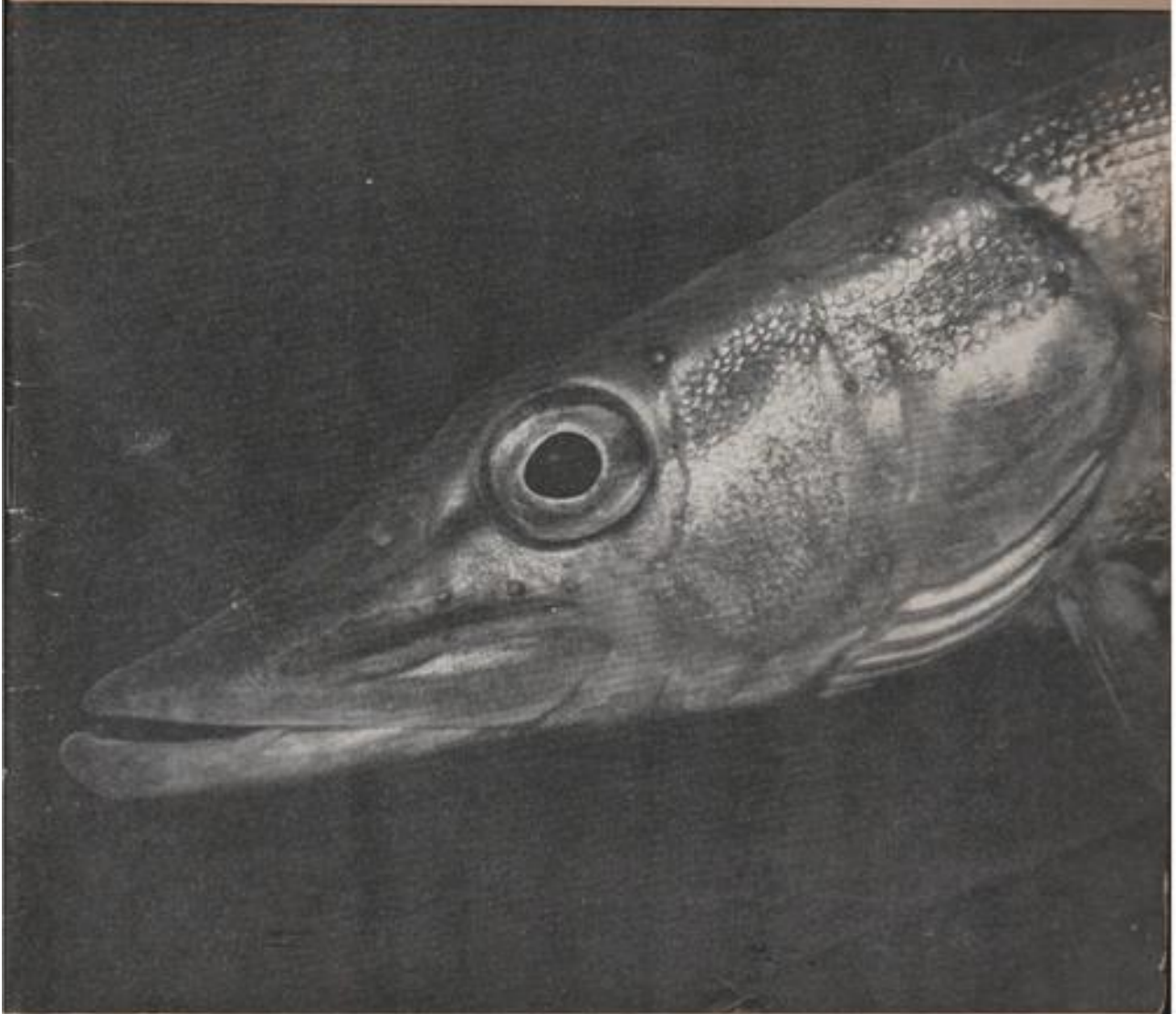


May
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Aquarist
and Pondkeeper



the Aquarist

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The Editor accepts no responsibility for views expressed by
contributors.

Editor: Laurence E. Perkins

May, 1969

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TWO FOR THE PRICE OF ONE

by Dennis Holmes

MY STORY starts about three years ago when a friend gave me an old 16 in. tank complete with various bits and pieces (one of a pair he had just received from another pal, such are the ways of friends). I was at that time in the middle of renovating an old 1900 house to 1960 standards, and the idea of keeping fish had but rarely occurred to me. After due thanks, the tank was placed in the shed to be investigated at a later date. Nothing, but nothing was to come between me and my "5 year" plan to improve the family living quarters.

Work progressed apace till the day dawned when the hall was stripped, re-wooded and ready for paint and paper, leaving only the lounge, as yet unused, to receive the diligence of blowlamp and scraper. My thoughts turned to an old 16 in. tank languishing in the garden shed and an idea began to germinate. My mind went forward in time to the day when both hall and lounge would be finished. Mental pictures of a modern lounge began to form, chair here, sideboard there, bookcase in that corner, aquarium where . . . ? Jumbled with these pictures were proposed colour schemes for the hall which, I might add, is rather large, some 20 ft. by 7 ft., a Victorian legacy of all show at the front.

The solution to "where" was staring me in the face and I would kill two birds with one well-aimed stone. Why not place the aquarium in the hall and knock a hole through the wall into the lounge. The hall would take the bulk of the aquarium and benefit considerably from a very interesting feature, whilst I could sit in the lounge and either watch T.V. or swivel my chair and view fish.

My wife was horrified at the thought of gaping holes in walls, especially when I became more ambitious and talked of a 30 by 15 by 15 in. tank. However, I won her round and assured her the house

wouldn't tumble down about our ears. Being a cautious chap I had first taken specialist advice and assured myself that said house wouldn't finish up like a relic from an Air Raid provided I took a few precautions, namely the insertion of a substantial lintel.

First job was the hole and this proved quite easy. I marked a rectangle in pencil on the hall side of the wall some 20 in. by 36 in. and using door and floor as a guide repeated this on the lounge side. The plaster was then chipped away and removal of the bricks commenced, the top course was taken out first and the 4 in. by 3 in. wooden lintel duly inserted and wedged in place; removal of the rest of the bricks followed with an easier mind. A base of $\frac{1}{2}$ in. block-board some 33 in. by 15 in. was then inserted and wedged in place with two uprights of the same material. A further piece across the top, some re-plastering and the job was complete. I now had a neat hole some 32 in. by 20 in. lined with block-board with a shelf projecting into the hall. The base was given further support of a piece of 2 in. by 1 in. edge on and two legs cut from 1 in. dowel. The empty tank was placed in position, the front flush with the lounge wall and, after insertion of a false front, framed with $2\frac{1}{2}$ in. bullnose architrave moulding giving a picture effect. Round the back I built two side frames of 2 in. by 1 in. covered in hardboard, these are some 21 in. high at the wall, sloping to 18 in. at the front and screwed to the base and side panels. A further piece of 2 in. by 1 in. across the back and almost resting on the tank top formed a rough frame and this was covered with a sheet of 7 mm. plywood which has a hole some 28 in. by 11 in. cut in the middle for viewing. The whole makes a suitable hood with a lift-off lid and hides wires, air-lines, etc., with room

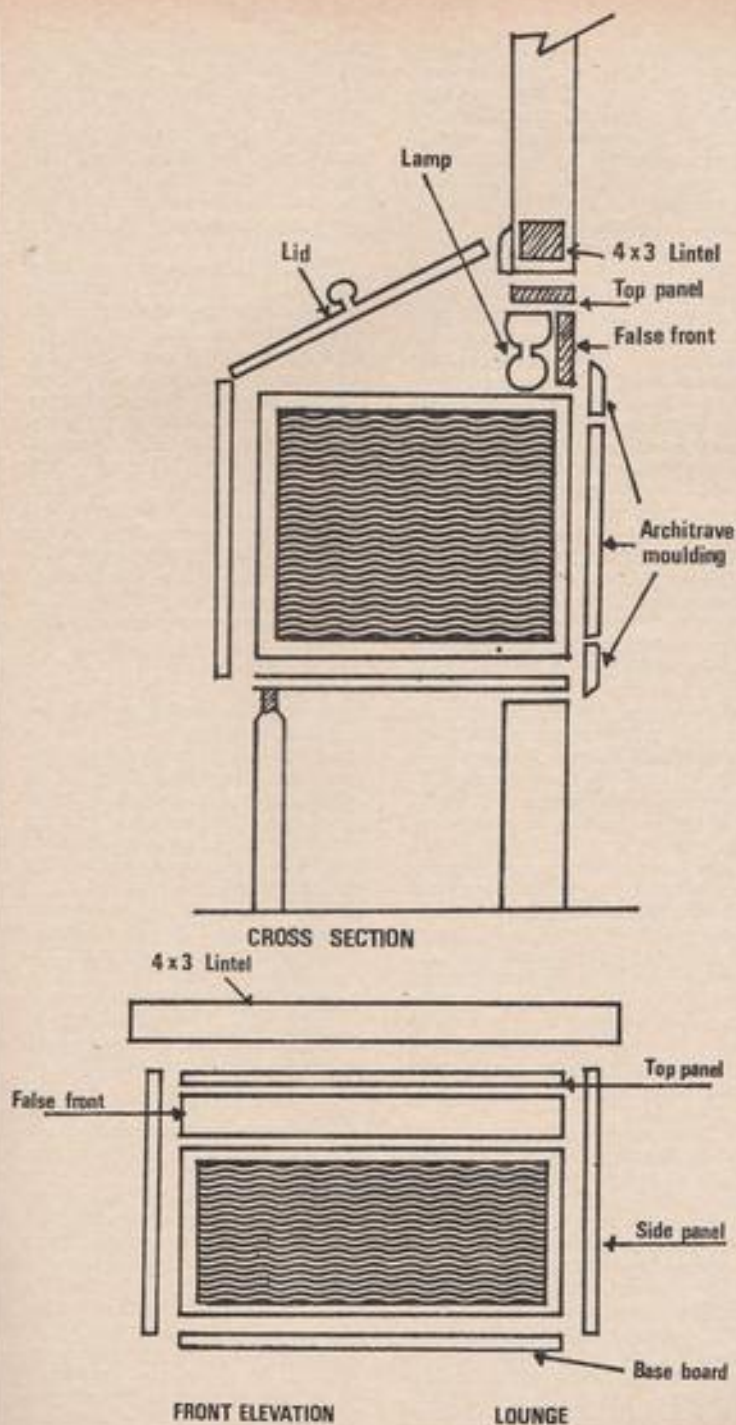
for servicing. Incidentally, the ply back is fixed with dome topped screws to facilitate easy removal should the occasion arise, i.e., leaks. I had three spaced over several weeks and it wasn't funny, not till afterwards anyway. I can demolish walls but I'm a lousy tank maker. Dow Corning saved the day, bless him, and all is now secure.

Electricians proved very convenient as I have a cable under the floor supplying a plug in the lounge, this was cut and a spur inserted and run through steel conduit in a channel cut in the plaster to a plug base screwed inside the hood. A fused plug leads to a block of cable connectors wired to light, pump and heater. The light and pump have separate switches screwed to the underside of the base-board, whilst the heater has a two-pin plug inside the hood.

The pump was put in after the aquarium had been in operation for a couple of months, as I was hoping to manage without filtration, and hangs from a joist under the hall floor, accessible from the well which houses the door mat. Consequently, the air-line and cable had to be hidden behind one of the legs. These could have run down the conduit bringing in the mains supply; we live and learn, don't we?

Lighting is supplied by a 2 ft. 20 w Warm White Atlas fluorescent fitting screwed to the underside of the wall frame. The inside of the hood is painted white gloss and the lid has a long mirror screwed to the underside giving excellent illumination for viewing and plant growth.

The cover glass is in three parts, first a 5 in. wide strip under the lamp which can be slid out for cleaning, then a 6 in. strip which lifts off for feeding and servicing and finally a 3 in. strip of clear Perspex suitably drilled for entry of cable, air-lines and thermostat.



Planting was a problem for two reasons. First, the usual horseshoe of plants at the sides and along the back was out as the aquarium is viewed from both sides. I am overcoming this by keeping the centre third of the tank clear of plants and gradually filling up the ends with short plants at the front, i.e., lounge side, and taller ones to the rear. Secondly, as we now know under-gravel filtration is excellent but some plants do take ages to either become acclimatised or give up the ghost. I have at the time of writing three strands of Bacopa; they have been there two months and I'm still waiting to see if they will fill in the empty space allotted to them or die on me. An old rustic once told me it takes three years to establish a garden; my underwater plot has two and a quarter to go; good job I have plenty of patience.

Finally, a word of warning to those of us who have never kept fish. Don't go knocking dirty great holes in the wall for a passing fancy. For how else will you fill it if the fancy passes? Also a word of encouragement; my wife, who thought I was crackers when I first mooted the idea, is now as keen as I am.

*Watch for
the
Aquarist
Fishkeeping
Exhibition*

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IRISES AT THE PONDSIDE

by Jas Stott

MANY PONDKEEPERS, when planning their pondside planting and deciding to include Irises in the scheme, often think no further than using those species usually referred to collectively as the "Water Irises". This is perhaps understandable, if somewhat short-sighted, for there are many more species to be had from this great family of plants which the pondkeeper can make use of, for they are capable of providing a procession of bloom in a wide range of colours and sizes spread over several months of the year.

There are nearly two hundred species or basic wild types of Iris which are found in many parts of the world. Although the classification is, therefore, somewhat elaborate they may be very conveniently divided, chiefly those possessing rhizomes and those having a bulbous root system. Those with rhizomes, or fleshy rootstocks, are sub-divided, in the main, into the Bearded, Beardless and Cushion Irises while those having bulbous roots are the English, Spanish and Dutch producing the taller types (1 to 2 ft.) and the dwarf species, the miniature bulbous Irises, favourites for planting in rock gardens or for growing in pans in the alpine house. These last mentioned species are most useful to the pondkeeper for including in the rock edging of the informal and alpine style of ponds, especially in view of the fact some of them are very early flowering; so let us first start with a selection from these species.

One of the earliest to bloom is *Iris danfordiae* which produces its golden-yellow flowers in February and grows to a height of three inches. It appreciates a sandy soil, reasonably well drained, in a sheltered south-facing pocket in the rock edging. Quick to follow in bloom and suited to similar conditions is *I. histrioides* bearing its bright blue and ultramarine

flowers before the leaves appear. For early March the lovely violet-scented flowers of *I. reticulata* can look well when grown in thick clusters on the slopes of the rock edging. They are deep violet-purple flowers with a golden blotch on the tip of the falls, as the lower petals are called. There are several varieties of this Iris all of which are worth trying.

