prosecution of a man last year for ill treatment of one of the large foreign spiders, an American airline was fined £10,250 at Uxbridge in March when over 800 snakes were reported dead on its plane's arrival at London airport. This was a few days after the RSPCA secured £3,600 in total fines at the same court after a 12 years-old-boy reported 427 tortoises packed into the back of a car where 18 had died, and 35 died later, on a very hot day in Bedfordshire.

One way to photograph wild snakes, of the smaller European species, when found restless in the sunshine, is to cover them first with a cloth, which subdues them. When removed there is usually time for an exposure. With insects like active caterpillars, the "drill" is to blow on them, which usually subdues them.

## Life on Earth

Several excellent colour-plates of reptiles, fish and amphibians are in David Attenborough's lavishly illustrated *Life on Earth*, published recently by Collins and the BBC at £7.95 in conjunction with

the popular TV series. Few books have condensed so much and covered such vast periods of time in the story of evolution. It is the best popular but sensible natural history exposition since Disney's *Living Desert*, as it doesn't give an imbalance of birds and cuddly mammals for sales appeal. The story of how these creatures came out of the water to live on land, and some like the legless U.S. salamander, the siren, went back again, is well told, revealing the incompleteness of the fossil story. The amphibian's was the second voice on land after the insect's. Water-lilies were the earliest among flowers. The little butterfly-fish are the most diversely patterned family among the warm coral-reefs. Sharks and rays are drably coloured because unlike bony fish their eyes cannot perceive colour. The acquisition of a swimbladder enabled catfish to communicate by calls which they hear through their bodies, not ears. Much is still to be learned when the first aquarium caelocanth can be kept alive; one miserable, hooked fish, brought from great depth, lived only long enough in captivity to be filmed in a languid state.

The water-tight skin of reptiles enabled them to live further ashore and breed in waterless places like the deserts, for which they evolved water-tight eggs with the first egg-shell. The land ceased to be dominated by great dinosaurs when the climate grew cooler and they could not generate enough heat for such big bodies. Crocodiles, the largest living reptiles, solved the problem by going back to the water. Snakes, the last great reptile group to appear, can absorb the sun's energy directly by basking in it, and thus reduce their food requirements without the bird's endless search for it.

## Insects

Insects receive a poor Press, usually as pests; but marginal plants grown in the shallow water of pond or pool are mostly fairly leafy and host to numerous insect eaters. Water or amphibious bistort, whose pink flower-spikes lift above its floating leaves, is host to caterpillars of two micro-moths, while water-lily aphid attacks arrowhead and flowering rush, and its brown China mark moth attacks frogbit too. Leaf-mining sawflies and cuckoo-spit bug infested *Filipendula*, water-dropwort, while the pests of flag-iris range from gladiolus-thrip and caterpillars of the crescent moth to iris-sawfly, potato and tulip

bulb-aphids and its own fly *Diizygomys iraeos*. Yellow flag is also commonly attacked by adult and larvae of hymenopterous *Rhadinoceraca micrans*. Foetid iris seed-capsules are food for *Oenectra pilleriana*, a tiny Tortrix moth.

Water-mint may be galled by the leaf-mining Agromyzid fly, *Phytomyza petoi*, despite its odorous leaf-oil. Reeds (*Pragmites*) harbour a host of parasites such as the beetle *Cyphon variabilis* in abundance, also *Notaris* beetles, tiny *Bactra*, *Rhizedra lutosa* and other tiny caterpillars of Tortrix moths, and those of larger wainscot moths in their roots, as well as true flies, sawflies (*Cephus*), a midge-gall, hymenopterous *Selandria*, etc. Rushes (*Juncus*) likewise suffer from larvae of micro-moths *Bactra*, *Glyphipteryx* and leaf-case making *Coleophora*, also the double line wasp-gall *Antichira striata* and midge-galls (*Perrisia*), hymenopterous *Selandria*, and by capsid bugs (*Tylthus*) and ground-bugs, *Pachybrachus*.

#### Micromoths

Leaves and stems of sedges (*Carex*) feed micro-moth caterpillars like leaf-mining *Elachistra*, *Celaena* and *Bactra*, stem-feeding *Aristotelis lucidella*, many small beetles, *Cymus* capsids and wasp-galls like *Antichira striata*, *Dichroma galluram*, *Hormonyia* and *Pseudohormonyia* species. Sparganium or bur-marigold is another victim of "brown" and "beautiful" China mark moths, as well as of reed-boring wainscots. Spiraea, like native meadow-sweet, is attacked by potato-aphis, 6-spot burnet moth, eyed hawk and, on in its flowers, V-pug caterpillars; also by four tiny tortrix moths, by midge-galls including one from meadow-sweet *Dasyneura* (= *Perissia ulmariae*, by brown scale, mealy bug, plus an abundance of hymenopterous *Monaphadnus* and by its own sawfly *Nematus spiraeae* eating its leaves to skeletons.

*Typha* the reed-mace or false "bullrush", cat-tail, etc., has its own ground-bug *Chilacis typhae* and a stem-boring wainscot-moth caterpillar *Nonagria typhae*, as well as sharing reed-wainscots and water-lily aphid. Valerian is attacked by a gall-midge *Liriomyza strigata*. Water-plantain attracts the brown China mark moth *Nymphala* (= *Paraponyx stratifolia* which runs on the water-surface and whose tiny aquatic caterpillar lives in a case of silk-sown bits of leaf. Water-speedwell also shares some of the rush and willow midge-galls. Water whorl-grass (*Catabrosa*), with far-creeping runners, is attacked sometimes by brown China mark. Great hairy willowherb of the waterside has its own capsid bug, *Dicylphus epilobi*.

#### Coypu and Voles

On top of all these, water-voles, often confused with rats, are attracted to nibble creeping rhizomes of reed-mace and other marginal aquatics, especially when these are exposed in dry spells. Rats and East Anglian coypu usually require denser reed-beds

of large ponds or lakes rather than garden pools for their harbourage. One of the most attractive of all insects of marginal plants, the swallowtail butterfly, is certainly not a pest. I see this oftenest around the abundant milk-parsley bordering the south-west shores of Norfolk's Hickling Broad, below Decoy Lane. Also at Barton Broad Fenside. Although some books also give its food-plants as angelica, fennel, cow-parsnip, pimpinell and wild carrot, the darker British race does not extend its diet to these, though continental swallowtails introduced into Kent marshes will. Ragged robin is the favourite nectar-source of the flying adult. It has been re-introduced from Norfolk for a precarious struggle for survival at Cambridgeshire's Wicken Fen. Great water-dock was the food of the virtually extinct large copper, reintroduced at Wicken and Woodwalton Fens. Few garden pools are likely to be troubled by the small mountain-ringlet butterfly laying on their rushes. Many insects visit flowers for pollen or nectar without laying on them; others, like dragon-flies, may roost or rest on them as a territorial vantage-point from which to attack intruding rivals. Many nibblings of sawfly-grubs, or even slugs, are mistaken for the work of caterpillars. Not all galls are insect-made; some are caused by fungi and bacteria as well as by eelworms and mites.

## READER'S LETTER

### Advice Wanted

Through your columns and re-News from Aquarists Societies, can I ask how they manage to have and keep so many members.

As far as I know we are not a bad Society, I try and get at least one speaker a month or a tape slide lecture.

To date we have had the Severn Trent Water Board with a Lecture and Film. Next came another very good lecture from Mr. B. Chandler on Lake Malawi Cichlids, with supporting film. And last meeting we had the F.B.A.S. tape slide lecture on plants.

Our show committee work at the Table shows open shows, furnished Aquaria Exhibition to the best of their ability; a childrens party is put on at the end of the year. We haven't the members to be a great force at open shows, though a few of us do go.

All in all for £1.50 I think Aquarists get a good deal, therefore where are they all from Loughborough?

We meet twice monthly on the 2nd and 4th Thursday, at the Charnwood P.H. In the Rushes, next door to the bus depot. If anyone has any ideas on how to survive let me know.

A. ONSLOW,  
Hon. Sec.  
8 Garfield Road,  
Hugglescote,  
Leics. LE6 2HU.

# The Mollies (2)

*Poecilia mexicana* –

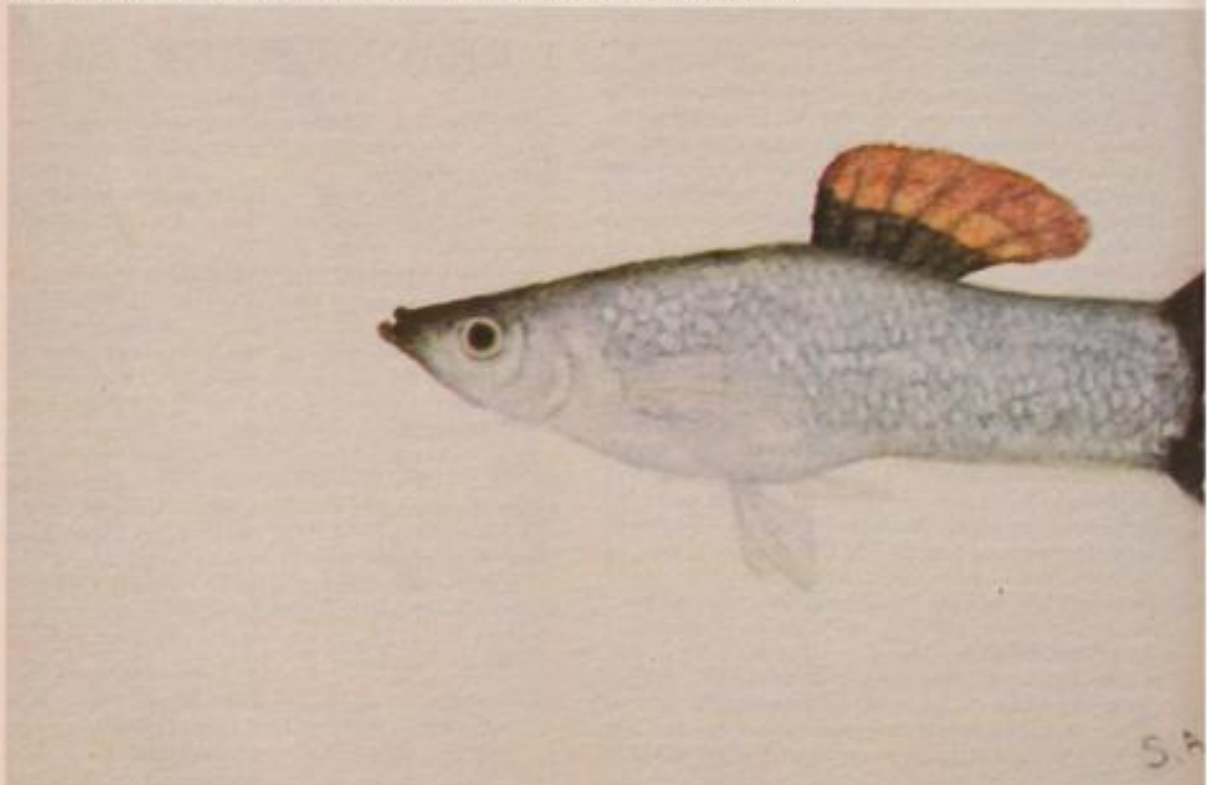
*A Molly of great variety*

*by Barry Durham*

IT SEEMS a pity that the only specimens of *Poecilia mexicana* available these days are inferior examples of what have come to be known as Liberty Mollies. Apart from the fact that the true Liberty is a far more beautiful fish than the ones currently masquerading under the name, many years ago there were plenty of

different colour forms available. *Mollinisia sphenops*, as it was then known, was being imported into Germany in the 1920s in twelve different varieties as well as the true Liberty, but unfortunately these seem to have been largely forgotten now since the importation of the Sailfins and the newer cross-bred varieties.

The true Liberty Molly showing the brilliant coloration of the dorsal and caudal fins.





It first came to scientific notice in the mid 1800's when it was named by Cuvier and Valenciennes in 1846, but because of its wide range which led to a great multiplicity of local races and forms, it was "re-discovered" and re-named on at least 40 other occasions being placed alongside swordtails, platies, gambusias and girardinus among other things.

This fact alone should show that it is a fish of great variety for each "new" fish was different enough from its cousins to fool some of the scientists. They came from rivers in Venezuela, from streams in Colombia, from lakes and ponds in Mexico and Texas; from ditches, canals and reservoirs; in fact, from every stretch of water large or small through 20° of latitude. They were especially found in river estuaries and even in the Leeward Islands.

It is this estuarine tendency which mark them out as fish which need salt in their aquarium water if they are to survive and prosper, and it is also this single fact, more than any other, which has caused aquarists so many problems with them. One tends to group all mollies as community fish but their liking for salt should really set them apart from their fellow tropicals into the brackish water category. With around two

teaspoonfuls of cooking, aquarium or, preferably, sea salt in the tank, they are much happier—and much more likely to grow to their full size and reach their true colour potential.

#### Colours

But what of those colours? They are known mostly nowadays as a bluish fish with a tendency towards orange in the black-spotted fins, but the description of the "nominate" form is much more spectacular.

True, the overall colour is still bluish, but the back is olive green and along the sides are four to six rows of orange dots which form a meshwork. There are also about eight greyish bars on the sides and the scales each bear a bright blue-green spot. The dorsal fin is spotted between the rays at the base and carries a broad orange border with a thin edge of black. A similar colour appears on the tail and while the remaining fins are colourless, the gonopodium is orange. Fish of that beauty just are not seen these days. More often than not they are a pale blue which reflects quite brightly in sunlight. The fins are pale orange with dark spots and that's about it—and more often than not this is the fish they call a Liberty Molly! The Liberty is, in fact, even better for as well as the lovely body colours it bears a dorsal fin with a black band at the base and then a broad orange band which darkens to red towards the outside. The tail is similarly coloured.

#### Varieties

A variety known early on as "dovii" was more greenish with silvery blue sides covered in black markings. The breast and fins were brownish.

A South American form was quite small, only reaching about 6 cms and was coloured grey-brown with up to 10 dark bars on the sides and numerous bright blue dots. The dorsal fin was brilliant orange.

From Central America came a green form with black, red and blue spots and blotches on the body and fins, and also a silvery form which shone with a violet iridescence above an orange lower half. Each side had a large black spot and three dark transverse bands and the tail was yellow.

And yet another spectacular form was very similar to the sailfin. It grew to a size of over 10 cms and the brassy yellow body was spotted with rows of red, green and silvery dots. The dorsal fin carried a pattern of spots very similar to *P. latipinna*.

Mexico also had its own form which was brownish to olive green on the back, paling on the belly region. Each scale on the front half of the body carried a bright streak and the caudal peduncle had six to eight green or blue bars. There were also several longitudinal stripes of gold to brown. The male carried a larger dorsal fin than the female and this was velvety black at the base with much black and white spotting towards the outside edge on a yellowish background. The tail was brown with black spots and a black border.

Each of these different types, and only a very few are



listed, had its own particular set of water conditions and temperature range and even variations in the gestation period, so it is quite easy to see difficulties arising when it came to keeping them in the aquarium.



