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Comments and Quotes

- Cultivated marines
- Mollies show more females in the wild
- Fish have ulcers too
- UDN dying down?

Power House Marines

A SCHEME for setting up 'fish farms' in the warm-water outfalls of power stations, outlined in the journal of the Central Electricity Generating Board recently, makes a tasty addition to the 'backing Britain' endeavours of us all. Dr Herbert Cole, director of Fishery Research at the Ministry of Agriculture, sees the possibility in these plans not only of a steady supply of young oysters and prawns for consumption at home, but the chance of developing a flourishing new export industry in sending them abroad. "In the restaurants of the western world the demand for sea food is insatiable", Dr Cole states. "Crustacean meat of all kinds is equivalent to hard currency. Those we don't eat, we can export at high prices." It is believed that the processing and marketing of fishes such as soles, plaice, halibut, turbot and brill, reared by intensive breeding from selected stock in warm-water ponds, could be as successful as it is in the poultry industry; and although a considerable programme of research must still be undertaken, it is reported that the preliminary stages are under way. Dublin Bay prawns and Whitstable oysters may yet find themselves replaced on the menu by delicacies such as 'Bethnal Green Power Station scampi' and 'Oysters à la Lots Road Generating Plant'.

More Females than Males

IF you have been tearing your hair because the fry from your sailfin

mollies all seem to grow up to be females you can stop blaming your management. It seems that in Nature the same preponderance of females can occur. In a report in the BULLETIN OF THE FLORIDA STATE MUSEUM ON 'The Fishes of the Santa Fe River System' this statement about *Mollinia latipinna* appears: 'A disproportionate sex ratio existed; of 709 specimens examined 72.2 per cent were females'.

This was only one observation among a great many made in the study of 60 species of fishes in the Santa Fe River. The River is unique in having two main parts separated by an underground section through which the River flows for more than 2 miles. Dr Thomas R. Hellier Jr., who made the report, was interested in the area because the long underground section obviously imposes a barrier to movement of fishes, and he was interested to see what species were found in the River's different parts. Mollies were found below the natural bridge section, where the water is more brackish, but some other species were found to be breeding both in the upper section and the lower section of the River.

Ills of the Flesh

DO not too lightly dismiss the pained expression on the face of your Oscar. He could be suffering from stomach ulcers! Dr J. C. Marr, area director of the United States Bureau of Commercial Fisheries in Hawaii, reports that when the stomachs of 64 billfish from the nearby Kona Coast were examined last year, ulcers similar to those found in humans were detected in two male

marlins.

With this suggestion that fishes might also suffer from one of civilised man's ailments aquarists might begin to wonder whether sudden deaths in the aquarium could be due to heart attacks in fish. If fishes were shown to be affected by their aquarium water in the same way that the latest report of the Medical Research Council says drinking water can affect the development of heart and artery disease in man, we shall all be looking at water hardness readings with a new interest. However, whereas the medical report suggests that the soft water areas in Britain have a higher incidence of deaths from cardiovascular disease most aquarists would agree that it is the hard water supplies that seem to be least advantageous for fishkeeping or, more accurately, fish breeding. Just as well!

UDN Dying Down?

UDN, or ulcerative dermal necrosis, the salmon disease that was first reported 3 years ago in County Kerry, may be on the decline. This does not mean, unfortunately, that deaths from the disease have suddenly come to an end. Only a month or two ago its presence was confirmed in the chief South Wales rivers, the Usk, the Towy and the Teifi. The Wye and all the east-flowing rivers from the Tweed north to the Moray Firth are affected. But, nevertheless, the incidence of the disease in County Cork and County Kerry has decreased this spring and numbers of diseased salmon removed from the Tweed have declined. The fact that it all seems to have happened before—between 1877 and 1889 and

in the very same rivers—and died down (though it took 12 years to do so) gives hope of the survival prospects of the salmon in this disaster.

Fears for the survival of the Atlantic salmon, *Salmo salar*, are now arising from another source, however. Between 1957 and 1964 the number of salmon taken commercially in the sea off West Greenland rose from 2 metric tons to 1,400 metric tons or 430,000 fish. It seemed that the chief marine feeding ground of the salmon, so long a mystery, had been found. In the last 4 years the weight of the annual catch has averaged 1,500 metric tons and the Greenlanders are likely soon to be joined by Japanese fishing vessels, already reported in the vicinity, with the possibility of the Russians joining in. It is feared that unless some international agreement is reached, *Salmo salar* may not survive this latest depredation.

PFM Photo COMPETITION



Mr D. Couch, of Cwmavon, Port Talbot, Glam., whose entry of a close-up picture of his scissortail is our selected photograph this month, has supplied these details of his photographic technique: Miranda F 35 mm. single lens reflex camera with 50 mm. lens plus 15 mm. extension tube; FP3 film (developed in Acutol-S); aperture $f/11$; electronic flash held slightly above and to one side of camera.

There are no special categories of entry for this Competition. Photographs in black and white or colour (prints or transparencies) can show your favourite fish in close-up, the interior of your aquarium, fish breeding or other fish behaviour, or your garden pond. Each entry will be judged according to photographic merit as well as for its interest to fish-keepers. Main cash prizes will be

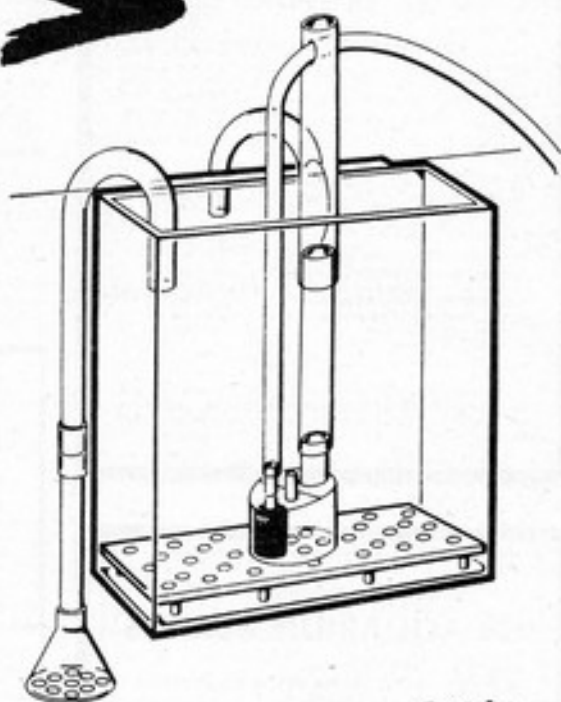
£5 each, with subsidiary prizes of £2 each, plus a monthly chance of being paid one guinea if a picture is selected for printing in an issue of PFM appearing before final judging and announcement of results. Use the entry form from a current issue of PFM when sending your pictures and please read the Rules and Conditions for the Competition printed in the June issue.

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More Praise for the Specialists

DURING the past few months much has been written on the 'Backing Britain' campaign and its influence on the aquatic hobby. Little information seems to have been brought to the attention of the public, however, on what societies are doing to foster and promote this theme.

We in Great Britain have probably the best selection of specialist societies anywhere in the world, all of whom have, for a long time, been playing a minor but nevertheless appreciable role in this field. Your readers are no doubt familiar with such names as the Fancy Guppy Association, the Goldfish Society of Great Britain, the British Killifish Association, International Catfish and ourselves of the International Marine Study Society. Most of these specialist societies have many overseas members, and with all but one exception their respective journals circulate throughout the world. One only has to glance at a cross-section of the aquatic literature coming in from Europe, South Africa, Australia and the United States and one or more of these groups are nearly always mentioned.

It is often said that Great Britain is far behind other countries in the field of aquatics, but in the field of international relations the British-founded organisations stand supreme. It is often repeated that the most famous definition of a specialist is one who learns more and more about less and less, but look where it's getting us. . . .!

M. J. PARRY
Public Relations Officer,
International Marine Study Society

Own Up, Winners!

I DO hope we're not entering a phase of anonymous winners at club shows. In the Club News in the May issue of PFM one or two awards were made to mysterious individuals or groups of individuals who were simply designated by one initial letter. No doubt friends in their own and local clubs know who they are but it is going to make club results a bit impersonal if all the awards come to be won by X and Z of Devonport, for instance. Please don't hide your light under too many bushels, prize-winners, or the club results will begin to read like a James Bond thriller.

Ashford, Middlesex

M. CUNNINGHAM

Looking for Colour?

BEING a tetra fan I take great interest in all your articles. In your account of the rosy tetra (PFM, December 1967) you say a tank of these is a sight to behold. Try a dozen or so of rosy tetras and black phantoms. Wow!

Blundellsands, Liverpool

P. GOODWIN

Moving Art

A RECENT television programme introduced the growing trend by a group of artists to create colourful moving designs in frames for home decoration instead of the conventional still picture. Although these were ingenious and I'm sure most soothing to watch I could not help thinking that the lighted decorative aquarium achieves the same object less expensively and in a much more satisfying and interesting way, asking as it does for creative participation from its owner. There's still a great need for aquarium designs that fit into the contemporary home, however, and given this I'm sure that even more people would take up keeping fishes. Ugly aquarium stands are still the commonest form of aquarium support on view at the shops; the public needs to be shown some alternatives I think.

Reading, Berks.

L. CARLTON

Programmes for Meetings

THANK you for publishing my letter a few months ago in which I asked secretaries etc. to contact me with details of speakers, programme aids etc. for inclusion in a booklet I proposed to prepare for the benefit of club secretaries sometimes at a loss to provide regular first-class programmes. Mr J. V. Morrice of London was kind enough to write to me twice in extremely helpful vein, but as his was the only reply to my plea I have regretfully decided to abandon the project. Shame on you secretaries! No more complaints, please, about your difficulties in booking up speakers.

BON TENCH

Chairman, Warrington A.S.

Gentle Water Change Needed

THE mention of *Otocinclus* in the article on the aquarium catfishes (PFM, June) has reminded me of a tip that might be worth passing on. I have always enjoyed having these fish in my tanks because they are attractive to look at and do a very good job of keeping leaves free from algae; but at first I was most unsuccessful in introducing them into the aquarium. I once lost four in 2 days only to find their tankmates, in the shop where I had bought them and had been given the second two fishes free as replacements, still swimming merrily about. They seem to be extremely sensitive to water change and although I had floated them in my tank for the required time to equalise the temperatures the water change was obviously too much for them. Two further replacements from the same batch of fish were purchased and floated in a large jar in my tank. Water from the tank was introduced into the jar gradually over a period of 4-6 hours. Only then were the fish released. Since then I have always followed this method and never had any further trouble with them.

Oxford

S. ROBERTS

How to Plant without Leading

I WOULD like to support Arpee in his statement that it is not necessary to use weights to obtain a satisfactory planting (Personal Comment, PFM, June). When I

planted my first tank I was persuaded to buy some lead weights and found them very difficult to put on the plants without breaking the stems. Furthermore they seemed to do the plants no good at all. I ran out of weights and started to plant without them. If the gravel layer is of a suitable thickness (1½-2 in.) there should be no problem in getting the plant to stay put. Cuttings should be guided down by a finger, and plants with long roots (such as *Vallisneria*) should have the root twisted round the finger

which is then pushed into the gravel. Put the root or stem in as deeply as possible and then give the plant a little tug to raise it so that only the required amount of plant is embedded. Of course, fish should not be put into the tank for a week or ten days so that the plants have rooted well by that time. The real secret, though, is in having enough gravel in the tank.

Edinburgh

M. McLAUCHLAN

Transatlantic TOPICS

THE word shark has always held a fatal fascination for members of the human race and though the majority of fishes with this title are barred from our tanks (for obvious reasons), we can still find a home for the so-called silver, black, red-finned and red-tailed 'sharks'.

Most books tell us that they have not spawned in captivity, so a report of such a feat from the South Suburban Aquarist Society, Markham, Illinois, is of popular interest. The gentleman to witness this was Len Morrell and I can do no better than quote his own words:

'About 18 months ago I decided to try my hand at spawning the *Labes bicolor*; at this time I had a young mature pair, approximately 4½ in. long, the male having a slight concave ventral and the female a convex ventral, both in profile.'

Len used a 24 in. by 8 in. by 8 in. tank, heavily planted and with rock-work made to form small caves; the water was soft (8° DH) and slightly acid (pH 6.6). He used peat to acidify and also to cut down the light—the acid conditions successfully counteracting any action on the eggs by bacteria and fungus.

Introduced into this set-up during the evening, the pair of sharks obliged by spawning the following morning, swimming in and out of one of the small caves. After each swim they turned on their backs and assumed a head to tail posture, in close contact and their bodies shaking rather like a mollie with the 'shimmies'.

After spawning the male took to guarding the eggs and the female was removed from the tank. Hatching took place in 48 hours and the fry were free-swimming 2 days later.

First foods were the British foods

By JIM KELLY

Biol and Liquifry (red), which were given for about 4 days, followed by newly hatched shrimp and micro worm. Though some fatalities occurred the majority of the fry thrived and at 6 weeks of age began to change their silvery-grey coloration through dark brown to black; the young displayed white tips to their fins and it wasn't until the eighth week that the familiar red appeared.

Armed with such information can we now expect would-be record-breakers on this side of the Atlantic to try their hand? Another upset for that gallant band of aquatic publishers who try desperately to keep their literature 'up-to-date'.

* * *

Citizens of the New World are very conscious of their weight and take steps to keep it down that involve much more effort than the usual dietary restrictions. One aquarium body laid on outings to their local swimming pool, claiming that this exercise—swimming—was good for the figure. Have none of these well-meaning folk ever taken a good look at a whale?

* * *

At the end of April, the Bronx Aquarium Society Inc. celebrated its eleventh Annual Tropical Fish Show and Exhibition. What is probably the best 'amateur' printed show schedule I have ever received was sent to me by them before the event. Containing 32 pages of advertisements and announcements



it also had a wealth of hobbyists' names, from all over the world, congratulating the club.

From the cover, illustrated by Kappy Sprenger, to the 'thank you to the judges' on the last page, it is sure to become a collector's item.

* * *

It is just 12 months since Dr James Braddock from Michigan State University spoke for 2 hours on fighting fish (*Betta splendens*) to 'Beta Bets', a group of specialists on this species. A year has passed and they are still reeling from what he had to say! The learned Doctor is a student of animal behaviour and, in my book, a brave man to boot, to beard the lions in their den as it were.

His lecture was so informative and much of the information so new, that the audience left the meeting wondering whether it was the same fish they had been acquainted with all these years.

He spoke of nine-year-old Fighters still actively producing young, their preference for building nests under yellow light, and their apathetic reaction to the colour blue.

'Beta Bets' contains some top men in the field, but admitted that James Braddock's knowledge set them wondering had their 'acquaintance' all these years just been a nodding one?

Spawning Success with *Pelmatochromis annectens*

SOME time ago, whilst peering into a tank of *Pelmatochromis arnoldi*, I noticed several odd fish which were much brighter coloured. After discussing them for some minutes I learned they were *Pelmatochromis annectens*. Being an inquisitive aquarist, I purchased the two the salesman had selected as a pair. How he managed this I'll never know, as the fish as far as I was concerned were still unsexable some 3 months later!

These beautiful cichlids come from Africa and seem to have a

now one fish was definitely deeper in the body than the other.

Once more I tried beef heart as food, this time sliced into 2 in. strips about $\frac{1}{4}$ in. by $\frac{1}{4}$ in., and these the fish took readily. The quantity consumed each day was amazing. From the small amount of knowledge available from the books, I ascertained the *annectens* were diffi-

about half a cupful of sea salt.

The very next day all the gravel had been moved up to one end of the tank. Three days later the central rock in the aquarium was covered with grey-brown eggs. The following day the eggs were wriggling and 4 days after the eggs were laid the fry were free-swimming.

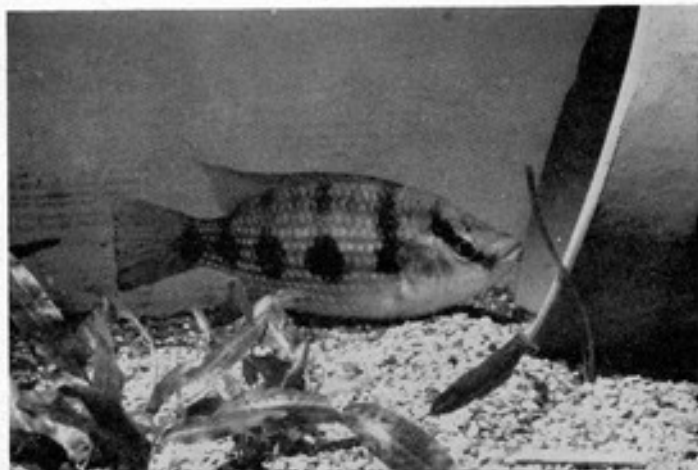
During this period the female

By **DAVE LELLIOTT**
(Verulam Aquatic Group)

temperature range of from 68°F to 85°F (20-30°C). The two I purchased had white spot, very ragged finnage and were very hollow bellied. I placed them into a 36 in. by 12 in. by 12 in. tank filled with tap water (hardness 340 p.p.m., pH 7.4 and a temperature of 80°F: 27°C) with a glass partition between them as they were inclined to fight.

At first they would eat only live fish and earthworms. My supplies of these foods became difficult as these fish, now 4 in. long, would eat some 20 small fish each per day or three full grown earthworms. I tried to feed them small lumps of beef heart but to no avail.