While on the subject of the bulbous Irises, although usually associated with the flower beds and borders of the general garden, the pondkeeper should not forget or ignore the possible use of the taller growing bulbous types in the pond surround. A few clusters, here and there where the bulbs can be planted and left undisturbed, will prove most attractive especially on the fringes of the pond or water garden area where it begins to combine with the rest of the general garden. From these can be recommended the following varieties. Among the English for flowering during late May and through June are the deep, blue Emperor and Mont Blanc which is white. During May the flowers of three Dutch varieties can be most attractive; Golden Harvest, Wedgwood and White Excelsior and two beautiful Spanish varieties for early June, Le Mogol (bronze-purple) and Cajanus (golden-yellow). All these are best planted in Autumn, four inches deep and, for our purpose, set in clusters of some eight or nine bulbs, seven inches apart against a background of, shall we say, tall growing ferns such as the Lady Fern (*Athyrium filix-femina*) or the Ostrich Fern (*Struthiopteris germanica*). Alternatively, the background may take the form of heavy foliaged, dwarf evergreen shrubs or the smaller growing conifers like the *Juniperus squamata Meyer* (forty to fifty inches tall) and *Chamaecyparis fletcheri* (forty eight inches).

Turning now to the rhizome-rooted Irises, there is a wide range of choice both in colours and varieties, too great to deal with in this article so the selection must be limited but those varieties mentioned can be fully recommended both for hardiness and performance. So starting at the extreme pond edge, the so called "Water Irises" first which form part of the Beardless group. For the water covered areas of the marsh, the Iris *Laevigata* will prove a delightful marginal subject and quite happy in

up to three inches depth of water. This type of plant has lovely violet-blue flowers, faintly lined with gold, and well worth including in the planting scheme but to my mind the outstanding varieties of this Iris are Rose Queen and *Elegantissima* which not only has a delightful shade of pale blue flowers but the foliage is variegated cream and green.

Moving back to the higher and drier levels of the marsh or to moist positions on the banks of the pond or stream is the ideal situation for the beautiful Japanese Iris, *I. kaempferi*. They have slender, sword-like leaves and large, rich colourful flowers in July and August. Most suppliers of this Iris offer collections of named mixed varieties and this is undoubtedly a good idea, if starting a basic planting scheme, for the collection usually contain a wide range of colours. There is one variety, however I would like to mention for it is most attractive and that is Koki-No-Iro. The flowers are a deep purple suffused blue and an orange splash on the petals.

The Siberian Iris *I. sibirica* is another Beardless species for a moist position similar to that appreciated by *Kaempferi* and flowering from late May through June. The leaves are slender and sedge-like, quite attractive in themselves, some two and a half to three feet tall. In this type of plant the flowers are a delicate blue but there are several fine varieties in differing shades of purple and blue with a white variety, Snow Queen, sometimes listed as a variety of *I. orientalis*. To my mind one of the best, although long established, is Perry's Blue for it seldom fails to give a good display. The yellow Flag to be found native of our own wild water-courses *I. pseudacorus* looks well in company with this old favourite although requiring, for best results, the deeper, submerged areas of the marsh with a four to five inches head of water.

Among the Bearded Irises I should say the most popular are the "German Flags", varieties of *I. germanica*, hardy herbaceous plants, one or two varieties of which are usually to be found in most well planted herbaceous borders but should not be forgotten by the pondkeeper or water gardening enthusiast for they are capable of providing a strong and attractive contribution to the annual display

within the confines of the pond surround. They make admirable subjects for cluster planting in positions where the surround begins to blend or associate with the rest of the general garden. Size of pond will decree the height of the variety chosen for they vary in height from two to five feet.

These Irises need sun and are happiest in a drained, medium rich soil containing a little lime which helps to keep the roots healthy. Care should be taken when planting; the rhizome must be planted in shallow depressions with the root fibres buried but the upper part of the rhizome left uncovered so that sun and air can reach it.

For a similar planting position in the surround of the smaller, informal

pond where these taller growing germanica varieties and hybrids may be too tall and, therefore, out of character there are the dwarf Bearded species, varying in height from six to twelve inches, which respond to similar conditions of cultivation and are almost as attractive in colour and shape. They are, in the main, listed as varieties of *I. chamaeiris* or *I. pumila* and two of my favourites are *I. pumila* Amber Queen a brownish-yellow and *I. pumila gracilis*, a lovely lavender-pink. Another delightful dwarf is *I. reichenbachii*, a flag from the Balkans, a yellow with the tips of the falls tinted a greenish-brown and yet another Balkan beauty which is a real miniature is *I. mellita* only four inches tall, a dusky red flower with red margined foliage. For the base of the

rock edging where a slightly moist soil is available the lovely Russian Iris *I. ruthenica* should find condition to its liking. The flowers, appearing in early June, are sweetly scented, violet-blue in colour with a network of pure white lines on the falls.

Finally to flower at a time when bloom is scarce at the pondside, mention must be made of the Winter flowering Algerian Iris *I. unguicularis*. The lavender-blue flowers are produced from November into January on stems nine inches tall. It will appreciate a south facing pocket, well drained and filled with a not too rich soil containing a fairly large proportion of grit and rubble for good flower production. If the soil is too rich the plant tends to produce foliage at the expense of flowers.

OUR PENCIL FISH

(*Nannostomus anomalus*)

by David Evans

THIS IS HOW we got four pencil fish to breed in a tank 18 in. x 10 in. x 12 in.

We washed and boiled the gravel and put it in the tank. We put a stone shaped like an arch across the back right-hand corner. Then we planted two, well grown Indian Ferns, one in front of the stone and the other along the opposite side. Then we planted some *Sagittarias* on the bottom, which has grown and sent out runners. We have some Naias floating on the top. The water we caught when it was raining. The tank was left to stand for three days. There is a 60 watt overhead bulb which is put on every night from about 6 p.m. to 11 p.m. Then we purchased our Pencil fish. These grow to about 1½ inches long. Their body is orange with a black line down the middle. The males have a white spot on their ventral fin. We bought two young adult males and two young adult females. It was not long before they settled down in the tank. We feed them once a day on either white worms, *tubifex* or scraped beef. Occasionally we feed them with a small amount of dried food. The males started to show off to each other. They swam side by side with their fins stretched before they went

after the females and started spawning. We could not see any eggs or fry for about one month. Then, much to our surprise, one day we saw a baby swimming about in the Naias. It was only very small and we only just saw it. After this we put a few drops of Liquifry in every other day. We now know that there are a few quite big babies and some others, newly hatched. This is not a very good way if you want to get a lot of babies as the parents eat most of them, but if they are kept well fed they will not eat them all. Our tank has not needed any maintenance since we set it up except to be topped up with rain water about at 77°F. The main danger is from overfeeding because the fish are small and do not eat much.

CRYSTALWORT

by B. Fry

CRYSTALWORT OR *Riccia fluitans* is indigenous to many parts of the temperate and tropical world. Its generic name is in honour of Pietro Francesco Ricci, a Florentine botanist; its trivial epithet is from the Latin *fluito*, to float. And float is certainly does (excepting for lichen-like terrestrial forms that colonise permanently wet mud and send down anchoring filaments called rhizoids), in thick spongy masses at the surface of the water. The minuscule foliage—the topmost layer just submerged—is

strap-like (known as a thallus) and repeatedly branched and forked at the ends. It is of the loveliest shade of green imaginable.

For aquarists the plant has the great advantage that it will tolerate a wide range of temperature, and is therefore well-suited to the coldwater or the tropical aquarium alike. Neither is it faddy about the chemistry of the water, though old or soft water appears to suit it best. It is to be pointed out, however, that it will not grow unless it is provided with plenty of strong light. Given this, myriad bubbles of oxygen are produced and twinkle crystal-bright (whence the popular name of the plant) in the tangle of foliage.

R. fluitans is held in high regard among some breeders of tropical fishes; for not only do many oviparous species favour it as a repository for their eggs (some of the gouramis like incorporate fragments of it in the construction of their nests), but tiny fry are assured of an attack-free, well-oxygenated area where they can find food (live food or substitutes for live food introduced by the aquarist) and eat it without fear of attack.

The great enemy of *riccia* is algae, and when this is noticed darkening the mass with its fuzzy growth it is of paramount importance to remove the affected foliage without delay. In the main the majority of greenstuff-eating fishes will leave *riccia* alone, but the larger barbs and the scats will not rest contented until they have cleared every portion of it from a tank.

THE CATFISH AND THE DOG

by P. F. Capon

THE "SUNDAY MIRROR" for June 30th, 1968, carried a report headlined "Swampland Terror of Walking Catfish." The headline and the article gave the impression of a monster stalking the Everglades and other watery areas of Florida devouring everything in its path. The reader was led to believe that this monster was far worse than anything that horror-film makers could conjure up. The article was accompanied by a photograph of the catfish with the caption, "Like Some Monster From Prehistory a Walking Catfish". The article suggested that the catfish had been known to actually attack a dog!

What species of fish can this be? What fluke of nature has caused this fish to carry out forays on land and to attack dogs? What horror now stalks the Everglades in search of poor defenceless mongrels?

The fish that has earned this infamous reputation is none other than our old friend the albino variety of *Clarius batrachus*!

Wondering how on earth the albino *Clarius* could have earned such a foul reputation, I contacted Mrs. Tina Mann, who is the editor of the *Trader* published by the Florida Tropical Fish Industries. I asked if she could tell me how the *Clarius* came by his bad reputation.

Apparently the *Miami Herald* carried the original story under the headline of "Walking Catfish Attacks Dog," together with a photograph of the aquatic criminal. It was alleged that the catfish jumped out onto the bank and chased and attacked a dog in the dog's own backyard. The dog was at least twenty-five times bigger than the monster, but according to the *Herald* the fish did the attacking! As Mrs. Mann said "... this is as ridiculous as a butterfly attacking a shark in mid-ocean."

When the story first appeared in the Florida papers, nobody who was in any way familiar with tropical fish

took it seriously. The majority regarded it as a misplaced story from April the First.

The Florida Game and Freshwater Commission and an organisation called "Exotic Research" viewed the matter more seriously. In only three weeks they had succeeded in banning the importation of the whole *Clariidae* family. It is now against the law for anyone to possess any member of the family. State agents are empowered to enter any house, retail premises, or fish farm and to poison any member of the *Clariidae* family they may find.

Whether they could tell a *Clarius* from a *Corydoras* is another matter for Tina tells of a case several years ago when she requested a permit to keep piranhas. A member of the Commission duly arrived to inspect the fish and asked for them to be pointed out as he had never seen a piranha.

In a recent raid by the Game Commission one fish farmer had to watch helplessly as the agents poisoned fifteen hundred *Clarius* in his outside pools.

Exotic Research through a number of press releases has made various statements to the effect that the *Clarius* is a monster, that when Rotenone (a fish poison) is added to their water they leave it and crawl away, and that they crawl out on the banks by "walking on their elbows" and travel overland. They also state that the albino *Clarius* has no known enemies neglecting the fact that their distinctive colouring will make them stand out from their surroundings. I am not familiar with the Florida fauna but I would imagine that a *Clarius* would make a tasty meal for at least one of the several species of snakes that presumably live there, not to mention the alligators. In any case, cold spells in Florida often drop to 50°F. or even below and *Clarius* are not known to survive such a temperature for any length of time.

Exotic Research and the Game Commission fear that *Clarius* will upset the balance of nature, but Mrs. Mann counters that the creature that does most to upset the balance of nature is *Homo sapiens* with his poisonous chemicals and wanton killing.

Water Hyacinths (*Eichornia crassipes*) have established themselves in Florida waterways and have been

sprayed with poison. The hyacinths have survived but the indigenous flora and fauna have been severely affected. A similar situation looks like taking place with regard to the *Clarius*. Waterways are being treated with rotenone, the *Clarius* is able to escape from the poisoned water by crawling out but the native species are not. The very persons whose avowed aim is to protect the native flora and fauna appear to be using materials, to exterminate "exotics", which are having an adverse effect on just those natives.

On 14th August, 1968, John Pennkamp, the associate editor, wrote in the *Miami Herald*, retracting his paper's previous statements under the heading "Walking Catfish is No Threat". Mr. Pennkamp wrote "... it's a witch-hunt; another instance of bureaucracy's policy of act first and look later." "The public is being given a lot of half-truths by commission scientists who admittedly know little about *Clarius*..." He also points out that *Clarius*, after their terrestrial journeys, often die of skin infections and fungus, caused by injuries and abrasions, soon after they are put back into water.

In a letter to the author Tina Mann wrote that erroneous newspaper articles had frightened elderly people to such an extent that they refused to walk on the lake-sides in case they might meet a "monster" *Clarius*. Members of the Florida Tropical Fish Industries had appeared on television in an attempt to dispel these fears and to try to put the record right.

Now, the Florida Game and Freshwater Commission may have a point in that alien fish could upset the balance of nature in Florida waters. But they have attacked the problem with such speed and vim that their motives are bound to be suspect. The fact that the newspapers got the story, presumably, from either the Game Commission or Exotic Research, of the *Clarius* attacking a dog makes one doubt whether they have knowledge of fish other than those that would interest sportsmen. After all, the inclusion of "Game" in the Commission's title implies that they are primarily interested in just those fishes that put up a good fight when caught on a line by an angler. Other fishes, be they exotic or natives, which do not fall into the category of game are

most likely regarded as just a nuisance unless they are suitable for bait.

Philip Maraccini writing in his publication, the "Ichthyophile" tells of the lack of *Poecilia (Mollinia) latipinna* in the canals of Florida. *P. latipinna*, a native, was once common in this part of America, but is now becoming rarer owing to man's liberal use of chemical sprays in and around the water courses. The Game Commission does not appear to be worried about this fish dying out presumably because it is of no interest to the anglers.

The albino *Clarius* feeds on small fishes and amphibians and is said to be particularly fond of snails, and if it consumes too much in its chosen stretch of water it must seek new pastures. It is unlikely to devour every last creature in a given locality because once it has killed off most of its prey it will starve for it will expend far more energy in seeking a meal than it will get from that meal. At the time of the *Clarius*' demise there may be only a few fish, amphibians or snails left but as aquarists we know of the incredible fecundity of aquatic creatures. With *Clarius* gone because of his own appetite the indigenous creatures would eventually regain their original numbers.

Another point is that Florida, contrary to popular belief, can have cold spells. The temperature in Florida can fall to 50° F. or below and frost and snow are not unknown. It is not likely that the *Clarius* coming from South East Asia can stand low temperatures. The *Clarius* indicted is the albino form of *Clarius batrachus* and albino forms are generally regarded as being weaker than their normal coloured relations.

Lest I have given the impression that I am in favour of albino *Clarius* or other non-indigenous fish being introduced to any stretch of water, perhaps I had better state my own views. To my mind no fish, or other aquatic creature or plant, should be introduced into any water where it does not normally live without very careful consideration of the possible effects. The introduction of fishes such as the guppy, *Poecilia (Labeo) reticulata*, and *Gambusia affinis* to control mosquito larvae and hence malaria is a case where the introduction of alien species is valid. In this instance it is a case of survival of man himself with these livebearers as

"CHAMPION OF CHAMPIONS" Contest

THE PREMIER award for fish-keepers will be contested for the third time at the British Aquarists' Festival to be held on 18th and 19th October at Belle Vue, Manchester. The preliminaries for this exciting event are already under way, and we wish to make a special request to Club Secretaries for full co-operation in notifying us promptly of their Open Show date.

This is most important to ensure the smooth running of the national contest, and to avoid disappointing delays in awarding the gold-plated pin to winners of "The Best Fish in the Show" competitions. It is these winners who qualify as entrants for the "Champion-of-Champions" Contest at Belle Vue, and it will greatly assist the organisers if Secretaries will forward the entry form for the "Champion-of-Champions" Contest **within five days after the Show date.**

Secretaries who have not received this entry form are urged to advise us promptly, and a copy will be sent, together with details of the Contest and the gold-plated pin for presentation. Forms have been sent to Secretaries where the Show date is known, but there are many Clubs still to be covered. The closing date for "Champion-of-Champions" entries is 30th September, 1969, but it is important that we have prompt advice of "Best Fish in the Show" winners on the completed entry forms without delay.

