

# The Aquarist

and Pondkeeper

DECEMBER 1963



MONTHLY  
Vol. XXVIII No. 9

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## Christmas Greetings

### BOOKS T.F.H. BOOKS

On the opposite page we mention just a few of the T.F.H. Pet books, but here we make no apology for concentrating on but one title, the looseleaf edition of "Exotic Tropical Fishes". Surely the most comprehensive book on the subject to date (so the purchasers tell us). And remember, "The Tropical Fish Hobbyist" contains free supplements every month, thus the looseleaf edition of "Exotic Tropical Fishes" keeps on growing! It can last you a lifetime, and never becomes outdated. Why not get yours today?

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THE AQUARIST

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# The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



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## Tagging Fish for Life



Marine biologists use nylon thread to tag a striped bass

**H**OW can a single fish in natural waters be tracked? How can it be predicted when last year's crop of fry will grow big enough for the nets? Where is the best fishing ground all the year round? These and many other important questions are continually being scientifically investigated.

Probing for the answers, the U.S. Fish and Wildlife Service "tag" fishes as part of their exploration work from a dozen experimental biological laboratories scattered from coast to coast, in Alaska, in Hawaii and in many other places. Haddock, salmon, herring, tuna and cod are all "tagged" and tracked from egghood to adulthood, from spawning ground to fisherman's net.

Marine biological scientists had to develop a really suitable, near-perfect "fish-tag", a device that would stay



In the picture above a round tag attached by nylon twine to the posterior part of the dorsal fin of a live striped bass is shown.

A legend offering a reward for the return of the fish to the U.S. Wildlife Service is on the disc rivet-fastened to the gill-cover of the fish seen on the right.



surely fastened to the fish for good without making it too conspicuously different from its companions. A 'tagged' fish has to migrate with the 'school', mate and spawn as all the others and, finally, be caught in the fisherman's net merely by chance. On the other hand, the tag has to be big enough to carry a serial number, the name as well as the address of the 'tagger', and to quote the reward offered for the return of the fish.

#### Search for the Ideal Tag

Scores of fish 'tags' have been designed in the past, none of them absolutely satisfactory. In 1911 Signor Sella tagged ten Mediterranean blue-fin tuna. He simply used a copper chain, looped it around the tail of the tuna and threw it back into the 'fishing grounds' and waited. But nothing has happened: none of the 'chained' tuna has ever been caught!

Almost two decades later, a group of French fishermen tried something new in the field of identifying fishes. They cut some sort of 'identifying marks' into their fish-books and tied them to rather flimsy leads that would break at the first tug, leaving the hook embedded in the fish's mouth.

Twenty-nine of their 'identifying' fish have been recovered when they bit on hooks of other anglers.

Afterwards followed a succession of fish tags, ranging from celluloid discs threaded through a gill to pieces of leather strapped around a fin. When the U.S. Fish and Wildlife Service began to tag fish in earnest in the late 1940s, technicians set up qualifications for the ideal fish tag. It had to be colourful enough to be seen easily in a catch, light in weight, not harmful to tissue and easily and readily attached to the fish.

Once established, these standards rapidly eliminated unworkable tags. Hook-type tags almost always caused mouth damage. Any kind of strap or band, whether metal or leather, caused chafing and irritation. Silver or copper wire snagged on rocks and kelp.

Early in 1952 U.S. Government researchers began an experiment that turned out to be the best yet to answer tagging problems. They attached a length of slender nylon twine to a 1/4 inch red plastic tag bearing the legend "51

reward for the return of this fish to . . ." Then they threaded the twine into a modified upholsterer's needle and looped it through the second top fin of striped bass.

The results were encouraging. According to the report of the research biologists, the nylon has met requirements for flexibility and continued tensile strength in salt water, beside not being harmful to the fish. Total recoveries of fish tagged in this way generally are higher. Researchers say this is probably because the tag doesn't injure the fish and is more durable than previously used types. Thus a more accurate measure of fish migration is being achieved, a fact that pleases biologists and commercial fishermen alike.

Michael Lorant

## Book Review

*Pond and Stream Life of Europe* edited by John Clegg. Blandford. 10s. 6d.

*Insects in Colour* edited by N. D. Riley. Blandford. 10s. 6d.

EACH of these books is profusely illustrated and ideal for easy identification of a wide range of animal life that the aquarist or general naturalist is likely to encounter in Britain. In publishing these English editions Blandford have the praiseworthy policy of translating the best European books for the benefit of British naturalists. *Pond and Stream Life of Europe* was first published in Denmark and *Insects in Colour* in Sweden. They maintain the high standard combined with a modest price that was set by *Reptiles and Amphibians of Europe* reviewed in these columns last February and are strongly recommended.

ROBERT BUTTAN

# The Paradise Fish (*Macropodus opercularis*)

by Dr. R. O. B. LIST

Habitat: Asia, Africa, China and Korea.

Family: Anabantidae.

Size: 3 to 4 in. (body length).

Temperatures: 75° to 80° F (24° to 27° C).

**T**HIS is a bubble-nest builder, also known as a labyrinth fish, which possesses an auxiliary breathing apparatus as well as ordinary gills. This apparatus has no independent muscular action, but is similar in function to the lungs of an air-breathing animal. It is composed of a labyrinth of involved fine blood capillaries which absorb oxygen from the air into the blood. This is not a constant process but is operated at intervals when the fish are at the surface. The process is particularly helpful when there is an oxygen deficiency. When the fish are scared they come to the surface fairly often, but when quiet they remain below the surface for several minutes at a time. They are very sensitive to draughts and an aquarium cover is recommended.

One of the peculiarities of these fish when breeding is the unusual behaviour shown by the male and female when first introduced to each other. They adopt a head to tail position next to each other, with the fins fully extended and open. This procedure only applies when the pair are ready for breeding.

The male commences to wave its fins to and fro rather quickly and the pair commence to slowly turn in circles. Should the rhythm become broken, the male will again draw the female into the right position and the circling recommences. The female at this stage will begin to lose all her colouring and will swim with her head quite upright and will appear to stand on her tail and swim.

Should the female not be ready to spawn, she will make an effort to leave the male and seek refuge in hiding places in the aquarium, which should have been previously prepared.

Later the male will repeat the approach and continue to do this until the female is ready. She usually signifies her readiness by taking one or two of the bubbles from the bubble nest, which has previously been prepared by the male, and spitting them out again. The circling will then continue and the male will form his body in a position which nearly resembles a question mark, and in turn the female will huddle into the male. In this fashion they will continue to circle. The loss of colour in the female also continues until all her colour is lost.

The male's encircling movement gets narrower and narrower, and the turning slowly comes to a halt. The male will then attempt to turn the female until she is swimming upside down, with her vent near to the bubble nest. When turned, the male will be seen to shiver slightly and the female then commences to throw her eggs. The pair will slowly separate and the eggs are forced upward into the bubble nest through the slow movements of the fish.

The pair appear to be fully exhausted and are apparently unable to move freely. The female slowly sinks to the bottom and the male will continue to swim for some time at the best spawning position. Should any of the eggs fail to be forced into the bubble nest, the male undertakes the duty of collecting them and spitting them into the

nest. Another fascinating point is how the male regulates the spacing of the eggs in the bubble nest, thereby avoiding overcrowding and clumps.

After a period, which varies, the whole spawning procedure is again gone through. When the female has spawned sufficiently, she will reject the male and in fact will not allow him even near her.

The hatching and after care of the young fry is looked after by the male, and, as far as I am aware, it has not been known that the female has interested herself in the hatching or after care. The female should therefore be removed, but the male may be left with the fry for some 4 to 5 days. If he is seen to feed on the eggs or fry, he should also be removed, as this appears to show that he considers his work done. There can be as many as 450 to 500 eggs in a spawning and eggs usually hatch out in about 2 days.

I have mentioned how the female expresses her unwillingness to spawn, and, strangely, the male may also express his disinterest. If he does not build the bubble nest, no power on earth will attract him to the female. So you have two signs of readiness to watch out for.

After a successful spawning you are faced with the problem of 450 to 500 young fry. And a real problem it is. The amateur's very loth even to lose one egg, and we have all at some time or another had pangs of regret at losing the battle with Nature. But never try to attempt the near impossible. At the beginning rather settle for small gains and thereby find greater joy in your sense of achievement.

With labyrinth bubble-nest fry there are two factors that you have to contend with. Firstly they require a greater amount of room for successful rearing, and if you should possess an aquarium of possibly the size of the Palm House in Kew Gardens, then you might raise the lot! Otherwise no. The second factor which goes a little against the grain is that the fry aquarium should not be over clean. This is not the usual concept with most fishes, I grant you, but it is of importance for the bubble nester. They require prodigious amounts of microscopic food and the best way of producing this is in old water. When I was faced with the problem some years ago, I naturally sought advice and found some of it rather hard to take. But when the advice is backed up with proof, one does not feel inclined to argue overmuch. And what was the advice? You may well ask and possibly shudder as I did when I first heard it. Simply to throw in an old decayed lettuce leaf. And what is more, it works. Not just once as if by fluke, but each and every time.

At the age of approximately 3 weeks, the young fish will commence to take very finely sifted small *Daphnia* and brine shrimps. But never before 3 weeks in any event. My preference is to use the yolk of a hard-boiled egg. When the yolk is well hard boiled, place some in muslin and press the yolk through. What is not eaten should then be discarded and a fresh batch prepared for the next feed.

The final outcome is that you will find that you have some very handsome fish indeed. They tend to be maligned a little, as they give the appearance of being somewhat 'tatty'. This is usually due to the absence of colour in the outer edges of the filaments.

The general overall colour is greenish brown to grey.



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ROBERT HUSTAD

THE AQUARIST

# The Paradise Fish (*Macropodus opercularis*)

by Dr. R. O. B. LIST

*Habitat:* Asia, Africa, China and Korea.

*Family:* Anabantidae.

*Size:* 3 to 4 in. (body length).

*Temperatures:* 75° to 80°F (24° to 27°C).

**T**HIS is a bubble-nest builder, also known as a labyrinth fish, which possesses an auxiliary breathing apparatus as well as ordinary gills. This apparatus has no independent muscular action, but is similar in function to the lungs of an air-breathing animal. It is composed of a labyrinth of involved fine blood capillaries which absorb oxygen from the air into the blood. This is not a constant process but is operated at intervals when the fish are at the surface. The process is particularly helpful when there is an oxygen deficiency. When the fish are excited they come to the surface fairly often, but when quiet they remain below the surface for several minutes on end. They are very sensitive to draughts and an aquarium cover is recommended.

One of the peculiarities of these fish when breeding is the unusual behaviour shown by the male and female when first introduced to each other. They adopt a head to tail position next to each other, with the fins fully extended and open. This procedure only applies when the pair are ready for breeding.