After some 4 months, and after clearing them of white spot, they had regained their finnage and body shape, and they seemed to have settled down. Because of this, one weekend I removed the glass partition and to my surprise they were quite amicable one to the other. By



African dwarf cichlid *Pelmatochromis annectens* at the mouth of a flower pot placed on its side in the aquarium

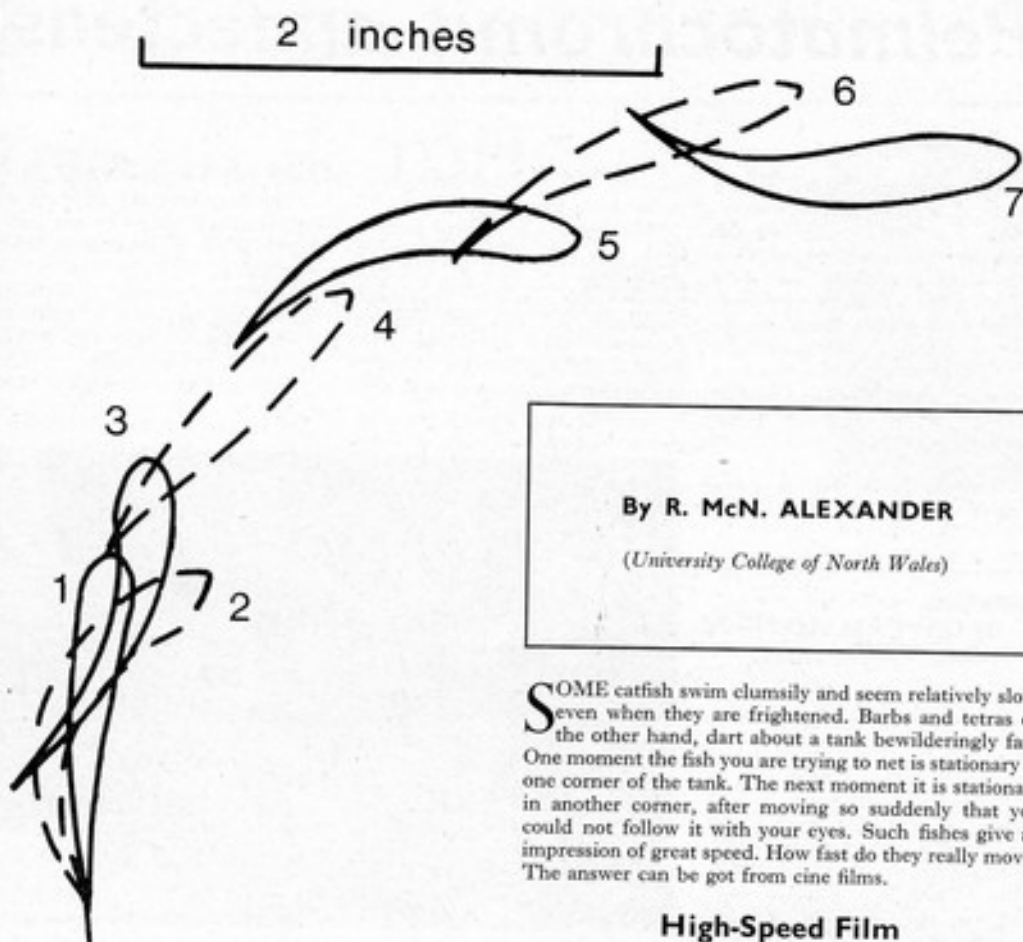
cult to induce to spawn, so I proceeded to alter the tank conditions.

At first I raised and lowered the temperature at various intervals but this had little effect. Next I tried changing large quantities of the water for rainwater; this they definitely disapproved of. After this a peat filter was tried, still with no success. Consulting the books again, I noticed a remark in one popular volume 'some sea salt may be necessary for their well being!'. One more try I thought, and so I added

guarded the eggs continually and moved them once. The male assisted slightly with the guarding but the female kept him well away from the eggs.

The parents were removed immediately the young fish took brine shrimp and some weeks later the youngsters were split between four 36 in. tanks; they number about 2500 to 3000. The parents, incidentally, eat very little now and have gone right off beef heart. Problems again!

How Fast is a Fish?



By R. McN. ALEXANDER

(University College of North Wales)

SOME catfish swim clumsily and seem relatively slow, even when they are frightened. Barbs and tetras on the other hand, dart about a tank bewilderingly fast. One moment the fish you are trying to net is stationary in one corner of the tank. The next moment it is stationary in another corner, after moving so suddenly that you could not follow it with your eyes. Such fishes give an impression of great speed. How fast do they really move? The answer can be got from cine films.

High-Speed Film

The illustration on this page shows a series of outlines traced from a cine film of a seven-spot barb (*Barbus lineomaculatus*). The fish is seen from above, swimming off after being startled. The film was taken at the high speed of 64 frames/second but only alternate frames have been traced, so each outline shows the fish $1/32$ second after the one before. At the start of the film the fish was stationary with its body straight, in position 1. When it was startled it bent its head and tail to the right (position 2) taking only $1/32$ second to do so. After another $1/32$ second it had bent the other way and had moved about half an inch forward (position 3). By the time it reached position 4, $3/32$ or about $1/10$ second after it started moving, it had travelled $1\frac{1}{2}$ inches and was moving at its top speed, about 33 inches/sec.

This is not a very high speed by human standards. It is less than 2 m.p.h.—a slow walking speed. However, it is a good speed for so small a fish, for if the barb had

By the use of cine film a barb has been shown to swim at the rate of twenty times its body length per second, accelerating from rest to this top speed in a distance about equal to its body length. Between positions 2 and 4, above, the barb had an acceleration of $1\frac{1}{2}g$, higher than the best acceleration of any car.

continued at the same speed it would have travelled twenty times the length of its body every second. A car travelling twenty times its own length in a second would be doing something like 150 m.p.h.!

The acceleration of the barb is just as impressive as its top speed. In position 2 it is hardly moving forward but by position 4, $1/16$ second later, it is travelling at top speed. It has accelerated from rest to top speed in a distance about equal to its own length.

Readers who have taken an interest in space travel may know the method of describing an acceleration as so many gravities, or so many *g*. If I drop a stone down a well, its speed increases as it falls. It increases by 32 ft./sec. for every second the stone falls. In other words, the stone has an acceleration of 32 ft./sec./sec. This is sometimes described as an acceleration of 1 gravity, or 1 *g*. It can be worked out from the film that between positions 2 and 4, the barb had an acceleration of $1\frac{1}{2}$ *g*.

Barbs and Racing Cars

This would be a marvellous acceleration for a car. Of all cars, the ones with the highest accelerations are the strange ones which are used for Drag racing. The best of them can reach 200 m.p.h. in $\frac{1}{4}$ mile from a standing start. This is an acceleration of 1 *g*, which is less than the acceleration of the barb. Still, I wouldn't back my barb against a car for any race over a course of more than a few inches.

The comparison with cars is really rather misleading. It is perhaps more realistic to compare the barb with other small animals. A locust, for instance, is about the same length as my barb. When it jumps, it kicks itself into the air with an acceleration of about 15 *g*. This makes the fish look distinctly sluggish.

Big fishes can swim faster than small ones, but not quite in proportion to their size. My barb is just over $1\frac{1}{2}$ inches long, and can get up to a speed of twenty times its length per second. Other fast fishes of similar size, such as young trout, can do the same, but a trout a foot long can only manage ten times its length per second (about 7 m.p.h.). When a 1-foot trout is startled it accelerates faster than the small barb (up to $4\frac{1}{2}$ *g*).

I do not know how long my barb kept going at its top speed, after it swam out of the field of my camera. It probably could not have kept it up for more than a second. No one expects an athlete to keep going for a mile at the speed at which he runs a hundred yards. The faster a fish swims, the less time it can keep up the speed. Fish that can get up to ten or more lengths per second in a burst of speed lasting less than a second, cannot keep going for 20 seconds at more than about four lengths per second. These figures were obtained from experiments at Cambridge University, in which the movements of fish were recorded as they swam round and round in a ring-shaped tank.

Two Kinds of Muscle

Not surprisingly, a fish needs more muscle to drive it along at a high speed than at a lower speed. Fish have two kinds of swimming muscle, one for ordinary use and the other to provide the extra power needed for occasional bursts of very fast swimming. The difference between the two can be seen in most fishes but is particularly obvious in herring.

The part of a herring that is eaten, apart from the roe, is of course the swimming muscle. Most of it is white but there is a strip of deep red muscle just below the skin. Recent experiments have shown that only the red muscle is used when a fish is swimming slowly but that the white muscle is used in bursts of fast swimming. The experiments have only been done on dogfish and tunas but the conclusions are probably true of fishes in general. The top speed, which can be maintained for only a second or less, is the maximum speed at which all the muscle working together can drive the fish. The speed of about four lengths per second, which can be kept up for a long time, is the speed at which the fish can be driven by the red muscle acting alone. There is many times as much white muscle as red muscle but it is all needed at the top speeds because high speeds are very expensive in terms of energy. It can be calculated that if a fish doubles its speed, it needs six or eight times as much power as before to drive it along.

The two kinds of muscle work quite differently. All muscles depend on oxygen but whereas the red muscles have to be supplied with oxygen as they work, the white ones work on a principle of swim now, breathe later. This is part of the reason why the top speed cannot be kept up for long. The white muscle soon needs a rest, to give the blood time to bring it the oxygen that is owed to it: it cannot go on working if the debt gets too big. The gills are big enough to keep the red muscle constantly supplied with oxygen, and that is why a fish can swim for ages at the lower speeds at which only red muscle is used. Fantastically large gills would be needed to supply enough oxygen for the highest speeds, if the very large white muscle could not develop an 'oxygen debt'.

Oxygen debts are not a peculiarity of fishes. Men could not run short distances so fast if we could not develop an oxygen debt which is made up as we recover, panting, afterwards. However, we differ from fishes in that we use the same muscles for a sprint as for a marathon.

To finish, here is a speed record. The highest fish speed that has ever been measured, so far as I know, is 44 m.p.h., done by a 5 foot tuna. I do not know how accurate that measurement was, but you will certainly not see speeds like that in your aquarium!

Aqua-tip

I HAVE recently purchased an aquarium stand, and it occurred to me that to improve the appearance of the stand and the two tanks therein neat wiring and the running of air lines would be essential. This was achieved by cutting a television aerial into four sections of 24 in. lengths and attaching these tubes to the rear of the stand with adhesive. By running the wires through these tubes the general effect is one of neatness, as the wires cannot be seen at all.

E. F. KENNEDY

continued at the same speed it would have travelled twenty times the length of its body every second. A car travelling twenty times its own length in a second would be doing something like 150 m.p.h.!

The acceleration of the barb is just as impressive as its top speed. In position 2 it is hardly moving forward but by position 4, $1/16$ second later, it is travelling at top speed. It has accelerated from rest to top speed in a distance about equal to its own length.

Readers who have taken an interest in space travel may know the method of describing an acceleration as so many gravities, or so many *g*. If I drop a stone down a well, its speed increases as it falls. It increases by 32 ft./sec. for every second the stone falls. In other words, the stone has an acceleration of 32 ft./sec./sec. This is sometimes described as an acceleration of 1 gravity, or 1 *g*. It can be worked out from the film that between positions 2 and 4, the barb had an acceleration of $1\frac{1}{2}$ *g*.

Barbs and Racing Cars

This would be a marvellous acceleration for a car. Of all cars, the ones with the highest accelerations are the strange ones which are used for Drag racing. The best of them can reach 200 m.p.h. in $\frac{1}{4}$ mile from a standing start. This is an acceleration of 1 *g*, which is less than the acceleration of the barb. Still, I wouldn't back my barb against a car for any race over a course of more than a few inches.

The comparison with cars is really rather misleading. It is perhaps more realistic to compare the barb with other small animals. A locust, for instance, is about the same length as my barb. When it jumps, it kicks itself into the air with an acceleration of about 15 *g*. This makes the fish look distinctly sluggish.

Big fishes can swim faster than small ones, but not quite in proportion to their size. My barb is just over $1\frac{1}{2}$ inches long, and can get up to a speed of twenty times its length per second. Other fast fishes of similar size, such as young trout, can do the same, but a trout a foot long can only manage ten times its length per second (about 7 m.p.h.). When a 1-foot trout is startled it accelerates faster than the small barb (up to $4\frac{1}{2}$ *g*).

I do not know how long my barb kept going at its top speed, after it swam out of the field of my camera. It probably could not have kept it up for more than a second. No one expects an athlete to keep going for a mile at the speed at which he runs a hundred yards. The faster a fish swims, the less time it can keep up the speed. Fish that can get up to ten or more lengths per second in a burst of speed lasting less than a second, cannot keep going for 20 seconds at more than about four lengths per second. These figures were obtained from experiments at Cambridge University, in which the movements of fish were recorded as they swam round and round in a ring-shaped tank.

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E. F. KENNEDY

Flowers in the Tropical Aquarium



Growing water plants from seed gives an additional interest in the aquarium that houses flowering species

WE hear quite a lot about the types of plants that adorn our aquaria but much less about their methods of propagation. Here I shall deal mainly with the growing of plants that bear flowers and can be grown from seed in a similar manner

By C. WRIGHT

to the plants of the gardener, whose flowers are fertilised by the agency of insects and various other means. The aquarist can reproduce his plants similarly, although the task is made a little more difficult because in most cases the flowers of aquatic plants are small and open only for a short period; this means careful watching and prompt action to get the very best results.

Vallisneria spiralis (tape grass) is known to all aquarists and is one of the most interesting and useful of aquatic plants. Not only is it a good oxygenator but it is very attractive,

The white flower of *Sagittaria* has three petals and unlike that of *Vallisneria* is of the same form for both males and female flowers and the two types arise from one plant

and a large thicket of it provides splendid shelter for young fish, especially those of the livebearers. More interesting to the grower are its two distinct methods of reproduction. The first method is by the runners, with which we are all acquainted, but the less well known method is by means of their seeds.

The individual plants of this species are either male or female and each produces its own flowers. The female plants bear single flowers at the end of a very long spirally coiled stalk, so that whatever the depth of water, 4 inches or 4 feet, the flowers will always float to the top and lie on the surface of the water. Although described as a 'flower' it is not quite as one would normally expect to see, being nearly a quarter of an inch in diameter and having no petals, only three very small pistils (the seed-bearing part of the flower).

Male Flowers

The male flowers are borne in spikes on short stems about 2 to 3 inches in length. When the male flowers are ready to open the spikes burst, releasing the minute flowers, which rise to the surface of the water and float among the female flowers and shed their pollen. When floating the flowers appear to be like small particles of white dust on the surface of the water. When the female flowers have been fertilised, the stalks bearing them contract and the flower is dragged to the bottom of the pond or aquarium, where it forms a pod of seeds which ripen off.

Unlike *Vallisneria*, which is dioecious (meaning that each plant is of a distinct sex), *Sagittaria* produces both male and female flowers on the same plant. Both flowers are about half an inch in diameter and consist of a canary yellow centre with three white petals. These flowers are borne on stalks or stems which may carry any number of flowers up to ten or twelve. These stems lie along the surface of the water and, when the buds open, the small branch stem bearing the flower supports the latter just above the surface of the water. Only one or two flowers, all of the same sex, open each day on one particular plant, their duration of life being about 10 hours.

To grow *Sagittaria* successfully

from seed one must have several plants, and pollinate the flowers as soon as they open, usually about 11 o'clock in the morning. Pollination is accomplished artificially by means of a fine camel-hair brush. The pollen is removed from the male flower by means of the brush and dusted on to the female flower. At the end of the day the female flowers that have been fertilised fall beneath the surface of the water, where they ripen off. This usually takes about a month, and when the seeds are ripe they break away and float to the surface. After a day or two the seeds should be sown in a shallow tank set up in the following way.

Place about 1 inch of fine loam on the tank bottom and cover with about one-sixteenth of an inch of silver sand in about 2 inches of water. The seeds should be sown so that they lie between the sand and the loam. It takes about 3 weeks for the young plants to appear, and when they have grown to a height of 2 inches they can then be transplanted to an aquarium. They will continue to grow like those produced by runners. I have found that there is usually a higher percentage of female flowers than male on this particular species of plant.

The flowers of *Cabomba* are yellow and shaped like a tulip, but only about half an inch long. They are borne on short stalks which rise from the submerged plant to the surface. Like *Sagittaria*, both male and female flowers are produced on the same plant, but so far I have been unable to propagate this plant from seed or even obtain any ripe seeds.

Flowers of *Ambulia*

A plant which is often confused with *Cabomba* is *Ambulia* (*Limnophila*), which produces aerial foliage similar to that of parrot's feather, which appears very shrunken and on which numerous small flowers appear. There are two distinct varieties of this plant, namely *A. sessiliflora* and *A. ambliopletris*, both liking high temperature (75-90°F; 24-32°C). Below 70°F (21°C) *Ambulia* will quickly deteriorate and become stunted, but even under these conditions it seems to retain

its hold on life and the smallest scrap of plant will quickly recover if given the light and warmth it deserves. *Ambulia* will thrive in depths of water from 10 to 24 inches and also increases by runners similar to those of *Vallisneria*. *A. ambliopletris* (the plant normally sold in shops) has pretty little bunches of small purplish flowers, whereas the flowers of *A. sessiliflora* are white. Both carry their flowers 2 to 3 inches above the surface. The aerial foliage of *Ambulia* attracts a large number of small black flies, very similar to those which attack the garden broad beans, although very much smaller. These small creatures will do all the pollinating that is necessary, thus eliminating artificial pollination. After a week or two, the flowers fall beneath the surface of the water, where the seeds, which are very small and black in colour, ripen off and sow themselves by falling to the bottom.

Several of our so-called aquatic plants are really bog plants adapted to grow in submerged conditions. A number of these, as would be expected, give aerial flowers. *Ludwigia* produces very small flowers which consist of four diamond-shaped yellow petals. *Helxine* (baby's tears) produces small violet flowers and moneywort (*Lysimachia*) produces the ever-common yellow flowers. *Hygrophila*, also an adapted bog plant, produces flowers and aerial foliage which resembles very much the common garden mint.

Cryptocorynes will flower if grown as marsh plants in a few inches of water and planted in rich peaty-loam rooting medium. My only successes with this group have been with *Cryptocoryne willisii* and *C. griffithii*; the flowers of both are reddish brown in colour with a violet tinge. *Echinodorus intermedius* (the Amazon sword plant) will also produce flowers if kept in shallow water, but I have never been successful with this plant and so am unable to say what they look like.

What I have written has been an account of some of my own experiences in plant growing on a small scale. Two types of growing medium were used: the normal aquarium compost with fish in the aquarium, and garden soil or peat with a covering of sand and no fish. The latter was obviously the best method but I was more interested in fish so they came first!

THE AQUARIUM CATFISHES—4

The Grotesque and the Dangerous

Even more grotesque in appearance than the 'ordinary' lizard-like Loricariids introduced in last month's article are so-called 'bushy-faces' or 'bristle-mouth' members of the family such as *Xenocara* and *Ancistrus*. Males of these and other genera come equipped with enough 'hair' on their heads and snouts to qualify for the hippy coiffure test without alteration. A number of these also are equipped with patches of hook-like spines in the region of the interopercular part of the gill covering. Often when these fishes have been netted they will catch these interopercular spines in the net, making it extremely difficult to shake them free of it.



Head of the South American bushy-faced catfish (*Xenocara* species)

By BRAZ WALKER

Photographs by the author

These broad-headed, rather preposterous looking fishes are excellent workers for controlling algae and are for the most part smaller than the *Hypostomus* species. Requirements for their welfare are mainly that they be given enough vegetable or cereal-based foods to supply the bulk needed for their long coiled intestinal system. This applies to all the species of loricariid catfishes.