To summarise; will Secretaries please advise us of the date of their Open Show. We will send entry form, full details, and the gold-plated pin for presentation to "Best Fish in the Show" winner.

Complete the entry form when winner is known, and send it within five days to "Champion-of-Champions," The Aquarist and Pondkeeper, Half Acre, The Butts, Brentford, Middlesex.

Winners of "Best Fish in Show" awards who have not received an entry form may apply for one by writing to us at the above address.

Entries for the Contest must be single fish (not pairs, etc.).

Other important points that should be made clear: to qualify for entry in the "Champion-of-Champions" Contest, the "Best Fish in the Show" award must have been won at an Open Show (and by this is meant a show open to any member of the public and not by invitation only), and also where show schedules are available. Winners at Table Shows and Table Shows open by invitation are not eligible to enter the "Champion-of-Champions" Contest.

THE CATFISH AND THE DOG

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valuable allies in his battle. In areas where mosquitos are prevalent as carriers of malaria there is obviously a biological niche that these fishes can fill especially as the larvae are a favoured item of their diet. But it should not be forgotten that even such apparently inoffensive little fishes will eat the eggs and fry of other varieties. However, their introduction to foreign waters should only take place when it is to man's advantage and when there is little risk of their ousting the indigenous fauna. The *Gambusia*, in particular, has an almost insatiable appetite for mosquito larvae. Alvin Seale, one time Superintendent of the Steinhart Aquarium, California, carried out a test on *Gambusia affinis*' mosquito larvae eating capacity. He isolated a female in one small tank and for comparison placed a goldfish of a similar size in an identical tank. Into each tank he counted five hundred larvae and then left the tanks for twelve hours. When he examined the two fish at the end of this time he found that the goldfish had eaten two hundred larvae and died in the attempt, whereas the *Gambusia* had eaten all her five hundred and gave every impression of still looking for more.

Another fish that is introduced into waters other than where it is native is *Tilapia mortimeri* (mosambica). Here again the fish is serving mankind in that it is supplying many of the underdeveloped countries with much needed protein. Without the several species of *Tilapia* used, primarily, in pond culture, the numbers of people dying of protein deficiency would be greater than the already alarming figures indicate. Here again is a fish that is aiding man in his fight for survival. However, in at least one locality *Tilapia* have established themselves where their presence is not necessarily in man's best interest.

The San Antonio Zoo keeps a number of *Tilapia mortimeri* in a small stream that runs through the Zoo's grounds. The fish are kept from escaping by the use of wire netting. The inevitable happened; whilst the netting stopped the escape

of the adults the fry found the wire an easily surmountable barrier. Numbers of fry escaped through the mesh and now the *Tilapia* is established and breeding in the San Antonio River system and threatens to establish itself in other Texas rivers.

In addition to the total ban on the keeping of *Clarias* in Florida, other States have already passed legislation banning other species of fishes. The first laws passed against aquarium fishes in the U.S.A. were enacted in 1957. In that year Kentucky banned the sale of Piranhas and *Astyanax fasciatus*. In May of the same year Florida banned the Piranhas; also in 1957 Congress passed a bill prohibiting the importation of Piranhas and South American species of parasitic catfishes such as *Vandellia* species.

Oregon considered a bill to give the Game Commission the right to destroy any dangerous animal and also the right to decide which animals were to be considered dangerous. A one dollar licence would have been needed for each individual fish of the Characin group of fishes. Another bill considered by that State would have required that no animal under six weeks of age could be sold unless it was accompanied by its mother. Consider the poor dealer selling portions of tubifex! Of course, ostensibly these bills were designed to prevent the release of exotic fishes into Oregon waters. But the winterters in this State would soon settle any tropical fish that might have been released.

South Carolina attempted to get a bill passed to outlaw any aquatic creature not native to that state. Illinois tried to pass a statute requiring a certificate of ill health signed by a veterinary surgeon to accompany the sale of each and every animal; how many vets really know much about fish diseases? Surely they are more usually concerned with warm blooded pets and farm animals.

California brought forward legislation to ban all the Characins and Cyprinid fishes; these two groups probably account for about 75 per cent of all our aquarium fishes.

A Californian dealer, Frank Adams, refused to allow the Game department to have their way with his stock of Piranhas and was promptly arrested. The Department asked the judge to fix a bail of the incredible sum of one

million dollars! Yet it is said that the California Fish and Game Department had, paid an eminent ichthyologist, a few years ago, a consultants fee because they did not even know what a Piranha looked like.

Texas is seeking to ban exotics because of fears of their effects if they were to be released. But Texas was criticized recently by ex-President Johnson's Water Pollution Control Advisory Board for management that threatened the well-being of native species. Yet, Texas authorities are more interested in hounding the aquarist than managing their own water resources adequately.

Texas has prescribed 18 separate species, 3 genera, and one family of fishes; any aquarist wishing to keep any of these prescribed fishes must obtain a licence both for the fishes and eggs. A report must be lodged with the Parks and Wildlife Department every year for all the fishes and eggs kept under permit, and all methods of disposal of fishes or eggs must be reported in detail. Aquarists having these fishes in their tanks may present them to public aquaria but they must inform the Parks and Wildlife Department within thirty days of doing so.

In the U.S.A. there are an estimated 10,000,000 aquarists, the amount of paper-work and the number of clerks required if all the States of the Union required permits for each and every fish or egg is left to the imagination of the reader.

The principal culprits in the release of alien fishes are not aquarists but fish farms and even Zoological Gardens. This is not to say that either concerns purposely release fishes. In the case of fish farms, overflow systems for the pools are not completely efficient in preventing the escape of specimens. It should not be beyond the powers of a nation so technically advanced as to be able to place men in orbit around the moon to design fish-proof overflow systems. Perhaps all waste and overflow water from the pools could be irradiated with U.V. light of sufficient intensity to destroy all creatures and plants in that water. Possibly even simple but efficient sand filter beds might suffice. The problem of pools overflowing during severe storms would also have to be tackled. Zoos that maintain alien fishes in watery compounds only screened from water systems by metal

or plastic mesh would certainly have to tighten up their security.

For the most part aquarists do not release exotics into new waters. The very price of many of their specimens prevents their doing this. Although we must bear in mind the situation that has occurred in the sewers of New York, where alligators threatened to establish themselves in this warm, if unusual habitat. Apparently numerous persons having purchased small alligators as pets tired of them as they grew and simply disposed of them by flushing them down the toilet!

Aquarists or any other persons who release exotics should be punished by law not only in the U.S.A. but

also in the U.K. Right-minded aquarists can hardly object to such a law for it is surely better for all concerned than a licence for your fishes.

Whilst some tropical fishes are able to survive and even breed in the ponds and rivers of some parts of North America, very few indeed could be expected to survive British summers let alone winters. However, British aquarists should beware of releasing alien species that are used to a temperate climate or our own over-zealous legislators may have a good excuse to require us to buy licences for our fishes; imagine 7s. 6d. as a licence fee for every fish!

We should all be careful not to

allow such fishes as Japanese carp (Koi), the American Sunfishes and Grass Carp and the like to enter our rivers, ponds, lakes and streams. The Grass Carp have recently been imported by the Electricity Generating Board to control water plants near cooling water inlets; this importation is to my mind of dubious value as if these fishes become established by eating large quantities of plants they could well destroy the spawning sites of many of our native fishes.

So, please Mr. and Mrs. Aquarist do not release any of your fishes; you could create a situation where we all have to trot down to the Post Office every year to buy a FISH LICENCE!

Aplocheilichthys dayi, a Community Killie

by Joseph Trusso

FOR ABOUT TWO MONTHS I had been carefully considering a pair of "panchax". However, as an apartment dweller, space limitations at that time dictated that they would have to share a ten gallon community tank with six other fish. In this aquarium the water temperature was held at 76 degrees Fahrenheit. This automatically excludes many of these little beauties, as does community life itself. Chemically, the water was soft and had a pH factor of 6.6.

So the search began for a "killie" that was large enough not to suggest dinner to the other inhabitants of the tank, but was still peaceful in temperament; one that required higher water temperature; would eat all sorts of food including dried flakes; needed soft, acid water; and was colourful and attractive to me. Research eventually pointed to *Aplocheilichthys dayi*, although photos of them did not excite me. However, when I saw them in my dealer's tanks, I was immediately won over.

The male has colourfully marked orange, yellow, and black dotted anal, dorsal, and tail fins. He does *not* (as seen in most photographs) have dull grey sides, but rows of iridescent blue-green scales on an orange-pink body. One further distinguishing feature of the male is the pointed anal and ventral fins.

Females, while not as colourful, have rounded fins nicely marked with

black dots and orange edging on a yellowish body which has vertical half stripes.

Once safely in their new tank, I gave everyone a meal of live adult brine shrimp as a "welcome-a-board-get-comfortable" gesture. They were timid (especially the male) for the first week or so. Then I noticed that the male would occasionally court the female, but would soon break off. Hoping to encourage this, I put two nylon spawning mops under the large floating water fern, the area of the tank they liked most.

After an impatient week and a half, I took out the mops and examined them. To my great surprise, I found fifteen eggs!

The eggs were carefully removed and placed in a plastic refrigerator dish with some aquarium water and a drop of methylene blue. Then dish and eggs were dated and shelved in our kitchen closet.

I accepted my good fortune, but thought it merely chance. However, with a secret hope that it wasn't, the mops were cleaned and placed back in the tank. My "dayi" have been spawning daily since then, with an average of 2-4 eggs each day.

Predictably, the eggs incubated for 10-14 days and then began hatching. At first, the newly hatched fry swam only sporadically and absorbed their yolk sacs. In approximately 48 hours, they became free swimming.

I prepared a one gallon aquarium with water from the large tank, and after careful chemical and temperature tests, began transferring the free swimming fry with the aid of a soup spoon.

Since a continuous supply of live shrimp nauplii would be needed, a gallon jug was set up as a hatching vessel. The fry readily and greedily ate them. Feedings were twice a day (a.m. and p.m.) with mild aeration and some surplus for between meal snacks.

That began six weeks ago, I now have fry in various stages from one week to four weeks old. The oldest being about $\frac{1}{2}$ of an inch and they snap up brine shrimp nearly their own size. I have made several observations of eggs, fry, and adults that I would like to share.

1.—Some eggs fungused even with methylene blue, but never with malachite green. However, there were never any dead fry in a hatching dish containing methylene blue; but several with malachite green. Malachite green is a powerful inhibitor and should be carefully used. It easily kills young fry, and may affect "dayi" more than others, though I know of no research done that would support this statement.

2.—One spawning, after having become free swimming, was lost to velvet; later discovered under the microscope. Too much disintegrating

Continued on page 40

Aplocheilichthys dayi, a community Killie—continued

artemia suggests the source. I'd become careless and not siphoned them out.

3.—The first spawning, four days after hatching, suffered a severe drop in temperature (from 76 degrees to 66 degrees) when a heater failed during a cold snap. The temperature was gradually raised and they seemed none the worse for it. When they were cold, food was ignored. But the increase in temperature brought back their appetites. Their ability to withstand this cold may have been luck or characteristic of "dayi".

4.—After four weeks of spawning,

the last group of eggs were about 25 per cent infertile and the remaining fry seemed genetically imperfect and died shortly after hatching. At this point the adults got a well deserved rest.

5.—Fry were transferred to larger aquaria as they became available. After two weeks of feeding only brine shrimp nauplii, I began feeding crushed flake food at the morning feeding when hunger would encourage their acceptance of dried food. They now readily accept it. Evening meal varies from live shrimp, to frozen, to flake food.

6.—The adults soon lose their timidity and now come to my fingers during feeding time. They accept all foods to this point. Generally my fish get one or two meals of live food

per week, the rest are divided between frozen, dried, or freeze dried foods. I've never observed them instigating or being the object of any finny battles.

7.—The only imperfection that I can find in *Aplocheilichthys dayi* is the small number of eggs spawned. This is characteristic, and not particular to my pair. However, this does make them a better choice for those who have limited space and wish to raise healthy, attractive young.

So, if you want a "panchax" for your warm water community tank, or to try your hand at one of the surface spawners without having to accommodate large numbers, may I suggest this "Ceylon Panchax". It is not only a perfect community member, but also a very viable fish and quite pretty in the bargain.

OUR HORACE

by J. Dernie

FOR APPROXIMATELY TWO YEARS, my wife has been keeping an African Lungfish (*Protapterus*). It measured only four inches when she acquired it, late in 1966. A number of aquarists will have seen this fish as it took third place A.O.V., Tropical at the 1968 B.A.F. Show. It was exhibited on the Workshop Stand. Since the show, we consider that "Horace" has grown about three inches in length, has gained three to four pounds in weight and is now thirty-four inches long, sixteen to eighteen inches in girth and weighs seventeen pounds. These figures are approximate and I think, conservative. The length is correct as there are two inches "to spare" when "Horace" lies straight in a thirty-six inch tank.

The only information which we have been able to obtain about the fish is from an article written by Helmut Stallknecht in the August, 1965, issue of the *Tropical Fish Hobbyist*. The fish is only then mentioned in comparison with the

Australian Lungfish. The article finishes with these words:—"In spite of the fact that, because of their size, the lungfishes are adaptable only to large public aquariums, and will never be the subject of interest among fish hobbyists, a knowledge of the existence and peculiarities of these fish will serve to round out our knowledge of the workings of nature in ages gone by".

Contrary to the above statement, "Horace" is one of the most interesting fish we have ever kept and is the centre of attraction in the Fish House. He only eats two kinds of food, both easy to prepare. One is pieces of half-cooked liver, the other, pieces of frozen Kit-e-Kat. Quantity—six or seven pieces of one or the other food each day. His eating habits are entirely different from those of any other fish we have ever seen. Considering that "Horace" has a mouth large enough to take a golf-ball, he is a very strange eater. The inside of his jaws are corrugated, very much like the old-fashioned rubbing-board used for washing, and when he takes in his food he presses the upper and lower jaws together, forcing the food out of his mouth until it is pressed flat. He repeats the process three or four times before swallowing the food. If he ever gets really hungry, he will come to the top of the tank and take food from your fingers—that is if you are prepared to take the risk!

Considering "Horace's" size he is a very graceful performer. He can do the "victory roll" to perfection. The "figure eight" is usually his way of asking for food and if no attention is paid to him he will smash the tank cover (which is a thick piece of perspex—well weighted). "Horace" has one other trick—much to our dismay! Several times each day he climbs up a corner of the tank until the top of his head and his top jaw are out of the water. He will stay in this position for a short time, then he makes his final move. Being a lungfish he takes in gulps of air and the nearest description I can give of the noise he makes is that of water gurgling down a wastepipe. Anyone hearing this noise for the first time, during darkness in the fish house, would stand a chance of breaking the record for the hundred yard race!