The male commences to wave its fins to and fro rather quickly and the pair commence to slowly turn in circles. Should the rhythm become broken, the male will again drive the female into the right position and the circling recommences. The female at this stage will begin to lose all her colouring and will swim with her head quite upright and will appear to stand on her tail and swim.

Should the female not be ready to spawn, she will make an effort to leave the male and seek refuge in hiding places in the aquarium, which should have been previously prepared.

Later the male will repeat the approach and continue to do this until the female is ready. She usually signifies her readiness by taking one or two of the bubbles from the bubble nest, which has previously been prepared by the male, and spitting them out again. The circling will then continue and the male will form his body in a position which nearly resembles a question mark, and in turn the female will huddle into the male. In this fashion they will continue to circle. The loss of colour in the female also continues until all her colour is lost.

The male's encircling movement gets narrower and narrower, and the turning slowly comes to a halt. The male will then attempt to turn the female until she is swimming upside down, with her vent near to the bubble nest. When turned, the male will be seen to shiver slightly and the female then commences to throw her eggs. The pair will slowly separate and the eggs are forced upward into the bubble nest through the slow movements of the fish.

The pair appear to be fully exhausted and are apparently unable to move freely. The female slowly sinks to the bottom and the male will continue to swim for some time in the best spawning position. Should any of the eggs fail to be forced into the bubble nest, the male undertakes the duty of collecting them and spitting them into the

nest. Another fascinating point is how the male regulates the spacing of the eggs in the bubble nest, thereby avoiding overcrowding and clumps.

After a period, which varies, the whole spawning procedure is again gone through. When the female has spawned sufficiently, she will reject the male and in fact will not allow him even near her.

The hatching and after care of the young fry is looked after by the male, and, as far as I am aware, it has not been known that the female has interested herself in the hatching or after care. The female should therefore be removed, but the male may be left with the fry for some 4 to 5 days. If he is seen to feed on the eggs or fry, he should also be removed, as this appears to show that he considers his work done. There can be as many as 450 to 500 eggs in a spawning and eggs usually hatch out in about 2 days.

I have mentioned how the female expresses her unwillingness to spawn, and, strangely, the male may also express his disinterest. If he does not build the bubble nest, no power on earth will attract him to the female. So you have two signs of readiness to watch out for.

After a successful spawning you are faced with the problem of 450 to 500 young fry. And a real problem it is. The amateur is very loth even to lose one egg, and we have all at some time or another had pangs of regret at losing the battle with Nature. But never try to attempt the near impossible. At the beginning rather settle for small gains and thereby find greater joy in your sense of achievement.

With labyrinth bubble-nest fry there are two factors that you have to contend with. Firstly they require a greater amount of room for successful rearing, and if you should possess an aquarium of possibly the size of the Palm House in Kew Gardens, then you might raise the lot! Otherwise no. The second factor which goes a little against the grain is that the fry aquarium should not be over clean. This is not the usual concept with most fishes, I grant you, but it is of importance for the bubble nester. They require prodigious amounts of microscopic food and the best way of producing this is in old water. When I was faced with the problem some years ago, I naturally sought advice and found some of it rather hard to take. But when the advice is backed up with proof, one does not feel inclined to argue overmuch. And what was the advice? You may well ask and possibly shudder as I did when I first heard it. Simply to throw in an old decayed lettuce leaf. And what is more, it works. Not just once as if by fluke, but each and every time.

At the age of approximately 3 weeks, the young fish will commence to take very finely sifted small *Daphnia* and brine shrimp. But never before 3 weeks in any event. My preference is to use the yolk of a hard-boiled egg. When the yolk is well hard boiled, place some in muslin and press the yolk through. What is not eaten should then be discarded and a fresh batch prepared for the next feed.

The final outcome is that you will find that you have some very handsome fish indeed. They tend to be maligned a little, as they give the appearance of being somewhat 'tatty'. This is usually due to the absence of colour in the outer edges of the filaments.

The general overall colour is greenish brown to grey.

with black mottling at the head. There are alternate red and blue bars with metallic sheens on the sides. The caudal fin, which in the male is much larger than in the female, is red streaked with blue and is bifurcated. The anal fin, together with the dorsal, which is again much larger in the male, is deep red to reddish brown, with blue streaks. The dorsal, caudal and anal fins are elongated in the male and terminate in lengthy filaments. The female is not so brilliant in her colouring and her fins are a great deal shorter. The male also has blue-green spots with an orange edge on the gills.

There is also a black and an albino paradise known. It has not been my pleasure to have any dealings with the former, and as for the latter, this is known to us, but I have no personal preferences for this form of colouring. In fact, I rather tend to dislike albinos, regardless of species.

Another oddity of the paradise fish is that it will stand low temperatures. Literature records pond spawnings at 45° to 50°F (7-10°C) in Asia and it is known that the Chinese have kept them in goldfish ponds. As the males tended to attack the finnage of the goldfish, the paradise were withdrawn. Even these records will not allow me to change my mind about their being good aquarium fish. They rather dropped into disregard because of their easy breeding habits. First-class show fish are not all that easy to breed and a good paradise fish will often hold his own at any show in his class, as well as being a delightful addition to the home aquarium.

I have also noted from various records that attention should be paid to the depth of water in the breeding aquarium, and it is said that the water should not be deeper than 2 to 4 inches. I have not found this to be of importance, but on the other hand it is preferable not to have the water too deep.

With this species pH of the water should be 7, and contrary to usual expectations the hardness has little bearing. If, as stated, the fish are ready for breeding, provided that the pH is right, the degree of hardness is of little consequence.

## Fish Sleeping Sickness



A leech conveys parasites from fish to fish

A MINUTE unicellular parasite is responsible for the disease known as sleeping sickness and its presence may be suggested by a fish apparently dying from weakness caused by not eating food. The infected fish may lie on its side in the aquarium for weeks and if placed in an upright position it will slip on to its side again. Gill movements are slow and the fish makes very little movement.

Little is known about this disease except that infection generally takes place when a fish is attacked by a leech (*Piscicola geometra*) that has previously sucked blood from an infected fish; this indicates that the parasites must be introduced direct to the blood stream before contamination is achieved.

As leeches are rarely found in aquaria, this infection is not often met with. To my knowledge there is no known cure for sleeping sickness in fishes.

R. E. Macdonald

## EXOTIC GOLDFISH

# Adornments of t

by C. E. C. COLE

I HAVE seen many mature and well-developed normal-eyed veiltails and twintails with strange wrinkles and crenellations beginning to develop in the skin on the top of their heads. It seems as though the skin is thickening and forming into deep wrinkles. In other specimens the skin looks as though it has been immersed for a period in strong detergent water.

I am convinced that it was from fish like these that the curly orandas were derived. First by accident and then by design and selective breeding fanciers so intensified the tendency for the skin to wrinkle and thicken that a growth developed which eventually appeared as a fair-sized raspberry or bramble. The new character continued spreading until it not only covered the top of the head but also the whole of the opercula or gill covers.

### The Oranda

The Federation of British Aquatic Societies drew up an ideal at which to aim when breeding orandas. Apart from the head growth there is little difference from a normal-eyed veiltail.



Veiltail with a raspberry—the oranda

The Goldfish Society of Great Britain, in its booklet *Basic Varieties* (first edition), ignored the oranda but chose a still more extraordinary creature upon which to concentrate. This had short rounded finnage, a short, medium deep body, twin caudal and anal fins, an oranda-like growth over the head and opercula and no dorsal fin. They gave the name bramblehead to this "basic variety".

The complete absence of a dorsal fin is the most interesting character to many people, for this is the first sign that

## the Head

the goldfish can not only add features but also lose fundamentals. The loss of a fin by accident or operation is understandable, but to lose it by mutation, and for that loss to become inheritable, is something extraordinary.

Of course, many offspring of bramblehead crosses show only partial repression of the dorsal. The first two or three rows may develop as a spike or the back may show a distinct line like a seam where the rays would normally have emerged from the skin.

The F.B.A.S. ideal shows the head growth in three distinct lobes, but this is the only difference worth mentioning between the two interested groups—apart from the name given to the fish. The Federation prefers the name lionhead.

World War 2 made little difference to the goldfish. It still went on breeding and mutating, although in this country it was almost impossible to do more than keep a minimum of breeding stock alive and everyone knows that the common goldfish disappeared from our ken with the cessation of imports from the continent.

### Celestial and Pom-pom

As soon as practicable after the end of hostilities, however, importations were resumed—at first of the commoner types, but later of more unusual variations. Among these were the celestial, the bubble-eye, the pearl scale and the pom-pom.

The celestial and the pom-pom had been known for many years, but no one in this country had any specimens. The bubble-eye and pearl scale were new to us and demonstrated once more that with the goldfish anything seems to be possible. The celestial was so called because its eyes were level with the top of its head and horizontal instead of the usual vertical. It is as though it was intended to be telescopic-eyed, but one side only of each protuberance grew, lifting the iris and lens into a horizontal position.

The pom-pom had very enlarged nasal flaps, which folded in a series of crumplings, and to my mind was one of the least attractive of the re-importations.

### Bubble-eye and Pearl Scale

The bubble-eye was characterised by a blister-like growth beneath each eye—an embellishment which made it look utterly miserable and dissipated.

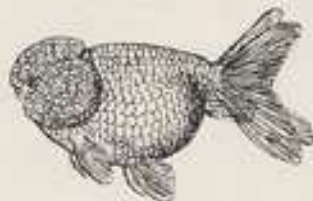
The pearl scale produced domed scales instead of normal ones, and has been likened to a peeled pom-pom.

Fanciers hailed these newcomers with delight, and soon set to work to emphasise the characters so much admired. But, of course, to possess a specimen, say, with enormous sacs beneath each eye, or with very domed scales, or with horizontal eyes the size of dinner plates, was not sufficient. What shape of body should it have, what size of fins, what kind of caudal and anal fins were best, and so on?

To change the shape of any of these, crossing with other mutations already showing the desired characters must be undertaken. All crossings, in the first place, must be experimental, because no one can tell what effect the various character-bearing factors will have upon each other when they are first introduced.



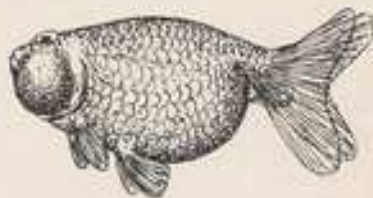
Bramblehead goldfish of the type described in the Goldfish Society Standards



Lionhead goldfish (F.B.A.S. Standards)



Celestial goldfish (the direction of the gaze accounts for the name of this variety)



Bubble-eye goldfish

## HOUSE PLANTS IN THE FISH HOUSE



**T**HIS showy house plant is ideal for fish houses which are centrally heated, for a minimum winter temperature of 55°F (13°C) is necessary for perfect health. Coming originally from Malaya, this plant is grown widely throughout the tropics as a garden shrub, reaching 4 or 5 feet in height, and is often used for hedging. Unfortunately, with the generally inadequate space heating in the majority of houses in this country, in winter when the room temperature may be around 70°F (21°C) during the

## Croton

(*Codiaeum variegatum pictum*)

by BARRY R. JAMES

day and near freezing at night, premature leaf drop in this species may happen.