Possibly the only real drawback in keeping the larger suckermouth catfishes is their awkwardness. Combined with the bulky proportions which some species may eventually reach, this can play havoc in a delicate underwater garden. Some have the habit of lashing their dragon-like tails and possibly uprooting plants with this action.

Among the family Loricariidae, several have been successfully bred in aquaria, although this is far from a common occurrence. The eggs are usually rather large and are deposited in caves, on broad-leaved aquatic plants or on the aquarium glass. Most species incubate the eggs, although at least one is reported to spawn with a similarity to *Corydoras*, depositing the eggs on the aquarium glass and later ignoring them.

This is a fascinating group of fishes whose lack of beauty only adds to their charm. They are easily kept and will at least partially earn



Above: this small catfish is one of the burrowing types, a tiny member of the genus *Tridens*. Left: A species of *Xenocara* from South America, seen in belly view as it clings to the aquarium glass

their keep by helping to keep down the growth of unwanted algae as well as performing the more ordinary scavenger or clean-up duties. As with other catfishes that are sold as 'scavenger fish', they should not be expected to thrive or to even survive for any length of time on the leftovers of others.

The mythical generalisation about catfishes being unable to tolerate salt in the aquarium is particularly untrue of many of the larger members of the family, since some of these are found in brackish water as well as fresh.

Family Trichomycteridae

Among the catfishes there is hardly a more interesting or infamous group than the trichomycterid catfishes of South America. Although these are rather uncommon in the aquarium, they do appear from time to time and, because of the nature of some of the species at least, they are worthy of more discussion than they have received in aquarium literature.

If some master designer had been intent on blueprinting a fish family possessing some objectionable quality, a piscatorial equivalent to the vampire bat would seem to meet the need admirably. The Trichomycteridae go beyond this, for not only among their ranks are parasitic creatures which actually invade the gill chambers of larger fishes and feed upon their gills, this is also the family to which belongs the infamous 'candiru', which upon occasion enters the urogenital openings of human bathers.

These are for the most part very loach-like fishes in their appearance, many of which could be easily confused with the weatherfishes of Asia. The rounded face (of some species), the usually small barbels, the dorsal fin set far toward the posterior, the absence of the little adipose or fat fin found on most catfishes and the similarity in shape of the caudal (tail) fin to that of the weatherfishes in

some cases can present a striking overall similarity of looks.

The trichomycterids are burrowers. Many are worm-like in shape and swim with a rather serpentine body action, both of which aid them in their burrowing habit. They bury themselves in the sandy or mud bottoms of streams or in holes in the banks of streams, and with the aid of the opercular spines which most possess they are able to cling to rocks in very swift water. Also through the clinging ability of these spines and the same wriggling motion, certain species have been seen actually to 'climb' up the rocky face of a waterfall.

Pygidium is the largest genus and contains some rather attractive species. These are the more loach-like members of the family along with several other genera, and are not generally considered to be among the urinophilous species known as 'candiru'.

Species of the genera *Tridens*, *Vandellia*, *Stegophilus* and other tiny species possessing streamlined, pointed profiles with flattened heads are unbelievably swift and are those usually credited with invasions of the body openings. Urethral penetration is not only extremely painful, but removal is often difficult and dangerous because of the possibility of infection.

The trichomycterids are shy, retiring creatures. They dislike bright light although those I have kept will adjust to it as far as feeding. Because of their burrowing nature, they should have fine sand in the aquarium or some other equally penetrable medium. For the tiny species such as *Tridens*, baby brine shrimp are ideal. Larger species will readily accept frozen brine shrimp or finely ground ox heart.

Because of the parasitic nature of at least some of these fishes, it would be wise to either keep them alone or with fishes their own size whose gill cavities could not be invaded.

To be continued

Going away? Worried about what is going to happen to your aquarium during your absence?

TEN TIPS for Holiday-makers

By JIM KELLY

TRYING to find an experienced aquarist to look after your fishes during your absence is just about as easy as finding digs when carrying a trombone, but don't worry, just follow our suggestions and we can assure you that your well-deserved vacation isn't marred by what I term the 'gas tap blues'!

1. Check all electrical equipment—examine for any signs of worn or frayed electric flex and renew where needed; see that the screw connections in the power plug are tight. If in doubt, throw it out and renew.
2. Slowly lower the aquarium water temperature to around 70°F (21°C) in the week preceding the holiday. Unlike man, fishes are 'poikilothermal creatures' and adopt the temperature of their surroundings. If water is at a high temperature then the metabolism of the fishes is quickened, they eat and excrete more.
3. In planted aquaria, prune the plants severely. During the hours of darkness, they give off carbon dioxide; thinning out the plants will reduce the amount of this to a harmless level. It will also ensure you don't return to a jungle.
4. Fishes can go for long periods without food; up to 2 weeks won't harm them provided that they have been fattened up beforehand. However, if you think there is a risk in leaving your fishes without food or if you are lucky enough to have a month at a time away, take note of the next two tips.
5. If you must have a well-meaning relative or neighbour in as caretaker, be sure to leave *written* instructions; what seems simple to your trained mind might be complicated to them.
6. If you decide not to subject your fishes to total abstinence from food, place each day's rations in a spill of twisted paper with full instructions. Hide all other fish food. The uninitiated often think we aquarists starve our fishes and will only feed more the minute our back is turned. Don't tempt them!
7. See the tank is cleaned and serviced last thing before you go and, above all, ensure it is well topped up. The amount of evaporation is surprising. Check that you have allowed for a drop in water level if internal thermostats and heaters are fitted. Allow for at least one inch drop in level per week's absence.
8. Place a 'Do Not Remove' sign on the power plug supplying the tank and put a spare set of fuses near it. We once had a neighbour who removed the plug to use a vacuum cleaner. The house was spotless on our return but that is more than we can say for the fishes.
9. If your tank isn't covered, then cover it temporarily with some 'cheesecloth' obtainable from your butcher. If the aquarium is in a sunny location, shade the sides and top with tissue paper secured by adhesive tape.
10. Don't feed heavily a few minutes before you depart on the mistaken assumption it will last them over the holiday. Uneaten food will only pollute the water. Give a small portion of food, preferably live *Daphnia* (no tubifex); if it has to be dried food then be sure to siphon off any left uneaten.

Finally, have a nice time, secure in the knowledge that your precautions will help to ensure you return to a tank full of leaner but healthy fishes and the water will be as clear as I hope your holiday weather will be.

By making a few simple preparations and checking your equipment properly before departing on holiday you can leave your aquaria unattended for a couple of weeks without any likelihood of harm

How the M.A.P.S. was Born

In August the twenty-fifth open show to be staged by the MIDLAND AQUARIUM AND POOL SOCIETY will be held in Birmingham. To mark the silver jubilee of the highly popular 'Midland Show' PFM asked one of the Society's most senior members to tell us how it all began.

COLONNADE Passage was a 25 yards long back-alley in the heart of Birmingham shopping centre. It contained just four shops, and it's a safe bet that the large majority of Birmingham people never knew of its existence.

Back in 1935 no. 4 shop in the passage carried on the business of retailing fishing tackle under the direction of J. P. Morton & Co., who employed, as assistant salesman, Mr E. L. Winnert. Mr Winnert was personally responsible for a window display of a 24 in. by 12 in. by 12 in. decorative coldwater aquarium which was a great novelty with the public and attracted much attention, aquarium fishes in those days being rarely seen outside zoo aquariums. Among the interested sightseers were two gentlemen, Mr W. E. Barrett and Dr K. S. Thompson, both of whom possessed coldwater aquaria of their own.

Their interests were such that they were often tempted into the shop, where they became engaged in 'fishy conversations' with Mr Winnert. Inevitably there were times when all three were together inside the shop, sometimes being joined by other interested customers. These friendly chats became so animated that it gradually dawned in the minds of the 'three' that an Aquarists' Society would afford better opportunities of discussing their favourite hobby. There were no such Societies in the Midlands in those days and the writer has spent many hours interestedly listening to tales from these early aquarists of their experiences whilst travelling to and fro between the Midlands and London, where then there existed two or three clubs.

As a result of all this, Mr Winnert circulated letters to several persons, calling for a meeting at the Queen's Hospital, Birmingham on the 3rd April. Dr Thompson was pathologist at the hospital and the meeting took place in his study. The study was actually separated from the mortuary by a thin brick wall, whilst the respective entrance doors were side by side. Of course, the inevitable happened: one person who turned up for the meeting mistook the door, wondered why there was no response to his knocking, and somewhat timorously walked in. His exit was much more precipitate than was his entry!

Sixteen people attended and were entertained by Dr Thompson, who spoke on 'Some practical aspects of the Disease of Pond and Aquarium Fish'. The primary object of the meeting, of course, was the formation of a Society. The matter was fully discussed and a chairman and committee formed of the following: chairman, Dr K. S. Thompson; secretary, Mr N. W. Gilbert; asst. sec. and treasurer, Mr E. L. Winnert; and Mr F. A. Eversden, Mr W. E. Barrett, Mr A. Menzies, Mr D. Bailder, Mr C. P. Paget-Jones. Incidentally, some of these members

are still very actively engaged in the hobby and have retained their membership. One or two, in fact, are internationally known.

The first meeting of the committee was held at the secretary's home on the 11th April, 1935, when the Society was formed and given the title 'Midland Aquarium and Pool Society'. Subscriptions were fixed at 10s per member. It was also decided to publish a journal and the following members were made responsible for this: Dr Thompson, Mr Gilbert and Mr Bailder.

Seven committee meetings were held before the end of the year. Unfortunately, minutes of monthly general meetings were not kept and so the chance of reading an interesting record was lost. An exhibition of aquaria was held at the Chrysanthemum Society Show in Bingley Hall, Birmingham, the M.A.P.S. utilising an area of 20 ft. by 20 ft. An account was opened with the West-

By T. L. DODGE

minster Bank and the princely sum of 62s 6d deposited therein.

The first annual general meeting was held at the Chamber of Commerce on the 17th September, commencing 8.30 p.m., and one item of interest that occurred was the Society decision to limit the number of professional committee members to half that of the amateurs. To apply this proportion Mr Zenas Webb and Mr A. B. Coleman were elected to the committee as amateur members. Subscriptions were amended to 5s per member instead of the previous 10s. It was also apparent that the fair sex had to be considered; accordingly a family subscription of 7s 6d was inaugurated.

The Society journal was the subject of a lot of hard work and discussion which took place over a long-protracted period. It was eventually published and distributed at a cost of 9d each, in January 1936. It was an excellent and professional type journal which did great credit to the organisers and the Society. The main matter contained therein was the report of meetings held at the Chamber of Commerce and were almost word-for-word as per shorthand notes taken by Miss Coleman. Articles by well-known people in the hobby and general items of information were also incorporated. There was even a colour plate of a garden pool on the front cover. Unfortunately THE POOL & HOME AQUARIUM was too much



The M.A.P.S. Show Committee responsible for last year's most successful Midland Open Show photographed on the M.A.P.S. Stand. The impressive array of trophies and shields on display are competed for annually and will be in the hands of new winners next month

for the Society funds to maintain and the project had to be abandoned with the second issue. Some copies of these two issues are still in the hands of older members of M.A.P.S. and are regarded as valued treasures.

Halfway through 1936 the Society was beginning to feel its feet. At the second A.G.M., held on the 12th May the secretaryship changed to that of Mr D. E. H. Knight. A show committee was formed and consisted of the following members: Dr Thompson, Mr Barrett and Mr Builder. A Show was held at the Chrysanthemum Society Exhibition in Bingley Hall and the M.A.P.S. used 100 ft. of tabling; Mr Barrett acted in the capacity of judge. Eight coldwater classes and one tropical class were catered for and attracted an entry of 62, four entries being made by the judge but marked 'Not for Competition'. It must be remembered that these were the early days of organised fishkeeping and very few indeed were the enthusiasts who kept tropicals.

By 1937 the Society considered itself sufficiently experienced to run an Open Show independent of other organisations. The secretary assisted the Show Committee in arranging such a Show at the Botanical Gardens, Edgbaston. The Show was of one day duration and proved most successful. Thus encouraged, the fourth Show was also arranged by the Society at that venue and held on Saturday, 22nd October, 1938. Ten coldwater and two tropical classes were catered for and brought in the record entry of 150 exhibits. Judging was ably performed by Mr C. C. Perkins of Bristol, who gave the best fish in the Show award to Mr Barrett's telescopic-eyed calico veiltail. Owing to the peculiarities of the regulations concerning independent competitions at the Botanical Gardens, no monetary profit could accrue but the Society gained much in prestige and the name of the Midland Aquarium and Pool Society was making itself known.

By the beginning of 1939 membership had grown to 100 and it was becoming increasingly difficult to provide a variety of fare at all monthly general assemblies. Lectures had always been conducted by the more experienced members and were usually of very excellent quality. However, the membership cry was for fresh faces and so a committee decision was made to engage speakers from outside the Midlands.

During the war years, of course, there were no meetings and Society activities became non-existent. However, meetings were resumed in 1945 with a general assembly on the 17th October, and to accumulate immediate funds a levy of 2s 6d per member was made. Several old faces were missing but, in the main, the assembly was representative of the pre-war membership. Mr E. A. Mason, who was chairman at the outbreak of hostilities, was again elected to the chair, Mr Zenas Webb became vice-chairman and Mr D. E. H. Knight was secretary and treasurer. The rest of the committee comprised Mr N. W. Gilbert, Mr H. Cotton, Mr J. Graham-Keys, Mr E. L. Winnert, Mr J. S. Vinden, Mr G. Taylor and Mr H. J. Capener. (This was truly a powerful committee, several of the members being, and still are, very well known in the hobby, not only in the Midlands but all over the world.) Subscriptions were raised to 10s per member and were not increased again until 1966, when they were doubled.

Matters proceeded steadily enough for a year or two, and then in 1947 came the decision to promote the first post-war Open Show, and it was the ambition of the committee to make it a really large Show. There was less than £5 in the kitty and absolutely no other assets of any kind. One committee member offered, gratis, the loan of his extensive motor car show rooms, just off the City Centre, and went to lots of trouble and expense clearing the way for aquaria equipment to be erected. Staging was loaned by courtesy of the Public Works Department. Twelve members got together in parties of twos and threes to make as many 12 in. by 10 in. by 8 in. show tanks as possible, at their own private residences. The frames, glass, putty etc. were purchased at wholesale prices and there was a Society understanding that, after the Show, to pay invoices, members would buy the aquaria at 12s each and so put enough money in the coffers to clear all accounts. The Show proved such a success, with entries from all over the country, that it was not necessary to sell any of the aquaria; in fact, the Society finished with a neat credit balance in the bank.

About this time several members living outside the immediate Birmingham area were finding one meeting per month insufficient outlet for their enthusiasm. Hence the birth in 1948, or thereabouts, of Societies at Coventry,

Walsall, Solihull, Smethwick, West Bromwich, Wolverhampton etc., some of whom affiliated to the M.A.P.S., for honorary membership.

November, 1949 saw the formation of the Show committee, elected for the purpose of organising Shows and Exhibitions for the Society. It was to be a permanent committee with its own bank account, and empowered to elect its own officers and members, provided that they were members of the M.A.P.S. This Show committee is still going strong and very active in the various branches of the hobby.

December, 1949 also saw the first real change of secretaryship to that of the writer, Mr D. E. H. Knight retiring after 13 years of excellent and enthusiastic service to the Society.

Matters progressed so satisfactorily, both with the promotion of Open Shows and from a social aspect, that the Society had to find bigger premises for the monthly meetings, which were getting an average attendance of 60 members. A move to new headquarters at the Central Y.M.C.A., where better facilities were enjoyed, was accordingly made and the first meeting there attracted an attendance of 115. The Shows were proving very successful indeed, and four open events were promoted during 1949-50, two for coldwater fishes only and two for tropical fishes (tropical fishkeeping, at this stage, was rapidly overtaking the coldwater fancy and entries at open shows were just about breaking even). These successes, however, proved a double-edged sword, because the work involved in organising and holding two comparatively large shows per year was too much, even for the M.A.P.S.

On the other hand, the show rooms so generously loaned to the Society, gratis, although rather extensive were not large enough for a modern Show catering for both coldwater and tropical fancies. Consequently enquiries were made for more commodious premises and

the secretary, with tongue in cheek, found himself in the sacred sanctum of Bingley Hall Offices telling a pathetic tale to the highly professional Custodian. Very much to his (secretary's) surprise he was given a sympathetic hearing and the M.A.P.S. 'were in'. The first Show at these very spacious premises involved an expenditure that, had it failed, would have put the Society in the red for years. Fortunately things went very well indeed and the 3 days' Show drew a combined coldwater and tropical entry of 525.

Since these comparatively early days the 'Midlands Show', as it has come to be called, has made steady progress and now ranks as one of the largest, and the best Show of its kind in the country. There have been several offers of sponsorship by external organisations but all have been rejected. It is felt that it is a Show organised by the hobby for the hobby and the Society prefer to keep it that way, and so long as there is enough money in the kitty and Society members willing to roll up their sleeves and have a go, it will remain the M.A.P.S. 'Midlands Show'.

Much water has flowed under the bridge since that first meeting in April, 1935. The society's progress has not always been upwards; adversities have been experienced, changes have taken place and rules altered but always the M.A.P.S. have pulled through until today it is one of the most powerful and influential aquarists' societies in the country. Very few of the older faces remain but the present membership is alive to the traditions and their activities influence the hobby the world over.

The story does not end here; it is the narrative of a small Society who, through the energy and activities of its membership, rose to giant status, and it could yet prove the inspiration of existent small Societies who are pondering the wisdom or otherwise of entering the open market with Shows of their own.

Readers' Queries Answered



Sign of Pollution

I have been keeping mouth-breeders for the last 3 months and have bred quite a few. Recently, in one of the tanks I have noticed a few little white worms clinging to the glass. I have studied them under a microscope and watched their behaviour and find them so far to be quite harmless. But I would like to know what they are.

The small white 'worms' are in

§§

themselves harmless creatures (they are actually giant protozoans), but their presence does indicate that they find the water conditions favourable to their growth. They feed on bacteria and the overgrowth of these and other micro-organisms happens when organic materials on which they feed have dissolved in such amounts that the water has become a culture medium for them. The source of these materials can be the

fish (particularly in overcrowded tanks without plants), the plants (when they are dead or dying in unlighted situations), or uneaten dried foods which have rotted in the water. It is this 'rich' water that could be harmful to the fishes and not the worm-like protozoans (*Spirontomon*) themselves. The water in the tank should be changed, a third a time over a period of several days. Is gravel being used in the tank? And if so, is it quite clean or has it gone black underneath? If it has, the gravel should also be removed and the tank set up again.