Black Veiltail Molly (male)



Black Veiltail Molly (female)

In general a temperature in the mid-seventies Fahrenheit is usually safe, slightly higher if you wish to shorten the time between broods which can be anything from four to six weeks.

#### Common tastes

One thing they all have in common, however, is a liking for vegetable matter, especially algae on which they like to browse, and this is another factor which has contributed to many aquarists failing with them. They really do need an adequate supply of green stuff in their diet, whether it is algae, spinach, lettuce or even a proprietary brand of vegetable flake food.

Perhaps it was because the short-finned molly occurred naturally in so many different colours it was not bred into the many fantastic hues that now bedeck the swordtails, guppies and platies. It was largely left alone apart from the black form. This alone caught the eye of the breeders and the now common black molly was bred from a sport or freak of nature. The initial specimens were not all black at birth, however. They carried only varying degrees of dark markings which disappeared soon after birth to reappear some weeks later. Some fish turned all black eventually while

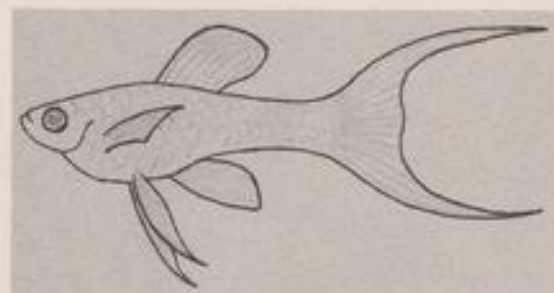
others retained a degree of speckling. Eventually, however, a "permablack" version was developed and this is the one we see today.

#### Cross breeders

It is, in fact, only in quite recent years that attention has once again been turned to the short-finned molly and even then not really for its own sake, but as a cross breeder with other developments. However, we do have the lyretails now in black and albino forms and the latest addition which is the veiltail molly. This does appear at present to be only in the Mexicana, although no doubt it will be bred into the others in time. The tail is longer and broader than in the wild form, though not as large as in its namesake the veiltail guppy. So far it only appears as a black.



Albino Lyretail Molly (male)



Albino Lyretail Molly (female)

Another thing that has changed over the years is the temperament of the fish. The early short-finned mollies were known to be fast and boisterous swimmers not averse to taking a bite out of a passing fin, but this tendency seems to have been curbed with domestication, although sadly the reputation still lingers in some quarters.

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NEXT—The Crown Prince of Mollies (*Poecilia latipinna*).

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*More about*

# "The Aquarist" Fishkeeping Exhibition



LAST month's preview of *The Aquarist Fishkeeping Exhibition* presented the Society Tableau Class and Specialist Societies' Displays. Following along, we next come to those other Classes that need extra planning time and preparation—*FURNISHED AQUARIA*, *AQUASCAPES*, and *PLANT* Classes.

Again, there is ample opportunity for all to compete with Furnished Coldwater or Tropical Aquaria at Individual or Society level; these will be benched in 24 in. x 15 in. x 12 in. tanks (provided), or exhibitors may bring their entries partially set-up in their own tanks. For the smaller type of Furnished Aquaria there is a Miniature (10 in. x 8 in. x 6 in.) Class but here the exhibitor normally supplies the tank. As the entries will be on display for three days, exhibitors may worry about their wellbeing; heaters, thermostats and airline will be provided and filtration/aeration may be used (except during judging).

If you fancy a bit of both worlds, then an 'above and below' aquatic scene is very much possible within the AQUASCAPE Class. As in the Furnished Classes, Individual and Society entries are catered for and although aquascape tanks are provided, again exhibitors are free to use their own if desired. Within this 'standard' Class, exhibitors have a free hand to do their own thing and the only linking theme throughout will be the aquatic world in general. For would-be exhibitors, rest assured that our Night Stewards are dab hands with the water-spraygun so that you need not fear that your handiwork will 'dry out' overnight before the public have a chance to view your creation. Whilst on the subject of overnight security for exhibits, it might be an opportune moment to ask those Societies presenting Tableaux or Specialist Displays to provide a sketch plan of their display, indicating 'master' electric control switches in the event of

nocturnal malfunctions—for the benefit of the night-watchmen.

To some people, the aquarium is not complete without plants (some fishes might also agree) so the PLANT Classes will be a good starting place if you are thinking of furnishing a tank of your own. The three sub-divisions in this Class will be for Rooted and Floating specimens, and Cuttings. As with the Fish Classes, it is hoped to have Plant exhibits named, and reference to the FBAS No. 3 Booklet will give you full details of a plant's 'Show-worthiness' and where details of its aquarium culture may be located in three well-known standard Plant books. In addition, this Booklet also contains details of the Pointing Systems used in the Furnished Aquaria and Aquascape Classes, and so you can see what is taken into consideration by the judges when evaluating the entries.

**Latest Show News:** Over 800 Show tanks have been checked and sealed and now await your entries. Schedules are available from the FBAS Show Secretary, Laurie Brazier, 66 Ormesby Way, Kenton, Middlesex. Posters, Handbills and Car Stickers are available from 'The Aquarist & Pondkeeper' direct (address at the front of this magazine) but please send a large stamped, self-addressed envelope when ordering. Tickets may be obtained in bulk by post in advance of the Show and orders for more than 20 tickets qualify for a discount; why not stock up for your Club's visit? They make good Raffle prizes too!

Next month we'll take a look at some of the Fish Classes, but meanwhile, keep planning and looking forward to The Aquarist Fishkeeping Exhibition at Alexandra Palace, London N22, 13th-15th July 1979.

# Dwarf Cichlids

## *Jewels from the lakes of East Africa*

AFRICAN DWARF cichlids are extremely charming and attractive varieties. They are ideal for the aquarist for whom the larger cichlids are too big and characins too small. Their average size varies between 8 and 12 cm., so they are highly suitable for medium-sized to larger aquaria. As far as setting up the tank is concerned these fish make few demands on the aquarist. Decorative plants are not recommended—only the sturdy Amazon and other Echinodorus varieties seem suitable.

The tank floor should be furnished with stones

**by Lothar Fuchs**

arranged in a series of shelves—a layer of covering gravel being added after the arrangement has been completed. The cichlids themselves will be able to move gravel without difficulty in order to create nooks and crannies as they wish. Care must be taken, of course, in arranging the stones—unsteady construction may well result in a cracked or shattered tank.

*Pseudotropheus ornatus*



No particular types of stone are essential. I personally use local sandstone, pieces of limestone, and stones from the vineyards from which our excellent Franconian wine originates several clumps of moor oak—of which I prefer the Scottish varieties—add contrast to the tank.

After carefully cleaning the stones and roots and arranging them in the tank, I introduce the water over a period of three to four weeks using absorbant cotton, charcoal and peat as filter. In spite of very hard water—8 GH and 7.5 pH, the fish show every sign of good health. Proof of this was provided by the fact that the first fish I kept quickly reproduced within four months.

The offspring grew quickly and, after four weeks, developed the characteristic body-shape and the beginnings of coloration. Both young and mature fish are very lively, quickly disappearing into crevices at any sign of danger. However, they soon peep out from their hiding—places and re-emerge.

All the different species have a vivid coloration rather reminiscent of sea-fish. Also, they are remarkably adept at changing their coloration—prompted by changes in mood or surroundings.

I keep the following species in a community tank, one pair of each: *Labidochromis caeruleus* lik (pearl of Likoma), *Labidochromis ewartii* (brilliant blue



*Labidochromis ewartii*

variety), *Pseudotropheus johanni* and *Pseudotropheus spec. ornatus* (blue and white striped dwarf cichlid).

All of these were obtained from the Tagis-Aquarium, Frankfurt. The firm has its own collecting station in East Africa. Great care is taken in catching the fish with the result that aquarists are offered excellent specimens in good condition. As a consequence the Tagis company is the largest supplier of fish from the Malawi Lake area in Europe.

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**TRADE ENQUIRIES INVITED**

I AM CONSIDERING renaming my house "Marine Hotel". Very shortly after providing temporary lodging for a neighbour's tropicals while she was in course of replanting and refurbishing her tank, I was telephoned by a colleague one very cold Sunday morning to inform me that his pond was leaking fast and what was to become of all his goldfish? I rapidly collected some nets, polythene sheeting and some plastic bags and reported with my daughter, always ready to help where animals are concerned, to the poolside, where the gloom and depression of

wards. The latter all went into a plastic baby's bath (about 30 in. x 18 in. x 8 in. deep) and the others were divided more or less evenly between two buckets. My cold greenhouse seemed to be the best place for them while the weather remained so appallingly cold, and that was that for the time being. It was interesting to note that while the young fish remained very still in the water, the adults wriggled themselves into a mass formation, almost as though they were trying to keep warm, but the true explanation, no doubt, was that they were using one another

## Commentary

by Roy Pinks

a bitterly cold morning were in no way dispelled by the discovery of a six inch slit in the pool lining and the presence of scores of fish in dire need of rehousing.

It had obviously been a fruitful breeding season, moreover, as there were young fish everywhere, mostly brown or black, but here and there a shubunkin. In the ordinary course of events I would have netted the lot and tipped them into my large pond, hoping to recover most of them later after their pool had been repaired, but it was largely frozen over, badly polluted, and would be the end of them if the weather turned arctic again. There are two other ponds, one of which is in course of being relined, and the other, I suspected, as leaky as the subject of this article.

I decided that the best thing to do was to capture as many of the fish as possible, and to try to keep them just ticking over in the coldest spot, short of freezing, that I could find. We slopped around in that pool for the best part of two hours there being, seemingly, no end to the number of fish it contained, and we eventually departed with over fifty youngsters and twenty or so adults measuring from six inches down-

wards. The latter all went into a plastic baby's bath (about 30 in. x 18 in. x 8 in. deep) and the others were divided more or less evenly between two buckets. My cold greenhouse seemed to be the best place for them while the weather remained so appallingly cold, and that was that for the time being. It was interesting to note that while the young fish remained very still in the water, the adults wriggled themselves into a mass formation, almost as though they were trying to keep warm, but the true explanation, no doubt, was that they were using one another

### **Food withheld**

I completely withheld any form of feeding, and simply left them alone. To prevent any of the large fish jumping out I covered much of the surface of the bath with a couple of empty seed boxes, and these also reduced their alarm whenever I came and went. It was quite remarkable how unworried these large fish were under conditions of extreme overcrowding, but it should be remembered that their metabolism was at a low ebb and their oxygen requirements were minimal. The arrangements were highly provisional, because in this capricious climate a few warm days would have warmed up the greenhouse, and I just would not have got away with the improvised accommodation which I had so hastily set up.

I therefore examined the remaining spare pool, which was merely a temporary affair from the year of the drought, and which was lined with heavy gauge polythene. It appeared that it had sprung

# The Berlin Platy

It had to happen! After spending months researching the platies and swordtails to make sure I had got all the different varieties sorted out for my series of articles for "The Aquarist and Pondkeeper" last year, another one pops up.

The Berlin Platy appeared in very limited numbers in a few dealers' tanks in the latter half of 1978 but so far does not seem to be arriving in any quantity, which is a pity for it is a lovely fish.

It would appear to have been bred out of the Berlin Swordtail for it bears identical coloration i.e. a red, gold or yellow head, belly and back with a large area of shiny black scales each bearing a brilliant green dot. The fins match the head colour.

The first time I saw them just two or three had arrived in a shipment of tuxedo platies from Singapore, presumably by accident, and I managed to get hold of the best. Since then I have seen another couple appear on the show bench in the north of England, but the few in dealer's tanks have been very small poor specimens. No doubt the German fish fanciers have already cornered the market, but let's hope that some more good examples of the fish are imported this year so that British Aquarists can establish what promises to be a firm favourite.

*by Barry Durham*



# Coldwater jottings

by Frank W. Orme

DURING LAST WINTER most outside ponds were covered in ice; the semi-raised pond in my daughter's garden had roughly a six inches thick sheet of ice over the water surface which she was unable to keep open. Snow falling during night time froze, thus adding to the problem. She was, of course, concerned that the pressure of the ice might fracture the raised walls and that the solid blanket of ice and snow would have harmful effects upon the fishes—she anticipated that there would be a number of casualties.

As the severe weather conditions improved the ice began to thaw and, eventually, the pond became free of winter's icy grip. Fortunately the pond walls had escaped damage. The water was surprisingly clear, revealing the fishes huddled near the pond bottom. Rising temperatures prompted the Bristol shubunkins into becoming active and, as they swam near the surface, it could be seen that all were in good health and not a single fish had been lost. Yet, not so far away, the owner of an ornamental pond of similar size suffered heavy losses of common goldfish. Many of the fishes had lived in the pond for a number of years and seldom given their owner any cause for concern.

The question arose as to why one pond should suffer so severely, while the other came through the winter unscathed? Although luck and the pre-winter condition of the fishes no doubt helped in the case of my daughter's pond; the obvious factor, which pointed the difference, was the fact that the pond which suffered losses had not been disturbed for many years, and held a very thick layer of bottom sludge. On the other hand, my daughter's husband makes a habit of emptying their pond each November. All bottom silt and dying vegetation is removed, the pond is scrubbed out, and the health of the fishes checked. The pond is then refilled and the fishes returned. Thus during the freeze-up there was little decomposing matter left to create the adverse conditions which affected the ill-fated pond.

The idea of cleaning ponds is often scoffed at as an unnecessary chore; however, here is a case where, perhaps, a point has been made—especially where the average size pond is concerned.

During a recent conversation with a dealer, when the state of the fishkeeping hobby was being discussed, we got around to the subject of the ever increasing costs involved in keeping tropical fish. I was informed that he had the impression that fewer people were entering the ranks of tropical fishkeepers because he had noted a marked decline in the sale of tropical fish and ancillary equipment. The culprit, blamed for this state of affairs, was firmly believed to be electricity; the high charges levied for the use of electricity had resulted in many people finding it too costly a business to heat tropical fish tanks and the more tanks kept the higher the cost involved.

I was interested, and a little surprised, to hear him forecast that there would be a continuing decline in the number of tropical fishkeepers and a corresponding increase in coldwater fishkeepers—especially of koi and fancy goldfish—many transferring from one section of the hobby to the other.

Whether this dealer is correct in his forecast only time will tell; however, I feel it will be a great pity if the keeping of tropical fish reaches a stage where it becomes too expensive for the average hobbyist to enjoy or afford. Even so, it is a fact that most coldwater societies have welcomed new members who have left the tropical fishkeeping side of the hobby and, of course, this increase in membership has been welcomed. Coldwater fishkeepers would be less than truthful if they denied that they did not welcome the trend and looked forward to it continuing into the future.

The British Koi-Keepers Society are arranging an event which may interest readers. According to the society P.R.O., Mrs. Gill Minchin, the B.K.K.S.



will hold an auction sale of koi at the Botanical Gardens in Edgbaston, Birmingham on the 24th June. Although the sale will be open to the public, only members will be allowed to enter fish in the auction. If all goes well a local Best-in-Show winner and 22 inches long National Show 1st prize winner will be on offer without reserve, together with a number of home-bred fish and others.

At the time of writing, details are still being worked out; however, I am sure that interested readers could get full details from Mrs. G. Minchin, 26 Acacia Road, Bournville, Birmingham.