Aquarists seeing the fish (and scores have) would think it cruel to keep it in such a small tank (36 in. x 18 in. x 15 in.) but "Horace" seems to be very happy. Very soon, however, we intend to move him to a larger tank (60 in. x 36 in. x 24 in.) and we are longing to see what new tricks he will perform in his new home.

Does any aquarist have a larger and/or as interesting a fish as "Horace"?

"Horace" will be appearing on the stand of the Dukeries Aquarist Society at the B.A.F. Show in October this year. We hope!

THE OSCAR

by Jack Hems

THIS SOUTH AMERICAN CICHLID is found extensively in Paraguay and Brazil. In its native waters it attains a considerable size, but in the aquarium it seldom reaches more than about a foot. For its size, the oscar—scientifically known as *Astronotus ocellatus*—is reasonably well-mannered, but small ones are unsuited to a community tank because they always seem to attract the unwelcome attentions of other fishes, that chase after them and usually succeed in frightening them away from food.

A tank for a pair should never be less than 3 ft. long and 4 or 5 ft. is better. The bottom should be carpeted with a thickish layer of well-washed coarse sand or fine grit. Some pieces of lime-free rock may now be introduced into the aquarium to furnish shelter places and decoration. In common with lots of other cichlids, the oscar will tear out plants that grow from the bottom, but floating plants or plants that will grow floating, such as *Elodea densa*, are usually left alone. The most satisfactory temperature is about 78°F (26°C), but a variation of a few degrees either way does no harm.

The body of the oscar is well-fleshed and elongate-oval in shape. The scales are small and have this unusual feature, that they do not reflect metallic lights. This lack of glitter results in the fish having a singularly beautiful appearance, like that of fine suede or velvet. The ground colour may be anything from pale beige through olive to a rich chocolate brown. Over this is spread a marbling of orange, grey-green, black, and ivory-white. In the base of the caudal fin there is an eye-spot, or ocellus, of dark brown to black in an orange field. Similar ocelli may be present, almost always are, in the spinous dorsal fin. Otherwise the fins are greyish olive with or without lighter or darker markings. Nearly always the sexes of well-grown specimens may be distinguished by differences in coloration: the male being the handsomer of the two. This is most noticeable during courtship and

spawning. Occasionally though the sexes look alike, or nearly alike. Young fish are not so well-coloured as adults. And breeding size is not attained until the fish reach about 6 to 9 in.

Behaviour before spawning is typical of most of the larger cichlids, or let's say of the cichlasomas, to which genus the oscar is closely related. Interlocking of the jaws is a feature of the courtship, as is also the spreading of the unpaired fins. The female gives as much as she takes, but is less aggressive in her love-play and occasionally has to be protected from the onslaughts of the male. It is usually the male who makes the first advances, who rushes at the female with jaws agape, and initiates the exchange of nibblings and body-pressings.

The large and adhesive eggs are laid on a smooth surface as, for instance, the base of the aquarium after the sand has been moved away, or on top of a flat stone. But before this stage of the breeding procedure is reached, the spawning site is cleaned by the male. Sometimes he is assisted in his task by the female. And about this time, too, both sexes develop a nipple or spawning tube from the vent.

It is not uncommon for a pair of oscars to quarrel during or just after spawning. This unhappy state of affairs usually results in the eggs being eaten by one or both fish. Therefore, if more than two spawnings come to nothing, commonsense dictates that the next batch of eggs laid should be separated from the parent fish.

If the eggs are placed in another tank any change of temperature must be avoided. And another thing, it is of particular importance that the water in the hatching tank is clear and soft. A subdued light and gentle aeration are two more pointers to success.

A sharp look out should be kept for any eggs that turn white or fluffy. These must be removed at once. It is not difficult to do this with the aid of a needle fixed to a short length of cane, or a fine-pointed forceps. The period of incubation is three to four days, and as soon as the fry have become free-swimming an unfailing and generous supply of small livefood is called for. Rotifers, micro worms, freshly-hatched brine shrimps, and tiny *Daphnia* are well-suited to their needs.

It would take too long to describe in any detail the behaviour of a perfectly matched pair intent on raising a family, and at this point it should be mentioned that the fish does not breed very readily. But one thing is certain, and that is that the two fish take it in turn to fan the eggs (to prevent dirt settling on them) and generally watch over them. As soon as the fry are free-swimming, they are taken on exploratory tours of the tank with, usually, one parent (the male) in the lead, and the other parent bringing up the rear. Sometimes, but not always, newly hatched young are moved to depression after depression hollowed out in the sand.

By nature the oscar, known, also, by-the-bye, as the velvet cichlid, marble cichlid and peacock-eye cichlid, is carnivorous and will not thrive unless it is fed on livefood or suitable substitutes for livefood. Snails, earthworms, maggots, woodlice, cooked heart, washed liver and raw lean steak are all eaten with relish. But for all that, the oscar is not strictly carnivorous, and dried food is usually accepted.

For the rest, the oscar, once it has settled down, soon becomes remarkably tame and is, without question, one of the handsomest, longest-lived (upwards of eight or nine years) and endearing of all of the larger tropical aquarium fishes. It was first made available to aquarists in 1929.

THE PENGUIN FISH

by Guy Robertson (age 10)

In the day he is still,
Except for an occasional dash,
At another fish.
He is a penguin fish,
A devil at that,
He chases the fish like some madcat
But at night he is even worse;
He bites the fins of some of the fish.
You put him in a jar to cool,
But when let out he acts the fool.
His colour is gold;
A large black stripe runs,
Down his sloping back.
He eats as much as he can get,
But never cares one little bit.
His eyes like demon's are quick,
And sly,
But no one knows the reason why!

'OPERATION EXHIBITION'

July's Big Attraction in London is taking shape

ALL INDICATIONS POINT TO success for the *Aquarist and Pondkeeper* Fish-keeping Exhibition, for which preliminary arrangements are well in hand and have already produced evidence of enthusiastic support for the event.

Every foot of exhibitors' space has been booked and enquiries for show schedules are pouring in from clubs and individuals all over the country. It is evident at this early stage that Alexandra Palace will be a gathering point for aquarists from all quarters in July, and that they will find much to interest them. The general public, too, will be strongly attracted through widespread publicity to the prospect of a colourful exhibition combined with a family outing in the 280-acre parkland around the Palace; and with a strong accent on schools' exhibits the ranks of the junior aquarists should swell considerably after July.

The Exhibition, covering nearly 20,000 sq. ft., will be a major event in the aquatic calendar. It opens on Thursday, 10th July at 2.30 p.m. and continues until the following Sunday, four busy days in which the best and the latest in fishkeeping skills will be on parade. A vast amount of expert organisation is necessary for an event on this scale, and the sponsors are indebted to the Federation of British Aquarists for their willing and capable co-operation in planning and running the Exhibition.

Thanks go, too, to the many enthusiasts who have offered their services as stewards; more are needed and the Show Secretary will be pleased to hear from you if you are interested and available. Refreshments will be available for helpers at the Exhibition Hall before the opening and of course throughout the time it is open.

Show schedules have now been distributed and further copies are available from the Show Secretary, Mr. S. Mooney, 44 Coniston Road, Muswell Hill, London, N.10.

The schedule of classes includes



Alexandra Palace and Park. Photo: Aerofilms Ltd.

Society Furnished Aquaria, Tropical and Coldwater, and similar classes for individual entries; Furnished Aquaria, Marine, open to individual entries; Junior Furnished Aquaria; and a special class of Furnished Aquaria entered by schools. Pairs of Swordtails, Platys and Mollies each have their class, and other sections cover Rooted Plants and Cuttings. In addition to the competitive classes there will be exhibits by specialist societies, and the traders' displays in themselves will offer abundant interest including one of the finest displays of marines to be seen anywhere.

Among the many authorities who will be on hand to answer questions and give advice are our technical experts, Mr. J. Hems and Mr. A. Boarder, at the *Aquarist and Pondkeeper* stand, where the Editor will also be in attendance.

Handsome trophies have been presented for competition by leading companies in the trade and by this magazine, which will also present Award Cards and souvenir trophies to first, second and third-place winners; fourth place winners will also receive Award Cards.

NOTE: The reference on page 12 of our April issue to "tropical" prizes was not intended to hold out a prospect of our whisking away the winners to some sunlit island paradise!

It [was, as most readers will have guessed, a mishap in typesetting and we regret any misunderstanding of a phrase which should have read "handsome trophies and prizes."

The special class for schools promises to produce some interesting entries and a high degree of competition. Most of the schools in the London area have been invited to take part and the response to date indicates a lively interest and keen rivalry among them.

Admission charges have been kept at a level that will encourage the maximum attendance from family groups in particular, and special concession rates are available for parties, i.e., 3s. per head for parties of 25 and over. Application for party tickets should be made to the Show Organiser, *The Aquarist and Pondkeeper*, The Butts, Half Acre, Brentford, Middlesex. Handbills, posters and car stickers are also available from the Show Organiser.

An immense amount of energy and organisation is being put into the planning of the Exhibition by the Federation, show officials and the many willing helpers, and will continue right up to opening day to ensure that this event will be one that no aquarist can afford to miss—and one that will recruit many more enthusiasts to the arts of fishkeeping.

THE AQUARIST & PONDKEEPER FISHKEEPING EXHIBITION

Sponsored by The Aquarist & Pondkeeper and organised with the co-operation of the Federation of British Aquatic Societies.

Schedule of Classes

Society Furnished Aquaria Tropical
Society Furnished Aquaria Coldwater
Individual Furnished Aquaria
Tropical
Individual Furnished Aquaria
Coldwater
Individual Furnished Aquaria Marine
Junior Furnished Aquaria
School Furnished Aquaria
Pairs of Swordtails
Pairs of Platys

Pairs of Mollies
Rooted Plants (one plant will
comprise an entry)
Cuttings (three cuttings of same
species or variety will comprise
an entry)

In addition to the competitive classes
above there will be displays of fishes
representing specialist society
interests.

Book the dates Thurs 10th to Sun 13th July

Show Schedules available from
S. Mooney, Show Secretary,
44 Coniston Road,
Muswell Hill, London, N.10

P. J. Golding, Show Organiser,
The Aquarist and Pondkeeper,
The Butts, Brentford, Middlesex
Telephone 01-560 6221

The fishkeeping
event in
London to be
held at

Alexandra
Palace
Wood Green
London N22

Awards and Trophies

The Aquarist and Pondkeeper Fish-keeping Award cards will be given to the First, Second, Third and Fourth in each class. The first three in each class will also receive a souvenir trophy.

Challenge trophies are being presented to the First Awards in each class and are being donated by Inter-Pet Supplies Ltd.; South Coast Aquatic Nurseries Ltd.; T.F.H. Publications (London) Ltd.; Shirley Aquatics Ltd.; Singleton Bros. (Electronics) Ltd.; SeAquariums Ltd.; Philip Castang; House of Fishes; Thomas's Ltd.; Nuova; Herb Royal Ltd.; *The Aquarist and Pondkeeper*.

Open to the public

THURSDAY, 10th July, 2.30-9 p.m.

FRIDAY, 11th July, 10 a.m.-9 p.m.

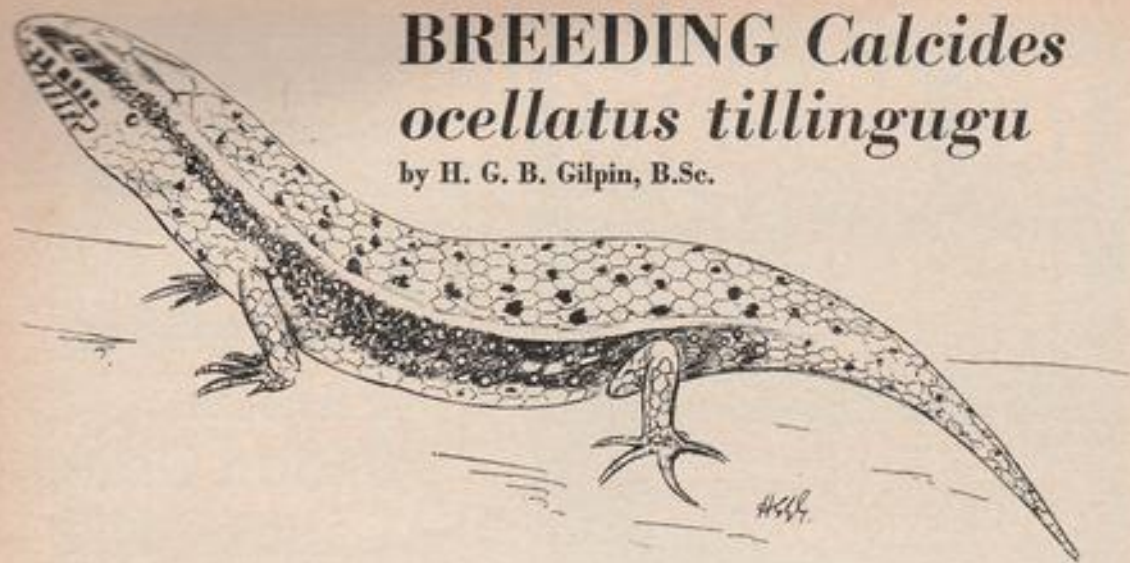
SATURDAY, 12th July,
10 a.m.-9 p.m.

SUNDAY, 13th July, 10 a.m.-5 p.m.

Unlimited free parking and ample room for the family in the 280 acres of grounds.

BREEDING *Calcidetes ocellatus tillingugu*

by H. G. B. Gilpin, B.Sc.



THE EYED SKINK, a sub-species of the Ocellated Skink, *Calcidetes o. ocellatus*, occurs in Tunisia, Algeria, Sicily, Sardinia, Pantellaria and Malta. It is found in vineyards and orange groves. My pair were caught in a nursery comprising twenty acres of cultivated and waste land where water was available. Not many were seen in Malta generally but they were fairly numerous, both adults and young, in this particular spot. It was noticed that the adults usually occurred in pairs.

My pair arrived in England in April, 1968, in good condition, and were placed in a vivarium 17 in. x 11 in. heated to 80°F. The floor was covered with two to three inches of smooth pebbles, each roughly the size of a marble, in which both skinks immediately buried themselves. After a while they pushed their heads above the pebbles, leaving the rest of their bodies submerged. In this position they were almost invisible, the fawn-brown heads, wide between the eyes and narrowing sharply to pointed mouths, merged marvellously with the rounded stones.

After a day or so, they emerged and spent some hours each day basking in the heat from the overhead electric light bulb, giving me an opportunity to observe them more closely. They were identical in colour. Their stout, powerful bodies, sepia brown in colour, were marked with trans-

verse lines of dark brown, oval spots. A fawn line on each side separated the back from the flanks and below the line the spots merged into a black band dotted with circular fawn spots. The underparts were white. The male, stouter built and rather coarser than the female, measured 11 in. from nose to tip of tail, the female being one inch shorter. In both sexes the legs were disproportionately tiny and although they seem inadequate for carrying such heavily bodied animals on solid ground (indeed they scarcely raise the abdomens above the horizontal) they cause little obstruction below the surface where the skinks can move with considerable speed. I discovered this when attempting to catch them, finding they moved underneath the pebbles faster than my hand could follow them.

The bodies were covered with hard, smooth scales, so highly polished as to appear metallic in finish. This forms a slippery surface, which together with the very muscular nature of the bodies, makes them difficult to hold in the hand.