More queries overpage

A Safe Food

I would like to know if it is possible for earthworms to spread disease in the community tank through the dirt that they carry?

Earthworms do not spread disease in a tank; they do not come from an aquatic environment where there might be parasitised fish or other aquatic animals carrying diseases transmissible to the fish, so they are blameless in this respect. Large pieces of uneaten earthworm will, of course, help to cause pollution of the tank water itself and the earthworm should be prepared for feeding

by cutting or shredding into pieces of a size suitable for the tank occupants.

Pet Jack Dempsey

*I would like to know if it would be safe to put a 2½ in. Jack Dempsey in a large tank which already holds a 9 in. black shark, two 6 in. tinfoil barbs and a 4 in. *Mystus vittatus*. I know he is very aggressive but will he harm fish this size? I now need the breeding tank in which he has been kept and I do not want to do away with him as he is a pet.*

Cichlasoma biocellatus did not

receive the name of a famous prize-fighter for nothing. At the size mentioned he will 'tolerate' the other occupants, but the day will come when he will 'find his feet' and you will arrive home to cowered tank occupants and maybe dead or dying fishes. These fish should be kept either solo or with fishes of their own kind and size. As he ages his colours will become really brilliant and they do become very tame. With a longevity record of around 10 years, there should be plenty of time to train him to take scraps of food from the fingers.

What's New?

Comprehensive Catalogue

FOR a comprehensive view of the equipment at the disposal of the modern fishkeeper one has only to scan the pages of the new catalogue issued by Keith Barraclough of Bradford. The range and choice would surely have seemed unbelievable to hobbyists even a few years ago.

The catalogue itself is a most handsome production. Almost every item mentioned is illustrated by line drawing or photograph and carries a few lines of description and advice. The items are grouped under page headings and the whole enclosed in a most attractive coloured cover portraying discus fish.

Marine Fish Remedy

A NEW product for the marine aquarist is now being marketed by North Agencies of London and

distributed solely through the International Marine Study Society. This is **Marina no. 1**, a scientifically prepared formula for combating velvet disease (*Oodinium*) in marine

fishes, and it is also suitable for use with freshwater fishes. The fact that it is harmless to invertebrates makes its advent particularly welcome in the marine tank.



New fountain and waterfall pump for garden pond owners, operating on 24 volts from a mains transformer. See 'The Super Cascade' below

The Super Cascade

A NEW fountain and waterfall pump comes on to the market from Elsworthy Electronics Ltd. Called the **Super Cascade** (and retailing at 8 guineas), an outstanding feature lies in the technique by which the im-

pellor is driven. Because it is coupled to the motor by a magnetic force, it has been possible to house the motor in a separately sealed moulding that eliminates the possibility of water leakage into the motor housing. The Super Cascade operates on a safe voltage of 24 volts and is supplied with a completely enclosed mains transformer and adjustable fountain rose and waterfall outlet.

Pond Plants in Variety

A selection of marginal and submerged pond plants as suggestions for the pondkeeper

By D. B. McINERNY

***Iris pseudacorus*:** height 2-3 ft.

This iris can often be found at the edges of British streams. It is tough and strong and easily moved. It bears large golden yellow flowers; after the flowers enormous seed pods are produced and these need to be removed to prevent masses of young plants from seeding themselves. A very showy iris.

***Iris sibirica*:** height 3-4 ft.

There are many named varieties, all of which are beautiful, in a range of colours—white, pale blue, purple and violet, or these colours with white. They have more slender leaves and flower stems than the common yellow iris.

***Mentha aquatica*:** height 2-3 ft.

Often known as the freshwater mint, it certainly has a minty smell, but is not as sweet as ordinary garden mint. The leaves are somewhat hairy with serrated edges, dark green above and tinted purple beneath. It throws several heads of rich lilac-coloured flowers. During the summer months masses of runners grow out at water level and these must be trimmed back or the plant will spread beyond bounds.

***Menyanthes trifoliata*:** height 1 ft.

Although this plant does not grow more than 1 ft. tall, it sends out long shoots, sometimes 4 or 5 ft. in length, across the pool. The leaves grow from stems above the water and are always borne in threes, hence the name. The flowers are pure white on the inside and pink outside, and in the centre of the fringed petals there is a red stamen. The blooms have a feathery appearance and are very sweet scented, not unlike broad bean blossom—and thus it has earned the nick-name of bog bean.

Myriophyllum proserpinacoides

This plant rarely exceeds 6 in. in height, but like the bog bean sends out long stems at water level. It does not bear conspicuous flowers, but the foliage forms great feathery heads of pale green which poke

upward out of the water. It is a tremendous grower and can form dense mats over the water surface, but these are easily shortened by chopping back. It will withstand the constant rain of a fountain, one of the few plants to do so. It is not always frost-proof, but mine has survived throughout the last four winters, including the very severe winter a few years back; this may have been partly due to the fact that the shortened-back mats were so dense that the inner stems received some protection from the outer ones.

***Pontederia cordata*:** height 2½ ft.

There are not many blue-flowered aquatic plants, but this is one of them. It sends long stems outward and upward on which are borne large heart-shaped, deep green leaves. These are tightly curled to start with but unfurl gracefully. The stem continues and produces a furry spike which is covered with blue flowers, like miniature lilac heads. Unfortunately there is a tendency for the growing stems to spread outwardly at an angle of 45 degrees instead of standing straight upright. Nevertheless it flowers in abundance and is strongly recommended.

***Sagittaria arifolia*:** height 2-3 ft.

The plant produces a central stem from which green, heart-shaped leaves branch out, and carries spikes of scented white flowers; though more unusual, it is well worth having.

***Scirpus zosterifolius*:** height 3-4 ft.

A most effective rush resembling the quills of a porcupine, but these are banded horizontally in alternate patches of green and white. Plant in a sheltered spot if possible, as strong

winds will often break the quills which then hang down here and there rather untidily. A few quills sometimes appear without the zebra-banding but give them time to reach at least 12 in. in length and if they are still entirely green cut them off as low as possible. The flowers are somewhat like dried grass seeds, but it is a most effective rush and always provokes admiration.

***Typha stenophylla*:** height 3-4 ft.

Another slender rush, often erroneously known as a bulrush, which it is not. The leaves are flat, though the stems bearing the flower heads are round. These flower heads are brown and furry and typical of the flower spikes of the bulrush.

***Lythium salicaria*:** height 2-3 ft.

The purple loosestrife is an attractive showy plant, the stems are woody and are not really round, being more square in section. The leaves grow horizontally from the stems and the flower spikes terminate in reddish purple blooms. There are other varieties of different shades, ranging through pink, red and mauve.

***Orontium aquaticum*:**

height 12-18 in.

Another plant that can be grown in deeper water in the centre of the pond or as a marginal. As a marginal the leaves will stand above the water; in deeper water they will often float on the surface. The leaves are deep rich green. Flat and oval in shape except that the end of the oval are more pointed. Each is coated with a protective wax and when first under water they catch the light and look like polished silver. The flower heads are borne on curving stems and take the form of

a long, pointed spadix, densely packed with small yellow blooms (somewhat like miniature golden pokers rising from the water). The plant is deep rooted and requires a fair depth of soil to do well.

Polygonum amphibium

Planted in shallow water the stems grow 2-3 ft. along the surface. The leaves in summer are bluish green but change to a reddish colour in autumn. The plant bears spikes of pretty pink flowers and is very like the polygonum flower on rockeries where there is no water.

Elyceria spectabilis: height 18-24 in.

Not a flowering plant but an ornamental grass. The foliage is striped with tints of green, yellow and white. In the autumn, before dying back, the foliage turns a pinky red.

Limnanthemum hypnoides

Another plant that will grow in

6-18 in. of water. The heart-shaped leaves about 2 in. across borne on thin stems are a light green but mottled with brown blotches. These lie flat on the water surface. The flowers, like miniature water lilies, stand 1-2 in. above the water. They are fringed and pale gold in colour. When established in deep water the plants can grow like huge water lilies and bear leaves 6 in. across.

Myosotis palustris
(water forget-me-not)

Too well known to need much description, it prefers a shady location where it will grow 9-12 in. in height. It bears pale blue flowers resembling the land forget-me-not.

Preslia cervina: height 12-15 in.

An uncommon attractive aquatic, it has single stems with narrow leaves and bears spikes of lavender

blue flowers. A rather dainty plant but hardy.

Typha minima: height 12-18 in.

This is a miniature rush with quill-like stems of deep green. It bears brown flower heads similar to the bulrush, except that these are almost round, like brown puff-balls.

Zantedeschia aethiopica
var. little gem

Strange as it may seem, this is the African arum lily, quite often grown on land but rarely in water, though in Africa it can be abundant in swampy places. Provided that it is planted in a pot and submerged 8 or 9 in. to escape frost it will survive our winter. In very severe winters the pot can be lifted and placed in a basin of water and kept where it will not freeze. It grows about 12 in. high and produces the sweet-scented arum lily too well known to need further description.



GUPPY

World

By
PETER UNWIN

True, this can be affected by treatment and environment in the hands of the breeder but it doesn't alter the fact that, at puberty, our fish are ready to pass on to their offspring what they have to offer.

Yet a recent letter from a reader showed that he thought the half-grown guppy and the fully matured fish each contained different hereditary material and as a consequence never mated his guppies until they were 4 or 5 months old.

What a lot of wasted time and effort, to say nothing of extra food and electricity he wasted following this dictum; instead of crossing them earlier, as do most first-class breeders.

• • •

This time of the year sees the awakening of that annual ritual, the aquarium show. Those who spent some of the winter months reflecting on why they hadn't been so successful on last year's benches might bear in mind the advice that very often the difference between a first prize and an also-ran is often just a few points, and coming under that heading are the odd marks for 'deportment'.

Fish having just spent the winter in the confines of a large aquarium don't take too kindly to the confines of a glass show jar and they show their displeasure by dropping to the bottom of the container and giving

a favourable impression of a learner driver struggling bravely with the intricacies of the clutch.

This could be avoided if your fish were acclimatised to the show jar, gradually over the weeks before the show. For using that little forethought you should take full marks!

• • •

Do you allow your fish to grow to full size before mating them? Why? From the moment of fertilisation when the male sperm makes contact with the female ovum, the future progeny are endowed with a built-in packet of genes, computed to control their future development.

Quote from the American magazine NEW YORKER: 'In my travels it is bound to happen that subjects often come up for discussion that are not directly connected with the breeding of guppies.' You leave the room, of course!

PRACTICAL

JOTTINGS

ONE thing that surprises me is how difficult it is to eradicate aquarists' pet fallacies. Repeatedly I am asked by aquarists whether extra heat on its own will cure white spot. The answer to this question is, I think, that raising the temperature to say 85-90°F (29-31°C) is, at best, a very unreliable form of treatment and also weakening, or even lethal, to many varieties of fishes.

Mysterious Disappearance

Heat used alone seems to work sometimes, but then I have observed the disease disappear from an experimentally infected tank without any treatment whatsoever and in spite of my attempts to keep it going! A modest degree of heat (80°F; 27°C) is an adjunct to almost any form of treatment (quinine, mercurochrome, methylene blue, chloramine etc.), as it hastens the life cycle of the parasite and thus cuts short appreciably the period of treatment.

Since hot water holds less oxygen in solution than water at cooler temperatures and, as the parasite is to some extent susceptible to oxygen lack, no doubt at very high temperatures it finds it difficult to carry on its life processes. But the simple fact remains that to rely on extra heat alone to eradicate the disease from the tank is courting disaster. That has been my experience at any rate.

One can see how this fallacy about the heat treatment arose and is perpetuated. The reasoning behind it runs something like this. Mercurochrome plus heat cures white spot. Quinine plus heat cures white spot. Methylene blue plus heat cures white spot. Acriflavine plus heat cures white spot. Therefore the conclusion is made that the common factor, heat, is responsible for the cures and not the various drugs. There is about as much logic in this reasoning as in the conclusions drawn by the student who became inebriated on Scotch and soda, brandy and soda, and gin and soda on successive nights and made the brilliant deduction that soda water must have been the intoxicating fluid!

What is 'Natural'?

To the aquarist, 'nature' and 'natural' are important words, for one can hardly discuss any piscine topic without some naturalist reminding us that what we have done or intend to do is unnatural. The word 'natural', of course, means very different things to different people.

When we talk of fishes in their natural surroundings, we really mean fishes in the wild state, in the rivers, ponds and the sea. Does it therefore follow that fishes kept in aquaria are in unnatural surroundings? Most of the fishes that we keep in our tanks have been aquarium-

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

bred for scores, even hundreds, of generations. Surely to them the aquarium is their normal and 'natural' habitat? If they were transported to rivers and ponds, that would be a very unnatural surrounding indeed for them.

The idea that this mysterious 'natural' state is the ideal and that, as aquarists, it is our job to imitate Nature, is, in my opinion, highly overrated. Learning from Nature is, of course, a different matter. I like to know how fishes live and breed in the wild state. I like to know the temperature and the chemistry of the water they live in, but I have no intention of slavishly imitating these conditions in my tanks, because I do not think that would lead to success.

The problems facing me and Nature are very different. I want to keep 50-odd fish in a small aquarium—in Nature that quantity of water, on average, would house rather less than one fish! In Nature, probably one or two fishes survive to maturity from a spawning, the rest are eaten up or destroyed by disease or starvation. I would like to do a lot better than that. I want to rear a few hundred fish from a spawning. I want to see them healthy and well fed.

The problems are different, and hence the method of solution must be different. Mere imitation is bound to fail. All the ingenuity of man must step in with his heaters, thermostats, pumps, filters, dried foods, cultured foods and what have you, to achieve this end.

A non-discerning admiration of Nature is as detrimental to successful fishkeeping as would be the refusal to learn from observations made in Nature.

Temperature Variation

We all know that most tropicals experience considerable fluctuations of temperature during the course of the day and that the surface layers in stagnant ponds are bound to be appreciably warmer than the water at the bottom of the pool. From these natural observations, some might advocate that these conditions should be mimicked in the aquarium. There are, in fact, some aquarists who believe that such fluctuations improve the health and vitality of fishes.

There is, however, no concrete reason to believe this to be so; indeed, hundreds of aquarists maintain a more or less uniform temperature of about 78°F (25°C) in their tanks and the fishes are none the worse for it.

I fail to see why because a thing is natural it should also be the best for the creature concerned. The fishes probably enjoy and benefit from variations in temperature just about as much as we enjoy fogs and blizzards, but they live through them just as we do; they have little choice in the matter. If an aquarist gives them perennial warmth and light wherein lies the objection?

Some years ago, to utilise the heat that is normally lost from the electric lamps used to illuminate my aquaria, I fixed them so that the glass portion of the lamps was

immersed in water. At first, I burnt the lamps only a few hours a day, but as time went on I forgot to switch them off and in the end I left the lamps on more or less indefinitely day and night. In fact this went on for about two years, when I decided to end the experiment and try out a different lighting system.

No doubt, all this was entirely unnatural and according to some it might have a detrimental effect on the fishes and the plants and cause algae to smother everything.

However, these things just did not happen. Algae trouble was encountered but once the plants really got going algae disappeared from the tanks and formed only on the lamps. The fish and fry did very well indeed. I bred large numbers of livebearers and egglayers as well as ever before and the plants grew in abundance. In fact, with plants grown under such unnatural conditions (virtually no daylight reached the tanks, which were housed in a cellar) I took many first prizes at shows.

Thus we see that even a considerable deviation from natural conditions, such as giving the fishes continuous light for a prolonged period, produces no detrimental result.

Most animals, including fishes, caught in the wild harbour a few or many parasites and suffer from one or more diseases. This is to be expected for, after all, Nature has to look after the welfare of both the pests and the fishes! The aquarist, with only unilateral obligations, however, is not satisfied with this state of affairs, so, with drugs, he kills off the parasites and cures the fishes.

Quality of Wild Fishes

A few years ago I saw some angels and tiger barbs that

had been caught in the wild; their colour was poor and the fins were tattered and scarred. The tiger barbs looked very thin and flat in the belly. This was exactly the condition they were in when caught from their natural waters and they would certainly have won no prizes at a show.

In the wild state, there is fierce competition for available food; in fact the size of an animal colony is dependent upon the total available food. Starvation is the cruel, ruthless whip by which Nature controls the numbers in an animal colony. Imagine what would happen if every fish in every spawning found food to grow up on and reach maturity; the waters would be solid with fishes!

Life is a constant struggle, with the proverbial survival of the fittest; the not so fit and the small serve as food for the larger fishes. There is little doubt that the average expectancy of life for a fish in the wild must be much less than that in an aquarium maintained by a competent aquarist. The fact that some fishes in the wild grow to a larger size than aquarium-kept specimens does not militate against the concepts expressed here.

Sometimes Nature can do better than we can, on other occasions we can improve on her work. The large numbers of colourful fishes, fighters and livebearers in particular, bear silent but certain testimony to this fact. None but a fanatic would insist that the beautiful veiltail guppies and the colourful fighters are not more attractive fishes than the wild specimens seen in Nature.

The admiration of the unquestionable beauties of Nature should not be accompanied by belittling the achievements of man. There is much we can learn from Nature but we have a few tricks up our sleeves also!



Personal COMMENT

by
ARPEE

From recent issues of PFM it had seemed to me that there had been a marked decrease in the concern expressed about the level of disease in fish. Then came the May issue, with the Editorial Comment mounting an especially strong attack on the seller of diseased stock. Since I have consistently campaigned against such menaces in this column I can only applaud the lead taken and hope that it will be sustained.

There seem to me, however, to be several factors which will have to be taken into account at the present time which will have to be resolved before we can expect much improvement. First and foremost, the current economic policy is designed to reduce consumer spending on luxuries, and however much we may argue that hobbies are not really in this category, they inevitably suffer when

the pay packet is restricted. Presumably therefore we are spending less on non-essentials, and I imagine that the trade, saddled with Selective Employment Tax as well, is having a rather thin time of it. How one can expect significant improvements under these circumstances I cannot imagine; we have got to get solvent first, apparently, and this will take time.

Another factor is that, at this time of the year the average 'mixed' dealer emerges from the winter trade in tropicals into the spring and early summer stampede of the pond trade. When one looks at what he is faced with, it is hardly surprising that things get overlooked, and if some spot develops in a tank unnoticed, this is one of the counterbalancing seasonal hazards. It seems to me that there is a tremendous lot of hysterical advertising on the subject of outdoor ponds (they have got into the status symbol category, and this always means trouble for someone!)—hence dealers are briefly overwhelmed with a passing demand and are left to contemplate their 'ich' after the goldfish have been disposed of.