Most koi are kept in spacious, filtered, outdoor ponds, and, as most readers will know, can quickly grow to quite large fish. It is not too uncommon to see koi averaging around 24 inches swimming in the ponds of koi enthusiasts. Knowing the size that these fish can reach, is it reasonable to insist that they must be displayed in glass sided tanks when entered in a competitive open show? I understand that such a condition was imposed upon koi keepers by officials of an open show which forced them to withdraw their participation.

While Western aquarists believe that fish should be critically judged from all angles, which can only be done if the fish is placed in a tank, it quite obviously depends upon the size of the fish. Although koi capable of being comfortably housed in a tank should be so accommodated in compliance with normal Western practice, it is hardly feasible to expect the larger specimens to be exhibited in the same way. Suitable tanks would be monsters compared to the average large show tank, and extremely difficult to handle and transport. In order to get around this problem the koi societies have adopted the Japanese method of exhibiting koi in collapsible vats, and judging the fish from above.

Perhaps, if show organisers insist that all koi must be shown in glass sided containers, the solution would be for the organisers to supply the necessary number of tanks at around 4 ft. x 3 ft. x 18 inches each and allow them to occupy a large area of floor space. Or, possibly, it would be more feasible to recognise the problem and accept the fact that, in-so-far as large koi are concerned, the accepted rules cannot be applied and allow the fish to be exhibited in a large portable pool. The alternative is to allow a display pool of koi, on a non-competitive basis, purely as publicity for the particular exhibiting society. There is usually a mutually acceptable compromise, if it is sought which, unlike the rigid enforcement of a rule that cannot be complied with, creates goodwill rather than illfeeling and ensures the societies' continued participation and support.

When we first get our fish to breed, and the young are successfully raised, we feel a great sense of pride and satisfaction. This achievement encourages us

to do better and try for larger numbers of young, only to discover that a very small proportion of the fry turn out to be anything like the quality fish that we had anticipated, the larger proportion being very inferior specimens.

For a time we are content to produce just one or two reasonable fish from the many that are produced from a hatching. With time, however, we undergo a complete change of attitude. We become discontented with only being able to hope for so few decent young, and we begin to feel that there is a need to improve our methods and skills. In other words, we want to avoid the poor results which, hitherto, we have had through haphazard methods of production. We desire to exercise more control by selection.

Whatever our object in breeding fishes, consciously or unconsciously, we rely for success upon the working of the laws of heredity. When we mate fish, perhaps faulty in one feature such as colour, with one of the opposite sex which is not defective in that particular feature, we do so in the expectation that among the young that result some, if not all, will inherit good colour as well as a well-formed body and good fins. We count on the desired features being passed on from the parents to their progeny and learn from experience that this first generation, with its inherited characteristics, is likely to transmit them to their own young in turn. At the same time we realise that while some of the progeny may not show the desired features, they may carry the factors responsible and as such, despite what may be an unprepossessing appearance, can be used to advantage in producing, in a further generation, specimens displaying the desired features.

If we are to be able to exercise any control over the type of fish we get our stock to produce we must be aware of the characteristics possessed by the parents and by their parents. In other words, we must build up a strain. We must practice line breeding in order to establish certain inherited features which are likely to produce, in due course, true breeding specimens or, at least, specimens which are capable of producing a high percentage of quality young.

Should we require new stock to overcome an apparent lack of virility in our own strain, we must endeavour to obtain it from other line breeding fishkeepers, preferably those who have created a strain developed from fish which came out of the same original stock as our own, thus being blood-linked.

In this way we shall the more quickly be able to improve our strain and have less need to place reliance on purchasing breeding stock which possess unknown, and unproved, qualities which may manifest undesirable features in the young and, more than likely, upset the quality of the strain. Such use of stock whose capabilities are unpredictable may be at the

expense of those good points which we have fixed firmly in our own fish over a number of years. Too often some fishkeepers persist in bringing unknown fish into their breeding programme just because, outwardly, they appear to be desirable. Line breeding, with the judicious introduction, when necessary, of new blood from a known established strain, is the commonsense approach to improving our stock. It takes many years of diligent selective line breeding to establish a strain, so beware the person who claims to have an established strain after just one or two years, unless they admit to be propagating true stock from an older known strain.

Which is the ideal variety of fancy goldfish for the novice fish breeder to begin with? It is often claimed that the singletail varieties provide the easiest fishes from which to learn the rudiments of breeding and selection—but is that strictly true? Certainly they tend to be hardier than some of the more exotic types, and there are fewer characteristics to consider. The shape of body and finnage together with colour are the basic points governing selection of the young. The fancier varieties have many more points to consider. For instance, the lionhead must be studied for body shape, smoothness of the dorsal contour, shape of head, shape and size of the various fins, separation and place-

ment angle of the divided twin caudal and anal fins, and the colour, among other factors.

Having so many points to look for, a fish such as the lionhead will quite quickly have its numbers reduced by the removal of faulty specimens. All those with single, joined, or tri-lobed tails, single or joined anal fins, imperfect backs, pointed heads, overlarge fins, lack of body depth, and other faults will be discarded. The fact that there are so many factors, required in the selected fish, will mean that only a few will be free of fault. The removal of the many less desirable types ensures more space becoming available to help promote the growth of those considered worthy of retention.

The single-tailed varieties, on the other hand, will more likely appear to possess the necessary factors as young fish that permit their retention. Inevitably, fewer fish will be discarded, thus less growing space will be made available. They will need to be grown on for much longer than the fancier types before a final selection can be safely made.

Growing space is an essential element if young fishes are to develop successfully and during the breeding season space is almost always in short supply. Again, many novice fish breeders attempt to raise too many young in too small a space. Perhaps, therefore, the single-tailed varieties are not really the ideal 'beginner's fish'!

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## BOOK REVIEW

**Reptiles of Northern and Central Europe** by Donald Street Published by Batsford Ltd., @ £10.00.

For those of us naturalistically inclined and brought up on a diet of reading material dealing with the fauna and flora of the British Isles, reappraisals need to be made now that the geographical isolation of these islands has been overshadowed by the political embrace extended by the European continent. While it cannot be denied that our limited variety of reptiles remains unchanged by the emergence of the new brotherhood of Europe's human population, ease of travel has broadened the scope of herpetologists who no longer need suffer the restrictions of study imposed by insularity. So here we have a comprehensive survey of reptiles to be found in territories extending from the Atlantic coast of France across Europe and the Alps to the Carpathians as well as northwards to embrace Scandinavia.

This book is claimed to be the first publication to be devoted to this entire region and is based upon the author's own field work in conjunction with his research into extant literature on the subject. He

covers here twenty-five species, each accorded detailed description of its appearance, habitat and ecology, life cycle and distribution. Every species and subspecies is illustrated by at least one photograph, coloured or black and white, many of them by Eric Hosking.

The author should be congratulated on his thorough and painstaking treatment of his subject and his systematic format will appeal to both specialist herpetologist and naturalists in general and has been cleverly planned to cater for both. In every case the European names are listed in the languages of the countries of occurrence—a very useful adjunct for the field student visiting the habitats. An extensive bibliography is also supplied which is a vital ingredient of any book of this nature.

It is always a pleasure to read a book such as this which, as well as being readable, contains much personal anecdotal information stemming from the author's experience. With no British periodical catering for those interested in, to quote the publishers, "this much maligned group of animals", a book like this will be hungrily consumed by the growing numbers of amateur herpetologists.

# THE GARDEN POND

## *Feeding the fish and maintenance*

by Arthur Boarder

THE CORRECT feeding of pond fishes is very important and a lot of the troubles sometimes encountered are due to the wrong feeding. The chief fault is over-feeding. This does not mean that the fishes will eat too much but that if more food is given than the fishes can clear up in that day, it will remain uneaten and soon pollute the water. This sets up a chain of trouble as if the food turns sour the fish will not eat it. The water then becomes full of foul gases and lacks oxygen. This upsets the fishes and they do not want to feed at all. If more food is given then one can imagine how soon the water becomes very foul and the fishes may die.

It should be realised that the majority of fishes usually kept in garden ponds are omnivorous and do not have a large stomach like carnivorous fish such as the Pike and Perch. These fishes are able to swallow a fish whole and digest it in the stomach. Fishes such as goldfish have no large stomach and so they can only deal with small particles of food. It must also be remembered that several conditions regulate the amount of food a goldfish needs. If the water is in good condition and the fishes are healthy, they can eat fairly often and so a well oxygenated water will mean that the fishes can eat plenty. However, this is not the whole problem as the temperature of the water plays a very important part in the regulating of the amount of food a fish can eat and digest. The warmer the water, as long as it is well oxygenated, the more the fish can eat. The colder the water the less will the fish be able to eat and digest.

### **Temperature**

Whilst the water temperature is above 50°F., the fishes will usually eat fairly well but when it drops below 40°F., then the fishes become almost dormant

and need little if any food. During most winters there is a mild spell or two when the fishes may become active and then a very little food may be offered. At such times I think that garden worms are the best food to give as any dried food, if uneaten could pollute the water whereas a worm could live in the water for some time before it would die and start to decay. Another consideration is important and that is the number and sizes of fishes in the pond. Obviously the more there are and the larger then the more food should be given. It is only by experience that one can learn just when to feed and when not to. Many pondkeepers go wrong right at the start by feeding the fishes directly they have been placed in the pond. This is a mistake as the fishes have no doubt been disturbed in transit and they should always have a day or two to settle down in their new quarters. A good sign as to when the fish might feed is when they are moving around very actively and browsing among the water plants.

It must not be thought that a fish will suffer if it goes without food for a few days. I have written before how I had found a goldfish in a large outdoor tank which I thought had been emptied of fish after six months. The fish was very healthy and had grown better than other fishes of the same hatching which had been well fed and cared for. There were masses of Hornwort in the tank and no doubt the fish had been getting plenty of soft vegetation and Algae from it. In any well planted pond there will always be something edible for the fishes and not only vegetation but there are sure to be various larvae from insects and it is surprising how other creatures get into a pond. One in particular is the water louse, *Asellus*. These creep about eating decaying matter and are eaten by some fishes, but

how they get into a pond in the first place is something of a mystery.

#### Feeding Times

The time of day for feeding is not very important but at certain times of the year it will be found that the water temperature is higher in the evenings than earlier in the day, and so this is the better time to feed. Usually once a day is enough for most pond fishes, but large Koi may need feeding more often. I have found that a very good test as to whether the fishes are on the feed or not is to throw a stale brown bread crust in the water. If the fishes are hungry they will soon be up at the surface biting at it.

#### Pig Food?

The kinds of food pond fishes will eat are very numerous and it has been said that a goldfish will eat anything that a pig will eat. Nowadays there are many foods on the market for pond fishes and so one need not worry very much as to what to feed. For most pond fishes the Trout pellets are ideal. As these float on the surface for a time it is easy to see if they are being eaten. If the fishes are very small then flake food could be used, but I consider that this excellent food is better used for the indoor tank. Before pellets were available I used to make up a fish food from various sources such as rolled oats, boiled wheat, Bemax, tinned dry cat food, and anything else I could get hold of. Then for live foods I relied on garden worms and white worms. I did not use *Tubifax* nor *Daphnia* as the first time I did so for young fishes I got a bad attack of flukes and fish lice. Once was enough for me but if anyone wants to take the chance with these foods then it is up to him, but do not blame me if pests or diseases are introduced to the pond. I never use any foods which have come from natural ponds but stick to those which breed out of water.

Various forms of meat may be used such as ox heart and strips of fresh meat or fish. I never used fresh fish myself for feeding as I thought that it might encourage the fish to try to eat another fish. The feeding of fry will be dealt with along with the methods of breeding fishes in a later article in this series. I think that it is an advantage to use a feeding ring in the pond. These can be obtained in plastic or rubber. Obviously one should get a larger one than the type used for an indoor tank. The ring should be anchored near the side and kept in that position. It is then easy to see if food has been cleared up and this would not be possible if it was allowed to drift about all over the surface before it was eaten.

#### Maintenance

Having dealt with the feeding problem I shall now give a few instructions as to maintenance. Providing the pond has been well planted there is little

which may need to be done during the first few months. Few plants are likely to have grown so large that they need pruning: at least before the autumn. The water will almost certainly turn green once the weather warms up. This is a natural happening. Any water left uncovered in the open will soon turn green through the presence of thousands of tiny single celled plants called Algae. If the water had been covered and light excluded then the water would have remained clear. If the water becomes very thickly green it is a good plan to empty most of the water and refill with fresh. This will give the water plants a chance to grow stronger when they can choke out the Algae. Another good idea is to cover the surface of the water with Duck weed, *Lemna*. This small plant will grow over the surface and so give shade to the water. When the water has cleared the weed can be removed by flushing it across the pond with a hose, and then raking it out. This weed is also eaten by most fishes, but if it is not kept under control it could become a nuisance.

#### Thunderly Weather

During thunderly weather a watch must be kept on the condition of the water. At such times it often happens that the water loses much of its oxygen. This is especially the case if the water gets very warm. Such fishes as Golden Orfe are then in great danger as they need plenty of oxygen and so if any signs of distress are seen it is essential that some fresh water should be run into the pond as soon as possible. A good method is to fix the hose, with a rose fitting, on to a garden fork stuck beside the pond. The freshwater can then be added with a spray which will be well charged with oxygen.

A watch must be kept on the condition of the fishes. If a fish is seen to be by itself away from the others for some time, it may be ailing and need attention. Usually a sick fish will mope by itself and not join the others when they are feeding. Examine such a fish to make sure that it is not infested by pests or has any signs of disease. Such troubles will be dealt with in a later article of this series. When introducing any fresh fishes it is very important to make sure that they are in good health and have no pests, such as fish lice or leeches on them. It is better to keep the fish in quarantine for a few days to make sure all is well, before adding them to the pond. Also it is very essential that the fishes are carefully handled or netted to ensure that no protective mucus covering is removed.

During the late summer it is probable that some of the water plants may need attention. The water lilies may have made too many leaves which could cover too much of the surface of the water. The older ones can be removed. There should always be at least a third of the surface free from leaves. Any water lily leaves which are turning yellow should

be cut off before they start to decay. This also applies to dead flowers. When these decay they give off an oily film which does not look well or do any good to the state of the water. A knife tied to a long stick can be used to cut leaves, etc.

Other flowering plants need some attention and any dead flowers should be removed. It is doubtful if any of the oxygenating plants will need pruning during the first year, but some may have become too rampant and should be cut back in case too much swimming space is denied the fishes. If any fresh plants are added during the year, make sure that they are not carrying any pests or their eggs. It is a good plan to wash new plants in a solution of permanganate of potash, before they are put in the pond.

#### Topping up

The pond may need topping up during warm weather and if there is any doubt as to the condition of the water, waste no time in changing a fair quantity for fresh. This partial change can improve the condition of the fishes as can be seen when such a procedure is used to encourage fishes to spawn.