My pair commenced to feed within a day or so after they were first installed. All feeding, with these two at least, appears to take place at night or in the early morning. This may be due to their somewhat nervous natures since, although they will lie out in the open as long as one

remains perfectly still, at the slightest sign of movement they disappear below ground. This tendency to withdraw from observation is not readily overcome. Mine have been with me almost a year now and still "sound the retreat" at a surprise approach.

To begin with they would only eat adult locusts consuming two to three apiece every 24 hours and showing little interest in hoppers. Nowadays they will take locust hoppers as small as the third instar and also consume blowflies and some mealworms. These skinks are said to take raw meat but mine have refused steadfastly to show any interest in this article of diet. I have not offered them beetles but, judging from the powerful appearance of the jaws, can well believe they would have little difficulty in crunching up these insects as described by some authorities.

Although I have not actually seen the adults drink, the level of the water pot falls regularly and there is no doubt that they need water and are prepared to take it from a vessel. A day or so ago one of the young ones was observed lapping water with its tongue. After cleaning out their quarters, just before Christmas, I replaced the pebbles with three to four inches of rounded gravel and introduced a bark covered log. They showed little interest in the log,

except to burrow underneath it, but the gravel caused a slight change in their habits. Instead of protruding their heads, as they had done when supplied with pebbles, they submerged the whole of their bodies, leaving no part exposed. At this time the temperature was allowed to rise to a constant 90°F.

On February 20th, my attention was drawn to the skink's vivarium and to my surprise and delight, although the female had shown no previous signs of being in young and in spite of fairly constant observation during which I had not seen the male taking any particular interest in her, a baby skink was basking on the surface of the gravel. On running my fingers gently through the gravel, I dislodged five more young skinks. Being all too well aware of the enthusiasm with which mature lizards regard their offspring as a welcome addition to the menu, I hastily transferred two of the babies to a fresh vivarium, leaving four with the parents. One, born with a malformed jaw, died within 24 hours but the rest flourished. After a week, although I had seen no attempts by the adult skinks to devour the young ones—(probably because their burrowing habits, firmly established in the babies from the day of their birth—enabled them to avoid any direct contact with their parents) I decided to eliminate all possible risk and transfer the adults to other accommodation, so leaving the young ones to grow on in familiar and apparently satisfactory surroundings.

Catching the adults involved blind groping in the gravel until the fingers encountered a skink, a process which was not made any easier by the speed with which they moved as soon as they were touched. The female showed no particular resentment on being handled but the male responded promptly and bit my finger, hanging on with all the determination of a bulldog. The bite did not draw blood but was nevertheless quite painful.

Owing to temporary shortage of room, the adults were put in with a full-grown pair of Jersey Green Lizards. The floor of the vivarium was covered with a dry mixture of coarse sand and soil, in which the skinks buried themselves with the same enthusiasm they had shown when based on gravel. The two species appear to agree perfectly well

and there have been no signs of conflict.

Meanwhile the young ones are growing steadily, feeding freely on newly hatched locust hoppers, tiny mealworms and small stick insects, the latter being by far the favourite article of diet.

The babies were each about nine centimetres in length at birth and are almost identical with their parents in colour and shape. They are less nervous than their parents, spend far more time in the open and do not disappear with the same readiness when approached. It will be interesting to see if this state of affairs continues or whether they revert, as they grow older, to the inherent nervousness of the species.

WALKING' FISH THAT WALKED OUT

Extract from
Malay Mail, Kuala Lumpur

by Joachim Ng

KUALA LUMPUR, Mon.—A "walking" fish which the Selangor Aquarists' Society wanted to enter for the 3rd Annual Tropical Fish Exhibition beginning on Wednesday, has walked out on them.

The fish left the same way it came when it was caught—walking on its fins.

Unusual

It all began about two weeks ago when a schoolboy, Stewart Labrooy stopped his car at the 15th mile Federal Highway, when he noticed an unusual object waddling across the road.

A close look dumbfounded him. It was a two-foot long walking fish!

So Stewart took it to the home of Mr. Douglas K. K. Lee, president of the Society.

Mr. Lee decided to enter the fish for the exhibition. He also decided that fish fanciers throughout Malaysia should know of this unusual fish. So he called in a T.V. Malaysia camera crew and let lose his walking fish on his lawn. It promptly moved around "rather like a walrus."

And then on Wednesday night the walking fish—an Ikan Haruan—suddenly decided it had had enough of publicity. It broke through the

plastic net covering its tank and has not been seen since.

However there is one consolation for the fish fanciers because T.V. Malaysia will screen the action of the walking fish tonight after the English news.

Strange as it may sound the Ikan Haruan, or China Walking Fish, is actually very common in the country. It lives in the swamps.

But what most people do not know is that it can live out of water for up to seven hours with just a trace of moisture.

It can also walk miles.

The five-day exhibition at Stadium Negara will be opened by the Sultan of Selangor.

It will feature 45 species of fish. More than 400 entries have been received for the show.

The emphasis this year is on the larger varieties of local fish, such as the Knife Fish, the Ikan Toman and the Ikan Bulan.

FIND THE FISH

Doreen Thiel

The first is in DOSE but not in PILL.
The second is in COLD and also in CHILL.

The third may be found in RAIN
and also in WATER.

The fourth is in MOTHER as well
as in DAUGHTER.

The fifth is in OCEAN but not in SEA.

The sixth is in POTATO and also
in PEA.

The seventh is in HILL but not in DALE.

The eighth is in BARGAIN and also
in SALE.

The ninth is in COTTAGE but not
in HOUSE.

The tenth is in JUMPER and also
in BLOUSE.

The eleventh is in START but not
in BEGIN.

The twelfth is in BRANDY but not
in GIN.

The next is in FRONT and also in REAR.

The fourteenth is in GUN but not in SPEAR.

The fifteenth is in AQUARIUM
but not in TANK.

The last is in SMACK and also in SPANK.

Solution on page 48



THE PERMANENT UNION of organisms which depend on each other for their existence is referred to by biologists as symbiosis. We have known of the existence of this association between land creatures for hundreds of years. A good example of this is the osprey which spends its time picking ticks from the tough plated skin of the rhinoceros. A similar relationship is found between the frail Egyptian crocodile birds which boldly clean out the teeth of yawning crocodiles. However, symbiosis does not only occur on land, for in recent years this phenomenon has been observed between sea creatures. Many underwater pioneers have filmed this relationship on the sea bed and further study has been carried out by biologists and marine fish hobbyists from observations made on fish and invertebrates in the aquarium.

Perhaps the best example of symbiosis in marine life is the hermit crab, for this unusual creature does not have a hard shell like other crabs, and therefore has to make use of discarded snail-shells for a home. Often it has been observed that the hermit crab will carry around different sea creatures on its shell for mutual companionship. The small cloak anemone *Adamsia palliata* can often be found on the back of the hermit crab, and two parasite anemones (*Calliacis parasitica*) have also been seen riding along on the back of the crab's shell. The parasite anemone is rather a misleading name for it certainly earns its keep by acting as the first line of defence for its host as fish will make sure they avoid the stinging cells of the anemone and thus leave the hermit crab in safety.

The way the hermit crab entices the anemone, a generally static creature, on to its shell is rather ingenious. The crab tickles the anemone until it shifts its anchorage from a rock onto its shell. However, the relationship is not just one-sided,

MARINE SYMBIOSIS

by T. H. Legg

as the crabs, being rather messy eaters, often spray food on to the anemones which are thus certain of a regular diet.

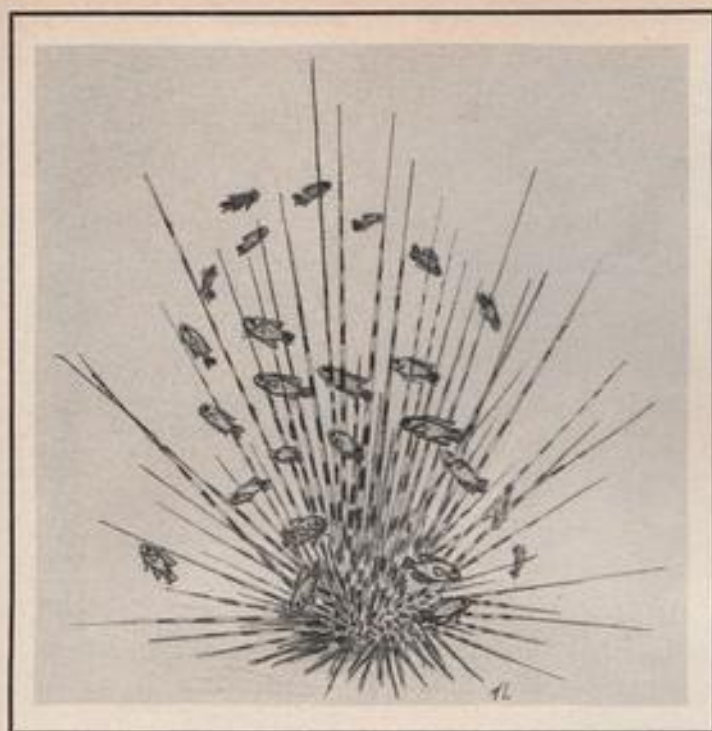
Quite often hermit crabs will have other creatures on their backs such as sulphur sponges, or small fixed polyps of the hydroid family, usually *Hydractinia echinata*. These polyps resemble very small anemones, having a tubular soft body, sometimes with a hard outer chitinous skeleton. The unattached end has a mouth surrounded by a ring of tentacles which are able to catch any surplus food from the hermit crab. Another form of life which is also found on a hermit crab, and which is one of the most primitive forms of life, is the sponge. In fact, until the 19th century the sponge was thought to be a plant. Sponges are made up of a maze of tubes which are joined together. Valves draw water through the tubes filtering food and oxygen in the process. Sponges often have a hard outer shell made of calcium carbonate or silica which have many closeable pores to allow water to circulate through the tubes. Sulphur sponges

gradually dissolve the snail shell in which the crab is living so that the crab eventually finds itself using the sponge as a home. Again, as with the anemones, the crab also gives a service in return, enabling this normally static creature to cover a much wider feeding area.

In the spring these crabs must perform a most dangerous manoeuvre, finding a mate and also a larger home as the crab will soon outgrow its old one. The mating takes place in a matter of seconds, both crabs risking their lives by leaving their shells and exposing their vulnerable, delicate bodies to any hungry fish. I have heard that during the war, U.S. troops, to their amazement, saw discarded bullet cases get up and run into the sea. On closer observation the bullet cases were found to contain the adaptable hermit crab making use of these man-made shells.

Perhaps the best known form of symbiosis, is the perfect relationship between the clown fishes and anemones. It seems most unusual that the anemone should befriend the clown fish, and yet prey on all other species of fish. For a long time it was thought that this friendship was rather one sided in that the clown fish sought protection amongst the stinging tentacles of these anemones and yet gave nothing in return. But after careful observation in the sea and aquarium, it is now certain that the clown fish feeds all surplus food it may find to its host anemone. These fish not only live with large tropical anemones, but can quickly befriend any other type of anemone. I have observed clown fish touching the stinging cells of our native marine beadlet anemone within minutes of them being placed together in the same tank.

Some anemones from the Great Barrier Reef mature over several hundreds of years to as much as three feet in diameter and these may house



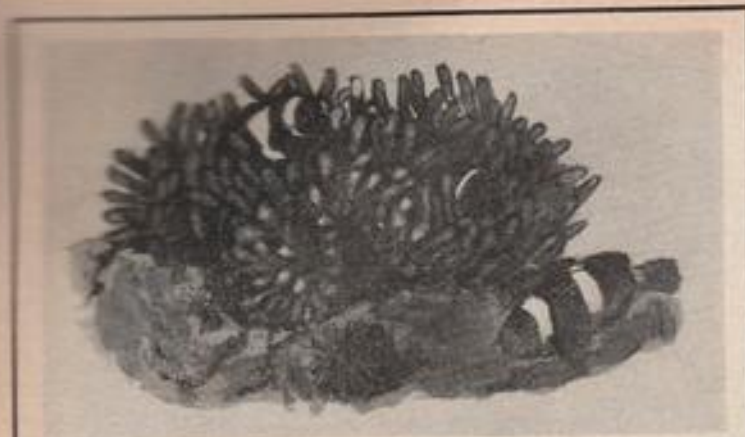
a whole family of clown fish. However, the smaller anemones will only provide a home for a single, or at the most, a pair of clown fish which will defend their "home" from other members of their own species.

A close relative of the anemone is the jelly-fish. The Portuguese Man-o-War has been known to inflict a fatal sting on a human on a second contact if the first sting has caused a sensitivity. These jelly-fish can catch, stun and digest fish, but some small fish, usually *Stromateidae* and *Nemurus*, are immune to these stinging cells. They seek protection amongst the 10 to 16 feet long fishing threads that hang under this jelly-fish. The reason for the Man-o-War tolerating these fish might be that they use them as a means of luring other fish into the apparent safety of their weed-like threads.

Another form of symbiosis is between the brightly coloured, vertically striped Pilot-Fish that are found accompanying large sharks, Rays and ships. It was once thought that the Pilot-Fish guided short-sighted fish like sharks and in return they were able to feed on the left over food. But some marine biologists now believe that the other senses of the shark are more acute to compensate for the poor sight, that the Pilot-Fish are just too nimble for the shark to catch; that in the company of these larger fish they are not molested by other fish, and are on hand for easy food when the shark makes a kill. However, this theory does not explain the colour and pattern which makes the Pilot-Fish so

Top: A shoal of small Damselfish (*Pomacentrus melanochir*) amongst the spines of a poisonous Indian Ocean sea urchin.

Bottom: Two parasitic anemones riding on a hermit crab. A young wrasse (*Coris gaimard*) is in the background.



Top:
Rarely seen, three species of
Clown fish, at home in an Indian
ocean anemone.



Bottom:
An attractive Red, Squirrel or
Soldier fish (*Holocentrus furcatus*)
is doctored by a pair of Cleaner
wrasse, (*Labroides bicolor*).

conspicuous. Large sharks may have many of these fish plus several shark-suckers in attendance; the latter attach themselves to the shark by means of an oval suction pad on their heads.

Jacques Cousteau and his underwater team filmed an experiment on the sea bed to see if the small shoals of damsel fishes that live in harmony with the large poisonous sea urchins can be induced to transfer to another urchin when their own is removed. Several urchins were grouped together by placing plastic domes over

the different urchins, but their entourage could not be induced to join the wrong urchin.

Sea Urchins are a rather interesting form of life, belonging to the class Echinoidea. Echinoderms are egg shape shells consisting of several hard plates joined together. There are spines of different lengths projecting from the shell which can be moved in almost any direction. The urchin moves in a slow creeping way by means of small stalk-like legs tipped with suction pads. A few species have poisonous spines which can

cause severely painful wounds; and the spine tips often break off in the wound and cause inflammation, even from non-poisonous urchins. Many species of urchin are suitable for the home marine aquarium although some are strictly vegetarian, grazing off marine algae and will unfortunately not last long in a tank.