Crotons are generally sold in this country at around 12-18 inches in height. The leaves are similar in shape to those of the laurel but slightly longer in proportion to the width. The colours are extremely variable, even on the same plant, and contain patches and spots of green, scarlet, pink, orange and black. The veins are very prominent and usually of one colour, often yellow. So can be imagined this species has a very exotic appearance and it is worth a little trouble and care to keep a croton in good condition.

In the fish house specimens of this plant require the sunniest position and should be kept uniformly moist with frequent feeding during the growing season. Spraying of the leaves in warm weather is beneficial and they should be wiped over once a week to keep them free of dust and so that they may show their brightest colours.

If by any chance leaf drop should occur during winter it is best to cut the plant back to within 6 inches and start again.

To propagate this species cuttings should be taken and dipped in powdered charcoal to prevent oozing of the sap, which has a milky appearance. They should then be potted and allowed to stand in a warm humid place until rooting is well advanced, when the plant may be brought into the usual sunny position.

A very attractive cultivar which at first glance may be taken for an entirely different species is known as 'Van Ootense'. It has long thin grass-like leaves, which are dark green spotted with yellow or orange. It is rather hardier than *Codiaeum variegatum* var. *pictum* and assumes a rather more bushy appearance than the latter.

## The Giant Danio

by JACK HEMS

**T**HE giant danio, *Danio malabaricus*, from the coastal rivers and streams of Malabar and Ceylon, was first introduced to tropical aquarists just over 50 years ago. It is a barbless member of the family Cyprinidae, a handsomely shaped and appraised, lively, shoaling fish that spends most of its time cruising to and fro in full view of its owner in the middle and upper levels of the water. In the wild state it attains a length of about 6 in., but under domestication it seldom grows much more than half that size. Even so, it is scarcely a tropical to recommend for cramped or poorly oxygenated quarters.

The body is olive grey on the back and gleaming white flushed with pink on the underparts. The sides are horizontally striped with shiny blue and gold. The middle blue stripe, and the gold stripes bounding it, run right into the well developed tail fin. Normally the fins are

silvery clear to pink, but during the nuptial chase and actual spawning, they show fiery red tints, especially in the male. At all times the female is fatter than the male, and her colours tend to be slightly quieter in tone.

*D. malabaricus* has a peaceful disposition and can be trusted to behave itself in a community tank. Yet because of its rather large size and active habits it is best omitted from the company of fishes very much smaller than itself. Feeding it is easy; tiny insects and various small or chopped worms, thin slivers of cooked or raw lean meat, any regular live or dried food, even uncooked porridge oats, are all eaten with relish. So far as temperature is concerned, it



has a range of from about 66°F (20°C) to 85°F (29°C), but breeders best at around 75°F (24°C), with a rise to 78°F (26°C) for breeding.

To breed the giant danio—and it can be bred without difficulty by the comparative beginner—a tank large enough to permit vigorous driving is required. The standard 24 in. by 12 in. by 12 in. comes first to mind. But a larger tank is better to speed the growth of the fry. It should contain really clear, matured water, and tied bunches of bushy-foliaged plants to receive the eggs. The plants should be anchored to the bottom with lead strips or stones, preferably in a group towards one end. It is a good idea to scatter just a little well washed sand or small gravel over the floor to cover the bare, light-reflecting and, in many cases, unnerving bottom glass.

Before actually introducing the pair into the tank, it is always a good plan to separate them for a fortnight or so; let the rest from each other's company, combined with a diet rich in live food, acts as a powerful stimulant and usually brings them into spawning condition. This condition is easily recognised by the male's accentuated colours and the female's abnormally swollen sides. All things considered, it is best to place the fish in the spawning tank last thing at night, for then it is not unlikely that they will spawn quite early on the following day.

The breeding procedure takes the form of a furious chase around the aquarium. The male is a close pursuer and, every now and again, as the couple pause for a moment or two among the plants, or whisk past or through them, the female lets fall a score or more of adhesive eggs. As these are a much appreciated delicacy, it is important that the parent fish are returned to their original tank as soon as spawning is over.

At a temperature of 78°F (26°C), as recommended above, the eggs hatch in about 40 hours, and 2 days later the fry become free-swimming and in need of a plentiful supply of food. This, of course, must be of the smallest, and a fresh culture of Infusoria is indicated. If these micro-organisms can be drip-fed to the fry throughout the first week or so of their infancy, so much the better. Falling Infusoria, a flour-fine dried food or a branched fry food can be given. Thenceforward they will be ready and eager for bulkier live or dried food. Among the latter, micro worms and brine shrimps are readily accepted.

The youngsters are at first rotund-bellied, silvery streaks of darting life, but before 3 months are out they assume a more stream-lined appearance and day by day show an increasing amount of blue and gold on their sides. Full size is attained in about a year to 18 months.

## The Flag Cichlid . . . a Community Fish

by ROBIN SANDERS

HERE is a cichlid that really can be kept in your community aquarium; it possesses many of the attractions of the larger cichlids and yet is peaceful, small and not quarrelsome. It does not really class as a large cichlid and yet is not generally considered to be a dwarf cichlid, and this makes it all the more interesting.

The flag cichlid is found in the Amazon basin region of South America, in quiet, fairly shallow spots, and often where there is a slight current. In an aquarium its maximum size is 3 inches and 2½ inches it probably a good average. In appearance the body is deep and strongly compressed, and it has a somewhat large head. Coloration is varied and often beautiful: the back is brownish-green to olive-green, the flanks a silvery green, and often including yellow and dark blue. The belly is silver to light golden, while the cheeks are covered with numerous sky-blue dots and streaks. There is a dark horizontal line running along the flanks with several indistinct dark blotches. The male, as with most cichlids, usually shows brighter coloration than the female.

This cichlid is known under a number of different names, including sheephead acara and blunthead. Its proper name does in fact give rise to both these terms, as *Aequidens* means "with teeth of equal length", and *caracaeptus* means "with a curved head".

This fish will eat all foods, but to do really well should be given regular feedings of live foods such as *Tubifex*, white worms and *Daphnia*.

Like most cichlids, it swims generally in the lower half of the tank, and being rather shy likes plenty of plants and a few pieces of corkswork in which to take cover. It will not tear out or damage the plants; this is one of the drawbacks of larger cichlids which fortunately it does not possess.

It will stand temperatures between 72°F and 85°F (22-30°C), but the optimum temperature is probably about 76°F (26°C). The type of water is not critical but a good guide is a pH 7.0-7.2, and hardness 150-180 parts per million. The important thing to remember is to avoid sudden drastic changes in water conditions. This variety

is somewhat vulnerable to diseases if kept too long in old water, and so it is recommended that one-third of the water be changed every so often.

Sexing this species is not always easy unless the fish are fully mature. Then the usual cichlid procedure can be adopted, and it will be found that the males will have longer and more pointed anal and dorsal fins, as well as showing greater coloration.

Breeding is not too difficult once a pair has been established. It follows the standard cichlid pattern, and a flower pot is often chosen as a site for spawning. Eggs will probably number between 100 and 300 and will hatch in 3 days at 80°F (27°C), which is the best temperature for spawning. They become free-swimming in a further 3-4 days and will grow rapidly if fed correctly, attaining a length of ½ inch in the first month.

Infusoria should be fed for the first few days, to be followed by brine shrimp, micro worms, and sifted *Daphnia*. After 3 or 4 weeks the fry should be large enough to take finely chopped *Tubifex* and white worms.

Unfortunately, the parent fish are prone to eat their young after a couple of days, especially at the first spawning. If they continue to do this, they should be removed as soon as the eggs hatch, or if they are eating the eggs before they hatch, the eggs should be hatched out artificially under an aerator with a little medicinal methylene blue added to the water to prevent fungus attacking the eggs.

The flag cichlid will live happily in a community aquarium with all except the smallest of fishes, and is a desirable community fish because of its colour and lack of aggressiveness towards other fishes. It will mix well with platies, mollies, swordtails, guppies and large tetras.

It has not been seen in quantity on the market recently, probably because of the small size of the spawnings and the habit of the parent fish of devouring the youngsters. Even so, its price is usually reasonable when it is available.

# Aquaria for Do-It-Yourself Aquarists

by IAN CHALMERS AND IAN HENDRY

**A**QUARISTS who are keen to use do-it-yourself methods in the expansion of their hobby may be interested to try the following experiment in building a fibre glass aquarium. The advantage of building one's own tank is that it can be made of any size. In certain cases where it is hoped to include an aquarium in an interior decorating scheme, this versatility in sizes is extremely advantageous.

The tank built by us was 30 in. by 15 in. by 12 in. When completed and finished with cream paint it was reasonably attractive in comparison with mass produced aquaria. Although it was slightly more expensive than a bought tank, the fact that it could be tailor made outweighed the very small increase in cost.

The materials required were a complete fibre glass kit, such as can be bought from any large ironmonger, and several feet of light wood for building the moulds. It is best to construct the tank in a garden shed or outhouse where the moulds can remain untouched while the fibre glass is setting. Allowing for a few hours spare time each day, the do-it-yourself enthusiast can make up a fibre glass aquarium within a week.

From the name 'glass fibre', one would assume that the basis of the material would be glass. However, this is not so. The correct name of the finished material is 'glass-reinforced plastic'. It consists mainly of plastic, the only reason for the glass fibre being to give the finished construction a reasonable tensile strength.

The plastic is worked in a liquid state and hardens through the action of a 'catalyst'. This means that once the catalyst is added to the original resin, nothing can stop it from setting. Unless the catalyst is added, the resin will remain in a liquid state indefinitely.

Since the setting process involves no appreciable change in volume, a rigid mould may be used. This makes it reasonably simple to mould a frame for an aquarium. Several precautions should be taken, however, and we have found these necessary by bitter experience!

1. The mould should be made 100 per cent leak-proof, otherwise the liquid plastic, which takes up to several hours to set (depending on the amount of catalyst used), will merely leak away. This can best be achieved by employing a reasonable amount of precision when constructing the mould. Further, all joints should be greased before assembly of the mould.

2. If the mould is of a complex shape, several feed points should be incorporated. If this is not done, air locks may develop, since the liquid plastic is fairly viscous, and this will result in an incomplete construction.