In late autumn or early winter any small or medium sized pond should be cleaned out. It can be very

surprising how much detritus can form in a pond during the previous warm months. If too much decaying matter, such as fallen leaves or uneaten food, remains in the pond, this could become a danger if the pond is frozen over for a few days. At such times any foul gases which may form cannot escape and the fishes could be in danger. A hole should be made in the ice each day but not by hitting it, as this could harm the fishes. The easiest method is to place a water can filled with boiling water on the ice when a hole will soon be formed. A small heater could be placed in the pond to keep open a hole if electricity is available.

I do not think much of the idea of placing a rubber ball or log of wood in the pond which some people think will stop the ice from cracking the sides of a pond. Once the ice forms round such an object there is no way that pressure can be avoided away from it. After any ice on the pond has thawed it is important to change a lot of the water as if the pond has been covered with ice for a few days the water is almost certain to have become foul, and more so if the pond was not cleaned out in the autumn.

The next article in this series will deal with breeding fishes in the pond.

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## Improving an external box filter

by Ian Fry

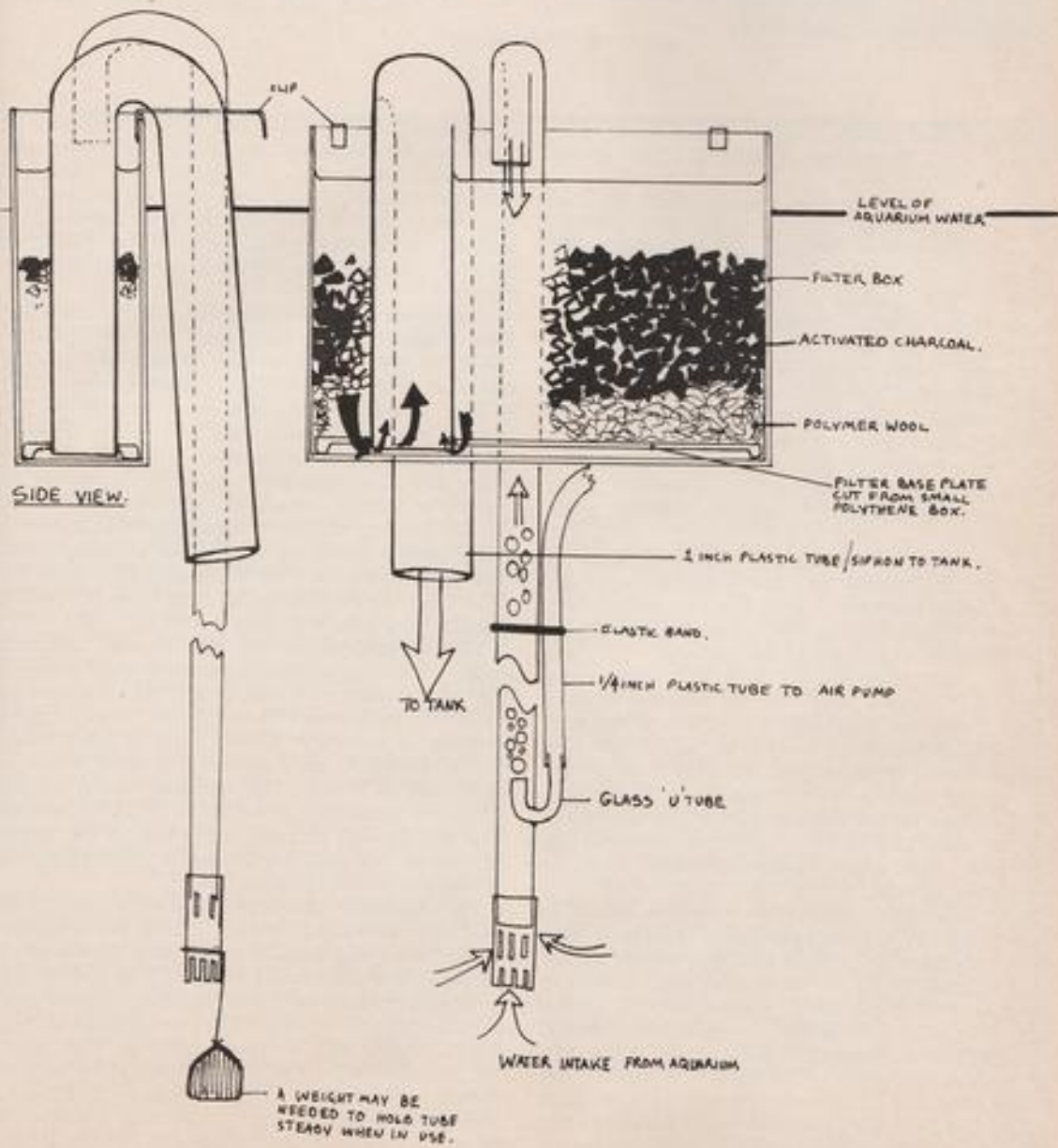
THE BOX FILTERS which clip on the outside of an aquarium are quite efficient little units, but have a low turnover rate compared to an undergravel filter. There is a simple method, however, to greatly increase the turnover rate by simply reversing the roles of the inlet and outlet pipes. Basically, the normal filter works slowly because the airlift from the filter to the tank is only a few inches high, giving the air-bubbles only limited speed to carry water. If the long siphon from the aquarium is used as an airlift, the air bubbling up it has a much greater carrying power.

To convert the filter a few extras are needed. Ten inches of one inch plastic tube will form the outlet—this must be bent into a 'U' shape in hot water. The base plate must be changed to accommodate the larger tube. Polythene lids from photographic slide boxes cut to size and slotted for the filtered water are fine for this. Next drill a small hole to fit a small glass 'U' tube near the bottom of

the inlet pipe. The air tube from pump is connected to this.

To set up the filter, fill the box in the usual way with polymer 'wool' and charcoal, making sure that the new outlet tube is reaching below the water level in the aquarium. Fill the filter to the brim with water, and siphon this through the outlet by sucking through a tube, while the outlet is still below the aquarium water—this may be a fiddly procedure, but is necessary to prevent air being trapped in the tube. The new airlift from the tank is placed in position. When the pump is switched on, air pressure may cause the airlift tube to swing sideways. This can be corrected by weighting the bottom of the tube. There are two slight disadvantages to the new conversion—the noise of the bubbles increases to a loud gurgle, and a more powerful diaphragm pump may be needed, but if a greatly increased turnover is required, this is a small price to pay.

## EXTERNAL BOX FILTER



# Product review

**Hillside Pond Filter.** *Hillside Aquatics, 46 The Service Road, Potters Bar, Herts. EN6 1QA. £5.00 + 8% VAT.*

**Aqualarm.** *Solent Marine Systems (Wells Furness Ltd.), Linden House, Station Road, New Milton, Hants. BH25 6JF. £15.00 inclusive VAT and postage.*

For the less spacious garden pool an inexpensive filter operated by any ordinary but reasonably powerful air pump will more than justify the outlay and time spent in setting it up; for, as every experienced water gardener is aware, too much sediment floating free in the water draws a curtain over fishes swimming near the surface let alone a foot down and, at the same time, does irreparable damage to submerged plants which cannot breathe and therefore cannot last under the suffocating cloak of adhering dust and dark-green algaic slime.

But be all this as it may, it is some consolation to know that it is usually possible to put matters right before many hours are out if the necessary chores are done. First and foremost, a goodly amount of the muddied water should be siphoned from the bottom. Make good this loss with fresh water drawn from the mains. Next, more oxygen-producing plants should be weighted to the floor of the pool than existed before the trouble set in. For a submerged forest of vegetation, trimmed back around the margins every so often (except when the breeding season comes round) will trap a lot of the wastes and convert them into food. Then again, overcrowding (especially with bottom-grubbing fishes) must be avoided at all costs.

The inexpensive pond filter under review looks remarkably like a flying saucer or green plastic soup plate. A green soup plate with a synthetic rubber tyre clasping its 1½ in. deep outer rim to keep it afloat. A rim-high raised portion with a tubular aperture to take a 9½ in. lift pipe (of sensible rigidity) is present in the centre. Around this a double row of sizable perforations. The bottom of the lift pipe (¾ in. diameter) is securely attached to a moulded flange fitted with a nipple on its upper surface to take a regular air line. Pinholes below break up the air into countless ascending bubbles. Put this piece

of apparatus into operation and at once a mixture of water and air rushes up the lift pipe and flows into the perforated gutter. To prove how efficiently this filter does its job it is only necessary to cover the perforations with a layer of white filter fibres. In a moment or two the fibres change to the colour of mud as the water spills out the suspended particulate matter.

This cleverly designed filter has another use apart from helping to keep an outdoor pool in a healthy condition. Any aquarist with a tank tall enough and wide enough (about 11½ in. from front to rear) to give it floating space will find it invaluable for clearing dirty water in a cichlid tank. It is certainly recommended for a cichlid tank because its circular shape and great buoyancy makes it impossible to capsize or destroy. Turnover (the amount of water passing through the fibre-topped perforations in a given time) depends on the type of air pump used. The going rate for a Wisa 300 is about 400 litres per hour. About 200 litres per hour can be pushed through by a Rena 301.

The Aqualarm is not just another gimcrack gadget; it is a properly engineered electric alarm—a sort of miniature of a similar unit manufactured by Solent Marine Systems for monitoring Diesel engines—which all owners of heated tanks or cases would find invaluable as an indicator of a failed heater or thermostat or both. The operating limits of the Aqualarm are factory preset to 75°F (24°C) low and 82°F (28°C) high although, according to the manufacturer of this precision instrument, the setting can be changed to suit the customer.

The Aqualarm measures about 4½ in. by 1½ in. by 2½ in. It is fitted with a 4 ft. cable for connection to the mains and about 3 ft. of black twin-flex terminating in a temperature-sensitive 2 in. glass probe. If this probe is placed in the aquarium and the temperature falls below 24°C (75°F) or rises above 28°C (82°F), it will emit an angry-sounding hum which can be heard more than fifteen feet away—and this through a closed door. Aquarists and herpetologists with the well-being of their livestock in mind would do well to invest in this useful and seemingly fool-proof alarm system.

JACK HEMS.

THE AQUARIST

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# WHAT IS YOUR OPINION?

by B. Whiteside, B.A., A.C.P.

*Photographs by the Author*



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EACH MONTH when I begin this feature I hope that the weather will have improved and that I will have had time to reply to readers' queries. As I glance out of my window now I see a few sparrows and starlings, feathers ruffled by the wind, fighting over a few crusts I threw to them. Snow lies on the hills and round my garden, and the bare branches of the rose bushes suggest a perennial dormancy. Only the bursting buds on the flowering currant bushes promise that the snow will go and the sun send the sap that signals the spring. My apologies to those who are still waiting for replies to queries sent to me. I regret that I do not have time to write replies to readers' queries, so please do not send me queries that require a personal reply. I'm quite happy to receive questions suitable for publication in this feature; but please remember that readers' answers may not reach you for some months—if at all. Roll on the summer when I may get a little free time to indulge in my hobbies.

Mr. R. K. Messent, B.Sc., M.I.Biol., of 1 Haddon Drive, Woodley, Berks., sent the following long, interesting letter. "I find your section of *The Aquarist* often the most fascinating. Comments from readers, and their queries, frequently stimulate thought about things long forgotten and I find the old grey matter being exercised to its great benefit. Eric Hardy's article is another one I look forward to.

"I have kept tropical and coldwater freshwater aquaria, and at one time British marine species in aquaria, since around 1945 after being introduced to aquarium keeping by a school friend. His tanks were heated by carbon filament lamps mounted below the aquarium; the thermostat was mounted in a tubular chromed container lock-nutted through the slate bottom of the tank. My first aquarium was a small, all-glass, ex-accumulator container that my mother brought home (Preston, Lancs.) from Pettycoat Lane and in which I kept bronze veiltail goldfish. I soon graduated to standard 12 in. x 12 in. x 24 in. aquaria which I glazed myself with a mysterious, but

superb, compound known as 'Black Magic.'" (I well remember using tins of 'Black Magic.' B.W.) "Leaks were often a problem at that time since most commercially-glazed tanks used a red lead-goldsize-putty mix which was really not very suitable for aquarium use, especially when hardened off.

"It wasn't long before there were enough local enthusiasts to form a society and the Preston and District Aquarists' Society came into being. Some of the 'characters' I remember were: the late Mr. Hall (a founder member of the Soc.), a well-known local trader; Mr. Jack (Guppy) Sandeman; Mrs. M. Thompson; Mr. T. Blackburn, F.R.H.S.; Mr. Campbell; Mr. Bowman; and Dr. Russell and his equally-keen wife (both were veteran car enthusiasts too). I was reminded of these by your correspondent who visited the 27th B.A.F. at Belle Vue and was somewhat disappointed. In common with some of my society friends, I visited the first B.A.F., I suppose 27 years ago now, and was delighted.

"There was a large class of furnished aquaria—some of the most beautiful things I have ever seen in my life, an even larger class of entries of small tanks with single fish or pairs of fishes, a class for plants, and I think there was a stand for novelty entries, e.g. wild British species—I remember seeing a small pike displayed. The trade stands were very exciting. There was a rush to buy the fairly scarce angels at £2-10s-0d each and I remember buying some tree frogs and a pair of grass snakes from W. Smith's stand. After lunch, when we met some friends from other societies—one remembered was Harry Loder, a breeder of several species of tropicals, from East Lancs.—we gathered in a hall for lectures, films and question sessions. The programme also continued after tea—which I remember being taken in a hall, with Chinese decor, that I believe has since been demolished.

"The director of Belle Vue at that time was Gerald Isles, and it was largely through his interest that the B.A.F. tradition at Belle Vue was started. He was



always kind to aquarists visiting Belle Vue aquarium and he also became well-liked by listeners to Children's Hour for his broadcasts about animals. Gerald Isles emigrated to America, being replaced at the zoo by the director of Blackpool Zoo and Aquarium—at the Tower—who, I think, later became director of Chester Zoo, Mr. Ray Legg, who was a member of the Blackpool Aquarium Soc. at the time, and, I believe, also a visitor to the first B.A.F.

"I received quite a lot of help with my problems, of keeping British marine species, from Blackpool Tower Aquarium, receiving many free gallons of filtered sea water from there. I understand it came to the Tower

was always a problem with filtration, which was arranged through a system of siphons and airlifts to outside filters (in all-glass accumulator jars) powered by a 'Hyflo' model B air pump. I have no marines at all at present, although the Coxian revolution in techniques has tempted me to try again. At present I have axolotls and *Xenopus*, and I have just set up an aquarium with twelve white clouds and two fresh-water prawns (species unknown). White clouds are a much under-rated species in my opinion. They provide me with constant interest, being very active fish, displaying to each other vigorously and never resting for a minute. The prawns seem happy too,



Co. at 10d per 1,000 gallons, along Blackpool's sea-water main which served a number of swimming baths and hotels. My specimens—beadlet anemones, opelet anemones, common prawns, blennies and gobies—usually came from Douglas, Isle of Man, as the product of a day trip from Fleetwood on the well-loved 'Viking.' Arrival in Douglas would be around 1.15 p.m. I would then get the ferry to Conister Rock and spend some happy hours collecting before returning to the harbour for the 6.00 p.m. sailing back to Fleetwood; then into the awaiting train to Preston and home.