A different type of symbiosis is the "medical service" performed by a small group of fish and invertebrates (some 26 fish, 6 shrimps and one crab) who act as doctors to the 11,000 species of fish that abound in the oceans. These small fishes, mainly of the wrasse family, spend their time picking parasites and diseased tissue from visiting fish. It has been known for a pair of wrasse to set up a "hospital ward" in a specific reef where sometimes hundreds of fish will come from far and wide especially for the cleaning services of these fish. In return the cleaner-wrasse are not only fed by the visiting fish, but earn perfect immunity from all the predator fishes which could make a meal of these tiny fish. The illustration shows a squirrel fish opening its mouth wide for a cleaner-wrasse (*Labroides bicolor*) to perform its duties, another wrasse cleans the gills from underneath.

I recently noticed a relationship in the tank, which could come under the heading "symbiosis", between a puffer fish and an Aesop prawn which cleans and rides about on the back of the puffer. At feeding time the prawn feeds on the food sprayed about by the puffer by reaching over its head.

Some of the creatures mentioned in this article may be parasites. But many species which are today thought of as parasites may well turn out to be performing a service to their hosts as well as to themselves, and in future may be described as symbiotic.

**Answer
to
Find the
Fish**

Scatophagus argus

WHAT IS YOUR OPINION?

by B. Whiteside



QUITE A WIDE RANGE of topics are covered in this month's letters.

Mr. P. Pearce, of Blackheath, London, writes on the topic of coldwater fish. He finds them much more interesting than tropical fish. Seeing fish in their natural environment is his main pleasure. The garden pond is the ideal place. Mr. Pearce asks who wants to see an aquarium in a room, hidden away in a corner, with, apparently, a large number of small, squirming fish, which require one to screw up one's eyes, or practically put one's head through the glass, to see the fish amongst the weeds. He would much rather see a good sized orfe or roach jumping out of the water after gnats or flies, or look at a pond with its full array of lilies, and a fountain or waterfall moving the water a little. Such a pond might be visited by a frog or newt, by beetles, spiders or snails, etc. Nearly all the food required by fish in a pond can be found in the mulm at the bottom. An occasional feeding 2-3 times per week will suffice their every need. If a worm is found whilst gardening, it can be thrown pond-ward and will supply a snack for the quickest fish. Vast numbers of fish can be put into a pond, with room for any newly born fry. There is no throwing of fish down the toilet, as is done with tropicals, probably due to lack of room with heating facilities. If overcrowded, coldwater fish can be scooped out of the pond and put into an old bath or sink in the garden, where they can live quite happily. Probably the main advantage of

coldwater fish-keeping and possibly why fish are not so abundant in the shops, is that you can catch your own. What is there better to do than spend a lazy day on the side of a lake, watching for a bob on the float, and saying, "That's a carp", or "That's a tench", and then whisking it out of the water to confirm your prediction. For the fisherman of action, pleasure is found in standing in the rapids waiting for chub or trout to test your skill. Even when one goes to retailers' shops, tropical fish seem to cost three times as much as our native fish, and be three times as small. One could purchase a 9 in. goldfish for £1. Mr. Pearce says that he has yet to see a tropical fish the same size, for the same price. One could catch a 4 ft. pike for nothing. How much would a reasonable tropical substitute cost?

Mr. Pearce ends with a few points. Our native fish can stand anything from freezing to 80°F. If, for example, there is a power cut for a sustained length of time, what do tropical fish get for heat and aeration? Does one place hot bricks in the water whilst wearily pumping bellows? At least you can transfer coldwater fish to other containers which need not be heated. One can become sentimentally attached to one or two large fish, as they live so long. Tropicals kept in aquaria never seem to become part of the family, from what Mr. Pearce has seen, and they never seem to live for more than ten years. Mr. Pearce hopes that other writers will defend our native fish.

Fifteen-year-old Master R. Bromwich, of Wembley Park, Middlesex, also writes in defence of coldwater fishkeeping, which he calls "a marvellous art". He begins with the point that one does not have to bother with heating. He says this not because of the extra cost of electricity, or the fact that if a heater or thermostat fails, a whole tankfull of fish can be lost, but because an extra electric point is needed, and this adds to the two already in use for the filter and lighting, making things rather crowded. The main reason why Master Bromwich prefers coldwater fish to tropicals is that they are bigger, and therefore such points as size and number of fins, shape and colour are much more easily distinguished on them. Also it is widely thought that the common

goldfish is the only goldfish, and that all other breeds are tropicals. This is quite wrong of course, as beautiful fish such as fantails, veiltails, moors etc., all come into the coldwater category. This means that there is quite a lot of variety amongst goldfish. Master Bromwich agrees that coldwater fish need more space and are, therefore, more difficult to breed than tropical fish, but surely the bigger the challenge, the more enjoyment one gets when one succeeds. Regarding the popularity of tropical fish over coldwater ones, he can only agree with my suggestion that coldwater tanks are often stuffed away in dark corners of shops, and do not seem very striking to the potential purchaser, but Master Bromwich adds that pet-shops do not seem to realise that coldwater fish need more space than tropicals, consequently, when crowded together, they are weakened generally, and diseases can spread more easily. These facts, combined with the fact that fantails and veiltails which are sold by shops, are usually bad specimens (show-wise) means that the would-be purchaser of goldfish often gets a nasty shock, either in the shop, or a few days later, at home.

Master C. Wood, of Bedford, Middlesex, who is 14 years old, does not think that dealers are helping to kill the coldwater side of the hobby. Near where he lives, is a pet shop which has goldfish in large, Gro-Lux lit tanks. The tropical fish, although more numerous, occupy smaller tanks. A well-known dealer at Hendon has a tank of coldwater fish. It's about 6 ft. x 3 ft. x 3 ft. Another fish farm near Staines, has an extensive system of ponds and tanks for keeping coldwater fish. On the question of hoods, Master Wood agrees with Mr. Higham that home-made hoods are the best type. His father made him a hood for his 24 in. x 15 in. x 12 in. tank. It is built from aluminium sheeting, riveted together, and has a large lid so that it is possible to work inside the aquarium easily. Most hoods on the market have a small lid and it is difficult to work inside these hoods with your hands. Aluminium has the advantages of being easily worked, light and rust proof. Chokes, starters and other equipment can be fitted on the back of the hood. When the hood was first constructed the hinges on the lid were of steel and

they rusted, causing rust to fall on to the surface of the water. Since then, they have been replaced by chrome-plated hinges. As the hood is about 7 in. from the surface of the water, it is difficult for the fish to jump out when the lid is open. The hood does not need to be painted because the aluminium is polished and it looks most attractive.

Mr. Alan Tower, of Airedale, Castleford, writes to say that he has kept tropical and coldwater fish for the past eight years and offers the following views. He says that coldwater fish are just as colourful and as unusually shaped as tropical fish. The black moor is as interesting in colour and shape as is the molly. Few fish carry as much colour as do the North-American sunfishes. On the subject of breeding, the spawning of bitterlings or the common stickleback is at any time as interesting as that of the mouth-breeding cichlids or bubble-nest building anabantids. Many comparisons can be made—such as—a shoal of neons, zebras or harlequins may look beautiful swimming in a large aquarium, but a shoal of minnows or small golden orfe are also a sight to be remembered.

For the aquarist who has room for a large, single fish, why spend good money on a piranha, when the British pike holds as much fascination with its savage and cruel eating habits. In closing, Mr. Tower says that not many aquarists realise that as an added interest to the tropical aquarium, most fancy goldfish such as the lionheads and orandas will live quite happily with tropical fishes. He also mentions that, unlike many other aquatic magazines, *The Aquarist* shows as much interest and consideration for the coldwater fish keeper as for our tropical rivals. (Might I suggest that we are not rivals, or would other readers disagree?)

It's pleasing to receive letters from lady aquarists, and Mrs. A. Shirley Taylor, of Halewood, Liverpool, 26, writes to defend the coldwater hobby. She says that she has never read such nonsense as appeared in the December article of W.I.Y.O., and can only hope that it does not put newcomers to the hobby, off keeping coldwater fish. Mrs. Taylor has kept both tropical and coldwater fish for several years and feels that she should comment. First, the myth that coldwater fish are difficult to keep; given

a reasonable sized tank, in relation to the size and number of fish, a fairly constant temperature, and enough aeration and filtration, it is simply up to the aquarist to keep the tank well maintained, the fish well fed with live food, and new fish quarantined. All these things are necessary for tropical fish too. Coldwater fish need no more room than the large tropicals (her own tinfoil barbs and yellow-finned barb require just as much space as her large orandas) and they are practically wasted in a pond in a country with a climate like ours, unless wintered indoors, giving time for some observation.

On the question of diseases, Mrs. Taylor would be amused by Mr. K. Forsyth's remark that "It's ten to one that they don't survive", if it weren't for the fact that someone might take him seriously. She has cured her own fish (nearly always newly acquired ones) many times, of just about every disease, with the exception of dropsy, and has known of cures by other coldwater fish keepers. For the sake of their fish, Mrs. Taylor would be happy to furnish anyone with information of the cures which she has found to be 99 per cent effective when used properly. (Her full address is 188, Leathers Lane, Halewood, Liverpool, 26). Indeed many diseases can be cured by the method used by Mr. Forsyth for his tropicals i.e., a simple rise in temperature for about 72 hours; this must be gradual, with any addition to the water as necessary. Over all, the fish can tolerate far more in the ways of "cures" than any tropicals. On the question of colour and variation, Mrs. Taylor says that it is obvious that none of the correspondents have ever made any more than a half-hearted attempt to obtain good specimens. The remark that "tropicals are dearer" illustrates her point. She feels that any serious coldwater fishkeeper would agree that it is almost impossible to buy a good but cheap coldwater fish; in fact this is the only thing that she has against them. However, if expensive to begin with, compensation is afforded by the beauty and colour of the grown fish. To her, nothing can rival the fully "hooded" veiltail oranda—in fact, the flowing finnage of any good veiltail displays a beauty unparalleled by tropicals, including the famed discus. She could write pages about the colour of her cold-

water fish, and their endless mutations. She carefully selects fish with colours which complement each other, for her show tank. This takes time, usually buying one or two on each occasion, but with the number of varieties now available, the choice is almost endless, but one does have to shop around, find good dealers, and stick to them. On the question of plants, Mrs. Taylor admits that she has experienced difficulties in the past, but time and patience have cured these. She finds that tropical plants such as Amazon Swords and various types of "grass" plants which do NOT interest the fish, are best. They grow well in a tank with a temperature of 65-67°F., and with adequate lighting. The usual Elodea and a few lettuce leaves make up the vegetable matter needed for the fishes' nutrition. Any display is best kept as a background, offering the fish plenty of swimming space. Finally, Mrs. Taylor thinks that my point about getting attached to large fish, is, perhaps, her main reason for liking coldwater fish. Their life-span is so much longer than most tropicals, that one cannot fail to become attached over the years, as one sees them grow and develop their various characteristics. She regards her fish more as friends than as mere inhabitants of the aquarium, and visitors to her house are always far more interested in them than in their tropical friends, although she has many and varied tropicals. Mrs. Taylor ends by saying that in case anyone thinks that she has endless time and money at her disposal, she is 28 years old, is married, has a one-year-old son, several animals and a husband to look after.

Another letter from Liverpool was sent by Mr. C. H. Molyneux, in defence of coldwater and semi-tropical fish. The writer of this letter says that if he had bought more books on fish keeping when he started first, he would not then have lost some of the most beautiful fish which he has ever seen or possessed. After his six years' experience, Mr. Molyneux has learned so much that he is now consulted as the local "fish doctor". Mr. Molyneux started keeping fish when his daughter won a goldfish at a fair. He then became interested in the hobby and graduated to larger aquaria. One of Mr. Molyneux's favourite fish is "Old Tubby", the finest lionhead, veiltail oranda

which he has ever seen. It has a large lionhead and pudgy face and is the envy of everyone who sees it. Some of his fish have been so tame that they would actually come up to his finger and suck it like a child. He still has some of his original fish including some goldfish, "Old Tubby" and two black moors which are now very large—all over half a pound in weight and priceless to him. He would not part with them for anything. Mr. Molyneux now treats, operates upon, and cures fish for children with sick pets, and advises other people capable of carrying out treatment for themselves. He has kept a wide range of both tropical and coldwater fish, including young trout but he does not recommend these unless severe aeration is used, together with good filters with charcoal, and rapid water change—the colder, the better. A perforated tube with pressure blown water is best. They can be raised to over 4 in. in length in a large tank. He also had golden orfes which grew to 8 in., but had to part with them for outdoors. He dislikes parting with large fish and he does not care for ponds as he likes to see the beauty of the whole fish, not just its back. Mr. Molyneux has, at present, five decorative tanks in his lounge, and five in a spare bedroom. He relates how he decided to make a coffee table for his wife, using an inverted bowl set in legs, with a light set under the top, and fill it with coldwater or semi-tropical fish. The latter won and he bought pairs of young orandas, moors, lionheads, fantails, etc. He fitted a small pump and air stones and filter, and it looked really beautiful. The bowl, being 16 oz. glass, he was afraid might be fatal. It was! For weeks he knocked the bowl around, moving it with water and gravel in it, and it stood all that. When he and his wife decided to put a new fitted carpet in the lounge, this was done, and the set-up looked a picture and was a delight to sit in. This was on a Sunday night. On Monday morning, everything looked beautiful and he fed his fish and went out for ten minutes. When he returned—catastrophe! Max Jaffa was playing on the radio which he had left on whilst he had been out, and he swears that to this day, Max Jaffa had played, as usual, a pure, high (and fatal) note for his tank. The mess can be imagined. The new

carpet shrank and took a week to dry out, but, to his wife's annoyance, she had to handle the fish to pick them up as quickly as possible, and place them in a bowl. This was the part which she disliked most, but at least she thought of the fish first, and mopping up operations afterwards. After that, Mr. Molyneux decided to have an aquarium in the garden; one big enough to entertain his friends in. After much consideration he made the complete domestic aquarium, insulated with polystyrene, built-in racks, heating, aeration lines for air stones, lights etc., with enough room for four or five people, 23 tanks, containers of various kinds, all food cultures: brine shrimp, micro worms, white worms, daphnia, etc. He even has a special place in the garden for garden worms of all sizes, the larger ones of which are loved by coldwater fish. His "aquarium" also has an extension loud-speaker fitted, as well as a table, a built-in settee and cast-off carpets. In his next letter he hopes to include some photographs to make all anti-coldwater aquarists think again. One of his attractions is a bowl of adult brine shrimps, the beauty of which equals that of any tropical or coldwater fish. He says that anyone who thinks that tropical fish are more colourful than coldwater fish, should see the beauty and colour of his fish. An outdoor pond is not necessary for coldwater fish, nor are they difficult to rear. His have proved more interesting as well as unusual, and, he admits, a greater challenge, and there lies their interest. Several of his friends have added coldwater fish to their collection, after seeing Mr. Molyneux's tanks, and they are delighted at their beauty and colour. Coldwater fish are more expensive than tropicals in his area, one coldwater fish costing as much as a pair of tropicals, and they are small. Large ones are very much dearer, and if full bodied, well finned and healthy, are worth a fortune to the breeder—anything from £25 upwards. Common goldfish are from 1s. 6d. to 35s. 0d., pond size, and with careful selection one can pick out some really beautiful fish even though they are cheap. Mr. Molyneux looks forward to any good ideas from other readers.