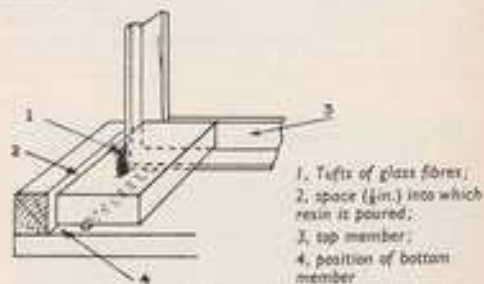
3. After mixing the resin and the catalyst, it should be allowed to sit for a few minutes to allow any air bubbles to rise to the surface. If the liquid plastic is poured into the mould immediately after mixing the construction will be considerably weakened through air bubbles trapped in the plastic.

4. All surfaces of the mould should be well greased before coming in contact with the plastic, otherwise the plastic will adhere to the mould. It is possible to buy 'releasing agent' for this purpose, but candle grease or lubricating grease was found to be quite successful.

5. Where the structure is being built in parts, fibres

should be allowed to protrude where another part is to be built on. This gives a far stronger bond than merely plastic to plastic, and also ensures a certain uniformity of reinforcement.

Because of the complexity of the mould required, it was found more successful to build up the aquarium frame in parts. The top and bottom members may be made with the same mould and the uprights may all be made from another mould.



Mould for upright members



Mould for top and bottom members

The mould for the top and bottom members can be made as shown in the diagrams. Once these members have been made, they can be inserted into another mould and the uprights moulded one at a time.

Obviously, if two moulds for uprights, of the pattern suggested in the diagrams, were made the pairs of uprights could be made at the same time.

The moulded construction should be left in the mould for a few hours after setting, as it remains in a malleable plastic condition for some time before setting hard.

When the tank is completely constructed the glass should be put in in the normal way. However, in our experiment, as well as using putty, we sealed off every corner with Sylglas and had no trouble with leaks.

Once the glass is in, the tank should be left with water in it for a few weeks. After this a good clean out is most important, and for the final setting up of the aquarium, it is always safer to give the water an acid-alkaline test.

The tank built by us has now been in commission for over 6 months. We have never once been bothered by leakages. There has been no warping and the tank is considerably lighter than an all-steel product.

## My Red-chinned Panchax

by PETER E. PAVEY

THESE are easy to breed", I was told when I bought my adult pair of red-chinned panchax (*Aphyosemion callianus*).

The male, his blue, pike-shaped body speckled with red, had red and yellow streaks in his fins, and the characteristic red line under his chin. He was as beautiful as I had hoped he would be, and the popular name fitted him well. The female was the same size, but, of course, duller, almost a murky amber colour. Easy to breed, though? For the experts, perhaps.

I crossed my fingers as I tipped the fish into the 18 in. by 10 in. tank, which I had sparsely planted with *Cryptocoryne* and half-filled with rain water in readiness.

Just to encourage them, I put in a spawning mop and peat bag straight away. The spawning mop was made from strands of white nylon wool, and the peat bag was simply a square of nylon net filled with two handfuls of peat and securely tied. I fixed a 25 watt, pink-shaded bulb over the tank, set the temperature at 75°F (24°C), and then hopefully began to feed my fish on *Tubifex* and white worms. This diet I varied occasionally with a shower of water fleas (*Daphnia*).

Aphyosemions, alas, are shy fishes, and though I have seen the male quivering above the female and pushing her down into the gravel, I have not seen any eggs actually being laid. But there have been eggs. Oh, indeed yes!

I thought the fish towards the end of June. On 22nd July I found one egg. Two days later I picked 37 eggs off the mop and peat bag. Disappointingly, most of these developed fungus.

The first egg, however, which obviously had been laid some time, for the tightly curled fry with its black eyes was clearly visible inside it, hatched out the very next day. By now he is a half-grown male fish (a more handsome specimen than his father, incidentally).

From 25th July to 14th August I found an average of 10 eggs every 2 days. These I put into jars of peat water (peat water in which peat had been soaked for several weeks) and floated in an unlit tank at 75°F (24°C). The eggs, I found, seemed to grow fungus more easily in a lit tank.

By the end of August eight eggs had hatched. Unfortunately, while I was away on holiday the thermostat in the hatching tank gave trouble and all fry and eggs were lost.

In the meantime some eggs, which had escaped my engineering fingers, had hatched in the breeding tank, and on my return home I found them thriving in there, apparently quite unmolested by their parents.

I was surprised to pick off a further 57 eggs, proof that the adult fish were still spawning. Twenty of these have now hatched. As the fry appear to consume their yolk sacs while they are still in the egg stage, they are free-swimming immediately they are hatched, and must be fed straight away on newly hatched brine shrimp. Within a week they are taking chopped *Tubifex* (my fry ignore micro worms).

It is a time-absorbing occupation searching for eggs every other day, but very quickly one's fingers are able to distinguish between the feel of a hard egg and a bit of grit. The eggs should be clear and amber-coloured. If they are white or soft, they are no good.

Eggs infested with fungus I remove from the jars immediately, for they rapidly affect the healthy eggs. It

seems to be particularly important to watch them on the first day after they have been picked off the spawning mop or peat bag. Once hatched, the fry are quite happy in rain water.

Odd as it sounds, if the adult fish are disturbed at all (once the female managed to get herself lodged inside the peat bag, and another time I took away the male to put in a local show) more eggs than ever are laid.

Now it is October, and I am still finding eggs. For how much longer, I wonder, shall I be lying flat on my tum on the stone floor in front of my breeding tank, trying to see how my *Aphyosemion callianus* do it!

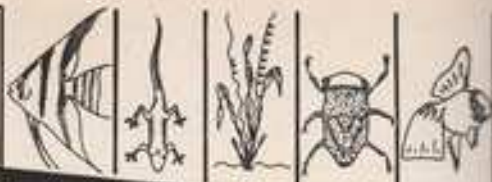
## Hendon A.S. Convention



Mr. van den Nieuwenhuizen arranging his slides before his talk at Hendon

ABOUT 300 aquarists with their friends and families attended the Convention organised by Hendon Aquatic Society last month. Parties of members of aquarists' societies from Sheffield, Yeovil and the Isle of Wight were among the many societies represented. The speaker was Mr. A. van den Nieuwenhuizen, from Holland, who gave a commentary on the breeding habits of a large number of tropical fishes, depicted in a beautiful series of colour photographs that he had taken himself. His photographs were projected for his talk by his secretary Mrs. Reynoekke. Among the many unusual pictures shown were some exemplary shots of the brooding performance of *Copernia arnoldi*, with the male and female above the water surface together during the deposition of eggs on an aerial plant leaf. A mere aquarist, however, could not help but notice that it was some pictures of birds that drew "oohs" and "ahs" from the audience, when these were shown to illustrate Mr. van den Nieuwenhuizen's concluding explanation of how his gorgeous colour results with the camera were obtained.

## our readers



# write

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.

Address letters to The Editor, *The Aquarist*,  
The Butts, Half Acre, Brentford, Middlesex

### Peppermints, Plecosoles or What?

MIL B. R. James has most kindly sent me specimens of the fish of type B that he described in his article (Peppermints, Plecosoles or What?; *The Aquarist*, Sept.). I can confirm that, as I suggested in my earlier letter, they are homalopterids: they belong to the species *Pseudogastromyzon fasciatus*.

Mr. James was unfortunately unable to supply me with specimens of his type A, but sent a species he described as similar to type A. This proves to be the loach *Barbarula fasciolata*, which is closely related to the European stone loach. As this loach is rather similar to some primitive homalopterids, it is not certain to which group the type A plecosoles belonged.

R. MCN. ALEXANDER,  
Bangor, Caernarvonshire.

### White Spot Disease

A SIMPLE method of dealing with "white spot disease" is to float the fish in jars half full of water in the affected tank and add a 1 per cent solution of methylene blue to the water in the jars until this appears the colour of ink and the fish become invisible except when they are actually against the side of the jar. This appears to be a very strong solution, but a simple calculation will show that it is not.

Raise the temperature of the tank to 88°F (31°C) but do not put too many fish in each jar as at this temperature the oxygen content is fairly low. The raised temperature has a tonic effect on the plants, and the methylene blue has a tonic effect on the fish.

The conditions should be maintained for one week or until all the fish are free from spots.

D. V. SINCLAIR,  
Thirsk, Yorkshire.

### Correspondents Wanted

I AM writing to you in the hope that through your magazine I will be able to obtain more British (and European, as a whole) aquarist pen friends.

I am 23, in my fourth year of university, with the Catholic University of Puerto Rico, in an extramural centre, in Aguadilla. I have been an aquarist for about 13 years, and at present keep swordtails, tetras, barbs, angels and guppies. I also have quite a few native and imported aquarium plants.

Here in Puerto Rico, the hobbyist has not very much to choose from in the way of native fishes, swordtails, some platys, guppies—also limias, perhaps—and some egg-layers, but not true aquarium fishes. As for plants, we fare a bit

better—we have *Cobombia*, *anacharis*, *Ceratophyllum*, *Vallisneria*, *Sagittaria*, *Marsilea*, *Azolla*, *Pistia*, *Eichornia*, *Salvinia* and *Potamogeton*.

I recently came back from a fish-catching trip for swordtails into the interior, and was lucky to get about 100 swordtails—red, green and blue, all large.

CARLOS F. REICHERD,  
Catholic University of Puerto Rico,  
Aguadilla, Puerto Rico.

### Public Aquariums

SO, it hasn't changed! Ten years ago, on getting married, I lived in a two-roomed flat, and not being able to keep pets we had a few tanks of tropical fishes. Getting keen, my wife and I took a trip to the Sussex coast to see the "famous public aquarium". Imagine our disappointment when we found that in our little flat we had more varieties of tropical fishes (varieties, not numbers) than they had on show! We felt completely diddled, and vowed that we would never again waste our money on another trip. I was therefore most interested to read from Mr. D. F. M. Blackman's letter (*The Aquarist*, November) that the situation has not been improved. It really is a scandal and the Corporation should do something about it.

R. W. COLLETT,  
Dorking, Surrey.

I REFER to the letter from Mr. D. F. M. Blackman in the November issue of *The Aquarist*. I had a similar experience when visiting a zoo aquarium in Northern Ireland recently: a very poor selection of fishes, which were listed erroneously.

I can, however, thoroughly recommend a visit to the aquarium at Chester Zoo. It is beautifully stocked and displayed and well worth a visit from any aquarist who wants to see fishes in prime condition.

H. JONES,  
Weston-super-Mare,  
Somerset.

### Live and Learn

AN American fish-keeper, writing about standards, stated that there are two forms of standards: closed and open. The British guppy standard is an example of the closed form, which requires the body of the male fish to be of a certain length. This type of standard, the writer claimed, tends to eliminate variation in the breed.