"Sometimes I obtained specimens from the marine aquarium at Cullercoats, Northumberland, by post. My efforts met with mixed success: I managed to keep marine aquaria going until the summer temperatures overheated the tanks and their inmates. There

having changed skins; and one is carrying eggs, quite visible through its translucent body, so hopefully in due course there will be some young. The tank—a Gem—has two U/G filters powered by a 'Hyflo' model C which has been running with minimum attention (oiling and cleaning) for seven years (circa 12-14 hours daily).

"Mr. Flood asks about public aquaria. I have recently visited the Aquarium at Birdworld, near Farnham, Hants. There is a separate fee charged for entry, but I found it a very interesting little collection which includes tropical marines and invertebrates and a few amphibia and reptiles too. I can recommend a trip to Mr. Flood. He will enjoy himself in the Aquarium and also in the Birdworld park if he has any feeling for well-looked-after animals at all. He should be able to take some good photo-

graphs. Master Locke's comment about acriflavine reminded me of the treatment I have used as a paint, for fungus-damaged fins, with some success, for some years now; and also for body wounds. 'Chloramine T' is a useful preparation from B.D.H. which, if carefully used, can prevent, curtail or cure a variety of protozoan and fungoid ailments. The substance is available commercially as 'Helamid' tablets. Dosage is simplified by the use of tablets. Having broken the ice perhaps I might write again before long; and may I thank you for your forbearance in reading my meanderings so far. P.S. I have absolutely no connection with any of the commercial firms mentioned except as a user of their products or stock."

Some months ago I included photographs for Bob Crossan's marine fishes, the proper names of which I did not know (if you are one of the several people who borrowed aquarium books from me and did not return them, please do so and I shall then be able to identify some of the marines in my photographs; no doubt those who permit other people to borrow items have noticed that of all items borrowed, books are the least likely to be returned). Mr. A. White lives at Goodwood, Colyton Hill, Colyton, Devon, and he writes: "I hope I can be of help to you concerning the identity of the fish in photograph 3 of the February edition." (I've included the fish as photograph 1 in this month's feature. Compare both prints: they were taken from the same negative. I tried to get a bit more contrast in this month's print. In fish photography what happens in the darkroom is often as important as what happens in the camera. Obviously photographs lose some of their quality when reproduced in a magazine. I have not yet had my February print returned to me by the Editor; but compare this month's print with the identical one on page 466 of the February issue and observe if there is much difference. The white should appear whiter and the black blacker. B.W.)

Mr. White continues: "This fish is known as the wimplefish or pennant coral fish—*Hemichus acuminatus*—and it is an extremely beautiful butterfly fish. As is the case with most butterfly fish, it is somewhat delicate. My specimen purchased from SeaAquariums, at Longford, has been living happily for the past four months with various tank mates which include, amongst others, a maroon clownfish (*Premnas biaculeatus*) and a Koran angelfish (*Pomacanthus semicirculatus*). Once acclimatised the wimplefish greedily accepts a wide variety of food. It also needs regular vitamin additions for good health. My specimen is very fond of vitamin-soaked, fresh beef. Sometimes this fish is confused with the much more delicate and expensive moorish idol (*Zanclus cornutus*), a relative of the tangs; however, once both fish have been seen by the aquarist the differences are easy to spot.

"I have, however, had less luck with sailfin tangs

(*Zebraosoma veliferum*). I purchased a small individual from a new (to me) shop and as I had no previous experience of his stock I was careful in picking out a healthy-looking fish. At home I placed the new fish into an acclimatisation tank. Next day I attempted to feed it and much to my delight it took fresh beef with great gusto. However, after 3-4 hours I noticed that the fish looked distressed. Immediately I began to examine the fish for any visible signs of disease. The fish was healthy and tests showed the water to be in good condition. For the next two days the fish refused all food; but despite this it was making a definite recovery. On the third day, after eating a good meal on the previous night, it died. Therefore I could only conclude that it had been cyanide-caught—a simply disgusting practice. Cyanide affects the internal organs, so when the fish eats, the affected organs malfunction and, ultimately, bring about the fish's death . . . .

"Although I could write pages more about marines I must conclude. If my letter and photographs have been of interest I would be willing to send some more. May you and this excellent magazine continue to make many aquarists happy people with the high quality of your material." (Mr. White kindly sent me five pleasing photographs he took of his marines. I should certainly like to see any future photographs. I'm always interested to see any reader's aquarium photographs. Please enclose a suitable s.a.e. for their return. Glossy black-and-white prints are best suited to magazine publication in monochrome.)

Photograph 2 shows one of my cardinal tetras. I know of no species that is more difficult to photograph successfully in monochrome. I have a selection of cardinal prints before me as I write this. They are all quite sharp, properly exposed and do not have very distracting backgrounds—yet none of them looks much like a cardinal. Of course the reality is that the cardinal tetra's singular attraction is its bright colours; remove those and one is left with a rather dull little fish. Have you bred the cardinal? If so I should be pleased to receive details.

Photograph 3 shows one of my little salt-and-pepper *Corydoras*—and it does not suffer as the cardinal does when it is photographed and printed in monochrome. The colours of this species of *Corydoras* are unimportant; its attractions are its pattern, its interesting shape and its bottom-freeding habits. Have you bred any species of *Corydoras*? If so please send me some details of spawning, feeding, etc.

Mr. Don Goldsmith's home is at 47 Porthleven Road, Runcorn, Cheshire. He sent me the following letter, some time ago, about the advantages and disadvantages of snails in aquaria. ". . . I have a 6 ft., a 4 ft. and a 2 ft. tank. Among the fish in the 6 ft. tank was a pair of angels that constantly mated and the eggs usually hatched and the fry became free-

swimming before being eaten by the other inhabitants of the community. Therefore I decided to place the angels in the 2 ft. tank in the hope of raising some fry. The pair of angels, plus a pair of scavengers, were put into the 2 ft. tank.

"Meanwhile I purchased, by post, a number of plants to furnish the 4 ft. tank; and along with the plants came a large number of undetected snails. In the 2 ft. tank the angels steadfastly refused to mate and the scavengers steadfastly refused to keep the bottom of the tank clear of uneaten food—not, I may add, because of over-feeding. No matter how little food was given the gravel became increasingly

were obviously more difficult to see to remove. The greatest disadvantage caused by the snails is that I have a pair of moonlight gouramies in the 4 ft. tank and as the male builds a nest, using plant material, the snails seem to eat it at an almost-equal rate. Perhaps this is why I have been unsuccessful so far in breeding these fish. Perhaps someone could tell me how I can rid myself of these pests as I have come to the firm conclusion that their disadvantages far outweigh their advantages." (I think that food lying on the gravel some time after one has fed one's fishes indicates either that the fish do not like the food or they have been given more food than they can consume



unsavory (a U/G filter was operating all this time). The water in the tank was becoming cloudy and the glass was becoming infested with unhealthy-looking, brownish algae. At this stage I thought it wise to move all the fish back into the 6 ft. tank—which I did.

"I was left with a completely unhealthy-looking tank that I thought would need to be emptied; but I decided to place six of the larger variety of snails—there are many different varieties (*sic*)—in the tank. I did so and within a very short time both tank and water were spotlessly clean. So much for the advantages of snails. Now for the disadvantages!

"The 4 ft. tank from which the snails had been taken was fast becoming infested with them. However many I removed I always managed to miss some—which soon increased in numbers. This major problem was caused by the smaller varieties as these

at one feeding. I think Mr. Goldsmith means species and sizes rather than varieties. All other things being equal—whatever that means—a good brand of aquarium snail killer, used *exactly according to instructions*, should solve the snail problem—eventually. I should avoid this method if the offending snails were Malayan sand snails—to my mind the least offensive of all aquarium snails. An alternative method would be the raw-steak-on-cotton-thread technique that I've mentioned occasionally. Some large cichlids could help clear up the snails and, possibly, some of the smaller fish in the tank. Once snails move in it's difficult to eradicate them completely. B.W.)

From 18 Grosvenor Road, Manchester 16, came the following letter—and it makes a pleasant change to be able to include a letter from a lady reader. Miss

S. Andrews wrote the following; it may have been some time ago because I cannot recall when I received her undated letter. She wrote "Although I read *The Aquarist* right through, it's often two months' copies together; so I must comment on the gentleman in Germany missing his local dealer's advice. When I lived in London, and began keeping tropical fish, there were some local dealers who *had no advice!* I came North only nine years ago. In the course of visiting shops in towns one hears much. One day I was in a dealer's and the subject of a species quite often bred came up. The dealer said: 'Oh yes, and the male stands on his head when fertilizing the

did have four in with various gouramies and they separated out with their own kind and spawned, one pair at either end of 36 in. x 18 in. tank. The eggs and fry were guarded but of course none was raised. I really feel fish are like everything else: they do not always want the mate that courts them; and of course when it's a variety within a species, well, they are unaware of variety; only that they are breeding with one of their species, e.g. black angel with marble or silver angel.

"You ask for comments about breeding thick-lipped gouramies. The first time I bred these nothing unusual occurred. When starting back with fish



eggs.' Well, I have bred this species a few times and can most certainly assure you it does not. I will not mention the species in case someone reading this gets a red face.

"Many dealers who have been involved with fishkeeping for many years offer sound advice; but I personally know of dealers who are still beginners themselves. I also feel that many dealers are selling beginners U/G filters just because they can take some more money. I know a person, just starting freshwater tropicals, and a dealer out stood (*sic*) her it was impossible to keep any fish without a U/G filter! I am not questioning the need with marines. Personally I give good dealers as much as possible of my custom, and as little as possible to the others unless they improve, as some do.

"Regarding comments about angels spawning, I

34 years ago I went into what was, to me, a new dealer, who was also new to the trade. He asked me what some fish in a tank were. They were thick lips that had lost their 'feelers' (ventral fins) while travelling. Only a couple still had slight pieces of them. A few months later I bought a pair of thick lips—but from a different source. I bred them; and although both parents did have ventral fins, only two or three of the young had both ventrals. Some had only one on one side; and some one on the other side. I kept them in one tank with a few odds and ends but I did not breed from them or dispose of them. The lack of one of both ventrals in any Anabantid species is hereditary and so one must avoid the use of such stock for breeding. I would not breed from such fish or the parents again. The only exception would have to be if it was a rare species

with a conservation ban placed on its import/export. Often it seems to be the commercial varieties which are hit by this, not the rare species.

"Regarding gouramies, I have always noticed in many dealers the wonderfully-coloured dwarf gourami. Although not missing any fins, it is often misshapen. I've seen them with fins—usually dorsal—so misshapen that they looked as if something had bitten a piece out beneath the fin. Usually it's the male that's deformed—but so frequently! It must be commercial breeding." (I suspect commercial breeding may be producing some inferior fishes in some species—and that the re-introduction of some wild blood would produce benefits somewhat akin to hybrid vigour. The tails on most male kribensis which I have seen in the past few years have been dull and bearing few spots. Where are the brilliant ones of some years ago? Dwarf gouramies seem to be less robust. Males seem to be brightly coloured and females very drab—which is usual. Those I've seen in this part of the U.K. have been of perfectly acceptable shape—but the beautifully-coloured males that I've bought have died a few days after purchase. This has happened on a number of occasions. The females, drab and unexciting on their own, seem to live much longer. Is the colour of the male being enhanced in any way—producing weaker fish? Of late I've seen some tanks containing attractive shoals of brightly-coloured male and female guppies. Prices seem reasonable for pairs—until one notices that the fish are fully-grown adults and that there is not a pregnant female in the tank—nor a sign of a baby guppy. Visually the beautifully-coloured female guppies remind me of the sterile females I produced years ago while carrying out experiments using male hormones in the water containing female guppies. I published my findings at the time—as did other guppy breeders who experimented with hormones in guppy tanks. Perhaps I am just out of contact. Have you noticed many brightly-coloured, sterile, female guppies about; or many male kribensis with brightly-coloured tails; or brightly-coloured, long-living male dwarf gouramies? I should be pleased to hear from you.

The last letter for which I have space this month was written by 13 years old Master J. Farrington—who does not give his Christian name. His letter is headed 74 Cranbrook Road, Acomb, York. He writes: "My subject is my experiences with *Colisa labiosa*. I purchased a pair from my local dealer. The female was plump and round; the male was pale in colour and was 2½ in. long. The female was even paler and about 1½ in. long. I have three tanks: a 36 in. cichlid community; a 24 in. sailfin community; and a 24 in. community tank housing barbs, angels, weather loach and a pair of blue gouramies. The fish were placed in the latter tank on 24th October; and on 29th I noticed the male poking about in the forest of floating plants. Closer observation showed

him to be building a bubble nest which was 4 in. × 5 in. The colour of the male fish was almost black. On 30th spawning occurred at 6.45 p.m. and finished at 9.57 p.m. The male embraced the female about twelve times, releasing 20-30 eggs each time. Soon after spawning, the other inmates showed interest in the contents of the nest—and before I could do anything they wrecked the nest." (If you're still wondering, *C. labiosa* is the thick-lipped gourami. B.W.)

I hope the snows will have gone when you send me your opinions, on any of the following, for inclusion in a future issue of *The Aquarist & Pondkeeper*: (a) hatching brine shrimps; (b) breeding and feeding worms for live food; (c) feeding aquarium plants; (d) the effects of cigarette smoke on aquarium fishes (I have not smoked for seventeen days, one hour, nine minutes and twenty-three seconds and hope that my fish, as former, passive smokers, feel very much better than I do); (e) inducing fishes to spawn using simulated rainfall; (f) the plant that grows best—and under what conditions—in your tank(s); (g) fishes you have spawned during the short, winter days. I look forward to hearing from you—and please keep your fingers crossed that I shall be able to continue to resist the dangerous attractions of tobacco. I'm finding it more difficult now than I did during the first few days. My sense of smell has improved—as has my appetite; and all those strongly-flavoured sweets I've been sucking—chloroform, cinnamon, citrus and mint—have almost worn a hole in my raw tongue; and I've gained several pounds in weight; but I am determined that I shall no longer be ruled by a plant. I shall keep you informed—unless I fail. Why not try to join me in breaking free if you are an addicted and/or habituated smoker. I've managed a 40 to 0 break, after 18½ years. Well, now that I've got W.Y.O. finished I can settle back in my chair and . . . twiddle my thumbs. Better still, I'll begin next month's feature and try to keep everybody happy. Cheers!

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#### PRESS RELEASE

John Chalmers the proprietor of Hobby-Fish Farm at Milton Keynes, is pleased to announce that he has received planning permission to construct an additional showroom on the front of the existing premises at Old Stratford, Milton Keynes. The additional 1,250 square foot extension will enable them to display an even greater range of Aquaria and Aquarium equipment. The project will include additional parking facilities.



## News from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists societies for inclusion on this page should reach the Editor by 3rd of the month preceding the month of publication.

**THE Accrington A.S.** have a new Committee for 1979. They are: chairman, Neal Ashton; treasurer, Mr. Burtwistle; show secretary, S. Lyne; 12 Thwaites Road, Oswaldtwistle; PRO, Miss J. Heald; secretary, David Hargreaves, 11 First Five, Church, Mr. Accrington (Phone ACC 581552).