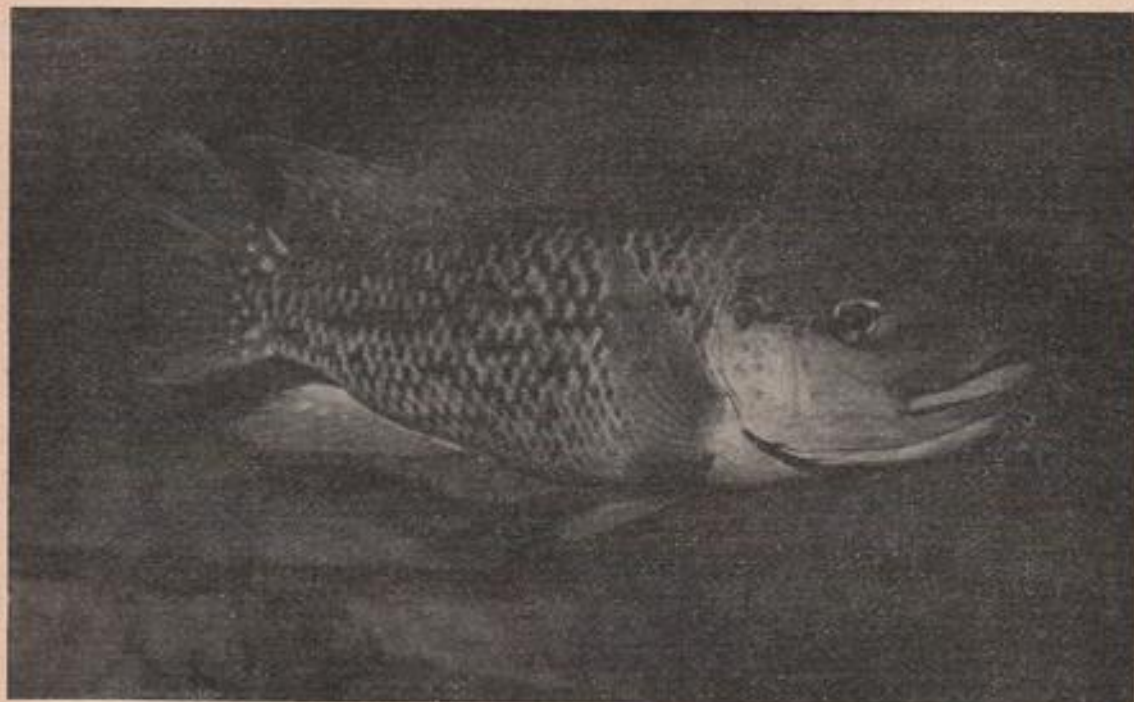
Mr. T. Hunter Jasp of Harrow, in Middlesex, agrees with me on the point of shops having only tropical fish well displayed. He says that

only common goldfish are on display for the coldwater fancier. What a choice, he comments. Before his interest in tropical fish, he kept a large number of common goldfish, the majority of which he still has. He thinks that the best coldwater show comes from such fish as fantails, with their waddle-way of swimming, comet-tails for their grace and colour, and shubunkins for their sheer variety. In keeping goldfish in an indoor aquarium, he had only one fatality, but since keeping tropical fish and observing all of the rules known to him, he has had six deaths. He ends, like another writer, by asking why there are not more books available which do not treat the reader like a child, and says that he finds *The Aquarist* most interesting and useful. (Another writer makes some suggestions on this subject).

As a change from coldwater fish we have some of the following letters, the first one coming from a regular writer, Mr. Peter Brown, of Wrekin College, Wellington, Salop. On the subject of white worms, Mr. Brown finds them an excellent food, having many advantages over other live foods. They are cheap, easy to keep, and not subject to seasonal shortages. He keeps his in tins about 6 in. x 6 in. x 3 in. There is no need to have a deep container as the worms live and breed only in the top layer. The media can be of many types. Mr. Brown has found the following to be the best: two-thirds damp peat, mixed with one-third soil which should contain no fertilizer or stones. Some charcoal is added to the mixture. The other type is that sold specially for white worms. When putting the compost into the containers one must be careful not to compress it too much. A depression should be made in the centre of the compost for food. Mr. Brown uses porridge oats. The worms must be kept in the dark with a tight fitting lid, a few air holes should be left at the corners. This keeps flies and other unwanted creatures out. The worms are kept in a room at a temperature of 65°F.

Now to some questions for the next issue. (1) Mr. Donovan asks for opinions on the best method of heating a tank, i.e., combined heater/thermostat, or separate ones; also what do other aquarists think of safety devices for tropical tanks? Does

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LARGE MOUTHBREEDERS AS COMMUNITY FISH

by H. N. Henry

MY COMMUNITY TANK was pretty well stocked when I first became interested in mouthbreeders, so I decided that a pair of one of the smaller varieties would be advisable. I chose a pair of Egyptian mouthbreeders, then about an inch and a half long, confident that they would only grow about an inch more. The children christened them Pharoah and Nefertiti—all our fish have names, and are regarded as family pets.

As the weeks went by, it was obvious that the owner of the small pet shop where I bought the two Egyptians knew as little about mouthbreeders as I, because the pair grew and grew. As they matured it was clear from their colouring that they were Mozambiques (*Tilapia mossambica*). Whilst Nefertiti remained a rather drab, dull grey, Pharoah developed handsome red fins and tail,

a white throat, and elsewhere was almost black. Their names, inappropriate as they are, have stayed.

In spite of their size (Pharoah is now over seven inches long, Nefertiti an inch less), they live peaceably with their companions—a Blue Acara, an African Jewel, an Opaline Gourami, a Spanner Barb, two Tinfoil Barbs, an Anabantid, an Angel, a Brown Acara, a Severum, two Botias, and ten assorted catfish and loaches. Pharoah creates havoc every day with his digging operations, uprooting plants and generally upsetting the floor of the tank to make a suitable hollow in which Nefertiti might lay her eggs. Most of the time, she is most unimpressed, and it did not occur to us they would one day successfully produce a family with so many other fish always in the way.

Early in September, when we had

had the pair about six months, Nefertiti seemed to be off her food and after a few days we could see that she was incubating eggs in her mouth. We watched her carefully as the days passed, fearful that when the eggs hatched and she released her brood the other fish would pounce on them as an unexpected titbit. After a couple of weeks we could bear the suspense no longer, so I netted her gently and transferred her to a nylon "nursery" tank floating in the main tank—there being no spare tank available in which to accommodate her. She seemed quite happy in her confined quarters, and a few days later we saw what seemed like dozens of tiny fish swimming near her, ready to dart back into her mouth at the first sign of danger.

Unfortunately, the rest of the fish had also seen them, and were trying

to catch them through the nylon. Although they could not eat the babies, they crushed and killed quite a few before we were able to rescue them and deposit them in a rigid, but smaller, plastic floating nursery tank. This was too small for Nefertiti, so she was returned to the main tank. She did not seem to miss her babies, and immediately joined Pharaoh in circling the tank.

The young ones spent three months in the little floating tank, feeding first on infusoria, then finely powdered dried food, and eventually a little of whatever the rest of the fish were having. They always seemed to be hungry, and grew visibly, especially during the first few weeks. By the end of three months we had about a dozen youngsters, some having been given away, and the weaker ones having died. As they grew they seemed to be getting rather crowded in their tiny home, and were now big enough to fend for themselves in our smaller community tank with the live-bearers.

At five months, the largest is an inch and a half long, the smallest half that size. Some of those we gave away, and which are in a larger tank with fewer fish, are much bigger. We shall soon have to find homes for them elsewhere, and are closely watching their mother in case she decides to present us with a second family. In the meantime, Father Mozambique continues his daily excavations, hoping, no doubt, like us, that his wife will co-operate.

What is your opinion

continued from page 51

anyone have a simple answer? (2) Mr. Marshall asks if anyone has any information on the use of rabbit droppings as plant fertilizers. Are they harmful to fish etc.? (3) Mr. Marshall also asks how long tank decorations made from a named brand of mortar mix should be soaked before they can be safely used. (4) Master Wood asks for readers' experiences of Amazon Sword plants grown in tanks where undergravel filters are used. (5) WHAT IS THE AGE OF THE OLDEST FISH THAT YOU HAVE KEPT? Let's see who holds the record. (6) Do you have any useful hints on filtration? (7) How did you begin fish-keeping? PLEASE PRINT NAME AND ADDRESS CLEARLY, ON LETTERS.

OUR EXPERTS ANSWERS TO YOUR QUERIES



COLDWATER QUERIES

by A. Boarder

If after the breeding season a male goldfish is unable to get rid of its sperms, does it affect its health?

The sperms of a male goldfish are stored in the soft roe and if not shed they remain there and do no harm to the fish. The same thing applies to other animals which do not have the opportunity to pair. Similarly if a female does not lay her eggs they remain dormant in the hard roe and the fish does not suffer any ill effects.

Can you give me some advice on how to move some fish a distance of 150 miles? I have 18 tropicals, average 2 in., 3 orfe, 7 in., and 12 goldfish, 5 in.

The modern method of moving fishes is to use plastic bags enclosed in strong cartons. I advise you to use three separate containers, one for the tropicals and one each for the orfe and goldfish. Suitable plastic bags can be obtained from an aquarist store and cartons can usually be got from a grocery store. The case for the tropicals can have a packing of corrugated cardboard or other insulating substance around, over and under the bag. Fill the plastic bags half full, and when you seal with an elastic band leave a good space above the water. Dealers usually blow in some oxygen before sealing, but this is not essential as long as you do not over-crowd the fishes. When traveling, see that the tropicals are in as

sheltered a place as possible but keep the coldwater fishes as cold as you are able.

I set up a tank, 24 x 18 x 12 in., with 5 common goldfish. I put in pea gravel, plants and a piece of coral. After a time the coral began to deteriorate and came away from the seaweed. The fish then failed in health, became sluggish and then died. Do you think it was the coral which killed the fish?

There is no doubt that the coral and seaweed were the cause of the trouble. You were dealing with fresh-water fish, not marines. Almost anything from the sea which had not been sterilised thoroughly could upset the water and kill the fish. If you had used some clean rockery stone such as Westmorland stone, you would have been all right. Coral is one of the most dangerous things you could put in a coldwater tank. The crevices in it could hold all sorts of matter which would soon decay and pollute the water.

I have a tank which holds about 26 gallons of water with a number of different kinds of fishes. The fish have had all sorts of trouble, such as Fungus, White spot and fin-congestion. I feed them with Ants' eggs, Tubifex, Daphnia and garden worms. Where have I gone wrong?

In the first place you may be over-crowding the tank with fishes. According to the surface area of the tank it will hold no more than 16 in. of fish. Much of your trouble may be due to the live foods you have been using. The Daphnia and Tubifex could be bringing in diseases. These probably came from natural waters and both kinds usually live in filthy water, or if not, then water which is badly polluted. It is possible to get all sorts of unwanted diseases and pests from such a water and I would never use either of these live foods for my fish. I know that many

aquarists use these foods and swear by them, but once bitten twice shy, and having had a bad crop of trouble, including "Flukes" which I imported from a pond; I have never used this form of live food since and have had no trouble whatever from pests or diseases for many years now.

I set up a fibre glass pond last July which was 5 ft. by 3 ft. and 15 in. deep. I stocked it with some plants, snails and fish, but after a few days the fish appeared to be in ill health. The fish became bloated and had fungus, and the two fish died in a few days. What do you think was the trouble?

It is difficult to say with any degree of certainty from what the fish died. It is quite possible that you were not to blame but that the fish were unwell when you got them. Also it may be that when you placed them in the pond you were not careful enough in handling them and some of their mucus covering (Slime), was removed. This would leave the fish open to any disease which may have been in the pond or on the plants or snails. Your pond is too small to function well and although it may be cheaper in the first place to use a small pond, it is dearer in the long run. When buying any fresh fish you should try to keep them by themselves under observation for a week at least to make sure that they are in good condition before they go into the pond.

I am at a teachers' training college and am to write a thesis on goldfish breeding. Do you know where I can obtain either some fertilised goldfish eggs or very young fry?

Your best course will be to contact one of the Aquarist Clubs near your district and it is possible that one of the members who breeds goldfish would be able to help you in the breeding season. It is not likely that a dealer would be able to supply you with these. Most of them would only import their fishes and not be bothered with breeding.

I have a tank 13 x 6 x 8 in., for coldwater fish and would like to know which plant or plants to use. I know that the tank is small

but I have no room for a larger one.

As your tank is in a living room you could try *Hygrophila polysperma*, Hair grass or *Bacopa*. The last named is usually grown in a tropical tank but should be all right in your tank. You realise I suppose that your tank will only hold about three inches of fish.

I recently noticed that one of my goldfish in the pond was dashing about and then saw that it had blood streaks on its body and a higoi had two small leeches on it. How can I disinfect the pond please?

If your pond is fairly large it is not easy to rid it of pests. Any fish attacked would have to be caught for treatment. The leeches would leave the fish if just dabbed with a little paraffin, Dettol or T.C.P. The blood streaks on the fish may have been caused by flukes or fish lice. Examine the fish and you will see which the pests are. I think that it is more likely that fish lice are the trouble as flukes do not trouble adult fish as much as they would very young ones. Lice can be removed by the same means as for the leeches or with tweezers. If you remove the fish from your pond you can treat it with permanganate of potash. This would have to be a strong solution but must be dissolved in a container before adding the liquid to the pond.

I have a spare tank with plants in and I see there are a number of beetle-like creatures on the surface film. They are only about a quarter of an inch long. What can they be?

They are a species of beetle, but which one it is impossible to say without further information. There are more species of beetles in the world than of any other genus of animals and several species inhabit the water, either within it or on the surface. Such small creatures are not likely to harm your fish.

I had one small goldfish in a small tank for three months and then bought another to put with it. When I switch the light on over the tank the new fish chases the other one, nudging it vigorously and almost pushing it out of the water. Can you explain this please?

From your description of the action of the new fish it appears that it is a male and that the other one is a female. The chasing is one of the preliminaries for spawning and the sudden light seems to spur the male fish into action. Unless the female fish is ready to lay her eggs nothing will happen. The first fish could be exhausted by the other one in such a small tank as it would not be able to hide away.

I have been told that leaf loam placed under the gravel in a tank is beneficial for the fish. What is this leaf loam please?

You no doubt mean peat, which is leaf matter decayed for centuries. This gives an acid condition to water and can counteract lime tendencies which can occur in some tap water.

I have a large pond with water lilies. Would carp thrive in it and keep the water clean?

Carp should thrive in your pond very well, but whether they would keep the water clean is another thing. They would at least keep down any mosquito larvae or other insect larvae.

TROPICAL QUERIES

Is it true that duckweed is the smallest known flowering plant?

It is true that a duckweed and not just duckweed, a term that embraces a large number of minuscule floating plants, is the smallest known flowering plant. The duckweed in question is *Wolffia arrhiza*, which is rootless and grows no larger than an ordinary pin-head.

Would a small quantity of weathered soot added to a clay and grit potting compost result in a sturdier and more abundant growth of tropical aquarium plants?

We do not advise the introduction of soot into the aquarium, for the ammonium compounds dissolved out of it would have a bad effect on the fishes.

Would green glass bottles placed in a hot fire and melted down be suitable for adding attraction to a decorative tank?