The open form, on the other hand, allows a range of

characters. An example of this, he says, is the colour range allowed by the American guppy standard. This type of standard allows the breeder to proceed in several directions and encourages variation in the breed.

Clearly there is some misunderstanding over this. All well-informed American fish-keepers know there are two British guppy associations and both cater for all recognised varieties and colour variations, in both male and female guppies. It is true they both have a standard length of body for this ideal, of 1½ in. (width of a penny) and that the B.G.B.S. (founded in 1938) and now known as the F.G.B.S. (down-point) a male if it should exceed the prescribed body length, but, so far, that has not been proved necessary.

The other association, the F.G.A. (founded in 1960) do not fault a fish if it should exceed the prescribed body length of 1½ in. British guppy breeders, like breeders of toy dogs, do not agree that a "good big 'un" will always beat a "good little 'un". It's all a question of how big. No guppy breeder would say, the bigger the better, and mean it. He is a guppy slave because he prefers them the size they are, within certain limits.

As a point of interest, some time ago I had some American "guys" brought along for my benefit. In the water they looked quite 2 in. but to the astonishment of the owner of these fish the largest measured 1½ in. body length, out of water, with an English ruler.

W. G. PHILLIPS,  
Past Chairman F.B.A.S.  
Judges and Standard Committee.

#### Help Wanted

WE, as a small club situated on an island and governed by transport across the water, are finding it hard to arrange a meetings programme which is interesting enough to please our members. We arrange quiz programmes and talks between ourselves, but we would like a member from another club or a lecturer to come and give us a talk on a

fish-keeping subject. If any mainland society has any suggestions on how we can make an evening's entertainment, or has slides or tape-recordings they can loan to us, we would be very thankful. We can supply transport or accommodation by the members to help any lecturer. We would like to hear from any other Society who could help us.

E. T. DAVISON,  
Secretary, Isle of Wight Aquarists' Society,  
89, High Street,  
Old Village,  
Shanklin,  
I.O.W.

#### Baby and the Champ

I WOULD like readers of *The Aquarist* to know of a strange experience my Jack Dempsey cichlid had a while back.

My 40 gallon tank, housing large cichlids, sprang a leak and I had to dismantle the complete set-up after a lot of bother trying to cure it. I had no choice but to transfer all my fishes into a disused baby bath, covering it with a piece of wood. While all this excitement was going on my young daughter, aged 9 months, was playing contentedly on the carpet, when my wife noticed something in her mouth. Frankly my wife took it out and threw it aside, and to her amazement it wriggled its way across the floor: it was my Jack Dempsey! Carefully my wife picked it up and put it back into the bath, thinking it was dead. The fish sank to the bottom and stayed there all night. I lost all hope of its recovery.

Next morning, to my surprise the fish was swimming happily about with baby teeth marks each side of her body! I'd like to add that the fish has completely recovered and has spawned since.

V. PRISTON,  
Cheltenham, Glos.

## Obituary

### Mr. L. R. Brightwell

WE ANNOUNCE with regret the death of Mr. L. R. Brightwell, who for many years was a contributor to *The Aquarist* and numerous other publications of articles and illustrations mainly on marine subjects. Mr. Brightwell was a skilled artist, and he first began drawing animals at the age of six; during his life he illustrated well over a hundred books and his strong sense of humour enabled him to contribute cartoons to many publications ranging from *Gossip Gals* to *Punch*. For many years he was an active member of the long-established West Surrey Aquarists' Society, a professional Fellow of the Zoological Society of London and a member of the Marine Biological Association. The field of the last-named was his special interest. He delighted in accompanying fishery boats on both scientific and commercial deep-sea fishing expeditions. One of his greatest disappointments was the failure of his devoted campaigning for the restoration of Brighton Aquarium to its original glory and for it to be made into a marine biology centre. In his later years he retired to a house within sight and earshot of the sea, on the Cornish coast, and there he continued his observations on shore fish and fauna, also continuing to produce his unmistakable artistic impressions of these, until declining health made this impossible. He died close to the rocky shores he knew and loved so well. Our condolences and sympathy go to his widow.

### Mr. Lester Coatman



WITH the death of Lester Coatman in early October the organised hobby has lost one of its best-known supporters. In 1951 Mr. Coatman helped to found the Hampstead Aquatic Society and in 1956 he joined the

Council of the Federation of British Aquatic Societies, having been elected its Services Secretary. His particular responsibility was to arrange visits by judges and lectures to the affiliated clubs, and this he did with considerable success. At the same time he held various offices in his own club. He had been a diabetic for many years and worsening health compelled him drastically to reduce his activities. The need, finally, to become a spectator, he found most difficult to tolerate.

He was a native of Bishop Auckland where he first worked in salt-glaze manufacture which he left for the pit-head. The industrial depression brought him to London in 1935 and his northern christian socialism was a cause he continued to serve.

Apart from fish-keeping, in which his main interest was competitive exhibiting, he was a lover of brass-band music, having played with the colliery band. He was also a devotee of the Bishop Auckland football team and an eager visitor to the Durham Miners' Gala.

Many aquarists will recall with pleasure the Cozman family's ready hospitality. Our condolences go to Beattie and his daughter, Christine. F.S.

The Hampstead Aquatic Society has decided to donate to the Federation of the British Aquatic Societies a Cozman Memorial Trophy. The Trophy is intended to be used by clubs organising competitive shows for catfishes.

## Copeina arnoldi

by JAS. STOTT

A NATIVE of British Guiana and the area around the Amazon Basin, *Copeina arnoldi* possesses a peaceful disposition and therefore may be considered a suitable subject for the community tank. It is not a colourful fish, but the streamlined body and shapely finnage give it an eye-catching appearance, especially the male, which is identified principally by the longer fins and the distinctive dorsal, long and pointed with a conspicuous white spot at the base of the fin towards the front edge, surrounded by a darker area. The dorsal fin of the female is smaller and more rounded and the spot is of a reddish hue. Apart from the larger fins the body of the male, with maturity, is also slightly bigger than that of the female. Body colouring is similar in both sexes, olive-brown with a fine dark edging to the scales particularly along the central area of the body. This olive-brown colour becomes paler on the underparts of the fish until it is almost silvery grey in the ventral region.

It is the breeding procedure, however, that is the most interesting thing about this species. The actual spawning takes place above the water level, for the eggs are deposited on a leaf or stone overhanging the surface of the water. A spawning site is selected by the male, and then he commences a courtship display which aims at enticing the female under the chosen leaf or object, and then they take up a side by side position. For a little while they remain like this with a quivering motion of their bodies, then, pressing close together, they leap clear of the water to adhere to the spawning surface for a few seconds, when six or seven eggs are laid and fertilised. This process is repeated a number of times until from 70 to 100 eggs are laid.

When attempting to breed in the aquarium a tank 24 in. by 12 in. by 12 in. is a good size for a breeding pair. Water temperature should be around 80°F (27°C), a water depth of 6 inches and a neutral reaction (pH 7) is recommended. A thin layer of fine gravel should be used over the base of the tank and a clump of plants weighted and placed in one corner. A piece of slate is reared against the other end glass so that some 2 inches of it is clear of the water surface; this will offer a spawning area.

Before introducing the breeding pair to the breeding tank they should be well conditioned on live foods, and it is



suggested they should be separated during this process. Water fleas (*Daphnia*), white worms and chopped earthworm are the best for conditioning and a temperature of 75°F (24°C) is maintained throughout the period. When conditioning is completed introduce the female to the breeding tank first, allowing her about 24 hours before introducing the male.

After the spawning is completed it is advisable to remove the female, leaving the male to carry out his special paternal duties over the next 3 or 4 days until the eggs hatch. These duties are to keep the eggs moist by periodical splashing with water and to keep them free from dirt by the same process. He achieves this by swimming to a position just under the egg and with a strong flicking motion of the tail fin throws the water up over the eggs. This is repeated three or four times in the hour and in between these efforts he hides in the plants nearby (hence the suggestion to include in the breeding tank a bunch of plants; it provides the male with a feeling of security and enables him to follow a natural instinct).

When hatching takes place the fry fall into the water and to the bottom, where they hide themselves in the gravel until they are totally free-swimming in about 5 or 6 days. Remove the male when the fry drop into the water.

When the fry have been in the water 48 hours commence feeding with Infusoria and keep this going for about 14 days, by which time the fry should be swimming quite freely at mid-water level; then finely screened water fleas (*Daphnia*) may be introduced. Keep the water temperature at 80°F (27°C) for the first month and then drop this to 75°F (24°C). As growth steadily increases, adjust food, both in size and variety, accordingly.

## The BRITISH AQUARISTS' FESTIVAL 1963

reported by A. BOARDER

THIS year's British Aquarists' Festival at Belle Vue, Manchester was again a huge success. In spite of inclement weather the hall was crowded all day on the Sunday and even on the foggy Saturday there were many visitors. Attendance on the Sunday was fantastic and I was quite unable to see anything at all of the dealers' stands because of rows of interested buyers. Even though the hall in use was 40 feet longer than last year, it was packed all the time.

The stands set up by the competing societies were very attractive. Most kept to a fairly conventional design, but one society had presented a hall with staircase. Handsome carpet covered the stairs, which were provided with banisters. Down the side below the stairs were the show tanks, set into the wall. The whole effect was very attractive, but for some reason the tanks became over-heated and the fishes were in trouble. This may have been due to too strong overhead lighting to each tank, which, being covered, became too hot. The competition for the best stand was very keen and the winner is to be congratulated on a fine looking stand that was also neat and tidy all round.

There were some fine tropical fishes on display. The silver shark that received the award for best fish in the show was in perfect condition, and a fine specimen. Coldwater fishes were down in numbers and quality, which was all that could be expected after the very severe winter we had. Once again a common goldfish was judged best coldwater fish. It was a fine fish with a very good body shape. The shubunkins were quite good, but one or two are getting too old for showing. It is a fact that as a fish ages the fins grow too long and profuse, especially the caudal, and the body may become too heavy and coarse. I thought the best coloured shubunkin was in a furnished tank set up by Tyne-side Aquarists' Society.

I saw only one fantail, a shubunkin type, which had a good body shape but showed by the rounded and insufficiently forked caudal fin that it had some veiltail blood in it. The veiltails were disappointing, but a couple of fantail moors, although small, were quite pleasing. The orandas were not hooded enough; the hood should not only well cover the head but the gills also.

The British coldwater fishes were very good, with a couple of large green tench, medium sized bream, a good rudd and a small golden orfe on view.

The coldwater breeders' class was well supported and shubunkins were very strong. A good team of veiltails were admired but they had the wrong colour, being almost all pale red and silver, and although their bodies were very good their caudal fins were too forked.