Where these dealers are to get the requisite space for

Continued on page 167

FOR THE KILLIEFISH FANCIER

Aphyosemion nigerianum

Photographs by the author



Male *Aphyosemion nigerianum*

By RUDOLF ZUKAL

IN the year 1933 this fish was imported to Europe from tropical West Africa under the name of *Aphyosemion calliurum calliurum* and later also as *Aphyosemion calliurum ahli*. In the year 1963 Herr H. Stenhold Clausen named these egg-laying toothcarps again.

In its home this species thrives in the marshes near Arum, at the foot of the Jas Plateau in the north of Nigeria. In tropical Africa there are very many *Aphyosemion* species and sub-species; interbreeding often takes place and the expert has no easy task in correctly differentiating many fishes of the family, and I am also of the opinion that they will not always be successful in this.

The occurrence of this fish is almost completely confined to the water areas of Nigeria, hence its specific name. Until the present day this fish has not been found outside Nigeria (according to Clausen).

There are two clearly distinguishable colour forms of *Aphyosemion nigerianum*. One has yellow markings on the fins and the other has blue or white on the fins. The body form is strong and robust, the forward-jutting lower jaw making the shape appear more powerful. The often sketched typical dorsal fin is broadly fan-shaped and not pointed. The tail fin is spade-shaped and without filaments.

Water should be at 72°F (22°C), in a medium size or smallish tank, and a good selection of vegetation with floating plants put in. Soft water, slightly acid, is best. The fish are not suited to a community tank as they accept only living food. They keep to the middle layers of the water. They are peace-loving, not at all aggressive, but they like to spring out of the water and it is therefore important to have a glass cover. The males spar harmlessly with one another.

Breeding presents no specific difficulty. The temperature is raised to 77°F (25°C). The fish spawn in fine-leaved plants. During spawning the male is very pugnacious, and sometimes the female will be killed. If one puts in more females to one male, or even more pairs,

Translation by F. MARSH

Spawning Behaviour of *A. nigerianum*

Continued from page 163



Typical 'fighting' postures adopted by the males are shown by the fish in this picture. With widespread fins they do 'battle' with one another by exchanging blows with their fins. This sparring does not result in any damage

One male can be used in a spawning tank with two or more females and this can be safer than using a pair alone since the male can damage or kill his mate if pugnacious



this difficulty is overcome. During the spawning period about 100 eggs will be obtained from one pair. After the spawning the parents can be taken away. After 3 weeks the females will again be 'full' and one can set them to spawning once more.

The fry hatch after 14 days and when they are swimming freely finest living food must be provided. After 6 months they are fully developed, although one should not use them for

breeding before 9 months. The best and most valuable spawning times are autumn and winter, but in my own experience this fish spawns with good feeding at any time of the year. There are several methods of propagating these fish successfully.

The pair, which for at least 14 days have been separated, are put into a small tank, e.g. 10 in. by 6 in. by 6 in., with soft, slightly acid water. Almost to order, the fish spawn in

Java moss or similar grass. Almost all *Aphyosemion* species show this willingness to spawn. One can, as already said, put two or more females to a male.

Method A. We can leave the fish in the tank for 14 days, that is so long as they are spawning. The eggs are

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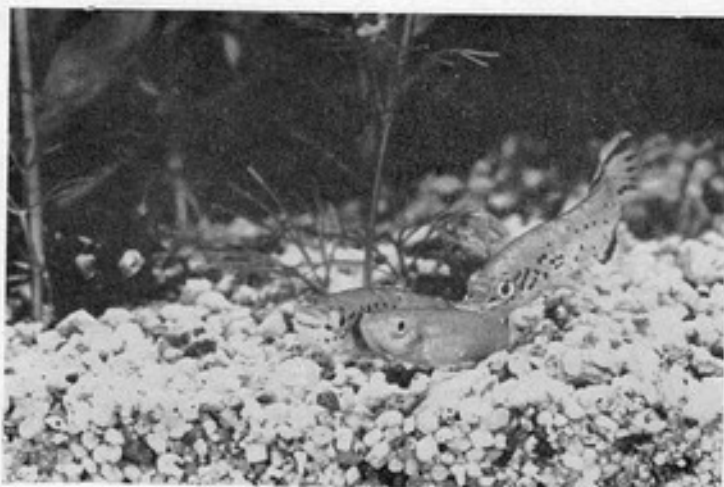
The spread fins of this male indicate that he is displaying to the female whilst following her and swimming around her



By diving headfirst into plants on the aquarium base the male tries to interest the female in spawning

As the pair swim close to the bottom side by side another female approaches from the left and appears to want to join in





In this picture the pair are seen close together in the spawning position on the gravel and being approached by a second male

From above the spawning pair are seen to lie with the dorsal fin of the male "wrapped" over the female's body



not usually eaten by the parents, if they have enough other nourishment. At the end of this time the first young fish are already hatching and we can convey them with a spoon into another tank with the same kind of water. The young fish are susceptible to changes in the water. As they hatch one after another, they grow disproportionately, and one grades them for size so that they do not devour each other. When they attain a length of about $\frac{1}{4}$ in. and are well

fed, there is no more danger.

Method B. This is the method I use. I leave the couple to spawn for a day. Afterwards the parents are taken out, the water depth is reduced to one half, and the tank darkened. After about 14 days the young hatch and, of course, at the same time. The work of grading is lessened.

Method C. With this method the parents are also removed, and the eggs are taken out by means of a glass dip tube and kept in a separate

bowl. After the removal of the eggs we can put another pair of fish in the breeding tank. The young fish hatch in the bowl and are then put carefully into a tank with similar water.

Not only these fish, but also other *Aphyosemion* species, will spawn in a community tank in the presence of other peace-loving species. Here again one can remove the eggs during the spawning by sucking up with a glass tube, for the spawning fish are not easily disturbed.

Personal Comment

Continued from page 162

quarantining, I do not know. Certainly, it is their problem, but since we, the consumers, insist that they also stock a dozen sizes of plastic pools, every sort of pump and fountain and (ugh!) possibly the plastic elves and toadstools, too, we are not making things exactly easy.

A third restraining factor is the utter stupidity on the part of numerous members of the hobby who don't give their dealer a chance of quarantining fishes, even if he wanted to. They pester the life out of him to order all sorts of fishes and hang around him, even at the railway station when they arrive, in the hope of picking up some superb specimen which they can pop into a show in a few weeks' time. Under such conditions the strongest falter and agree to sales they know in their consciences they should never agree to. There is, of course, the difference between the dealer who knowingly sells a bad fish and the normally conscientious chap who undergoes a temporary aberration. The former is unspeakable, and I make these comments on behalf of the latter, since we all make mistakes sometimes.

How to improve things? Here I disagree with the Editorial that not much can be done at present. I think a lot could be done if those many dealers who did care instructed their Trade Association to get itself interested. If you are buying flowers you may go to a shop with the Interflora sign in the window with the reasonable knowledge that if you have a complaint about standards there is some court of appeal behind the dealer to which you can address yourself. A set of standards backed by a similar sign in dealers' windows would at least indicate that this one or that one had identified himself with them and would presumably back them with a reasonable guarantee.

There is little doubt that the fishkeeping public can help, too, by pointing out to the dealer any disease they may observe in a tank which is not clearly marked with a quarantine notice. This is really most important, I think, as many a dealer may have disease in his tank and genuinely not see it because he sees the tank every day and it always looks the same. If he resents your observation, then you can categorise him with the unspeakables, but I have never encountered anything but appreciation on the part of the dealer, who usually knows too well what damage a dented reputation can do to his bank balance.

I must say that I think a universally adopted quarantine label would also help. It has to be prominent and categorical, and quite unlike the scrawled 'No sale' notices so often found on aquaria containing doubtful stock. It would also be politic when disease is present to indicate on the notice what the disease is, since neither the dealer nor the buyer can possibly fail to benefit from the gratis education. I very much hope that the Editor's plea for the highest standards in this connection will bring forth a written response from some of the dealers up and down the country. I believe that most of them are right behind the idea, and if they can only identify them-

selves as I have suggested above it will not be difficult for those who collect fish to direct their custom towards them, and away from those whose interests lie elsewhere. I somehow think this subject will not rest with this article, and if it helps stir some consciences it will have served its purpose well.



Tailpiece. With winter now well out of the way I have been showing increasing interest in the local ponds as possible sources of *Daphnia*. One rather murky tree-fringed pool used by local cattle is potentially a crock of gold, but the yield has always been low; as compensation, glass larvae have been plentiful, and my tetras always seem to relish these beyond belief. The children lured me into the fields on a cowslip collecting expedition on one of those rare days in late spring when the weather and Nature had combined to reveal what incredible beauty there still is in the countryside, and we finished up at an old waterhole, where pleasure at finding a good steady source of *Daphnia* was dampened by the discovery of an abandoned wild duck's nest containing a full clutch of eggs. Whether this arose from a natural tragedy or a trigger-happy finger, I do not know, but it was a sad sight; the smaller water birds are all part of the aquatic scene, and I often wonder why those of us with garden ponds do not give greater thought to the possibilities of keeping some of the decorative ducks. On more general matters, the winter breeding programme has been a bad one in terms of some of the more difficult varieties I had hoped to condition, but I think that this was because I left it rather late in the year before selecting the breeding stock. I now leave things well alone till after the summer holidays, as it is always an anxiety to leave fry in the care of others, however experienced they may be, and in any case the break from routine does provide one with an opportunity of looking over one's organisation more critically than is normally possible during the remainder of the year.



members' own show, with two new cups making a total of 14 to compete for; and the 'Jim Kelly Show' presented at the Guiseley Town Hall. Larger premises have had to be found to house the influx of new members. A total membership of 75 now meets at the Co-op Hall, Otley Road, Guiseley, nr Leeds (secretary, Mr G. E. Walker, 2 West End Terrace, Guiseley).

ALL expectations of members of TROWBRIDGE & D.A. & P.S. were surpassed by the 568 entries benched at their third annual open show. Entries came from Portsmouth, Barry, Llantwit Major, Cardiff, Newport, Taunton, Yeovil, Bristol, Bath, Bridgwater, Salisbury, Stroud etc. and the entry that perhaps attracted most attention was a 9-inch piranha that took first place in the characin class of 53 fishes. The Society and committee were very grateful to judges Mr R. Wigg, Mr K. Farrant, Mr A. Mately, Mr V. Capaldi and Mr F. Brown for their outstanding work in judging so many entries, and to all who helped to make the show a success—the members and wives who provided the refreshments, the traders and those who provided the raffle prizes and the 500 visitors who attended.

The best coldwater fish, and the best fish in the show award went to Mr W. Reeves for his shubunkin and the best tropical fish was judged to be the clown barb owned by Mr F. Brown. Detailed results were:

Coldwater. Goldfish: 1, Mr C. Cass; 2, Mr C. Pearce; 3, Mr W. Reeves. Shubunkins: 1 and 2, Mr W. Reeves; 3, Mr J. Wheeler. Fancy goldfish: 1, Mr B. Harding; 2 and 3, Mr W. Reeves. A.v. pond and river: 1, Mr J. Stillwell; 2, Mr M. Butcher; 3, Mr C. Pearce.

Tropical. Guppy, male: 1 and 2, Mr J. Wheeler; 3, Mr G. Carter. Guppy, female: 1, 2 and 3, Mr J. Wheeler. Swordtails: 1 and 2, Mr M. Salisbury; 3, Mr W. Corrick. Platys: 1, Mr B. Lewton; 2, Mr A. Rogers; 3, Mr S. Steers. Molliis: 1, Mr B. Harding; 2, Mr J. Parsons; 3, Mr J. Wheeler.

Characins: 1, Mr C. Gorseill; 2, Mr C. Hawks; 3, Mr A. Cox. Babels: 1, Mr F. Brown; 2, Mr J. Nye; 3, Mr D. Warrant. Danios: 1, Mr J. Lowden; 2, Mr C. Craddock; 3, Mr D. Warrant. Rasboras and minnows: 1, Mr J. Parsons; 2, Mr W. Corrick; 3, Mr M. Patrick. Dwarf cichlids: 1 and 2, Mr C. Craddock; 3, Mr F. Gibbs. A.o.v. cichlids: 1, Mr R. Wooley; 2, Mrs Fitzgerald; 3, Mr J. Parsons. Angels: 1, Mr R. Pope; 2, Mr C. Pearce; 3, Mr A. Cox. Fighters: 1, Mr J. Wheeler; 2 and 3, Mrs King. Labyrinth: 1, Mr P. Halliwell; 2, Mr B. Harding; 3, Mr R. Brown.

A.o.v. catfish: 1, Mr F. Brown; 2, Mr K. Clough; 3, Mr A. Cox. Corydoras: 1 and 2, Mr B. Harding; 3, Mr F. Brown. Botias, loaches, eels: 1, Mr M. Hazel; 2, Mr F. Brown; 3, Mr J. Wheeler. Toothcarps: 1, Mr R. Hemming; 2, Mr J. Powell; 3, Mr J. Almad. A.o.v. tropical: 1, Mr R. Brown; 2, Mr E. Shree; 3, Mrs J. Wright.

Breeders. Coldwater: 1, Mr C. Pearce. Tropical livebearers: 1, Mrs Wright; 2, Mr D. Warrant; 3, Mr J. Wheeler. Tropical cichlids: 1, Mr W. Gadd; 2, Mr B. Lewton; 3, Mr E. Scudamore.

Furnished jar: 1, Mr J. Parsons; 2, Mr R. Chard; 3, Mr D. Boding.

National Furnished Show



After assessment of the entries: judges Mr G. Reid (Kilmarnock), Mr G. Skinner (Wakefield), Mr B. Pengilly (Burnley) and Mr A. G. Jessopp (London) are seen talking to Mr Jim Kelly (left, back to camera) on the stand of PFM at the Show

AT the National Furnished Aquarium Show in Bradford last month 96 tanks were staged, although not all of these were entered for the competition.

The best aquarium exhibit in the Show was judged to be the tank arranged by Mr G. Binks (Leeds, 81½ points). Other results were: 2, Mr J. E. Taylor (Blackpool, 80½); 3, joint award (77½), Mr D. Shields (Halifax) and Mr M. Stray (Halifax); 4, Mr S. Hill (Riddings, 76½); 5, Mr J. E. Taylor (Blackpool, 76); 6, Mr and Mrs R. Stringer (Leeds, 75½); 7, Mr F. H. D. Vicker (Ilford, 75½); 8, Mr S. Hill (Riddings, 74½); 9, Mr J. Goodison (Bradford, 72). The prize for the best marine aquarium exhibit in the Show was awarded to Mr P. Moorhouse (Huddersfield, 78).

OVER 20 societies have now entered for the Aquarium Society Tableaux section of THE AQUARIUM SHOW to be held at the Royal Horticultural Society Old Hall, Vincent Square, London S.W.1, 7th-10th November. Closing date for entries to this section is 31st July and full details of entry for Society Tableaux were included in last month's issue of PFM. THE AQUARIUM SHOW is sponsored by PFM and organised with the co-operation of the Federation of British Aquatic Societies.

THE ISLE OF WIGHT A.S. elected the following committee at their annual general meeting. Chairman, Mr W. G. Jones; vice-chairman, Mr D. Crisp; secretary, Mr E. T. Davison (The Aquarium Cafe, 89 High Street, Old Village, Shanklin); treasurer, Mr E. L. Davis; show secretary, Mr J. Hobbs; curator, Mr J. Woods; committee, Mr S. Stevens, Mr Nolan, Mr R. Norman, Mr J. Bradley. The Society's annual dinner and social has also taken place and trophies were presented to the year's prizewinners. The Points Challenge

Cup was awarded to Mrs J. Hobbs (runners-up, Mr E. T. Davison, Mr A. West), who also received the Ladies Cup. The best tropical fish award went to Mr J. Nolan and that for the best coldwater fish to Mr T. Bradley, who also won the Novice Cup (coldwater). Mr S. Stevens received awards for the best furnished tank, best plant and the Guppy Cup. Mr E. T. Davison received the Tetra Cup, Mr R. Norman the Novice Cup (tropical), Mr D. Crisp and Mr I. Salter received the annual Achievement award. Anyone interested in the hobby of fishkeeping on the Isle of Wight who would like to join in the club's many activities will be warmly welcomed at the meetings held on the fourth Wednesday of each month at Leigh Richmond Hall, Newport, and Mr Davison, the secretary, will supply all further details.

THURROCK A.S. had no doubts about the success of their first-ever open show. When the society's president, Mr R. Nicholls, thanked 'one and all' for the wonderful support given he included the exhibitors of the 333 fishes benched, the 12 furnished aquaria submitted, members of other societies and the many enthusiastic club members and their wives whose hard work was so successful that it would seem the open show must become an annual event.

Of the special awards made, the Nicoll Cup for the best breeders team went to Mr R. Kerridge (Harlow); the Durrant Rose Bowl for the best catfish, loach or eel to Mr S. Mooney (Tottenham); the President's Shield for best characin, Mr A. J. McArthy (Catford); the Appleyard trophy for best labyrinth, Mr D. Durrant (Thurrock); the Essex Cup for best livebearer, Mr J. D. Wilson (Catford); Thurrock Cup and gold pin for best fish in the show, Mr S. Mooney (Tottenham); F.B.A.S. Championship trophy for best cichlid, Mr B. Harvey (North Kent); Killifish Tankard for best egg-laying toothcarp, Mr R. Nicholls (Thurrock).

Judges Mr A. Jessopp, Mr C. Creed and Mr C. A. T. Brown made the following further awards:

A.v. guppy: 1, Mr R. Savage (unattached); 2, Mr L. Goet (Bethnal Green); 3, Mr T. Asquith (Catford). A.v. mollie: 1, Mr T. Asquith (Catford); 2, Mr K. Appleyard (Thurrock); 3, Mr T. D. Smith (Brent). A.v. platy: 1, Mr J. D. Wilson (Catford); 2, Mr F. E. T. Smith (Catford); 3, Mr R. Nicholls (Thurrock). A.v. swordtail: 1, Mr P. O'Bryan (Thurrock); 2, Mr J. Hartlebury (Thurrock); 3, Mr J. D. Wilson (Catford). A.v. fighter: 1, 2 and 3, Mr D. Durrant (Thurrock). A.o.v. labyrinth: 1, Mr F. E. T. Smith (Catford); 2, Mr B. Harvey (North Kent); 3, Mr R. Fox (Brent). A.v. danio, rainbow, minnow: 1, Mr A. J. McArthy (Catford); 2, Mr R. Nicholls (Thurrock); 3, Mrs I. Salisbury (Harlow). A.v. barb: 1, Mr

CIRCUMSTANCES beyond their control have made it necessary for **CHELTHENHAM & D. A.S.** to postpone their annual open show that was to be held on 7th July. The new date is 12th October at the Ambulance Headquarters Hall, 86 Gloucester Road, Cheltenham.