**Ellesmere Port Aquarium Keepers Society** at the A.G.M. on 14th February elected the following committee: chairman, A. Roden; secretary, R. J. Haslett, 27 Ashfield Crescent, Chester, Cheshire (Telephone Chester 373183); treasurer, R. Parry; show secretary, Mrs. J. Parry; Floor Member, K. Marsden; Juniors Representative, B. Davies. New members are always welcome, meet fortnightly on Wednesday at the Grosvenor Hotel, Dock Street, Ellesmere Port, 7.30 p.m.

**Aylesbury A.S.** meet at the Quarrenden Community Centre, Spoonhaven Road, Aylesbury on the second Monday each month, at 8.00 p.m. Fixtures arranged: 9th April, talk by B. Hawkins on home aquaria; 14th May, tape slide show; 11th June, talk by Bob Eison on goldfish. For further information contact the secretary, P. Wheeler, 141 Wendover Road, Stokel Mandeville (SM 2409).

**AFTER** a very successful year **David Brown A.S.** have a full programme for the forthcoming year. They will be holding an annual open show again this year and full details will be available at a later date.

For further information phone 0484-663401 or write to Malcolm Morrison, 18 Lower Oldfield, Hookey, Huddersfield.

**AT** the monthly meeting of the **Mid-Sussex A.S.** held at the Fox and Hounds, Haywards Heath, on Thursday 8th March, Mr. J. Burtles presided for the first time. The presentation dinner dance, held on 17th February, was a very enjoyable and worthwhile evening. Mrs. M. Young was congratulated for the hard work she put into preparing the meal. Mr. Burtles welcomed new members, and this was followed by the auction.

The monthly draw followed for the 50 club. 1st prize went to Jack Oldacre; 2nd, John Birch; and 3rd Barbara Temple.

Mr. Burtles gave the lecture for the evening; the topic for discussion being "How to set up an Aquarium." He said that to make an aquarium "catch the eye," you need a large variety of plants, originality and technique.

The new show secretary thanked members for bringing their fish along; it was a very encouraging start to the year.

Mr. C. Corbin judged the table show and the cards were awarded as follows: Db Dwarf Cichlids: 1, J. Maddocks; 2, P. Levine. NQ-T Pairs Livebearers: 1, P. Levine; 2, L. Pinney; 3, E. & T. Tester. D Large Cichlids: 1, E. & T. Tester; 2, P. Levine; 3, B. Perrin. NB-M Pairs Egg-layers: 1, P. Levine; 2, J. Biech; 3, L. Pinney; 4, P. Levine. Highest Junior, G. Lamb.

Further information about the society may be obtained from the Secretary, Mr. J. Birch 11a Sandrocks Way, Haywards Heath, (phone H. Heath 50585).

**AT** the A.G.M. of **Wythenshawe and District A.S.** the officers elected were: chairman, Jack Carr; treasurer, Steve Barratt; secretary,

Mrs. Jackie Selby, 176 Crossacre's Road, Crossacre's, Wythenshawe, M.C.; show secretary, Ted Lee's, 10 Leycett Drive, Northern Moor, Wythenshawe M.C.

**ON** Saturday 16th March over 120 fishkeepers and killee enthusiasts assembled in the meeting rooms of the Zoological Society of London for the first Spring meeting of the **British Aquarists' Study Society**. The afternoon was to be devoted to the egg-laying toothcarps and members of the British Killifish Association were much in evidence.

The first paper presented by Ian Sainthouse was a review of the genus *Aphyosemon* and although affected by flu, Mr. Sainthouse was able to explain the associations and distribution of the various sub-groups in this genus.

After a tea break during which visitors were able to examine a display of fishes arranged by members of the Hertfordshire group of the BKA., Rod Roberts gave an interesting and colourful account of his trips to West Africa collecting and photographing the Killies.

Later Dick Ayott talked about breeding the bottom spawners and by distributing batches of Killie eggs he was able to launch another B.A.S.S. experiment; this time into the various hatching rates of eggs laid at the same time in similar conditions.

Those present were then treated to a look behind the scenes at the London Zoo aquarium by kind permission of the Curator, Dr. H. Gwynne Vevers.

The 2nd Spring meeting will be held on Saturday 26th May. The speakers will be Dr. Keith Banister of the British Museum and Adrian Blake of Basingstoke. The subject will be "The Barbs," and tickets (£1.50p) and further information is available from W. E. Goodwin, 14 Dawlish Drive, Devon Park, Bedford.

**THE Dunmow and District A.S.** has changed its meeting place from the Old Hall, Dunmow. The meetings are now held at the Social Club Hall, Radwinter Road Hospital, Saffron Walden. Also it has changed its night to a Monday, the first and third Monday of every month.

**A NEWLY** formed Aquarist Society **The Nottingham Home Aquarium Society**—meet at the "Queens Hotel," Queens Drive, Nottingham, on alternate Thursdays. Meetings in May are on 10th and 24th at 7.30 p.m.

Further detail from Mr. I. Hardwick, 63A Standhill Road, Carlton, Nottingham (Tel. Nottingham 873073) Secretary or Mr. Peachey 28, Sullivan Close, Carlton (Nottingham 583616).

**ON** 22nd March a new area group of the **Catfish Association, Great Britain** was formed. This took place at Collis Hall, St. Phillip's Church, Waterloo St., Maidstone, and the group have adopted the name Kent Area Group, C.A.G.B. Offices elected were: chairman, L. Getley; treasurer, S. Finnis; committee members, J. Edwards, M. Collins; secretary, John N. Gilbert, 1 Highfield Cottages, Street End, Lower Hardres, Canterbury, Kent; regional representative, S. Finnis.

It has been decided to hold monthly meetings on the third Thursday of the month at the above venue until the September meeting which will be the first A.G.M. Anyone who is

already a member of the C.A.G.B. will be made most welcome. Prospective members should note, however, that membership of the parent body is essential. Anyone requiring further information please contact the secretary (S.A.E. please).

**THE Bristol A.S.** arranged "An evening with Koi" for their March meeting, and the Bristol and West Branch of B.K.K.S. were invited to participate.

The programme consisted of two films, the first of a Koi Show in Japan and the second, by C. Spencer, showed Koi in an English garden.

A high spot in the evening was the presentation to the Bristol A.S. of an "Anniversary Cup" by members of the Bristol and West Branch of the B.K.K.S. to celebrate the Golden Jubilee of The Bristol A.S.

**THE Merthyr A.S.** gained a useful victory against the Abertillery A.S. in the Heads of the Valley league. This win puts Merthyr in the final against Port Talbot A.S.

In March M.A.S. held a table show which was judged by all members of the society. Results: 1, N. Clifford; 2, P. Willis; 3, E. Morgan. Entertainment for the evening was a well prepared quiz by R. Morgan.

**THE Northern Goldfish and Pondkeepers Society** as from April will meet on the second Tuesday of each month at 8 p.m. in their new headquarters at The Bolton Anglers Club, St. Simon and St. Jude's School, Kinston Lane, Bolton, Lancashire. New members will be very welcome. They have a varied and interesting programme for 1979 including lectures, talks and table shows. For a list of events please send a self-addressed envelope to Mr. David Lord, 40, Hospital Road, Bromley Cross, Bolton, Lancashire.

**THERE** were 512 entries for the open show of **Keighley A.S.**—Best fish in show Coolie Loach, Mr. and Mrs. Riley (Leeds P.O.). Other results: Guppies: 1, Mr. and Mrs. Dorrell (Zenith); 2, D. Barrett (Thorne); 3, M. Harrison (Swillington). Swordtails: 1, D. Poole (Ind); 2, E. and J. Morton (Hull); 3, Mrs. Heap (Keighley). Mollys: 1 and 2, S. Price (Castleford); 3, Jackson Bros (Sherwood). Platies: 1, Mr. and Mrs. Hill (Barnsley); 2, S. Price (Castleford); 3, Mr. and Mrs. Dorrell (Zenith). A.O.V. Livebearers: 1, P. Wright (Cesurids); 2, J. North (Morcombe); 3, B. Wiggles (Mexboro). Barbs Inc. Rosy: 1, D. Harris (Mexboro); 2, M. Price (Castleford); 3, Mr. and Mrs. Hopkinson (Darfield). Barbs over Rosy: 1, Mr. and Mrs. Kemp (Sheath Valley); 2, Jackson Bros (Sherwood); 3, L. Bush (Morley). Characins Inc. Bleeding Hearts: 1 and 2, Mr. and Mrs. Walsh (Blackburn); 3, R. and R. Cherryholme (Barnsley). Characins over Bleeding Heart: 1, B. Slight (Mexboro); 2, Mr. and Mrs. Walsh (Blackburn); 3, Mr. and Mrs. Daines (Doncaster). Rasboras Danios Minnows: 1, Mr. and Mrs. Copley (Doncaster); 2, Mr. and Mrs. Hopkinson (Darfield); 3, Mr. and Mrs. Riley (Leeds P.O.). Sharks Flying Fox: 1, 2 and 3, D. Souden (Bdl). Fighters Multi-colours: 1, T. Jackson (Sherwood); 2, D. Cook (Barnsley); 3, Mr. and Mrs. Riley (Leeds P.O.). Anabantids Inc. Thick-Lip: 1, Mrs. Anderson (Ind.); 2, D. Jones (Dearne); 3, Mr. Champman (Mexboro). Anabantids over Thick-Lip: 1 and 3, Mr. and Mrs. Clarke (N. Staff); 2, Mr. and Mrs. Yates (Blackburn). Toothcarps: 1, B. Banks (Thorne); 2, R. Brown (Morley); 3, J. Roberts (Nelson). Angelfish: 1, D. Harris (Mexboro); 2, A. and P. Barker (York); 3, Mrs. Swales (Halifax). Dwarf Cichlids: 1, S. Price (Castleford); 2, Mrs. Gray (Ind.); 3, P. Fisher (Sherwood). Cichlids over Krib: 1, Mr. Hollingworth (Sherwood); 2, Mr. and Mrs. Bollen (York); 3, J. Marsland (Barnsley). Corydoras Catfish: 1, S. Price (Castleford); 2, L. Bush (Morley); 3, Mr. and Mrs. Haig (Huddersfield). Loach Bonus: 1, Mr. and Mrs. Riley (Leeds P.O.); 2, Mr. and Mrs. Daines (Doncaster); 3, L. Price (Castleford). A.O.V. Catfish: 1, Mr. and Mrs. Honnor (Doncaster); 2, K. M.

Fisher (Sherwood); 3. Mr. and Mrs. Riley (Leeds P.O.). A.O.V. Tropical: 1. Mr. and Mrs. Snowden (York); 2. Mr. and Mrs. Kemp (Sheath Valley); 3. E. Bowles (Scunthorpe Museum). Breeders Livebearers 1-10: 1. T. and P. Busfield (Barnsley); 2. B. Banks (Thorne); 3. Mr. and Mrs. Hopkinson (Darfield). Breeders Livebearers 11-20: 1 and 3. Mr. and Mrs. Hill (Barnsley); 2. B. Banks (Thorne). Breeders Egglayers 1-10: 1. Mr. and Mrs. Waller (Chesterfield); 2. B. Banks (Thorne); 3. D. Barrett (Thorne). Breeders Egglayer 11-20: 1. D. Jones (Darnley); 2. Mr. and Mrs. Copley (Doncaster); 3. B. Banks (Thorne). Pairs Livebearers: 1 and 2. T. and P. Busfield (Barnsley); 3. Mr. and Mrs. Riley (Leeds P.O.). Pairs Egglayers: 1. Mr. and Mrs. Copley (Doncaster); 2. L. Price (Castleford); 3. M. Price (Castleford). Common Goldfish: 1 and 2. Mr. K. Chapman (Mexbco); 3. E. and J. Morton (Hull). Fancy Goldfish: 1. D. Jones (Darnley); 2. Mr. and Mrs. Waller (Chesterfield); 3. Mr. and Mrs. Haig (Huddersfield). Shubunkins: 1 and 2. S. Parrish (York); 3. E. and J. Morton (Hull). A.O.V. Coldwater: 1. Mr. and Mrs. Snowden (York); 2. Mr. and Mrs. Roberts (Doncaster); 3. Mr. and Mrs. Haig (Huddersfield). Junior: A.V. (Livebearers): 1. P. Busfield (Barnsley); 2. T. Hopkinson (Darfield); 3. Miss Robert (Nelson). Junior A.V. (Egglayers): 1. T. Hopkinson (Darfield); 2. S. Cherryhouse (Barnsley); 3. R. Gainsley (Bd). Juniors A.V. (Coldwater): 1. P. Busfield (Barnsley); 2. S. Martin (Zerith); 3. S. Stanfield (Bradford).

**THE officers of the Aireborough and District A.S. are:** Chairman, John Upton Hall (Pudsey); vice-chairman, Peter Smith (Leeds); treasurer, Steven Chaffer (Guiseley); secretary, Richard Stephens, 34 Hawkstone Avenue, Guiseley, Nr. Leeds; Guiseley 74289; show secretary, Raymond Shaw (Osley).

The society meets on the first Tuesday in every month and they try to have something of interest at every meeting, either a table show, a lecture or a slide show. They have also arranged a mini-show on April 11th and have another on September 12th. An open show is also being arranged for later in the year.

**MEMBERS of the King's Lynn A.S.** were joined by friends from Norwich and Yarmouth at their March meeting to hear a talk on Catfish by Mr. Terry Cruickshank, Show Secretary of the British Catfish Society. Mr. D. Lambourne, chairman of the society, assisted by explaining the beautiful slides which illustrated the talk. Members were fascinated by the variety of shape, size and colour of the catfish, and can now view their fish in a new light.

The club's own bench show for catfish was well supported by 21 fish, with results as follows: Corydoras: 1. R. Brown; 2. 3 and 4. B. Towler. A.O.V. Catfish: 1. B. Wright; 2 and 3. C. Simper; 4. G. Oiler.

The monthly shield for points was awarded to B. Wright.

**AT the recent A.G.M. of the East Dulwich A.S.** the following were elected to the committee: chairman, Ron Salmon; treasurer, Paul Cresswell; show secretary, Doris Winder; general secretary, Dave Winder, 32 Eddystone Road, Brockley, London SE4 2DE.

The annual prize-giving also took place on the same night. The four major awards were won as follows: Fish of the Year, Barry Light with a Ruby Shark. Highest Pointed Fish, Dave Winder with an *Acanthopthalmus myersi* which gained 81 pts. Members attaining the highest points throughout the year, Dave Winder; runner-up, Barry Light.

**Weymouth A.S. meeting** was very well supported. They were very encouraged to see new members and if this happy trend continues they will soon be considering larger rooms.

They much enjoyed a slide-tape lecture on "Aquarium Maintenance" which subsequently provided the basis for lively discussion during the tea break. Thanks are due to Edna Fancy for doing a fine job with the catering under quite difficult conditions.

The possibility of organising a coach trip to the Aquarist Fishkeeping Exhibition at Alexandra Palace was well received and it is hoped to go ahead with this.

After a difficult time last year they feel they are on the way up. Those interested in the society can telephone Colin Stratford on Weymouth 4575 for further information. Meetings commence at 8 p.m. at the Moose Lodge, Chickerell Road (formerly the Old Borough Arms) on the second Wednesday of each month.