The Fancy Guppy Association's stand was surrounded by admirers all day on Sunday, and I think that the stand will have to be increased in size another year if everyone is to get a good look at the fine variety of fish usually displayed by the members.

Keen interest was shown by those aquarists having tanks of tropical tanks in a stand displaying a system for running out any defectively heated tank in a bank.

I was able to meet many old friends at the stand of The Aquarist and spoke to aquarists from all over the British Isles. Several aquarists from Scotland came to see me and

one visitor was from Ceylon. In all the Festival was a grand spectacle and I could tell by the looks on the faces of the dealers that their efforts had not been in vain. I would like to offer a little advice, however, and that is for the dealers' stands at future shows to be spread throughout the hall more. I know that they all want to be near the entrance, but this means that they become overcrowded, as the refreshment bar is also close by.

Full results are given on page 170.

### Breeding *Badis badis*

A FISH not very often seen, though very often heard of because of its 'chameleon' ability to change colour, is *Badis badis*. This native of India, which attains a length of 2½ inches, is not an easy fish to describe, owing to its changeability of colour, though its usual body colour varies from a dull red to a bluish-black, usually crossed with wavy vertical lines.

*Badis* is a somewhat temperamental fish, not to be trusted with fishes smaller than itself. Indeed, they are not averse to quarrelling among themselves or taking a nip at other fishes' fins. It is essential that it be treated as a carnivorous fish if this problem is to be avoided.

It is quite an easy fish to breed, and it does this in a manner similar to that of the cichlids. The male is distinguished by its slimmer appearance and its more intense colour. The fish should be separated and conditioned for 10 days on *Tubifex*, *Daphnia*, white worms etc. The breeding tank, which should not be less than 24 in. by 12 in. by 12 in., should be set up so as to include slightly acid water (pH 6.8-7.2). It should be thickly planted with such plants as *Elodea*, hornwort etc., and be maintained at 80°F (27°C). A flower pot with the bottom knocked out should be placed in one of the corners at the back, in which the fish may spawn.

After the usual preliminary courtship, which commences with vigorous chasing by the male, the female will eventually place her eggs inside the flower pot, whereupon they will be immediately fertilised by the male. After spawning has terminated the female should be removed, the male being left to attend to the 80 odd eggs. To assist in the fight against bacterial growth a few drops of aqueous 5 per cent solution of medicinal methylene blue (enough to turn the water a light blue) should be added to the water. Until the eggs hatch (after approx. 75 hours at 80°F, 27°C), the male will prove to be a devoted parent, continually keeping the water circulating around the eggs.

After the eggs hatch, however, his attitude is similar to that of the Siamese fighting fish in that he might lose complete patience and attempt to eat the fry, or else he might prove to be a devoted parent, constantly keeping an eye open to watch that they do not stray too far. Unfortunately it is usually the former, so it will be found necessary to remove the male after the eggs have hatched.

After the yolk sac has been absorbed and the fry become free-swimming, the usual fry foods should be given in the following order: Infusoria, brine shrimp, finely sifted *Daphnia* and finally small white worms or chopped *Tubifex*. On this diet they will grow rapidly into the nucleus of future breeding stock.

M.J.P.



## from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 15th of the month preceding the month of publication.

### BRITISH AQUARIST FESTIVAL RESULTS

**BEST Fish of the Show:** C. Walker (Ottum), Best Other than Best Fish in Show: Tropical Egg-layers: R. Collins (Ottum); 2. Tropical Livebearers: Scott-Morgan (Bournemouth); Goldfishes: 1. Baxter (Northern Goldfish and P.S.); Parrotfish: Tropical: 1. Accrington, 83 pts.; 2. Ashon, 71 pts.; 3. Lamb, 70 pts. Goldwater: 1. Tyrone, 79 pts.; 2. (Northern Goldfish and P.S.), 78 pts.; 3. Bradford, 72 pts. Best individual tropical furnished aquaria: 1. K. Ingham (Accrington), 71 pts.; 2. H. Varney (Sheffield Brooders), 70 pts.; 3. Bradford, 73 pts. Best individual Goldwater furnished aquaria: 1. J. H. Hood (Tyrone), 75 pts.; 2. R. Marshall (Bradford), 74 pts.; 3. G. Holmes (Bradford), 70 pts. Best Aquaria: 1. Mrs. M. Knowles (Sheffield), 82 pts.; 2. P. Wain (Leeds), 80 pts.; 3. D. L. Lee (Leeds), 78 pts. Common Goldfish and Cousins: 1. L. Baxter (Northern Goldfish and P.S.), 87 pts.; 2. L. Baxter (Northern Goldfish), 78 pts.; 3. B. Kimmance (Blackpool), 72 pts. Shubunkins (Breed and London): 1. H. Penhall (Ottum), 85 pts.; 2. W. H. Ramsden (Northern Goldfish), 70 pts.; 3. H. H. Cheshire (Northern Goldfish), 69 pts. Moors: 1. R. L. Howarth (Northern Goldfish), 72 pts.; 2. R. L. Howarth (Northern Goldfish), 69 pts.; 3. A. E. Baines (Northern Goldfish), 65 pts. Varieties: 1. R. L. Howarth (Northern Goldfish), 69 pts.; 2. W. H. Ramsden (Northern Goldfish), 65 pts.; 3. R. L. Howarth (Northern Goldfish), 63 pts. Fancy Goldfish, Fancils, Orandas, Lionheads: 1. G. Holmes (Bradford), 85 pts.; 2. D. M. Mayhew (Northern Goldfish), 82 pts.; 3. W. H. Ramsden (Northern Goldfish), 72 pts. Any Species Goldwater other than those mentioned: 1. B. Gaskell (Northern Goldfish), 83 pts.; 2. H. H. Cheshire (Northern Goldfish), 78 pts.; 3. B. Gaskell (Northern Goldfish), 74 pts. Guppies: 1. G. Cooke (Thrusbury), 76 pts.; 2. A. Hickson (Belle Vue), 75 pts.; 3. M. Gashier (Sheffield), 69 pts. Livebearers: 1. South-Morgan (Bournemouth), 80 pts.; 2. J. Ashworth (Ottum), 79 pts.; 3. F. Woodall (Wolverhampton), 78 pts. Angels: 1. R. W. Cook (Blackpool), 64 pts.; 2. K. Wrigley (Linton), 62 pts.; 3. P. Merrygoose (Accrington), 61 pts. Dwarf Cichlids: 1. L. Lewis (Burnley), 79 pts.; 2. Mrs. C. Carr (Macclesfield), 78 pts.; 3. K. Davies (Derby), 69 pts. A. A. Perring (Sheffield), 65 pts.; 3. P. Pinner (Derby), 64 pts. Fishes: 1. J. Baxter (Teddington), 87 pts.; 2. W. Dine (Derby), 79 pts.; 3. C. B. Wilson (Bradford), 72 pts. Gouramis: 1. P. Williamson (Salford), 87 pts.; 2. C. Walker (Ottum), 85 pts.; 3. A. Bloom (Salford), 85 pts. Barb: 1. R. Collins (Ottum), 69 pts.; 2. M. A. Craghton (Sunderland), 65 pts.; 3. J. Hodgson (Accrington), 61 pts. Characins: 1. R. Collins (Ottum), 85 pts.; 2. I. G. Hunt (Tyrone), 84 pts.; 3. G. Pillinger (Merryvale), 83 pts. Carps and Albinos: 1. C. Walker (Ottum), 92 pts. A. Bloom (Salford), 87 pts.; 3. C. B. Wilson (Bradford), 86 pts. Catfish: Mrs. S. Rourke (Merryvale), 82 pts.; 2. E. Gill (Belle Vue), 80 pts.; 3. G. Holmes (Bradford), 78 pts. Egg-laying Tooth Carps: 1. S. Davies (Derby), 85 pts.; 2. Mr. and Mrs. Sisson (Merryvale), 82 pts.; 3. H. Cazenwick (Leeds), 80 pts. A.N.: 1. C. B. Wilson (Bradford), 2. J. Pinner (Derby), 84 pts.; 3. J. Moss (Leeds), 82 pts.

Brooders (Egg-layers): 1. P. J. Williamson (Salford), 80 pts.; 2. A. Moss (Accrington), 87 pts.; 3. M. Davies (Derby), 85 pts. Brooders (Livebearers): 1. D. Pinn (Wolverhampton), 85 pts.; 2. H. Woodall (Wolverhampton), 84 pts.; 3. R. Brown (Chester), 82 pts. Brooders (Goldwater): 1. R. L. Howarth (Northern Goldfish), 78 pts.; 2. A. Moss (Accrington), 73 pts.; 3. J. H. Hood (Tyrone), 71 pts. Plants: 1. R. Wainwright (Bradford), 82 pts.; 2. Mrs. J. Sisson (Walsley), 86 pts.; 3. H. Fletcher (Bradford), 85 pts. Most Attractive: 1. Sheffield & District A.S.; 2. Dewsbury A.S.; 3. Blackpool & Pyle A.S. Society gaining most awards: 1. Northern Goldfish & Pondkeepers Society. Individual gaining Most Awards: R. L. Howarth (Northern Goldfish). Award for Best post-Seedling: R. Scudlock (Ottum). Winners of "Boxes" Shield: Lancashire.

**TALKS to Breed and District Aquarists' and Pondkeepers' Society** were given by Mr. V. Rice, the president, on breeding egg-laying fishes, and by Mr. A. Stabbing, the chairman, on the breeding of live-bearing fishes. A slide show was held for any variety of plays—the first and third prizes going to Mr. A. Stabbing and second and fourth to Mr. Brit. A picture in oils, painted by Mr. E. Adams, a vice-president, was given in aid of club funds and was won by Miss Rita Berger.

IT is not difficult to get Siamese fighting fish to spawn provided that conditions are something like normal for them, but to get them to spawn with 2,600 watts of light blazing down on them is a vastly different business, according to this month's news-letter of the **Coventry Pool and Aquarium Society**.

Mr. Martin Smith, secretary, is to whom making use of a number of films which he showed at the October meeting of the Society. Another interesting point is that the amount of light needed to make successful colour films presents a problem when filming bubble-net fish, as the intense heat may cause the net to disintegrate.

"However," the news-letter goes on, "Mr. Martin Smith produced some exceptionally fine films." It adds that the cine camera used was not expensive, so that practically anyone who owns one could produce similar films—provided he has the fish, the tank, and unobtrusive patience.