A. J. McArthy (Catford); 2, Mr M. A. Jones (Eritb); 3, Mr B. Martin (Bethnal Green). A.v. Corydoras catfish: 1, Mr S. Mooney (Tottenham); 2, Mr W. R. Sharwin (Willesden); 3, Mr H. S. Wood (Croydon). A.o.v. catfish, loach or eel: 1, Mr T. D. Smith (Brent); 2, Mr G. Greenhall (Kingston); 3, Mr B. Martin (Bethnal Green).

A.v. characin: 1, Mr A. J. McArthy (Catford); 2, Mr G. Greenhall (Kingston); 3, Mr T. D. Smith (Brent). A.v. cichlid: 1, Mr B. Harvey (North Kent); 2, Mr B. Martin (Bethnal Green); 3, Mr S. Mooney (Tottenham). A.v. egg-laying toothcarp: 1, Mr R. Nicholls (Thurrock); 2, Mr J. Mason (Southend); 3, Mr B. Challenger (B.K.A.). A.o.v. tropical: 1, Mr B. Harvey (North Kent); 2 and 3, Mr C. Swinburne (Brent).

Breeders egg-layers: 1, Mr F. H. Vicker (East London); 2, Mr S. Mooney (Tottenham); 3, Mr J. D. Wilson (Catford). Breeders livebearers: 1, Mr R. Kerridge (Harlow); 2, Mr G. Greenhall (Kingston); 3, Mr F. R. Williams (Tottenham). Furnished aquaria: 1, Mr K. Appleyard (Thurrock); 2, Mr D. Durrant (Thurrock); 3, Mr S. Hendle (Thurrock).

WARRINGTON A.S. members pitted their skill against the experts recently when over 50 of them joined in an amateur judging contest. Winner of the competition was Mr Arthur Addison whose entry differed in only one instance from the results later announced by the Official judges, and he received a voucher cashable at the local pet store. Although fish judging may be for the more advanced fishkeeper, the beginners in the Society were well catered for when show secretary, Mr Jim Higham, gave an excellent lesson in glass cutting and the glazing of an aquarium. Because of the regular influx of new members the committee now think it advisable to hold sessions for beginners periodically and the second half of this meeting was devoted to a discussion by a panel of speakers on all aspects of fish-keeping and the pitfalls likely to discourage the enthusiastic newcomer to the hobby.

Members are at present working towards the provision of a new Society badge and at club meetings a secondary raffle is being held, with all prizes donated by members, tickets sold speedily at small cost and the proceeds added to the badge fund. There is still room for a few more members at club meetings and local societies are invited to send representatives along to any meeting. Recent table show results have been the following.

Swordtails: 1, Mr T. Durr; 2, Mr J. Sefton; 3, Mr R. Tench. Platys: 1 and 2, Mr

R. Tench. Guppies: 1 and 2, Mr B. Worrall; 3, Mr T. Durr. Mollies: 1, Mr R. Tench; 2, Mr D. Heaton; 3, Mr B. Worrall. A.o.v. livebearer: 1, Mr Alcock; 2, Mr R. Tench. Small characins: 1, Mr J. Higham; 2, jointly, Mr A. Addison, Mr Baker, Mr R. Tench; 3, Mr T. Durr. Large characins: 1, Mr Massey; 2, Mr R. Tench; 3, Mr B. Bewick.

BRIGHTON & SOUTHERN A.S. welcomed members from **EASTBOURNE A.S.** to compete in a two-way match in which classes were live-bearers, characins and barbs with four entries per class being benched by each club. Altogether there were some 60 members present from both clubs at this most enjoyable meeting. Mr Ted Jessopp had been invited to officiate and, after he had explained how he had pointed each entry, he declared that the home club were the winners by 19 points to 11. Eastbourne members were congratulated on making such a very good effort and in turning out in great numbers.

Because members had previously enjoyed a slide-tape lecture loaned from the F.G.A. it was decided to hire another and this again proved enlightening and most enjoyable. Entitled 'A Matter of Breeding', it included a variety of good colour slides showing various aspects of the hobby for both the beginner and the advanced aquarist. The commentary was by Mr Jim Kelly and included an explanation of water requirements, filtration and foods.

MEMBERS OF NEW FOREST A.S. have enjoyed a most varied year, as the reports of their club officers showed at their recent annual general meeting. The show secretary reported improvements in both numbers and standards on visits to Winchester, Portsmouth, Poole, Salisbury and Southampton. Exhibitions had been held at Eling Fair and at a local horticultural show and a home furnished aquarium competition successfully organised. The secretary was able to report that average attendance was higher at meetings that had included five slide lectures, a talk on fish breeding and several quizzes. Club member Mr A. Williamson was congratulated on 'getting into print' and chairman Mr J. Jeffery announced that a monthly newsletter was now in production.

Officers for 1968-69 were then elected. Chairman, Mr J. Jeffery; secretary, Mr R. Travers (6 Auckland Avenue, Brockenhurst, Hants, SO4 7RS); show secretary, Mr D. Harding; treasurer, Mr D. Letts; committee members, Mr A. Williamson, Mr C. Knapp, Mr K. Hinton; hon. auditor, Mr D. Hare. Annual awards were also presented to the following. Tropical points trophy: 1, Mr D. Harding, Mr M. Lee; 3, A. & C. Knapp; 4, Mr R. Travers. Coldwater trophy: 1, Mr L. Men-

henett; 2, Mr A. Williamson; 3, Mr D. Letts; 4, Mr R. Travers. Travers Breeders trophy: A. and C. Knapp. Tropical furnished aquarium, A. & C. Knapp. Tropical Champion: 1, Mr D. Harding; 2, Mr A. Williamson; 3, Mr J. Jeffery; 4, Mr B. Menhenett. Coldwater Champion: 1, 3 and 4, Mr L. Menhenett; 2, Mr A. Williamson. Champion fish were judged by Mr Stillwell of Portsmouth.

MR R. MOORCROFT of Merseyside won the best fish in the show award at the LEIGH A.S. open show. Fish enthusiasts attended from a wide area and good support was received from many societies. Awards were made to the following competitors.

Guppies: 1, Mr R. V. Brothwood (Gorton); 2, Mr W. Smith (Merseyside); 3, Miss C. Brothwood (Gorton). Platys: 1, Miss B. Kaye (Huddersfield); 2, Mr R. Preston (Belle Vue); 3, Miss P. White (Leigh). Swordtails: 1, Mr and Mrs Grimshaw (Sunnybrook); 2, Mr J. Shepherd (Salford); 3, Mr H. Greenall (Leigh). Mollys: 1 and 2, Mr and Mrs Standen (Loyne); 3, Mr M. Jones (Valley). Small characins: 1, Mr and Mrs Grimshaw (Sunnybrook); 2, Mr M. Jones (Valley); 3, Mr and Mrs Standen (Loyne). Large characins: 1, Mr J. Murray (Belle Vue); 2, Mr R. Moorcroft (Merseyside); 3, Mr D. Thomalla (Merseyside). Small barbs: 1, Mr J. Boardman (Leigh); 2, Mr and Mrs Grimshaw (Sunnybrook); 3, Mr and Mrs Webb (Salford). Large barbs: 1, Mr and Mrs Grimshaw (Sunnybrook); 2 and 3, P. & H. (Gorton). Dwarf cichlids: 1, Mr D. Thomalla (Merseyside); 2 and 3, Mr W. Smith (Merseyside). Large cichlids: 1, Mr R. Moorcroft (Merseyside); 2, Mr R. Preston (Belle Vue); 3, Mr A. Matthias (Leigh). Anabantids: 1, Mr P. Ledgard (Ramsbottom); 2, Mr James (Leigh); 3, Mr R. Preston (Belle Vue). Toothcarps: 1 and 2, Mr J. Boardman (Leigh); 3, Mr J. Roberts (Nelson). Loaches: 1, Mr and Mrs Webb (Salford); 2, Mr J. W. Hogg (Leigh); 3, Mr Hemshaw (Belle Vue). Catfish: 1, P. & H. (Gorton); 2, Mr C. Brothwood (Gorton); 3, Mr R. Moorcroft (Merseyside). Sharks: 1, Mr Leaver (Leigh); 2, Mr Norris (Warrington); 3, Mr Yates (Leigh). A.O.V.: 1, Mr and Mrs Grimshaw (Sunnybrook); 2, Mr Boswick (Warrington); 3, Mr D. Thomalla (Merseyside). Danios and rasboras: 1, Mr Cadman (Chorley); 2, Mr D. Thomalla (Merseyside); 3, Mr J. Boardman (Leigh).



In LONDON—this year!

THE AQUARIUM SHOW sponsored by PFM and organised with the co-operation of the F.B.A.S. 7th-10th November at the Royal Horticultural Society Old Hall, Vincent Square, London S.W.1. Fishkeepers will be showing the public what their hobby is about, according to the theme of **THE AQUARIUM SHOW: 'Fishkeeping in Home, Garden and School'**.

Coldwater: 1 and 3, Mr Walsh (Accrington); 2, Zelds (Leigh). Junior: 1, Master D. Bond (Leigh); 2, Master Richens (Leigh); 3, Miss J. Peet (Leigh).

Breeders. Six egg-layers: 1, Mr J. Shepherd (Salford); 2, Mr Curstow (Loyne); 3, Mr K. Townsend (Lytham). Six livebearers: 1, Mr J. Shepherd (Salford); 2, Mr R. V. Brothwood (Gorton); 3, Mr D. Ridyard (Leigh). Egg-layer pairs: 1, Mr J. Shepherd (Salford); 2, Mr and Mrs Webb (Salford); 3, Mr and Mrs Grimshaw (Sunnybrook). Livebearer pairs: 1, Mr D. Ridyard (Leigh); 2, Mr R. Preston (Belle Vue); 3, Mr J. Yates (Leigh).

'A MOST interesting and informative evening' was the verdict of members of ENFIELD & D. A.S. on their 'Any Questions' meeting. A panel of experts, composed of Mr B. Collins of Walthamstow, Mr D. King (chairman of Edmonton F.G.A.),

Mr J. Jarvis, P.R.O. of Harlow, Mr Mather, secretary of Walthamstow and the club's own chairman, Mr J. Coleman, answered questions on a wide range of aquatic subjects put to them by club members. Mr J. Duncan of Harlow judged the table show for characins and Mr T. Mann was placed first and second for bleeding heart tetras and Mr C. Grant third with the same species.

The club is pleased to announce that member Mr B. Senior is now an F.A.B.S. 'B' class judge. Also announced is the society's Dinner/Dance at the George Hotel, Enfield on 21st September. Members of other clubs would be very welcome and can obtain details from Mr E. Wittaker, 26 Shirley Road, Enfield.

THE result of the inter-club table show that PORTSMOUTH A.S. held with WORTHING A.S. was a victory for the guests by 20 points to 10. Judge Mr R. Masley awarded the points in the following way. Barbs: 1, Worthing (89, spanner barb); 2, Worthing (88, golden barb); 3, Portsmouth (87, B. binotatus); 4, Portsmouth (86, rosy barb). Livebearers: 1, Worthing (91, guppy); 2, Worthing (84, guppy); 3, Worthing (83, guppy); 4, Portsmouth (75, lyretail molly). Danios: 1, Portsmouth (87, giant danio); 2, Worthing (86, spotted danio); 3, Portsmouth (84, pearl danio); 4, Worthing (80, zebra).

At the Society's own table show for characins and cichlids (judged by Mr Stillwell), Mr C. Beets won the best fish in the show award when his cardinal tetra received 81 points. Characins: 1, Mr C. Beets; 2 and 3, Mr G. Marks (80, 79). Cichlids: 1, Mr S. Crabtree (75); 2, Mr E. Binstead (71); 3, Mr G. Marks (70).

Lectures at these meetings were given by Mr J. Howard and Mr M. Mason. Mr Howard spoke on amphibians and had many specimens with him that included an axolotl and a baby giant toad that could be about the size of a dinner plate when full grown. Mr Mason spoke on the art of fish photography and demonstrated his points with slides showing not only how the results should look but also how it should not be done!

WHEN HORSFORTH A.S. held its first inter-club show with SWILLINGTON, MIXENDEN and HALTON over 100 members and visitors attended. They were entertained, while the judging took place, by a film show given by chairman Mr R. Hampson. The points position at the end of the competition was: Horsforth, 27; Swillington, 20; Mixenden, 7; Halton, 1. Mr J. and Mr M. Linden of Swillington won the best in the show award. The list of

B.K.A. (London Group) News

THE OFFICERS for 1968-69 that the LONDON GROUP of the BRITISH KILLFISH ASSOCIATION recently elected at their annual general meeting are: chairman, Mr Dick Armstrong; treasurer, Miss Kay Bullbrook; secretary, Mr John Open (19 Dukas Court, 214 Peckham Rye, London, S.E.22); show secretary, Mr Ken Owen; assistant show secretary, Mr Norman Snelling. The retiring chairman, Mr Mick Packwood, reported a much improved membership and attendance in the past year and a rise from 16 members per meeting in 1966 to over 30 last year.

The new chairman, Mr Dick Armstrong, is also programme arranger and has produced a very varied programme for the year ahead, with a table show at each meeting, slide and tape shows, films, quizzes and fish auctions. Meetings start at 8 p.m. and visitors are very welcome. For the rest of the year, meeting venues and dates are: 22nd July, 22nd September and 25th November at 200 Wandsworth Road, South Lambeth, London, S.W.8 and 25th August, 28th October and 29th December at Woodlands, Mycenea Road, Westbourne Park Road, Blackheath, S.E.

henett; 2, Mr A. Williamson; 3, Mr D. Letts; 4, Mr R. Travers. Travers Breeders trophy: A. and C. Knapp. Tropical furnished aquarium, A. & C. Knapp. Tropical Champion: 1, Mr D. Harding; 2, Mr A. Williamson; 3, Mr J. Jeffery; 4, Mr B. Menhenett. Coldwater Champion: 1, 3 and 4, Mr L. Menhenett; 2, Mr A. Williamson. Champion fish were judged by Mr Stillwell of Portsmouth.

MR R. MOORCROFT of Merseyside won the best fish in the show award at the LEIGH A.S. open show. Fish enthusiasts attended from a wide area and good support was received from many societies. Awards were made to the following competitors.

Guppies: 1, Mr R. V. Brothwood (Gorton); 2, Mr W. Smith (Merseyside); 3, Miss C. Brothwood (Gorton). Platys: 1, Miss B. Kaye (Huddersfield); 2, Mr R. Preston (Belle Vue); 3, Miss P. White (Leigh). Swordtails: 1, Mr and Mrs Grimshaw (Sunnybrow); 2, Mr J. Shepherd (Salford); 3, Mr H. Greenall (Leigh). Mollys: 1 and 2, Mr and Mrs Standen (Loyne); 3, Mr M. Jones (Valley). Small characins: 1, Mr and Mrs Grimshaw (Sunnybrow); 2, Mr M. Jones (Valley); 3, Mr and Mrs Standen (Loyne). Large characins: 1, Mr J. Murray (Belle Vue); 2, Mr R. Moorcroft (Merseyside); 3, Mr D. Thomalla (Merseyside). Small barbs: 1, Mr J. Boardman (Leigh); 2, Mr and Mrs Grimshaw (Sunnybrow); 3, Mr and Mrs Webb (Salford). Large barbs: 1, Mr and Mrs Grimshaw (Sunnybrow); 2 and 3, P. & H. (Gorton). Dwarf cichlids: 1, Mr D. Thomalla (Merseyside); 2 and 3, Mr W. Smith (Merseyside). Large cichlids: 1, Mr R. Moorcroft (Merseyside); 2, Mr R. Preston (Belle Vue); 3, Mr A. Matthias (Leigh). Anabantids: 1, Mr P. Ledgard (Ramsbottom); 2, Mr James (Leigh); 3, Mr R. Preston (Belle Vue). Toothcarps: 1 and 2, Mr J. Boardman (Leigh); 3, Mr J. Roberts (Nelson). Loaches: 1, Mr and Mrs Webb (Salford); 2, Mr J. W. Hogg (Leigh); 3, Mr Hemshaw (Belle Vue). Catfish: 1, P. & H. (Gorton); 2, Mr C. Brothwood (Gorton); 3, Mr R. Moorcroft (Merseyside). Sharks: 1, Mr Leaver (Leigh); 2, Mr Norris (Warrington); 3, Mr Yates (Leigh). A.O.V.: 1, Mr and Mrs Grimshaw (Sunnybrow); 2, Mr Boswick (Warrington); 3, Mr D. Thomalla (Merseyside). Danios and rasboras: 1, Mr Cadman (Chorley); 2, Mr D. Thomalla (Merseyside); 3, Mr J. Boardman (Leigh).



In LONDON—this year!

THE AQUARIUM SHOW sponsored by PFM and organised with the co-operation of the F.B.A.S. 7th-10th November at the Royal Horticultural Society Old Hall, Vincent Square, London S.W.1. Fishkeepers will be showing the public what their hobby is about, according to the theme of **THE AQUARIUM SHOW: 'Fishkeeping in Home, Garden and School'**.

Coldwater: 1 and 3, Mr Walsh (Accrington); 2, Zelds (Leigh). Junior: 1, Master D. Bond (Leigh); 2, Master Richens (Leigh); 3, Miss J. Peet (Leigh).

Breeders. Six egg-layers: 1, Mr J. Shepherd (Salford); 2, Mr Curstow (Loyne); 3, Mr K. Townsend (Latham). Six livebearers: 1, Mr J. Shepherd (Salford); 2, Mr R. V. Brothwood (Gorton); 3, Mr D. Ridyard (Leigh). Egg-layer pairs: 1, Mr J. Shepherd (Salford); 2, Mr and Mrs Webb (Salford); 3, Mr and Mrs Grimshaw (Sunnybrow). Livebearer pairs: 1, Mr D. Ridyard (Leigh); 2, Mr R. Preston (Belle Vue); 3, Mr J. Yates (Leigh).