**Dundee A.S. meet** in Taysquare Halls on the first Tuesday of each month (except July and August), at 7.30 p.m. The table show results for March were: Large Cichlids: 1. D. Clark; 2. D. Mayo; 3. D. Hunt. Angels: 1. B. Johnston; 2. A. Middleton; 3. D. Hunt. Matched Pairs: 1. D. Mayo; 2. D. Hunt; 3. D. Clark.

Programme for the evening was a slide show with tape commentary on Gouramis, organised by members P. McNaughton and A. Inch.

Dundee won the Spring leg of the Spring/Autumn Inter-Club table show with Perth A.S. at Perth. This is a "battle" that is looked forward to twice a year by both clubs, and although it is a case of no holds barred, they have been friends for many years.

**THE Evesham Fishkeepers Society** was fortunate in securing the services of Charles Chamberlain, Chairman of Leamington and District Aquarist Society for its March meeting.

Mr. Chamberlain judged the second round of the Fish of the Year contest, and well entered classes of Sharks, and Loaches and Bona. Afterwards he gave a most informative talk on "The Midland Aquarist Society and its Judging Methods," giving his audience a great deal of invaluable information on showing fish, both in Table Shows and in the "Open."

Results of the Fish of the Year Contest: 2nd Round: 1. Miss J. Chester; 2. Miss C. Tlocnton; 3. M. Barnett; 4. Miss M. Goll. Sharks: 1. S. Biddle; 2. Mrs. J. Hessel; 3. Mrs. E. Thornton; 4. Mrs. L. Wright. Loaches and Bona: 1. Mrs. E. Thornton; 2. Mrs. E. Thornton; 3. J. Davis; 4. D. Goll.

The Society meets on the first Wednesday of every month at 8 p.m. at the Hampton Scout Hut, Perth Road, Evesham. Visitors and new members welcomed. Secretary, Mr. Michael Pattison, 22 Dudley Road, Honeybourne, Evesham, Worcs. (Phone: Evesham 831415).

**Loughborough and District A.S. meet** on the 2nd and 4th Thursday of every month, at the Charmwood P.H. in the rushes at 8 p.m. New and old members always welcome.

**RESULTS of the 1st Show** of the season of the Midland Aquarist League held at Burleigh Community College, Loughborough on 1st April: Siamese Fighter: 1 and 4, Paul O'Brien (Corby and D.A.S.); 2. Mr. and Mrs. Underwood (Unit 59); 3. E. and N. Hallan (Loughborough and D.A.S.). A.O.V. Anabantid: 1. J. Rule (Rugby Fishkeepers (Best-in-Show)); 2. B. Pyle (Leamington and D.A.S.); 3. S. H. R. (Nunston A.S.); 4. K. Pincher (Wolverhampton A.S.). A.V. Characin "A": 1 and 3, R. Elliott (Corby and D.A.S.); 2. F. Hurst (Coventry Pool and A.S.); 4. B. Chittenden (Leamington and D.A.S.). A.V. Characin "B": 1. R. Elliott (Corby and D.A.S.); 2. R. A. Clews (Coventry Pool and A.S.); 3. A. and S. Simmons (Coventry Pool and A.S.); 4. A. Young (Loughborough and D.A.S.). A.V. Barb "A": 1. L. Purdy (Loughborough and D.A.S.); 2. R. Elliott (Corby and D.A.S.); 3. F. and S. Whitehouse (Wolverhampton A.S.); 4. R. A. Clews (Coventry Pool and A.S.). A.V. Barb "B": 1. B. Chittenden (Leamington and D.A.S.); 2. D. McAllister (Corby and D.A.S.); 3. R. Elliott (Corby and D.A.S.); 4. F. and S. Whitehouse (Wolverhampton A.S.).

Positions of the league after the first show: Corby and D.A.S. (38pts.), Coventry Pool and A.S. (26), Loughborough and D.A.S.

(24), Leamington and D.A.S. (24), Unit 59 (21), Wolverhampton A.S. (21), Nunston A.S. (18), Rugby Fishkeepers (15).

Individual leaders after the first show: R. Elliott (Corby and D.A.S.) (15pts.), Paul O'Brien (Corby and D.A.S.) (5), J. Rule (Rugby Fishkeepers) (5), B. Chittenden (Leamington and D.A.S.) (5).

**THE Brighton and Southern A.S.** held two meetings in March. At the first the table show was for cichlids. Results: Class D: 1. P. Hine; 2. Mr. and Mrs. Ramshaw; 3 and 4. Mr. and Mrs. Raggio. Class Db: 1. B. Hooper. Class Dr: 1. Mr. and Mrs. Raggio; 2. Mr. and Mrs. Ramshaw; 3 and 4. Shawn Scofield. The show was judged by Mr. N. Davies.

The second meeting was a big one with more than 100 people at the Invitation Inter-club. The evening was a great success. Results: Class K: 1. R. Hard (Brighton); 2. A. Feast (Tonbridge); 3. L. Dinney (Mid-Sussex); 4. T. Ramshaw (Bton.). Class B: 1. B. Sayers (Brighton); 2 and 3. E. and T. Tester (Mid-Sussex); 4. R. Hard (Bton.). Class C: 1 and 3. A. Feast (Tonbridge); 2. E. and T. Tester (Mid-Sussex); 4. C. Forse (Portsmouth). Class M: 1 and 3. T. Ramshaw (Brighton); 2. A. Feast (Tonbridge); 4. D. Ballard (Hastings). Class T: 1 and 3. T. Ramshaw; 2. H. Armitage (Hastings); 4. T. Binstead (Portsmouth). Class N.O.T.: 1. B. Sayers (Brighton); 2. H. Armitage (Hastings); 3. T. Ramshaw (Bton.); 4. T. Binstead (Portsmouth). Thanks go to Cyril West and Allan Weir for judging the show.

The club has several tape-cassette and slide lectures for hire by other societies, further information from C. Raggio, 90 Bevenden Crescent, Brighton, Sussex. New members are always welcome, and information can be obtained from the Secretary, T. Ramshaw (Shoreham 62630).

**AT the March meeting of the Nailsea and District A.S.** they were entertained by a talk given by one of the members, Mr. Vanderplank who gave his thoughts on "50 years as an aquarist." Also was held the first of the club table shows. Results: Guppies: Open: 1. Mr. Kenwood; 2 and 3. Mr. Langson. Novice: 1 and 2. Mr. Langson. Flaties: Open: 1 and 2. Mr. Kenwood; 3. Mr. Walters. Novice: 1. Mr. Walters; 2. Mr. Upton; 3. Mr. Langson. The club meets on the fourth Tuesday of each month at the Highcliffe Hotel, Clevedon, where everyone is made most welcome.

**THE 4th A.G.M. Yorkshire Koi Society** was held on 4th March at De Lacy Motor Club, Bootherton, and was well attended. Reports of the Chairman and Treasurer were presented and unanimously approved. The following officers were elected: chairman, Fred Ayres; secretary/P.R.O., Syd Farrar; treasurer, Phil Peckitt; show secretary, Stuart Bent; membership secretary, Megan Hollicom.

It was unanimously decided to offer honorary membership to Dr. David Ford and Dr. Richard Leppington-Clark.

Dr. David Ford gave a most interesting and amusing talk on his launch of Aquarian Foods in Japan last Autumn.

Mr. Leo Smith of Pumping Services Ltd., Leeds, gave a most informative address on pumps and pumping systems, followed by an intensive question session. Membership details from Mrs. Megan Hollicom Membership Secretary, 54 Wilmer Drive, Heaton, Bradford 9.

**THE Newcastle Guppy and Livebearer Society**, although based in Newcastle upon Tyne, is internationally known and has corresponding members scattered all over the United Kingdom, as well as regular contacts in Europe and the U.S.A.

Some of their members have been directly responsible for introducing new species into the United Kingdom, as well as seeing that many of the rarer types of Livebearers are perpetuated, for in most cases, new stock is unavailable from the dealers. Although a

specialist organisation, their journal, which is published every two months, tries to cover as vast a range of topics as possible, from scientific studies to members' own experiences.

In recent months they have produced what they hope will be the first of many information booklets about Livebearers, which is available to members and non-members alike. They also have an excellent tape/slide show available for hire to interested societies.

Their object is to give members the chance to contact other enthusiasts and to make friends with people who have similar interests.

**New Forest A.S.** had a good attendance at their March meeting held at the usual venue, Community Centre, New Street, Lymington, Hants. The main item was a talk on live foods given by Mr. N. Walker, of Bourne-mouth A.S. He is no stranger to the Club having been along on previous occasions to speak on other subjects.

On this particular occasion he spoke on setting up worm cultures (for feeding Tropical fish), especially fry, before they are old enough to take patent foods. He passed round cultures of white worms, grindal worms and micro worms in various stages of growth, and explained what medium is used to feed them, and which will make them multiply more rapidly.

Table-show results: Cichlids: 1, Mr. L. Rickman; 2, Mr. T. Kirby.

The Society meets on the third Monday of every month at 7.45 p.m. The Secretary would be pleased to welcome new members.

The first meeting in March of the **Waltham-stow and District A.S.**, Mr. Dave Byfield and Mr. Gerry Steptowe gave a very informative talk on Malawi Cichlids. At the second meeting in March two club members lectured on breeding coldwater fish.

With increased membership a full programme has been arranged for 1979. New members are always welcome. Meetings are held on the first Friday and third Wednesday every month at the Grange Community Centre, Frederick Street, Walthamstow, E.17 and Secretary is Penny Chandler, 34 Lechmere Avenue, Chigwell, Essex. (Tel: 500 2339).

At the March meeting of **South Park Aquatic (Study) Society** they were pleased to welcome F.B.A.S. lecturer, Mr. D. Hickman, with his wife, who gave a talk on his experiences at pond-making. An informative evening was had, especially when Mr. Hickman said that he first built a pond to house goldfish with which to feed his Paranas.

They were pleased to have three new members join. New members and visitors are always welcome at their meetings at Wimbledon Community Centre, St. George's Road, Wimbledon, 8 p.m. every third Tuesday of the month.

**The Bexleyheath and District A.S.** newly elected officials are: chairman, R. Liddiard, deputy chairman, M. Balcombe; secretary, D. Goodwin, 149a Broadway, Bexleyheath, Kent; treasurer, M. Martin; show secretary, N. M. Raven; assistant show secretary, R. Yeates, P.R.O., D. W. Barnett; librarian, R. Mitchell; committee, G. Greenhalf, E. Dixon.

The society meet every other Thursday at 8.00 p.m. at the Committee Room, A.B.C. Cine Bowl, Broadway, Bexleyheath, Kent. New members are always especially welcome.

The annual general meeting of **Tongham Aquarists** was held on 1st March when the following committee members were elected: chairman, Keith Wray; secretary, Steve Swann, 44 Ilston Road, Aldershot; (Tel: ALD 311582); treasurer, Ray Cooke; show secretary, Peter Edwards; asst. show secretary, Maurice Bird; entertainments secretary, Trevor Williams; publications and advertising secretary, Terry Trussler.

Mr. Roger Paine, from Basingstoke A.S., was asked to judge a slide show, prepared by Steve Swann and Peter Edwards, to determine the winner of the club's home furnished Aquaria competition. The winner was Maurice Bird, with a very attractive marine set up.

Mr. Paine presented the trophies to members for the Club's Annual Table Show.

Tongham Aquarists meet on the first and third Thursday of every month at 8.00 p.m. at The Central Club, Farnham, Surrey. New members are welcomed whether their interest in the hobby is Marine, tropical freshwater or coldwater. Anyone interested should contact: Steve Swann (Ald: 311582) or Ray Cooke (Ald: 20863).

#### NEW SOCIETY

A NEW SOCIETY has been formed at Houghton Regis new Dunstable. It is named the **Houghton Regis Aquarist Society**, and meets at Houghton Regis Community Centre. Meetings the 2nd Monday in each month, starting at 8 p.m. New members welcome. The Society have already booked a six-months programme of talks, lectures and slide shows. The Secretary is P. A. Moye, 62 Elm Park Close, Houghton Regis, Dunstable, Beds. (Phone: Dunstable 609728).

#### SECRETARY CHANGE

New secretary of the **Cannock & District A.S.** is Mr. R. Potts, 25 Oaks Drive, Cannock, Staffs. The society meets every 1st and 3rd Tuesday each month at the Cannock Progressive Working Mens Club, Market Hall Street, Cannock, at 8.30 p.m.

#### CHANGE OF VENUE

The **King's Lynn A.S.** now meet the second Thursday of each month at the Victoria Public House, Lake Road, King's Lynn. Meetings begin at 7.45 p.m.

#### APPEAL

Would anyone in possession of trophies belonging to the N.T.P.S. (from open show June 1977) please arrange for their return to Mrs. Grey, West House, Greenside, Ryton, or to a club member.

#### CALENDAR

**6th May:** Yovil & District A.S. open show at the Martock Village Hall.

**6th May:** Midlands Aquatic Study Group open show at Compton Hall, Chadsmoor, Cannock, Staffs. 37 classes with over 100 trophies to be won. Schedules available (s.a.s. please) from I. Fuller, 38 Cambrian Lane, Rugeley, Staffs. WS15 2XH.

**6th May:** Hull A.S. open show.

**6th May:** Oram A.S. open show. Details from Show Secretary, P. Hewitt, 5 Staveley Close, Shaw, Oldham OL2 8ND (Tel: Shaw 44906).

**6th May:** Forfar and District A.S. third open show at the Reid Hall, Forfar. Official Federation judges.

**6th May:** Bournemouth A.S. open show at Pelhams Community Centre, Kinson.

**12th May:** Tonbridge and District A.S. fish exhibition at Lambeth Walk, High Street, Tonbridge.

**12th May:** Port Talbot A.S. open show at the Taibach County Youth Centre, Margam Road, Port Talbot, West Glam. Trophies, plaques, cards for all classes. Schedules early March from Show Secretary, A. E. B. Fouracre, 3 Cross Street, Velindre, Port Talbot, West Glam. SA13 1AZ. (Tel: 3752).

**13th May:** Gooles and District A.S. open show at the Shire Hall, Howden, Nr. Gooles.

**13th May:** British Koi Keepers Society national a.g.m. at the Botanical Gardens, Egbaston, Birmingham, at 1 p.m. Membership details apply Mr. M. Wausley, 165 Woodside Road, Amersham, Bucks, HP6 6NR.

**13th May:** Lanarkshire Muzehouse open show, Hamilton Tower, Hamilton. Enquiries: W. Bennett, 15 Coulter Avenue, Wishaw, Lanarkshire ML2 8SZ. Tel: Wishaw 72264.

**13th May:** Northwich & District A.S. open show (date re-arranged from 10th June).

**13th May:** British Koi Keepers Society national A.G.M. will be held this year at the Botanical Gardens, Egbaston, Birmingham. For details of membership apply to Mr. M. Wausley, 165 Woodside Road, Amersham, Bucks. HP6 6NR.

**19th May:** Trowbridge & District A.S. Open Show at St. Thomas Church, Timbell Street, Trowbridge, Wilts. Schedules will be available from Mr. J. Bennett, Show Secretary, 30 Lewis Crescent, Frome, Somerset.