**RECENTLY the Williesden & District A.S.** held a table show for visitors in both tropical and coldwater sections. Mr. C. Brown judged the show. The results were as follows—Coldwater Section: 1st and 8th; Master H. Malvey (Stones Lanch); also Fantasy Cup for Best Coldwater; 2nd; Miss M. Sherwin (Common Goldfish); 3. Miss Ing (Common Goldfish); Tropical Livebearers: 1. Mr. K. Nisall (Salford Mable); also Dox Benson Trophy for Best Tropical Fish; 2. Mrs. E. Dixon (Perry); 3. Master R. Ing (Black Milla); 4 (tie), Miss Ing (Sunderland); Miss D. Williams (Perry). Tropical Egg-layers: 1. Mrs. E. Dixon (Tiger Barb); 2. Mr. K. Nisall (Red Fin Tetra); 3. Mr. K. Nisall (Flying Fish); 4. (tie), Mrs. H. Dixon (Garnik); Miss Ing (Zebra Danio).

**MEMBERS of the Tipton and District A.S.** were entertained recently by the Tipton Tenth Band with a Film Show on Course Fishing in Ireland. At the November meeting of the Society were hosts to members of the Dunlop A.S. Birmingham in an Inter-Society Table Show for Barb, Cichlids and Livebearers. Mr. Ron Brown was the judge and his awards were as follows: Barb: 1. J. Cook (Tipton); 2. J. Bamford (Tipton); 3. L. Healey (Tipton). Cichlids: 1. F. Gilbert (Dunlop); 2. W. Davison (Tipton); 3. W. Davison (Tipton). Livebearers: 1. W. Davison (Tipton); 2. Mr. Elm (Dunlop); 3. W. Davison (Tipton). Best fish in show was P. Gilbert's Angel Fish. Further information regarding the Society and its activities can be obtained from The Secretary, W. Davison, 2, Shaw Road, Tipton, Staffs.

**AT the annual meeting of the Ludlow Tropical Fish Club,** the following officers were elected: Chairman: Mr. I. Whittall; Treasurer: Mr. A. Wright; Secretary: B. Calver; 10, Barton Way, North Kensington, London, W.10.

**AT the Second Annual Open Show of the Nelson A.S. held recently there were approximately 200 entries, and the results were as follows:** Guppies: 1. Mrs. Edmondson (Ottum); 2 and 3. Mr. H. Hickson (Belle Vue); 4. Swallowtail and 5. Pinner; 1. Mr. Swainston (Blackburn); 2. Mr. B. Richards (Nelson); 3. Mr. Ingham (Accrington); 4. Mollie; 1. Mr. H. Fletcher (Bradford); 2. Mr. L. Lewis (Burnley); 3. Mr. Wooster (Colton); 4. Mr. Fletcher (Bradford); Characins (Brazil): 1. Mr. L. Lewis (Burnley); 2. Mr. B. Dickson (Nelson); 3. Miss E. Edmondson (Nelson); Characins (Large): 1. Mr. E. Dillinger (Merryvale); 2. Mr. J. Hodgson (Accrington); 3. Mrs. Crick (Nelson); Barb (Small): 1. Mr. L. Lewis (Burnley); 2. Mr. J. Hodgson (Accrington); 3. Mrs. Crick (Nelson); Barb (Large): 1. Mr. E. Dillinger (Merryvale); 3. Mr. Scamper (Merryvale); 4. Mr. Dickson (Nelson); 2. Mr. Margaret (Bradford); 3. Mr. Hughes (Belle Vue); Fishes: 1. Mr. Bess (Bradford); 2. Mr. Wainwright (Ottum); 3. Mr. Howdsworth (Colton); Catfish and Lionfish: 1. Mr. J. Hodgson (Accrington); 2. Mr. B. Richards (Nelson); 3. Mr. T. Burt (Nelson); Cichlids (Large): 1. Mr. Hughes (Belle Vue); 2. Mr. F. Miall (Merryvale); 3. Mr. Scamper (Merryvale); Mr. E. Haddock (Kochlids); Cichlids (Small): 1. Mr. L. Lewis (Burnley); 2. Mr. B. Richards (Nelson); 3. Mr. Bibby (Accrington); Cyprinodonts: 1. Mrs. Crick (Nelson); 2. Mr. E. Edmondson (Nelson); 3. Mr. E. Bena (Leeds); Redfish and Danos: 1. Mr. F. Miall (Merryvale); 2. Mrs. Crick (Nelson); 3. Mr. Scamper (Burnley); Sharks: 1. Mr. Hughes (Belle Vue); 2. Mrs. Crick (Nelson); 3. Mr. Schofield (Colton); A.D.V. Tropical: 1. Mr. Lewis (Burnley); 2. Mr. H. Fletcher (Bradford); 3. Mr. Cameron (Merryvale); A.D.V. Coldwater: 1. 2, and 3. Mr. Isherwood (Accrington); Brooders (Livebearers): 1. Mr. Moss (Accrington); 2. Mr. Margaret (Bradford); 3. Mr. Hickson (Belle Vue); Brooders (Egg-layers): 1. Mr. B. South (Accrington); 2. Mr. Wainwright (Ottum); 3. Mr. K. Ingham (Accrington); Best Fish in Show: Mr. Isherwood (Accrington) with a Black Moor.

**AT the annual general meeting of the Plymouth and District Aquarists' and Pondkeepers' Society the following officers were elected:** President, Mr. T. Sparrow; chairman, Mr. W. Martin; hon. secretary, Mr. Trevor Lyle; hon. treasurer, Mr. Ron Quigley; auditors, Mrs. Ronald and Mr. Giddy; show secretary, Mr. Bruce Guppy; magazine editor, Mr. T. Easterbrook.

The secretary's address is 18, Staines Road, Keyham, Plymouth, and monthly meetings are held on the 4th Monday of each month at the Council of Social Services, Backwell Street at 7.30 p.m., at which visitors are welcome.



**MEMBERS of Nottingham Tropical Fishkeepers** have had some excellent achievements in the year. Among them are best fish in show at Sheffield open show, also at Open, several prizes at Mansfield, Nottingham, Queen, Sheffield and Bradford. They have also won the inter-society competition between Nottingham, Derby and Burton. The prize was a beautiful silver rose bowl. New members will be made very welcome, and are invited to contact the secretary, Mrs. G. P. Hunt, 44, Green Street, Hyson Green, Nottingham.

**THE last two general meetings of the Hastings and Bradwell A.S.** have been a great success. In the September meeting, the speaker was Mr. Larry from the F.R.A.S. who talked on general fishkeeping, giving many useful tips. He then answered questions put by the members on various problems connected with fishkeeping. A butterfly table show was also held and Mr. Larry was the judge.

At the October meeting, Mr. Jessop, another F.R.A.S. lecturer gave a most interesting talk on Cichlids. He spoke first on Cichlids in general, then discussed the habits and requirements of each member of this family. A table show for fish held by members was judged by Mr. Jessop.

The club's annual home aquatic competition was held recently. Mr. John Holder a member from Southmore was the judge, and he drove round to sixteen member's homes and assessed the respective merits of their tanks.

**THE Derwent Aquarist Club, Derby,** began a programme of special speakers and events arranged for the winter season with a visit from Dr. F. N. Chadwick, who addressed a well-attended October meeting. Several new members were enrolled as a result. Dr. Chadwick gave freely on his very varied personal experience of fish-keeping and breeding, gave many practical hints and tips, and answered a variety of questions. Mr. S. Yessons, chairman of the club, presided and Mr. H. F. Finch, a long time member, chaired the speaker.

**AT the Bethnal Green A.S. first table show of the year the classes were 50 Male Guppies and White Cloud Mountain Minnows.**

The entries were judged by the resident lecturer, Mr. D. Carman who afterwards gave a short talk on the quality of the fish exhibited and also expressed his satisfaction at the large number of entries. The results were: W.C.M.M.: 1, Mr. A. Collins; 2, Mr. F. Bennett; 3, Mr. A. Collins; Male Guppies: 1st, Miss M. Swiney; 2 and 3, Mr. F. Bennett.

**THE officers elected at the annual general meeting of the Thorpe A.S. were as follows:** Chairman, Mr. G. Swearing; vice-chairman, Mr. J. Brown; secretary, Mr. G. Lowe; J.L. Miller, Lecturer, South Common, Thorpe, N.; Treasurer, Mr. Rodgman; committee, Messrs. N. Sanders, P. Hill and D. March.

The table show of the evening was egg-laying Tooth-caps and the result was as follows: 1, Mr. P. Powell; (Approver's members); 2, Mr. D. Wells (Pouches larvae); 3, Mr. D. Machin (Yellow goats).

**THE Carbridge and District A.S. recently held their third members' show of the year.** Like the previous show entries were many and varied. A new method of labelling tanks was used. Numbers are permanently painted on the tanks. "Class No.", "First" etc. are attached on small aluminium clips to the top frame of the tank. The numerous business of numerous sticky labels above each show is thus avoided. Results of the show were as follows: Best in show and best live-bearer: Mr. A. Hester (Laysail mollie); Best egg-layer: Mr. J. Palmer (Moenkhana oligogaster); Best cold-water and Common Goldfish: Mr. Hildy; Best fancy Goldfish: Mr. Chapman (Shoemaker); Breeder's Cup: Mr. Hildy (Siamese fighting); Best Cup: Mr. A. Mason (Guppies).

**Guppy Cup: Mr. Hildy. The judge was Mr. Pope of Bedford.**

**THE Chester and District A.S. held their annual general meeting recently.** The officers elected were: chairman, Mr. I. Mossing; secretary, Mr. P. B. Millington, and treasurer, Mrs. J. Mossing.

The newly-elected chairman announced that he proposed to present the society with a shield which would be awarded to the member with the best furnished aquarium; the judging to take place in each member's home and prizes to be awarded for the manner in which the presentation of the aquarium fitted-in with the general furnishings of the home. The offer was gratefully accepted and a complete questionnaire was drawn up for the guidance of the judges thus appointed.

The retiring secretary announced a welcome increase in membership during the year and the meeting agreed that future hobbyists in the area should be invited to attend six meetings before being asked to join the society.

Meetings are held on the first and third Thursday of each month at 8 p.m. in a room on the second floor of the Oldfellow Hall, Lower Bridge Street, Chester.

Further details are available on application to the secretary, Mr. P. B. Millington, 129, Appleby Lane, Chester, and new members can be assured of a warm welcome.

**AT the recent Annual General Meeting of the Bethnal Green A.S. the Secretary reported a steady increase in membership since the last Annual Show, and said he could not help feeling that the show had a direct bearing on the matter.**

It was decided to have another Open Show next year and the date has been fixed for Friday, Saturday, 4th and 5th September. Before the election of Officers it was announced that Mr. I. Mark the Show Secretary would not be able to continue as a member of the society as unfortunately he was moving away from the district entirely. During his association with the club Mr. Mark has been a hard and willing worker and his departure will be felt by all.