'A MOST interesting and informative evening' was the verdict of members of ENFIELD & D. A.S. on their 'Any Questions' meeting. A panel of experts, composed of Mr B. Collins of Walthamstow, Mr D. King (chairman of Edmonton F.G.A.),

Mr J. Jarvis, P.R.O. of Harlow, Mr Mather, secretary of Walthamstow and the club's own chairman, Mr J. Coleman, answered questions on a wide range of aquatic subjects put to them by club members. Mr J. Duncan of Harlow judged the table show for characins and Mr T. Mann was placed first and second for bleeding heart tetras and Mr C. Grant third with the same species.

The club is pleased to announce that member Mr B. Senior is now an F.A.B.S. 'B' class judge. Also announced is the society's Dinner/Dance at the George Hotel, Enfield on 21st September. Members of other clubs would be very welcome and can obtain details from Mr E. Wittaker, 26 Shirley Road, Enfield.

THE result of the inter-club table show that PORTSMOUTH A.S. held with WORTHING A.S. was a victory for the guests by 20 points to 10. Judge Mr R. Masley awarded the points in the following way. Barbs: 1, Worthing (89, spanner barb); 2, Worthing (88, golden barb); 3, Portsmouth (87, B. binotatus); 4, Portsmouth (86, rosy barb). Livebearers: 1, Worthing (91, guppy); 2, Worthing (84, guppy); 3, Worthing (83, guppy); 4, Portsmouth (75, lyretail molly). Danios: 1, Portsmouth (87, giant danio); 2, Worthing (86, spotted danio); 3, Portsmouth (84, pearl danio); 4, Worthing (80, zebra).

At the Society's own table show for characins and cichlids (judged by Mr Stillwell), Mr C. Beets won the best fish in the show award when his cardinal tetra received 81 points. Characins: 1, Mr C. Beets; 2 and 3, Mr G. Marks (80, 79). Cichlids: 1, Mr S. Crabtree (75); 2, Mr E. Binstead (71); 3, Mr G. Marks (70).

Lectures at these meetings were given by Mr J. Howard and Mr M. Mason. Mr Howard spoke on amphibians and had many specimens with him that included an axolotl and a baby giant toad that could be about the size of a dinner plate when full grown. Mr Mason spoke on the art of fish photography and demonstrated his points with slides showing not only how the results should look but also how it should not be done!

WHEN HORSFORTH A.S. held its first inter-club show with SWILLINGTON, MIXENDEN and HALTON over 100 members and visitors attended. They were entertained, while the judging took place, by a film show given by chairman Mr R. Hampson. The points position at the end of the competition was: Horsforth, 27; Swillington, 20; Mixenden, 7; Halton, 1. Mr J. and Mr M. Linden of Swillington won the best in the show award. The list of

B.K.A. (London Group) News

THE OFFICERS for 1968-69 that the LONDON GROUP of the BRITISH KILLFISH ASSOCIATION recently elected at their annual general meeting are: chairman, Mr Dick Armstrong; treasurer, Miss Kay Bullbrook; secretary, Mr John Open (19 Dukas Court, 214 Peckham Rye, London, S.E.22); show secretary, Mr Ken Owen; assistant show secretary, Mr Norman Snelling. The retiring chairman, Mr Mick Packwood, reported a much improved membership and attendance in the past year and a rise from 16 members per meeting in 1966 to over 30 last year.

The new chairman, Mr Dick Armstrong, is also programme arranger and has produced a very varied programme for the year ahead, with a table show at each meeting, slide and tape shows, films, quizzes and fish auctions. Meetings start at 8 p.m. and visitors are very welcome. For the rest of the year, meeting venues and dates are: 22nd July, 22nd September and 25th November at 200 Wandsworth Road, South Lambeth, London, S.W.8 and 25th August, 28th October and 29th December at Woodlands, Mycenea Road, Westbourne Park Road, Blackheath, S.E.

winners reads as follows.

Livebearers: 1 and 3, Mr P. Reynolds (Swillington); 2, Mr and Mrs J. M. Linden. Cichlids: 1, Mr S. F. Helm (Horsforth); 2, Mr J. and Mr M. Linden (Swillington); 3, Mrs J. Dickinson (Horsforth). Pairs, a.o.v.: 1, Mr R. Stringer (Swillington); 2, Mr J. Brown (Moxenden); 3, Mr M. Pollard (Horsforth). Catfish and loach: 1 and 2, Mr W. Audsley (Horsforth); 3, Mr A. Jobbings (Horsforth). Characins: 1 and 3, Mr M. Pollard (Horsforth); 2, Mr J. and Mr M. Linden (Swillington). Junior a.o.v.: 1, 2 and 3, K. Kirkbright (Horsforth). A.o.v.: 1, Mr V. I. Garforth (Moxenden); 2, Mr J. Brown (Moxenden); 3, Mr A. Paery (Halton). Barbs: 1, Mr P. Reynolds (Swillington); 2, Mr J. Callaby (Horsforth); 3, Mr C. Tate (Horsforth). Anabantids: 1, Mr J. and Mr M. Linden (Swillington); 2, Mrs P. Hall (Halton); 3, Mrs J. Dickinson (Horsforth).

MEMBERS of MID-HERTS A.S. were very active during the month of May at fish shows in their area. Fish were entered in the Freelance and Hendon shows and 25 entries were taken to Reading for benching. Members were successful at all these shows, though perhaps special mention should be made of the Hendon open where club member Mr B. Davison took the best fish in the show award with his albino tiger barb.

Work will soon be commencing on preparations for the Society's own open show, to be held on 21st September (see Dates for Your Diary). In the meantime, table shows at club meetings are also being very well supported—51 fishes were benched at the May table show. Results for the table show for cichlids and fighters were:

Cichlids: 1, Mr B. Savage (92); 2, Mr B. Davison (91); 3, Mr P. Barnard (88). Dwarf cichlids: 1, Mr P. Barnard (88); 2 and 3, Mr A. Withers (86, 85). Fighters: 1 and 3, Mr T. Summers (86, 77); 2, Mr C. Withers (85).

Some very interesting lectures have also been enjoyed. The club's president, Dr G. Cust, gave a most enjoyable illustrated lecture on his recent travels in Africa, and a film show was given by Mr T. Summers on angling.

YORK & D. A.S. members have been busily engaged with inter-society and open shows of late and four plaques and one 'very large rose bowl' have been won. The big event of the year, however, has been the Society's own open show, which was a great success with 366 entries benched. Mr R. J. Walker of Sheffield received the best fish in the show award for a very fine *Apistogramma ramirezi*. Class winners are given below.

Guppy: 1, Mr J. Thickbroom (Peatefract); 2, Mr G. Mowk (Aireborough); 3, Mr and Mrs J. M. Linden (Swillington). A.o.v. livebearers: 1, Mr H. Gardener (independent); 2, Mr T. Collinwood (Hull); 3, Mr T. Douglas (Hull). Barbs under 3 in.: 1, Mrs J. Fields (York); 2, Mrs S. Batty (Swillington); 3, Mr F. Buxton (Barnsley). Barbs over 3 in.: 1, Mr S. F. Helm (Horsforth); 2, Mr P. Iveson (Aireborough); 3, Mr M. H. Cooper

(York). Characins under 2 in.: 1, Mrs R. Robinson (Aireborough); 2, Mr J. M. Linden (Swillington); 3, Mr R. J. Walker (Sheffield). Characins over 2 in.: 1, Mr J. Whaley; 2, Mr N. Turner; 3, Mr A. G. Whyte.

Anabantids: 1 and 3, Mr A. E. Whitlock; 2, Mr D. Hockley. Cichlids, dwarf: 1, Mr R. J. Walker (Sheffield); 2, Mr M. Stray (Halifax); 3, Mr Chamberlain (Stockton). Cichlids, a.o.v.: 1, Mr K. Scofield (Barnsley); 2, Mr S. F. Helm (Horsforth); 3, Mr A. B. White (Keighley).

Carp and minnows: 1, Mr R. J. Walker (Sheffield); 2, Mr P. Barratt (Aireborough); 3, Mr A. G. Whyte (Halifax). Siamese fighters: 1 and 3, Mr R. N. Taylor (Aireborough); 2, Mr A. E. Whitlock (Tad-

caster). Catfish and loach: 1, Mr Toulmin (Stockton); 2, Miss J. Wiggins (White Rose); 3, Mr A. B. White (Keighley). Toothcarps, 1, Mr P. Rimmer (B.K.A.); 2, Mr D. Smith (Tadcaster); 3, Mr G. Pygott (York).

Breeders livebearers: 1, Mr T. Collinwood (Hull); 2, Mrs S. Batty (Swillington); 3, Mr G. B. Hawkaby (York). Breeders egg-layers: 1 and 2, Mr F. Buxton; 3, Mr A. G. White (Halifax).

Coldwater: 1, Mrs D. Hunt; 2, Mr A. Trotter (Cleveland); 3, Mr P. Johnson

Continued on page 175

Kingston A.S. Show Results

FISH from 25 clubs were benched at the KINGSTON & D. A.S. open show. From over 400 entries the best fish in the show award went to the *C. seterum* owned by Mr R. J. Thorne of Hounslow. The West London section of the F.G.A. judged the guppy entries. Detailed results were as follows.

A.v. sword or platy: 1, Mrs M. Nicoll (red sword); 2, Mr J. D. Wilson (moon platy); 3, Miss L. Stevens (black sword). A.v. molly: 1, Mr J. D. Wilson (velifera); 2, Mr B. Funnell (velifera); 3, Mr W. Corby (velifera). A.o.v. livebearer: 1 and 3, Mrs L. J. Thorne (*Léonia vittata*); 2, Mr T. J. Summers (*L. vittata*).

A.v. barb: 1 and 3, Mr A. J. McCarthy (rosy barbs); 2, Mr J. Eggeman (half-banded barb). A.v. characin: 1, Mr T. D. Smith (piranha); 2, Mr H. Armitage (blind cave tetra); 3, Mr R. Knock (bleeding heart tetra). A.v. cichlid: 1, Mr R. J. Thorne (*C. seterum*); 2, Mr P. A. Grosvenor (angel); 3, Mr R. Yorks (blue scar). A.v. danio, rasbora, minnow: 1 and 2, Mr R. Biggs (poorhole rasbora); 3, Mr W. D. Harper (giant danio). A.v. toothcarp: 1, Mr R. Stockwell (*Aplocheilichthys lineatus*); 2, Mr W. Challenger

(*Aphyosemion spurrelli*); 3, Mr W. Corby (*Aphyosemion calabaricum*).

A.v. Corydoras: 1, Mrs M. Nicoll (*C. julii*); 2, Mr T. J. Summers (*C. apassini*); 3, Mr K. Deyden (*C. aeneus*). A.o.v. catfish: 1, Mr G. Greenhalf (*Plec. rachelii*); 2, Mr R. T. McMullon (*Synodontis*); 3, Mr T. D. Smith (*Synodontis*). A.v. loach or botia: 1, Mr P. A. Ginger (*B. berdjanici*); 2, Mr M. Bartley (kuhi loach); 3, Mr R. Cooper (*B. siddhikanti*). A.v. labyrinth: 1 and 2, Mr J. D. Wilson (leeri and thicklip gouramis); 3, Mr R. E. A. Partridge (*Trichopoma pumilus*).

A.o.v. tropical egg-layer: 1, Mr T. D. Smith (fire eel); 2, Mr P. A. Grosvenor (*L. bicolor*); 3, Mr K. T. Clough (*L. bicolor*). Breeders egg-layer: 1 and 3, Mr F. H. Vicker (red fighters, *A. ramirezi*); 2, Mrs J. H. Partridge (*N. anomala*). Breeders livebearer: 1, Mr J. E. Oliver (blue limias); 2, Mr H. J. Thompson (velifera mollies); 3, Mr G. Greenhalf (merry widows).

Common goldfish: 1 and 3, Mr T. Longstaff; 2, Mr R. A. Dodkins. A.v. shubunkin: 1 and 3, Mr R. Whittington; 2, Miss D. Morris. A.o.v. fancy goldfish: 1 and 2, Miss D. Morris (metallic twintails); 3, Mr R. Whittington (bramblehead). A.v. native and foreign coldwater: 1, Mr R. E. Dudley (peacock eye bass); 2 and 3, Mr K. A. Melhuish (gudgeon).

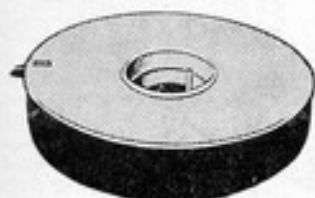
A.v. tropical pair: 1 and 2, Mr R. Biggs (*N. trifasciatus*; golden danios); 3, Mr R. Cooper (*Epiplatys orbicularis*).



Mr R. J. Thorne was the winner of best fish in the Kingston Show award with his *seterum* cichlid

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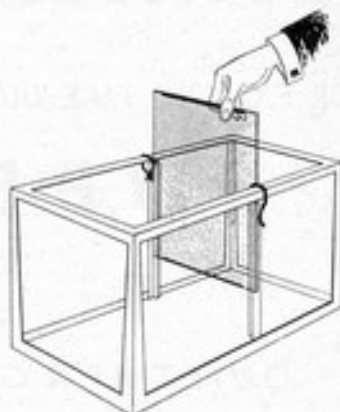
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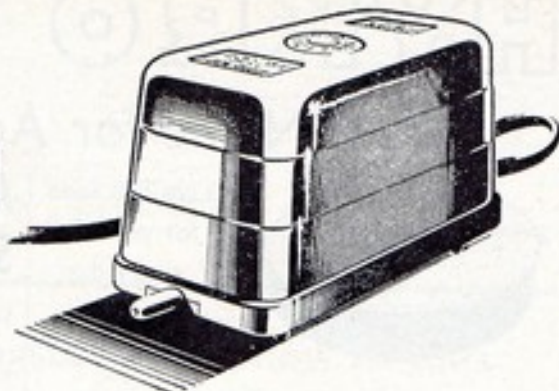
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Club News In Brief . . .

Continued from page 172

(York). A.O.V. 1, Mr P. Reynolds (Swillington); 2, Mr P. Casey (York); 3, Mr J. Brown (Mossenden). Matched pairs: 1, Mrs J. Hilde (York); 2, Mr and Mrs Stringer (Swillington); 3, Mr J. Brown (Mossenden). Furnished tanks: 1 and 2, Mr D. Shield (Halifax); 3, Mr G. Scarth (Cleveland).

ALTHOUGH the prolonged bus strike in Liverpool has made attendance at meetings difficult for some, members of **MERSEYSIDE A.S.** have been turning up in force for club table shows. There was a total of 50 entries for the show held at the end of April and results were:

Liverbearers: 1, Mr W. Smith; 2, Mr N. Peterson; 3, Mr J. Robinson. Medias: 1, Mr W. Smith; 2, Mr R. Moorcroft; 3, Mr J. Doherty. Barbs: Mr R. Moorcroft; 2, Mr K. Blair-Wood; 3, Mr N. Peterson. Characins: 1, Mr J. Robinson; 2, Mr W. Smith; 3, Mr N. Kirkby. Anabantids: 1 and 3, Mr P. Clarke; 2, Mr J. Doherty. Dwarf cichlids: 1, 2 and 3, Mr W. Smith. Catfish: 1, Mr J. Robinson; 2, Mr R. Moorcroft; 3, Mr N. Kirkby. Large cichlids: 1, Mr J. Doherty; 2, Mr N. Peterson; 3, Mr N. Kirkby. A.O.V.: 1, Mr N. Kirkby; 2, Mr R. Moorcroft. Pairs: 1, Mr P. Clarke; 2, Mr P. Cahler; 3, Mr R. Moorcroft. Rasboras: 1 and 2, Mr D. Broadbent; 3, Mr W. Smith. Juniors: 1 and 2, Mr Norman Kirkby; 3, Mr D. Moorcroft.

Club members paid a very enjoyable visit to the home of Mr and Mrs Thomas of Wirral Pets Ltd to see their stock of tropical marine fishes, including a trigger fish that is not only tame enough to be hand fed but enjoys being tickled with a planting stick!

NEWLY-FORMED COLWYN BAY & D.A.S. are now 20 members strong and have already a fine programme of activities under way. A visit has been made to the Marine Research Station at the Menai Bridge and a very successful *Daphnia* hunt held (this culminated in a visit to the local inn). A car rally and a treasure hunt with a fishy flavour were on the programme for June and a visit to Chester Zoo Aquarium and Tropical House is planned. An outing to collect from the beach and identify useful stones for the aquarium is also on the schedule.

It is hoped that the first issue of *Pisces*, a monthly newsletter, will be published shortly. The aim is to make this a regular feature that will contain much information of use to club members.

Any person, young or old, who is interested in joining in these activities is invited to contact the secretary, Mrs P. M. Hault (75 Cambrian Drive, Rhos-on-Sea, Colwyn Bay, Denbighshire) who will be very pleased to supply programme details.

... ALTHOUGH their main interest lies in tropical fish, members of **YATE & D.A.S.** much enjoyed the talk and slide show that Mr L. Emery, the well known breeder of coldwater fish, gave on the construction and stocking of garden pools. There should be many an aching back in the area this summer as a result of this talk. The table show was for *Hemigrammus*, *Hyphessobrycon* and a.o.v. characins. Results were: Open: 1 and 2, Mr F. Brown; 3, Mr D. Noble. Novice: 1 and 2, Mr D. Noble; 3, Mr S. Green.

... AT the beginning of the show season, Mr J. Wheeler was made very welcome by members of **BRISTOL T.F.C.** when he spoke on the best methods of bringing fish to show conditions, giving details of breeding, rearing and best conditions in which to keep the fish. Results of the table show for characins and Siamese fighters were: Open: 1, Mr J. Smith; 2, Mr D. Flower; 3, Mr G. Stone. Novice: 1, Mr J. Smith; 2, Mr D. Flower; 3, Mr B. Kilminster.

... AT the Annual general meeting of **DUNDEE A.S.** the following officers were elected. President, Mr F. McNaughton; vice-president, Mr D. Towns; secretary/treasurer, Mr R. Macdonald; show manager, Mr A. Inch; committee, Mr R. Brown, Mr P. N. Greening, Mr B. Hill, Mr J. McGeoghie, Miss E. Davidson; auditor, Mr A. Hastie; canteen manageress, Miss E. Davidson. Trophy winners for 1967/68 are: Scott trophy, Mr B. Hill; Member of the year, Mr W. Carstairs; Bruce Cup (guppies), Mr D. Perrie; Kamarhatti Cup (characins), Mr R. Baxter; Arnall Cup (catfish), Mr B. Hill; Baldozan (barbs), Mr J. McGeoghie; Davidson (dwarf cichlids), Mr J. McGeoghie; Pat Strachan (large cichlids), Mr B. Hill. Monifieth trophy (home-furnished aquaria), Miss E. Davidson; junior Member of the year D. Miller.