**19th May:** Caer Urfa A.S. first open show in the Charter Ede Community Centre, Denton Road, South Shields.

**20th May:** Caer Urfa A.S. 1st annual open show at the Charter Ede Community Centre, Benton Road, Biddick Hall Estate, South Shields. Fish auction and entertainments. Schedules later from the Show Secretary.

**20th May:** Gloucester Aquarist Society Open Show to be held at Chequers Bridge Centre, Painwick Road, Gloucester. 31 classes to F.B.A.S. ruling. Trophies for 1st and 2nd plus award cards. Dr D. M. Ford of 'Aquarist' will give a slide talk on Aquaria around the World during judging. Schedules from March, from Mr. S. Grainger, 2/10 Bazley Road, Marston, Gloucester.

**20th May:** Midland Aquarist League open show and inter-society show, Leamington Spa. Schedules from F. Underwood, 10 Hyde Road, Kenilworth CV8 2PD. (Tel: 59280).

**20th May:** Skegness & District A.S. 2nd open show at the Embassy Ballroom, Skegness. Benching 12 noon-2 p.m.

**20th May:** The British Aquarists' Study Society, Second Spring Meeting at 2 p.m. at the Meeting Rooms of the Zoological Society of London, Regents Park, N.W.1. The Barbs—Dr. Keith Banister of the British Museum Natural History and other speakers. Tickets, £1.25 members and £1.50 non-members, from W. E. Goodwin, 14 Dawlish Drive, Devon Park, Bedford.

**27th May:** Merseyside A.S. annual open table show at the Rainhill Village Hall, Rainhill, Lancs.

**27th May:** Portsmouth A.S. inter-club show at Portsmouth Community Centre, Malins Road, Portsmouth.

**27th May:** Bridlington & District A.S. open show at the Hildershorpe Junior School, Shaftesbury Road, Bridlington. Details from Mr. M. Jordan, Show Sec., 12 Greenfield Road, Bridlington.

**27th May:** Merseyside A.S. annual open table show, Rainhill Village Hall, Rainhill, Lancs.

**3rd June:** Accrington A.S. open show at Antley Methodist Church, Benching 12-2 p.m. More details, s.a.s. to show secretary, S. Lyne, 12 Thwaites Road, Oswaldthistle, Nr. Accrington.

**3rd June:** Scunthorpe Museum Society Aquarist Group 9th open show at Charter Hall, Corporation Road, Scunthorpe. Schedules available from Mr. D. Caldwell, 5 St. Marina Road, Scawby, Brigg, South Humberside DN20 9BG.

**3rd June:** Redcar A.S. open show at Coatham Bowl, Redcar.

**3rd June:** Loughborough & District A.S. open show at Burligh Community College, Thorpe Hill, Loughborough. Schedules from I. S. Purdy, show secretary, 10 Cleveland Road, Loughborough, Leics. LE11 2SP.

**3rd June:** Mid-Sussex A.S. invitation inter-club show at Sydney West Hall, Leylands Road, Burgess Hill. Further details from T. Tester, 19 Cyprus Road, Burgess Hill, West Sussex RH15 8AX (Tel: 43202).

**3rd June:** Sudbury A.S. open show at the Waage Rugby Ground, Repton Avenue, Wembley, Midds. Schedules from L. J. Brazier, 66 Ormsby Way, Kenston, Midds. (Tel: 01-204 5374).

**3rd June:** Arbroath A.S. open show at the Community Centre, Marketgate, Arbroath. Schedules etc., from John Steven 95 Beechin Road, Arbroath.

**9th June:** Dow Corning A.S. 2nd open show at the Memorial Hall, Barry. Schedules from Secretary, S. A. Jenkins, 43 Newwood Crescent, Coldbrook, Barry, Glam.

**10th June:** St Helens A.S. open show.

**10th June:** Northwich & District A.S. open show at Hartford High School, Greenbank Lane, off Chester Road, Hartford, Northwich. Judging to F.N.A.S. methods and standards. Further details from Show Secretary, D. Valence, 43 Hartford Road, Davenham, Northwich, Cheshire (Tel: Northwich 6624).



**16th June:** South Park A. (Study) S. SPASS open show at the Community Centre, St. George's Road, Wimbledon, S.W.19. Will all holding cups please return these by Thursday, 15th May, to the Show Secretary, Mr. L. Clapp, 16 Overhill Way, Beckenham, Kent. Tel: 01-657 4404, daytime.

**16th June:** P.G.N. North West Lancs. Manchester Section annual show at the Satom Chables Temple, Savoy Street (off Pitt Street), Preston. Benching 12.2 p.m. Further details from Mr. B. Morris 4 Irwell Street, Burnley, Lancs.

**17th June:** Loyal Aquarists open show, St. Paul's Parish Hall, Southforth, Lancaster. Details from Mrs. H. Batchelor, 76 Grazees Road, Lancaster (Tel: 66633).

**17th June:** Salisbury and D.A.S. annual open show at the Activity Centre, Wilton Road, Salisbury. 50 classes including 6 Cichlid classes and 10 Goldwater classes. Judging to F.B.A.S. standards. Further details and schedules from Mr. R. F. Adams, 26 Emrose Road, Salisbury. S.a.c. please.

**17th June:** South Park Aquatic (Study) Society 2nd open show at Wimbledon Community Centre, St. George's Road, S.W.19.

**24th June:** The British Koi-Keepers Society 1st national Koi auction at the Botanical Gardens, Edgbaston, Birmingham. Viewing from 10 a.m. Sale begins at 2 p.m. Further details from Mr. R. Hodgson (021-454 1283).

**24th June:** Warrington A.S. 11th annual open show at the Parr Hall, Palmers Square, South Warrington. Further details from I. Hopkins, 6 Westford Road, Lower Walton, Warrington, Cheshire.

**24th June:** The British Koi Keepers Society 1st national Koi auction at the Botanical Gardens, Edgbaston, Birmingham. Details from Mr. R. Hodgson, 5 Westbourne Road, Edgbaston, Birmingham (Tel: 021-454 6283).

**24th June:** Allerton & District A.S. open show at Allerton Hall. Schedules from Mr. P. W. Bonser, 10 George Street, Biddings, Derbys, D15 4AU.

**1st July:** Kings Lynn A.S. open show at the Corn Exchange, Tuesday Market Place, Kings Lynn.

**1st July:** Chard and District A.S. 8th annual open show at Farnham School, Chard, Somerset. Details from A. Griffin, 24 Thornton Road, Yeovil, Somerset (Tel: Yeovil 23231). Show schedules end of April.

**1st July:** Sherwood A.S. open show and auction, St. Margarets Hall, Holbeck, nr. Worksop. Further details from M. Hollingworth, 9 Vespar Court, Forest Town, Mansfield, Notts.

**1st July:** Midland Koi Association 4th national open show at the Baginton Village Hall, Baginton, Coventry. Pre-entry forms from the secretary, Mr. M. K. A. Casner, 8 Swinburne Road, Mill Hill East, Hinkley, Leics. (Tel: Hinkley 30145).

**7th July:** Nailsea and District A.S. open show at Community Centre, Clevedon. Schedules from P. Fichett, 2 Woodland Road, Nailsea, Bristol, Avon (Tel: Nailsea 3096).

**8th July:** Lytham A.S. Annual Open Show at Lytham Baths, Dicconson Terrace, Lytham, Lancs. Schedules from Show Secretary, Mr. Peter Ham, 1 Wyndene Grove, Freckleton, Preston, Lancs. (Tel: Freckleton 633182).

**8th July:** Scunthorpe & District A.S. open show at the Park Community Centre, Ferry Road, Scunthorpe, South Humberside. Also bring and buy sale. Benching 12.00-2.00 p.m.

**8th July:** Novon 1st open show at Heaton School, Newton Road, Byker, Newcastle (new date).

**14th-15th July:** Remford and Becontree A.S. open show (Dagenham Town Show), Central Park, Dagenham. Schedules (May) from Garry Stepstone, 35 Coniston Way, Elm Park, Hornchurch, Essex (Tel: Hornchurch 44057).

**15th July:** Scarborough A.D.A.S. open show at Gladstone Road Junior School, Wooler Street, Scarborough. Schedules (March) from J. F. Richardson, 5 Keld Garth, Pickering, N. Yorks. YO18 8DG. Tel: 73964.

**15th July:** Sandgraders A.S. open show at Meads Cap School, Meads Cap Road, Southport. 30 major trophies. Schedules later from Mr. B. Baldwin, 10 Olive Grove, Southport.

**22nd July:** Gosport & District A.S. open show. **29th July:** South Humberside A.S. open show at the Memorial Hall, Cleethorpes.

**29th July:** Dorchester Tropical Fish Society open show at Hardy's School, South Court Avenue, Dorchester.

**29th July:** Runcorn A.S. open show at St. Edwards Church Hall, Ivy Street, Runcorn, Cheshire.

**3rd, 4th, 5th August:** Three-Rivers Aquarium Fish Keeping Exhibition in the Crowtree Leisure Centre, Crowtree Road, Sunderland. Further details from the show manager, Mr. G. Liddle, 19 Pamleton Ave., Newcastle-upon-Tyne.

**4th August:** Northern Goldfish and Pondkeepers Society hold their 3rd Coldwater fish show at the Sports Centre, Silverwell Street, Bolton, Lancashire. Schedules from Mr. B. Rothwell, 4 Whalley Road, Hale, Cheshire. (061-980 8801).

**5th August:** Oldham and District A.S. annual open show, Wernith Park, Oldham. Tropical, marine and coldwater sections. Schedules from P. Harris, 21 Richardson Road, Eccles, Nr. Manchester (Tel: 061-707-1395).

**5th August:** Blackpool and Fylde Aquarium Society annual open show at St. Kenigerns Hall, Newton Drive. Address of the Show Secretary is Mrs. D. Moseley, Flat 80, Forshaw Avenue, Grange Park, Blackpool (tel: Blackpool 36456).

**19th August:** South East London A.S. 4th open show at 141 Greenwich High Road, S.E.16. Contact Mr. S. Jeffrey, 207, Sibthorpe Road, London S.E.12.

**25th, 26th, 27th August:** Leamington and District A.S. exhibition, including an open aquarium contest, at the Royal Pump Rooms Annex, Leamington Spa. Further details from show secretary, M. Burridge, Flat 1, 36 Warwick New Road, Leamington Spa, Warwickshire.

**26th August:** Long Eaton A.S. open show at Gregorys Rose Gardens, Toton. Details from K. West, 137 Longmoor Road, Long Eaton, Notts.

**27th August:** Petersfield and District A.S. 2nd open show at the Town Hall, Heath Road, Petersfield, Hants. Schedules from Show Secretary, G. Stacey, 6 Highfield Road, Petersfield, Hants.

**2nd September:** Bethnal Green A.S. open show.

**7th September:** Scunthorpe & District A.S. mini show at the Brown Cow Hotel, High Street, Ashby, Nr. Scunthorpe. Benching 7.30-8.00 p.m. Also bring and buy sale.

**8th September:** Bristol A.S. jubilee open coldwater show at St. Ambrose Church Hall, Strerford Road, Whitehall, Bristol 5. Schedules from Mr. W. G. Ham, 18 Imperial Road, Bristol BS14 9ED (Tel: 0272-716924).

**8th September:** Bethnal Green A.S. open show at Bethnal Green Institute, 229 Bethnal Green Road, London E.2. (Re-arranged date).

**8th September:** Kingston & District A.S. open show at Raynes Park Methodist Church Hall, S.W.20. Details from E. Lough (01-390 4138).

**9th September:** Longridge and District A.S. open show at the Civic Hall, Willows Park Lane, Longridge, Nr. Preston, Lanc.

**9th September:** Huddersfield Tropical Fish Society open show at Slatthwaite Civic Hall. Show secretary, Mr. D. Hill, 30 Celandine Avenue, Slatthwaite Nook, Huddersfield (Tel: Hudd: 659977).

**9th September:** Evesham Fishkeepers' Society open show.

**9th September:** Koi 79. The British Koi-Keepers Society fourth national open Koi show, Tatton Park, Knutsford, Cheshire. Membership details from Mr. M. Waurnley, 165 Woodside Road, Amersham, Bucks. HP6 NR.

**9th September:** Nove's Tropical Fish Club open show at Heaton School, Newton Road, Byker, N.C. Further details from Mr. P. Caddle, 47 South Street, Deckham, Gateshead, NE8 2BD.

**9th September:** Middlesbrough A.S. open show.

**9th September:** Bridgewater A.S. annual open show at St. George's Community Centre, Kenyon Way, Little Hulton, Manchester. Details from Show Secretary, M. Burgoyne, 15 Panty Road, Farnworth, Bolton, Lancs.

**12th September:** Aveborough and District A.S. mini show and auction, at Greenacre Hall, Rawdon.

**15th September:** Hounslow and District A.S. open show at Hounslow Youth Centre, Cecil Road, Hounslow, Middlesex. Schedules and run on from Show Secretary, Mr. T. Bellinghous, 2 Holmwood Close, Addlestone, Surrey. (Weybridge 54976).

**16th September:** Leamington and District A.S. open show at Trinity Hall, Trinity Street, Leamington Spa. Schedules from M. Burridge, Flat 1, 36 Warwick New Road, Leamington Spa, Warwickshire.

**16th September:** Midland Aquarist League open show and inter-society show, Coventry. Schedules from P. Underwood, 10 Hyde Road, Kenilworth CV8 2PD. (Tel: 59280).

**16th September:** Wythenshawe & District A.S. open show.

**23rd September:** Chesterfield & District A.S. open show at Clay Cross Social Centre. Schedules mid-May. Details from Mr. L. Waller, 79 West Street, Eckington, nr. Sheffield (Tel: Eckington 2331 or Chesterfield 36546).

**23rd September:** Whitby & District A.S. open show at the Spa Pavilion, Whitby. Schedules from show secretary, Mr. D. Forbes, 12 Lockton Road, Whitby.

**20th September:** North Wilts A.S. open show. **20th September:** Bexleyheath and District A.S. open show at the T.A.V.R. Centre, Watling Street, Bexleyheath, Kent. Schedules from Show Secretary, N. M. Raven, 39 Mount Pleasant Road, Lewisham SE13 6RD. (Tel: 01-690 2954).

**5th October:** Scunthorpe & District A.S. bring and buy sale at the Brown Cow Hotel, High Street, Ashby, Nr. Scunthorpe.

**6th October:** The British Aquarists' Study Society annual general meeting, followed, at 2 p.m. in the Meeting Rooms of the Zoological Society of London, Regents Park, N.W.1 by the Annual Conference. Membership details from the Secretary, Michael Shadrack, 61 St. Barbabas Road, Woodford Green, Essex.

**7th October:** Louth and District A.S. open show. **13th October:** East London Aquarists and Pondkeepers Association annual open show.

**21st October:** Midland Aquarist League open show and inter-society show, incorporating 1st award winners' classes. Venue in Rugby. Schedules from P. Underwood, 10 Hyde Road, Kenilworth (Tel: 59280).

**4th November:** Halifax A.S. open show Details later.

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