The officers elected for the year 1963/64 were

as follows: Chairman: Mr. J. Harty; Secretary: Mr. A. Collins; Treasurer: Mr. J. Cooney; Show Secretary: Mr. B. Harty; Committee: Mr. I. Harty, Mr. F. Bennett, Mr. J. Palmer.

The Annual Award Winners were: Best Fish of the Year: 1, Mr. A. Collins; 2, Mr. F. Bennett; 3, Mr. J. Palmer-Jones; T Show Points Competition: 1, Mr. J. Mark; 2, Mr. F. Bennett; 3, Mr. J. Palmer-Jones.

All are welcome at the Bethnal Green A.S. whose meetings are held every Tuesday evening at the Bethnal Green Institute in Bethnal Green Road. All information may be obtained from the Secretary: Mr. A. Collins, 11, Attercliffe Road, Chagwell, Essex.

**FOUR Midland Aquarist Societies have formed a league, to promote interest in the hobby, especially the breeding of fish for quality, and it is hoped to get more societies interested and possibly to join in table shows and the exchanging of ideas.**

The four societies are Huddersfield and District A.S., Leamington and District A.S., Coventry P. and A.S., Atherton A.S. So far two of four meetings planned for this season have been held, at the first meeting Atherton won the table show with a total of 26 pts. Coventry were second with 14 pts, Leamington 3rd with 11 pts and Huddersfield with 11 pts. The shield for best fish of the show went to Mr. Spencer of Atherton with a Chequre Barb.

The second meeting was held at Atherton, and again Atherton won the table show, this time with 18 pts, Leamington were 2nd with 11 pts, Coventry 3rd with 14 pts, Huddersfield with 13 pts.

The shield for best fish in the show again went to an Atherton member, Mr. Lewis with a Dwarf Gourami. The next meeting will be in March at Coventry.

The winning society will receive a Book and Gavel presented by the "Coventry Evening Telegraph".

**THE Bi-Annual Convention and Table Show of the Federation of Scottish Aquarist Societies will be held at Aldrin, on 1st March, 1964. The Host Club is Lanarkshire A.S. It is hoped that more details will be given later.**

**THERE was a general discussion at the recent meeting of the Prewick and Bury A.S. on the breeding of egg-layers. Questions were asked and answered, methods put forward and experience related and the evening passed very pleasantly.**

A Table Show was held for A.V. Livebearers other than Guppy. The result was as follows: 1, F. Campbell (Platy); 2, T. Hardman (Mollie); 3, A. Buckley (Swordtail); Best Junior: Master J. Cartland (Platy).

#### NEW SOCIETIES

**AN Aquarist Society has recently been formed at the National Engineering Laboratory, East Kilbride, Glasgow. The Secretary is Mr. T. Johnson, Reynolds Bldg., S.E.L., East Kilbride, Glasgow.**

**A NEW club has been formed at Worthing, the title being Worthing Tropical Fish Club. All communications to Mr. A. R. Margrove, 29, Meadow Green, East Worthing.**

#### SECRETARY CHANGE

**Sligoon & District A.S. (G. Docker, 2, Short Back Road, Sligoon).**

**THE Freelance A.S. held their Breeder's class trophy and twenty-one entries were received. The result was as follows: 1, D. V. Jones (Australian Rainbows); 2, B. Mansford (Mogran's Fish); 3, D. V. Jones (Black Widow); 4, E. R. Keys (Blue Figlet). The new show secretary is Mr. M. R. Thomas, 54, Brecknall Road, Brockley, S.E.4.**



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### BERKSHIRE

**The Reading Aquarist**  
64, King's Road, Reading  
Telephone: Reading 53652  
E.C.D. Wednesday. R. C.T.P.AA.

### BUCKINGHAMSHIRE

**Grange Pet Stores**  
Well Street, Buckingham  
Telephone: Buckingham 3216  
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### CHESHIRE

**Grassby, Joe., F.R.H.S.**  
"The Glen" Fisheries, Moberley, Nr. Knutsford  
Tel.: Moberley 3272 W. C.T.P.AA. R.&A.

### CORNWALL

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11, Downs View,  
Bude.  
Telephone: Bude 134  
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R. C.T.P.AA. R.&A.

### DEVON

**Plymouth Tropicals**  
127, North Road, Plymouth  
Telephone: Plymouth 62663  
E.C.D. Tuesday. R. C.T.P.AA.

### DURHAM

**Metcalf, G. R.**  
2, High Northgate (near A.B.C. Cinema)  
(On main A.1 road) Darlington  
Telephone: Darlington 5991  
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

**Powell, M.C.**  
The Honey Pot,  
Claypath, Durham City  
Telephone: Durham 2108  
E.C.D. Wednesday (All day). R. C.T.P.AA. R.&A.

**The Fish Bowl**  
Burdon, Sunderland  
Telephone: Sunderland 71026  
E.C.D. Wednesday (All day). R. C.T.P.AA. R.&A.

### ESSEX

**Goodmayes Aquaria**  
Shaftesbury Parade, High Road, Chadwell Heath  
Telephone: Goodmayes 2594  
E.C.D. Thursday. R. C.T.P.AA.

**Skilton, C. J., Aquarist**  
"Ridgeway", 139, Galleywood Road,  
Chelmsford  
Telephone: Chelmsford 56878. W. C.T.P.AA.

**The Hamlet Aquaria**  
14, Saint Helens Road,  
Westcliff-on-Sea  
Telephone: Southend-on-Sea 44724  
E.C.D. Wednesday. R. C.T.P.AA.

### GLOUCESTERSHIRE

**Patricia Preece (Prop. Mr. B. R. James)**  
10, Suffolk Parade, Cheltenham  
Telephone: Cheltenham 24949  
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

### HAMPSHIRE

**Arundel Aviaries & Fisheries**  
241/243, Arundel Street, Portsmouth  
E.C.D. Wednesday. R. C.T.P.AA. R.&A.

**Wingate Zoological Supplies**  
7, Market Street, Winchester  
Telephone: Winchester 2406  
E.C.D. Thursday. R. C.T.P.AA. R.&A.

### HERTFORDSHIRE

**Cura, L. & Sons**  
Water End, Hemel Hempstead  
Telephone: Water End 44  
E.C.D. Saturday. W. C.P. R.&A.

### KENT

**Kingsfisheries Aquarium**  
138, Croydon Road, Beckenham  
Telephone: Beckenham 3716  
E.C.D. Wednesday (all day). R. C.T.P.AA.

**Medway Aquariums**  
314, Canterbury Street,  
Gillingham  
Telephone: Gillingham 52158  
E.C.D. Wednesday. R. C.T.P.AA.

**Sherwood Pet Stores**  
(Proprietors, Fairbairns Aquaria, Ltd.)  
252, Sherwood Park Avenue, Sidcup  
Telephone: Bexley Heath 7217  
E.C.D. Thursday. R. C.T.P.AA. R.&A.

### LANCASHIRE

**Hornby's**  
Trafford Bar, Old Trafford,  
Manchester, 16  
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**Letty Kremner**  
13, King Edward's Building,  
Cheetham Hill Road,  
(opp. Woolwoeths), Manchester, 8  
Telephone: Cheetham Hill 3246  
E.C.D. Wednesday. WR. C.T.P.AA. R.&A.

**Liverpool Aquaria Company**  
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### LONDON (East)

**Wade Aquatics**  
333, High Street North,  
Manor Park, E.12.  
Telephone: Grange Wood 6333  
E.C.D. Thursday. R. C.T.P.AA. R.&A.



**LONDON (North)**

**Phillip Castang Ltd.**  
91, Haverstock Hill,  
Hampstead, N.W.3  
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E.C.D. Saturday. W. T.P.A.A. R.&A.

**Paramount Aquarium**  
95, Haverstock Hill,  
Hampstead, N.W.3  
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**LONDON (South)**

**Aquatic Suppliers Co. Ltd.**  
7, David's Road, Forest Hill, S.E.23  
Telephone: Forest Hill 3816  
(Open every afternoon and all day Saturday).  
WR. C.T.P.A.A.

**Fairbairns Aquaria, Ltd.**  
15, Well Hall Parade, Iltham, S.E.9  
Telephone: Iltham 5859  
E.C.D. Thursday. H. C.T.P.A.A. R.&A.

**The Jaynor Organisation**  
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Telephone: Lee Green 3577  
E.C.D. Thursday. W. C.P.A.A.

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**South Western Aquarists**  
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Upper Tooting, S.W.17  
Telephone: Balham 7334  
E.C.D. Wednesday. WR. C.T.P.A.A. R.&A.

**Tachbrook Tropicals**  
244, Vauxhall Bridge Road, Victoria, S.W.1  
Telephone: Victoria 5179  
(Open all week except Sundays).  
WR. C.T.P.A.A. R.&A.

**LONDON (West)**

**Aquapets**  
17, Leeland Road,  
West Ealing, W.13  
Telephone: Ealing 2748  
E.C.D. Wednesday. R. C.T.P.A.A. R.&A.

**Owen Reid's, Aquarium Dept.**  
12, Spring Bridge Road, Ealing Broadway, W.5  
Telephone: Ealing 3259  
E.C.D. Wednesday. WR. C.T.P.A.A. R.&A.

**NORTHAMPTONSHIRE**

**The Aquarium**  
192, Wellingborough Road,  
Northampton  
Telephone: Northampton 34610  
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

**The Pet Shop**  
120, Kettering Road,  
Northampton  
Telephone: Northampton 841  
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**OXFORDSHIRE**

**The Goldfish Bowl**  
9, East Avenue, Cowley Road,  
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W.T. AA. R. C.T.P.A.A. R.&A.

**SURREY**

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**WARWICKSHIRE**

**The Coventry Aquarist (Prop. W. Dymond)**  
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E.C.D. Thursday. WR. C.T.P.A.A.

**Funday Aquaria**  
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**WORCESTERSHIRE**

**The City Aquaria, Bird and Pet Supplies**  
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34, Friar Street (opposite Union Street), Worcester  
Telephone: Worcester 22005  
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

**YORKSHIRE**

**The Corner Shop (Prop. J. Wilds)**  
525, Abbeydale Road, Sheffield, 7  
Telephone: Sheffield 54172  
E.C.D. Thursday. R. C.T.P.A.A. R.&A.

**SCOTLAND**

**Aquarists' Rendezvous**  
164/168, Albert Drive, Pollokshields, Glasgow, S.1  
Telephone: South 4258  
E.C.D. Tuesday (1 p.m.) WR. C.T.P.A.A.

**Forbes, James L. (Prop. P. N. Greening)**  
176, Blackness Road, Dundee, Co. Angus  
Telephone: Dundee 66409  
E.C.D. Wednesday. R. C.T.P.A.A.

**NORTHERN IRELAND**

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