OWING to a misunderstanding, the notes about **BRACKNELL A.S.** in the May issue's *Badge of the Month* item did less than justice to **HIGH WYCOMBE A.S.**, who have also been winners in the *Three Counties League Competition*, and to fellow members of *Mr Les Jordan* who have also been voted 'Aquarists of the Year' during the past 5 years.

... SEVERAL MEMBERS OF **NOTTINGHAM & D.A.S.** have been achieving regular successes at open shows this year. Mrs I. Bullement has recently received a second in the breeders egglayers class and a third in catfish and loaches at Stockbridge, a second at Sheffield, and at Worksop a first in breeders, a second award toothcarps and a third loaches. President Mr C. Hill was awarded a second at Stockbridge, two thirds and a second at Sheffield, a second and two thirds at Worksop. At the Sheffield show, treasurer Mr Ken Binns won first prize in the large cichlid class and a silver cup for best large or small cichlid and a first in the large cichlid class at Worksop.

... **BRENT A.S.** have planned a very interesting and ambitious programme for the second half of this year and anyone wishing to join should contact the secretary at 97 Fleetwood Road, Dollis Hill, London, N.W.10. A recent lecture by Mr Len Smith of Bethnal Green A.S. proved most informative on many varied aspects of the hobby. Latest table show reports are: a.o.v. labyrinths: 1, Mr C. Hooper; 2, Mr R. Fox; 3, Mr J. Lime. Swordtails: 1, Mr P. Abbot; 2, Mr P. Shrimpton; 3, Mr B. Raymond. Platys: 1, Mr R. Fox; 2 and 3, Mr T. D. Smith. Best fish in the show: Mr C. Hooper.

... **CALLING WEST DULWICH, LONDON, S.E.21.** A new society, the **LAVENGRO A.S.**, has been formed. Meetings are held every other Wednesday at All Saints Church Hall, Rosendale Road, West Dulwich, London, S.E.21, and interested fishkeepers are invited to attend. Further details can be obtained from chairman, Mr William Newton (23 Lavengro Road, S.E.27).

... THE BEGINNER fishkeeper at **NEWPORT A.S.** was most thoughtfully catered for recently when the whole evening was devoted to subjects of interest to the 'learner'. Senior members lectured on such topics as elementary electrics, plants and planting, community fish and diseases. Table show results were: barbs: 1, Mr A. J. Payne; 2, Mr J. Lowndes; 3, Mr D. C. Bishop. Cichlids: 1, Mr J. Overland; 2, Mr J. Lowndes; 3, Mr A. Payne. Judge was Mr E. Myer. Plans for the Society's sixth open show in September are now well advanced, three judges having been appointed—Mr W. Holland and Mr G. Stone (Bristol) and Mr L. Nightingale (Keynsham).

... **NEW VENUE for STOCKPORT A.C.** Meetings are now held at The Three Tuns, off Princes Street, Stockport.

IS anyone looking for a good home for the monster in their tank that has long outgrown its welcome? The newly formed LAVENGRO A.S. will be pleased to offer it a home and can guarantee to take good care of it. They will arrange collection. All enquiries to chairman, Mr W. Newton (23 Lavengro Road, London, S.E.27).

... **BOURNEMOUTH A.C.** members very much enjoyed the comprehensive talk on coldwater fishkeeping that their chairman, Mr B. Coombes, gave at their May meeting. Mr Coombes illustrated his talk with specimens of coldwater fishes and plants in a tank that he had set up for the purpose and he also covered many allied subjects such as the general management of ponds, and the F.B.A.S. show standards of the fishes that he had mentioned.

... **CHANGE of secretary for CHELTENHAM & D.A.S.** Mr C. R. Surgeoner is the new secretary (1 Wymans Lane, Swindon Village, Cheltenham. Phone 56867).

... **FISHKEEPERS** in the Scarborough area. A new aquarists society has been formed (chairman, Mr R. L. Ingamells, 28 Ling Hill, Newby, Scarborough; secretary, Mr E. W. Dickinson, 110 Overdale, Eastfield, Scarborough) and interested readers who would like to join the **SCARBOROUGH A.S.** are invited to obtain further details from the chairman or secretary. Other officers are: treasurer, Mr N. Watson; committee, Mr F. Trotter, Mr J. Dickinson, Mr T. Gilfoyle, Mr Daglesh.

... **LEAMINGTON & D.A.S.** have been admirably entertained recently by fellow club members. Mr Bob Sharp spoke about photography and the do's and don'ts connected with producing a good photograph; and at a later meeting Mr Sharp and his brother presented a slide show of fish illustrated on postage stamps. The M.A.L. show for which the society were the host club was successfully presented, with **BEDWORTH A. & P.S.** taking every prize except one—a third in the breeders class that went to Mr P. Taggart.

... 21 entries were judged by Mr D. Thomson at the **RUGBY & D.A.S.** table show for livebearers. Results were: Guppies: 1 and 2, Mr R. Delday; 3 and 4, Mr C. Hands. A.o.v. livebearer: 1 and 2, Mr and Mrs G. Thomas; 3 and 4, Mr B. V. Woolterton. Breeders livebearers: 1 and 2, Mr H. Harris.



Badge of the Month

NORTH WARWICKSHIRE A.S. was formed in December 1959 and meets twice a month at The Settlement, Kingstanding Road, on the north side of Birmingham. Members are active at inter-society and open shows and have entered stands at the B.A.F. at Belle Vue. On several occasions they have taken the first award in the society stand competition at the Midland Open.

... **AT the third meeting of EALING & D.A.S.** the temporary committee was re-elected as follows: chairman, Mr L. Sandfield; vice-chairman, Mr G. Enever; treasurer, Mr D. Church; secretary, Mr R. Barrett (8 Grove Court, Grove Road, London, W.5); Mr C. Ankin, Mr R. Sellers, Mrs W. Church. Mr R. Savage was elected as show secretary, in which post Mr C. Rainbow was unable to continue for domestic reasons.

... **A NEW address for the secretary of CRAWLEY COLLEGE A.S.** Correspondence should be sent to Mrs J. H. Partridge at 29 Dedisham Close, Furnace Green, Crawley, Sussex.

... **LATEST results in the Scott trophy table show competition from DUNDEE A.S.** Large cichlids 1, Mr Brian Hill; 2 and 3, Mr Albert Hastie. Angels and pompadours: 1, Mr G. Mitchell; 2, Mr R. Brown; 3 and 4, Mr G. Mitchell Junior, 1, D. Miller. At the **DUNDEE-PERTH** inter-club competition a total of 76 entries were benched and of these 49 came from 14 Dundee A.S. members.

... **GOSPORT & D.A.S.** have elected the following officers. Chairman, Mrs J. Wright; secretary, Mr M. J. Ellick (5 Ankerwyke, Rowner, Gosport), treasurer, Mrs J. Wright; committee, Mr Sandfield, Mr Bridgon, Mr Grey, Mrs Sandfield, Master Perman. The show secretary is elected after the open show and is at present Mr K. Clough (16 Newport Road, Gosport).

... **WHILE members of BLACK-WATER A.C.** were still feeling expansive as a result of being entertained by the slide show of the 1967 B.A.F. the chairman asked all

members with cars to purchase car stickers advertising club activities. No less enjoyment was felt at the lecture by Mr Ed Nicholls of Thurrock on the selection of fish, which members found most helpful.

The Society's offer to furnish a tank in the rest room for the aged has been gratefully accepted by the local hospital. Anyone in the area can now join the club at a reduced rate and should contact Mr E. Gee, Park View, Chelmsford Road, Purleigh, or Mr D. G. Kempen, 47 Hall Estate, Goldhanger, Maldon, Essex.

... **37 MEMBERS** attended the first monthly meeting of the newly formed **TONBRIDGE & D.A.S.** in Dowgote Hall, where they enjoyed a very interesting and wide-ranging talk on the hobby from Mr A. G. Jessopp, chairman of the F.B.A.S. Mr Jessopp covered such diverse points as the identification of fish, setting up an aquarium, breeding and showing; he gave answers to members many questions.

... **A NEW society** has been formed in Huddersfield, to be known as the **TOP TEN A.S.** The first two meetings produced very encouraging results with 21 members registered. The club meets fortnightly on Monday evenings at the Top Ten night club, Northgate, Huddersfield, at 7.45 p.m. A programme of events has been arranged including an open show to be held at Huddersfield Town Hall on 16th March 1969. Visitors and new members will receive a cordial welcome at meetings. Officials of the Society are: president, Mr J. Marsden; secretary, Mr L. Kaye (6 Totties, Holmfirth, Huddersfield); chairman, Mr F. Ledger (37 High Royd Lane, Moldgreen, Huddersfield).

... **HARWICH & D.A.S.** entertained fellow aquarists from **WITHAM** and **IPSWICH** Societies at the Royal Hotel, Dovercourt on Saturday, 11th May. Mr and Mrs Riley from Anglia Aquatics, Bury St. Edmunds, acted as quizmasters for a contest between the three clubs. The inter-club shield, held during the last year by Witham, was decisively won this year by the home team.

... The 90 slides and taped commentary of Hendon's slide lecture on fishkeeping were greatly enjoyed by members of **LEEK & D.A.S.** recently. At this meeting Mr W. Ash was awarded first and second places

in the table show for danios, rasboras and minnows with a zebra and a pearl danio (3, Mr F. Brocklehurst, scissortail; 4, Mr R. Billing, harlequin). Other activities have included outings to Dudley Zoo Aquarium and Birdland, Bourton-on-the-Water.

... A NEW society in North Wales, the **COLWYN BAY & D.A.S.**, would welcome contacts with neighbouring societies and help in making the club a success. Secretary Mrs P. M. Hoult (75 Cambrian Drive, Rhos-on-Sea, Colwyn Bay, Denbighshire) would also be very pleased to supply details of meetings to prospective new members.

... **AMERSHAM & D.A.S.** were hosts to **UXBRIDGE A.S.** at a twelve-a-side table show recently. Although the guests gained first and second prize cards, the home team won the contest though by the very narrow margin of 2 points. Members have also enjoyed a film show featuring an expedition to the Indian Ocean and a behind-the-scenes visit to the London Zoo Aquarium. Those who would like to take part in the club's many activities are invited to attend a meeting at the Community Centre, Amersham on the first and third Wednesday in each month (details from secretary, Mr D. Moody, 65 Vale Road, Chesham, Bucks).

Dates for Your Diary

27th-29th June. **BRISTOL T.F.C.** Open Show. Newtown St. Congregational Church Hall. Schedules from Mr W. Holland, 47 Woodland Rd, Nailsea, Bristol.

29th June. **HUTTON GRAMMAR SCHOOL A.S.** third Junior Open Show, Preston, Lancs. Details from show secretary Mr D. J. Radcliffe, Kinco, Todd Lane South, Lostock Hall, Preston, Lancs., PR5 5XE.

7th July. **GOSPORT & D.A.S.** Open Show. Bridgeway Community Centre, Brewers Lane, Gosport. Details from show secretary, 15 Newport Road, Gosport, Hants.

7th July. **TADCASTER & D.A.S.** Open Show. Roman Catholic School, St. Joseph's Street, Tadcaster. Details from Mr R. M. Faircliff, Stutton Grove Lodge, Stutton Grove, Tadcaster.

7th July. **CHELTENHAM & D.A.S.** Open Show. Postponed, see 12th October.

13th July. **BASINGSTOKE & D.A.S.** annual Open Show. Carnival Hall, Basingstoke. Benching up till 11 a.m. Open to public after 2.0 p.m. Schedules from show secretary, Mr A. Marshall, 61 Pitman Close, Basingstoke, Hants.

13th July. **GOLDFISH SOCIETY OF GREAT BRITAIN** quarterly meeting. Details from secretary Mr W. L. Wilson, 57 Constable Gardens, Edgware, Middlesex.

13th-14th July. **ROMFORD & BEACONTREE A.S.** Open Show (Dagenham Town Show). Enquiries to Mr J. M. R. Fyfe, 3 Ashvale Drive, Cranham, Essex (phone Upminster 28435).

14th July. **BOURNEMOUTH A.C.** Open Show. Kinson Community Centre, Peihama Park, Kinson. Show schedules and entry forms after 1st May from show secretary Mr J. V. Jeffery, 30 Braemar Avenue, Southbourne, Bournemouth.

14th July. **MEDWAY A.S.** Open Show. St John Fisher School, Ordinance St., Chatham, Kent. Details from Mr J. Marshall Chiverton, Dartford Rd., South Darenth, Kent.

21st July. **CLEVELAND A.S.** first Open Show. I.P.F. Rooms, Fountain Street, Guisborough, Yorks. Schedules from Mr J. Haley, 51 Westminster Close, Easton, Yorks.

27th July. **CROYDON A.S.** Open Show, Stanley Hall, South Norwood, London, S.E.25. Schedules from Mr D. T. Smith, 26 Cumberland Road, Woodside, London & E. 22.

27th July. **EAST LONDON AQUARIST AND PONDKEEPERS ASSOCIATION** Open Show. Ripple Road School, Ripple Rd., Barking, Essex. Benching 6 p.m.

Friday, 26th-10 a.m. 27th. Enquiries to Mr J. Smith, 2 Hatch Grove, Chadwell Heath, Romford, Essex.

3rd-10th August. **PORTSMOUTH A.S.** Open Show. Portsmouth Community Centre, Twyford Avenue. Schedules available from show secretary Mr W. Ryder, 493 Commercial Road, Portsmouth.

11th August. **GORTON & OPENSIAW** Open Show. Details awaited.

11th August. **RAINWORTH & D.A.S.** Open Show. Showroom of E. Taylor & Sons (Southwell) Ltd., West End Garage, Southwell, Notts. Benching 12 noon-2.30 p.m.

14th-17th August. **MIDLAND OPEN SHOW.** Bingley Hall, Broad Street, Birmingham 1. Details from Mr J. Wits, 120 Franklin Road, Kings Norton, Birmingham 30.

25th August. **ROCHDALE & D.A.S.** Open Show. Hamer Working-men's Club, Halifax Road, Rochdale.

31st August-1st September. **HARLOW A.S.** second Open Show. (Harlow Town Show).

7th September. **HIGH WYCOMBE A.S.** Open Show.

7th September. **YATE & D.A.S.** second Open Show. Christchurch School, North Street, Downend, Bristol. Schedules from Mr T. J. Green, 42A North Street, Downend, Bristol.

7th-8th September. **NOTTINGHAM & D.A.S.** National Open Show.

8th September. **WARRINGTON A.S.** Open Show. St. Benedict's Youth Club (Bell Hall), Orford Lane, Warrington. Benching 12.30-2.0 p.m. Schedules from show secretary, 42 Hood Lane, Warrington.

14th September. **NUNEATON A.S.** first Open Show. 16 classes. Show schedules from Mr G. Cox, 36 Manor Court Road, Nuneaton, Warks.

15th September. **OLDHAM & D.A.S.** Open Show. Werneth Park, Oldham. Schedules from Mr M. Tonge, Paradise Farm, Delph, Oldham.

15th September. **HOUNSLOW A.S.** Open Show. Youth Centre, Cecil Road, Hounslow.

15th September. **REIGATE & REDHILL A.S.** Open Show. Somers Hall, Reigate. Benching 9.0 a.m.-1.30 p.m. Open to public 4.30 p.m. Details from Mr I. Seamp, 10 Benhams Drive, Horley, Surrey.

21st September. **MID-HERTS A.S.** Open Show. St. Pauls Church Hall, St. Albans, Herts. Benching: furnished aquaria, from 8.0 a.m.; fish, 10 a.m.-2.0 p.m. Schedules from Mr C. Withers, 15 Charmouth Road, St Albans, Herts.

21st September. **AMERSHAM & D.A.S.** Open Show.

21st September. **NEWPORT A.S.** sixth Open Show. Duffryn Junior High School, Snow Hill, Newport. Benching 9.0 a.m.-12.30 p.m. Open to public about 3.0 p.m. Show secretary, Mr M. J. Parry, 45 Western Drive, Gabaŷa, Cardiff.

22nd September. **STONE A.S.** Open Show. Walton Community Centre, Walton, nr. Stone, Staffs. Benching 12.00 noon-2.30 p.m. Schedules from Mr K. Harvey, 61 St Vincents Road, Walton, Stone.

27th-28th September. **BRISTOL A.S.** Open show. Bishopstone Parish Hall, Bristol.

29th September. **HUCKNALL & BULLWELL A.S.** first Open Show. A. R. Marshall & Sons Ltd. Works Canteen, Forest House, Hucknall Lane, Bulwell, Notts. Benching 12 a.m.-3 p.m. Judging 2 p.m. Schedules from Mr M. Harrington, 5 Greenwood Vale, Hucknall, Notts.

29th September. **BLACKPOOL & FYLDE A.S.** eighteenth Open Show. Hazroside Solarium, South Promenade, Blackpool.

6th October. **HEYWOOD & D.A.S.** Open Show. Heywood Labour Club, Bridge Street, Heywood (2 mins. from Heywood Centre on Heywood-Bury main road). Benching 12 noon-2.0 p.m. Schedules from Mr K. Hill, 29 Chadwick Lane, Heywood.

12th October. **CHELTENHAM & D.A.S.** Open Show. Ambulance Headquarters Hall, 56 Gloucester Road, Cheltenham.

26th-27th October. **BRITISH AQUARISTS' FESTIVAL** at Belle Vue Gardens, Manchester.

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

9th November. **GOLDFISH SOCIETY OF GREAT BRITAIN** quarterly meeting. Details from secretary Mr W. L. Wilson, 57 Constable Gardens, Edgware, Middlesex.

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Continued on page 180



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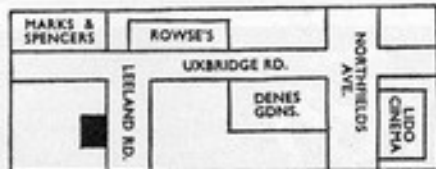
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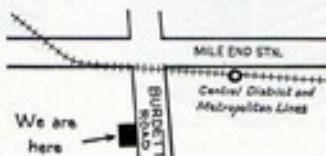
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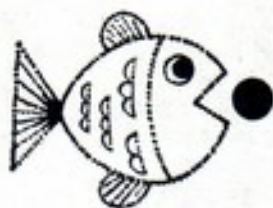
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