We did this many years ago and the results were always pleasing. After a good soaking, the glass ornaments do no harm to the fish.

What are the essential requirements for *Micralestes interruptus*?

Briefly a spacious aquarium filled with water on the soft neutral to acid side, frequent feedings of live *Daphnia*, tiny worms, gnat larvae, and the like, and a temperature in the middle to upper seventies (°F).

Would you advise a newcomer to tropical aquarium keeping to spread peat over the bottom of a tank before introducing the washed compost?

A thin layer of peat should not lead to any trouble. But soak the peat before introducing it (dry peat is buoyant and will push its way through the sand) and make certain that the loose peat you buy is pure peat and not some mixture adulterated with fragments of shell or chemical fertilizer.

Some writers on aquarium fishes refer to tilapias as mouth-brooders and others call them mouth-breeders. Which term is correct?

Strictly speaking the term mouth-brooder should be used for those fishes that incubate their eggs in the mouth.

How does one sex the black-banded sunfish?

Seemingly the only way to do this is to wait until the breeding season comes round (spring to summer) and then compare body shapes and colours. Assuming the fish are in breeding condition, the female has fuller sides and the male has the richer colours.

Please give me a few details about the habits and general appearance of the fish louse, which I feel certain I have seen swimming about in my tropical tank.

The fish louse (*Argulus foliaceus*) is parasitical and only swims freely when it is seeking a host or is in need of a mate. Mating and egg-laying (on stones) takes place anytime between spring to autumn. In a month the eggs have incubated and then, after a few moults, the young parasites take up residence on their

host fish. A female fish louse attains a length of about 1/2 in. The male is smaller. In colour the creature is olive-green and has suckers and a cutting beak on its underside. The body is roughly ladybird-like in outline, but is very flattened or depressed.

Would a 3 in. mormyrid settle down comfortably in a 3 ft. community tank?

A mormyrid is better on its own or with its own kind than sharing a tank with other species; for by nature mormyrids are shy and timid fishes that demand peace and quiet at all times. Be this as it may, a mormyrid or two should live contentedly in any thickly planted aquarium stocked with the smaller fishes that move about sedately and are not given to aggressive chasing or fin-nipping.

Could you give me the full scientific name (and family) of the pink-tailed chalice?

This fish is known to science as *Chalcus macrolepidotus*. It belongs to the family *Characidae*.

I have just acquired a Japanese weatherfish (*Misgurnus anguillicaudatus*). I should be grateful for what information you can give me regarding the maximum length of this species and its requirements in the matter of food and temperature.

M. anguillicaudatus can attain a length of 8 in. and more. It will eat anything normally given to the general run of aquarium fish and is quite at home at room temperature or above (within reasonable limits). But a word of warning: Large specimens will muddy a decorative tropical or coldwater tank by stirring up sediment.

I want to set up a very special tank for a shoal of cardinal tetras. Would the use of distilled water bring out their brightest colours and keep them in tip-top condition?

Distilled water by itself does not suit fishes; it lacks essential minerals. If your tapwater is not markedly hard, your best plan would be to use a 50/50 mix of tapwater and distilled water. This would give you a nice soft water well-suited to tetras.

FISH BAN LIFTED

extracts from
Beckenham Journal, Kent

A BECKENHAM TRADER has successfully campaigned against a ban imposed by Bromley Council on the sale of scorpion fish. The ban was lifted this week after reconsideration by the Health and Welfare Committee.

Mr. J. Attenborough, who, with his sister, Miss H. Attenborough, runs Kingfisheries Aquarium in Croydon Road, told the *Journal*: "It is extremely pleasing news. I think the committee now knows that it made a mistake."

He added: "I am sure that had it not been for the publicity in the local Press, the ban might still be in force."

The ban was imposed earlier this month—at the time when Mr. Attenborough's Pet Trade Act licence which covered the sale of scorpion fish, was due for renewal.

The original decision was taken in the light of the views of public health officials that a painful sting given by the fish could be dangerous to children and elderly people.

Protests

As soon as he heard about the ban, Mr. Attenborough—the only trader in Bromley Borough to sell scorpion fish, which comes from the coral seas—protested to the Council and asked for a personal hearing before the committee. It was then that a "temporary reprieve" came when the committee decided to review its decision.

Mr. Attenborough has always made it clear to prospective buyers of the fish that they did give painful stings. His policy has always been to be selective in whom the fish were sold to, because of the special facilities required to keep them.

He had also made this position clear to public health inspectors who had visited the shop before the ban was imposed, and also to the Council.

Mr. Attenborough declared: "The health inspectors did not know the situation and did not bother to acquaint themselves with the facts."

His last comment on the lifting of the ban was: "I have been told that my new licence will be coming to me without delay."

OUR READERS WRITE



More Information on Discus Wanted

I would like to compliment both your magazine and the author, R. M. Winter, for that excellent article, "Experiments in Keeping Discus." The section on diseases was most informative and it is pleasing to see some advances are being made on this subject. Even now, as a result of this article, it should be possible to reduce Discus losses considerably. I am a little disappointed that the author did not cover some aspects of breeding these magnificent fish.

Although Mr. Winter has obviously kept Discus much longer than I, and my experience is limited to the Browns, I have a few criticisms and suggestions which may be helpful to other Discus keepers.

I feel, overall, that he has been a little too fussy although he probably has the results to justify his methods. Gravel that is alkaline raises the pH and hardness of the water only very, very slowly if regular water changes are made. Driftwood as a source of creating hiding places doesn't seem to be worth the effort as strips of slate, clay tiles or sides of large flower pots require no preparation and also afford good spawning sites. I, myself, use inside box filters which function very well and, for some reason, seem to be preferred spawning sites.

There seems to be a growing trend away from glass filter wool and as a chemist, I know the different varieties well. The coarser varieties are particularly unpleasant to handle and it usually requires a period of days before all the glass splinters can be removed from the hands. That such splinters are readily contracted cer-

tainly makes it unsuitable as a filter medium, but the finer varieties are very suitable and give no trouble, and have been in use for many years here.

Here in South Australia the tap water averages pH 7.8, hardness 150 p.p.m. Discus seem to tolerate these conditions easily and there have even been some successful breedings and hatchings in this far from ideal water. As a substitute clean tank water is ideal. Even water collected in a galvanised iron tank is most suitable—the amount of zinc present is negligible, and the only other material present would be plain old dirt. I cannot agree with the fact that rainwater off a roof is unsuitable (after all, what is there on a roof which can contaminate the water—if in doubt, e.g., in a highly industrial area, the water would be alright after a few minutes of rain.) I use rainwater, collected in a galvanised iron tank, and have had no problems.

The problem of feeding Discus intrigues me. My fish have a staple diet of frozen beef heart (not even warmed previously) which they take greedily and grow really well. I supplement this with tubifex, daphnia, wigglers and bloodworms. The beef heart may be relished as my fish are locally bred or imported from Singapore when young—we see very few wild fish here. Wild fish should be readily adaptable to beefheart even though the author has not found this so. The use of beef heart in the main probably minimises diseases, too. With tubifex I am wary as they are supplied from sources of questionable health. Some have been shown here to be very harmful to human health.*

The setting up of a Discus society, I feel, would be very beneficial in spreading information about diseases breeding new varieties, etc. I was thinking about this very thing only a few days before I received the January issue. I am looking forward to the day one eventuates and would appreciate it if Mr. Winter could write to me if there is anything that I can do.

BRENTON C. NICHOLSON,

*Another problem which was not covered was that dealing with the keeping down of algae in Discus tanks. A few snails, even in breeding tanks, helps a lot and they don't seem to bother the eggs—they also clear up small amounts of uneaten food. Algae eaters (*Gyrinocheilus aymonieri*)

which are excellent eradicators of algae in most community tanks are unsuitable with Discus. They tend to "graze" on the large Discus removing both slime and scales. Redtail and Redfin sharks are excellent substitutes as well as being good scavengers. However, they also "graze" occasionally on the Discus but seem to do no harm and the Discus do not seem bothered; sometimes they don't even both to swim away. Of course no sharks can be tolerated in the breeding tank.

Society Programmes

I feel it would be helpful to those societies constantly seeking attractions for their monthly programmes if club secretaries when forwarding reports for inclusion in your feature 'News from Aquarists Societies', could include at the end of their report the name and address of their particular guest speaker and the topic on which he spoke. Other society secretaries would then have very valuable information easily to hand, information which can only be to our mutual benefit.

To give an example, if the idea had been adopted at the time I forwarded the report of the January meeting of the Harlech Aquarists' Society the following would have been added:—

"Guest speaker, Mr. R. I. Millichamp, Fisheries Officer, Usk River Authority, 'The Croft', Goldcroft Common, Caerleon, Mon.; Subject: 'Salmon and its life cycle,' illustrated by a black and white 16 mm. film."

M. J. PARRY (Secretary)

Coldwater v. Tropical

In the December edition of the *Aquarist* I observed a number of adverse criticisms towards coldwater fish-keeping in the "What is your opinion" column. It is my intention to enlighten a few people who, it appears have very little knowledge about which they write. Young Mr. Forsyth for example, makes an exaggerated observation in the potentialities of disease elimination regarding coldwater fishes. It's his opinion that when coldwater fishes are stricken with disease the odds against their survival are ten to one whereas tropical fishes can have their temperature raised and the appropriate remedy administered with good effects.

I venture to suggest that apart from one or two goldfish he may have kept in a goldfish bowl Mr. Forsyth has not owned or studied any species of coldwater fish at all. There are many ways of curing a fish's ailments regardless as to whether it is tropical or coldwater. Admittedly, the raising of the water temperature has its advantages, indeed a number of coldwater aquarists have utilised this procedure to their own satisfaction, but it is not absolutely necessary. I am a coldwater fishkeeper and there have been a few occasions in the past when I have had sick fishes to deal with. I have treated them, not always successfully, but I guarantee that my fatality rate has been no higher than my tropical counterpart's.

Mr. Goodwin is quite right when he says that the tropical fishes are more popular because of their endless variety and colour variation. True enough, they are in continuous demand but so would the endless variety of smaller coldwater fishes of varying colouration, particularly from North America, if only we could lay our hands on them. Quite naturally enough, or so it appears, Mr. Goodwin's definition of a coldwater fish is "goldfish", a frequent error of tropical fishkeepers I'm afraid, particularly when I relate that on one occasion I showed some young coldwater fishes to a fellow aquarist society member. "Corydoras" he asked? No, was my reply, your own native stone loach.

Coldwater plants do not flourish too well in the aquarium says Mr. Goodwin. He goes on to say that they quite often become uprooted and get insufficient care. This is utter nonsense. There are a number of favourable plants for the coldwater aquarium and if a tank is set up properly there is no reason why it shouldn't maintain a certain amount of dignity and well-being over an indefinite period. Admittedly, some of the larger and more boisterous fishes can play havoc with the plants but surely the same fishkeeping hazard exists in the tropical aquarium? Well-established *vallisneria* and *sagittaria* will resist the ravages of 4-5 inch goldfish though I must confess that *elodea* takes a hammering. On the other hand other species give little trouble. Mr. Higham makes a comparison between tropical and coldwater tanks in public aquaria,

placing emphasis on the plant presentation. Admittedly, planting is less apparent in large coldwater tanks containing large eye-catching fishes, and not without good reason. The introduction of plants into a large aquarium housing eighteen inch carp, adult bream, chub and tench would be a waste of time and money. Incidentally, some of the tropical tanks containing very large fishes are generally devoid of plant. It is unwise for a person to judge the coldwater aquarium set-up as he sees it in the above circumstances, let alone putting his views of the subject down on paper.

I would suggest that those coldwater critics from the north (some of whose names I have previously mentioned) should make an effort to read a little more about the subject—there are many good books in which a fair variety of coldwater plants recommended for aquarium use are mentioned. Furthermore it wouldn't be a bad idea for them to "have a go" at setting up a coldwater tank. The proof of the pie is in the eating. Failing that, they could come to Portsmouth and Southsea next August for a holiday and see for themselves how it is done.

I have seen some beautifully set-up tanks in the field of coldwater fishkeeping, furthermore some of them have retained their beauty over a great period of time with little maintenance. I for one have tanks at home that were set-up seven or eight years ago. The water in each tank is crystal clear and the plants are in healthy condition. Also, no filtration, artificial aeration or artificial lighting is used.

In reply to the point raised about the oxygen requirements of coldwater fishes I would agree up to a point that they do need more though some are more active than others irrespective of temperature and others are very small—I have eight species that do not exceed four inches in length when fully grown. What do I keep? Apart from the more respectable looking goldfish varieties I interest myself in Native, European and North American coldwater fishes.

It would perhaps be a good thing for greater strides to be made in the fields of coldwater fishkeeping in the North of England. I certainly would like to see a vast improvement in the 'native and foreign' coldwater fish

class at the Aquarist's Forum, Belle Vue, Manchester, this year. Last year the class was an absolute disaster, not only in a material way but in the general condition of the fishes themselves. They were not fit to be the show bench.

One final word for Mr. Brown of Wellington who quotes: "One can have hundreds of tropical fish and many tanks in a small room whereas coldwater fish need more space and," he says, "preferably an outside pond." I agree with him on the subject of the larger goldfish and shubunkins, Tench orfe and rudd but what of the little bitterling, the smaller *sunfishes*, dogfishes and golden medaka. You wouldn't know they were there. The place for them is in the aquarium.

VERNON B. HUNT, Portsmouth A-5.

Low Wattage Lighting

I would like to agree with Mr. Fox's comments on low wattage lighting although I would like to point out that my experience is not as great as his. I would like to borrow his question/answer method to illustrate my agreement and limited experience.

What size is your tank?

18 in. x 18 in. x 12 in.

What type of lighting do you use in your tank?

Two 15 watt clear bulbs (30 watts is maker's maximum as the tank is all plastic).

Duration of light?

12 to 17 hours per day.

Does algae exist in your tank?

There is no brown algae in my tank, a small quantity of green algae grows on the back of the tank.

Do the plants die off?

No, although when *Sagittaria* and *Vallisneria* were growing side by side both stopped growing until the *Sagittaria* was removed.

Do you use filtration and aeration?

Both.

What type of plants are in the tank?

Vallisneria, *Hygrophila polysperma*, *Bacopa*, *Cryptocoryne*.

What type of fish are in the tank?

Platies, Swordtails, Gouramies, Guppies, Zebras, Neons.

DEREK A. BAYNE. Fife.

Find the Fish

I had read this letter (Feb. Issue) and was rather surprised. I have used this type of under-gravel filter for years and never experienced any-

...the fish appeared dead, ... pressure to try and ... with a knitting needle; the ... in two, no sign of ... at all, and must have gone into ... then tried to double back ... trapped in the process.

I have now bought the carbon filter attachment for this type of under-gravel filter and so made sure that no fish, no matter how small, can enter tubes.

D. S. LATTA.

Barbus classification

After reading Mr. J. Hem's letter in the December issue of the *Aquarist* regarding the classification of the genus *Barbus*, I telephoned Dr. K. Banister of the British Museum (Natural History) to find who was correct. His answer was the same as that of Mr. H. J. Klee. Later I went to see Dr. E. Trewavas of the British Museum (Natural History). She explained to me the classification of the genus *Barbus* and pointed out examples of where Dr. L. Schultz's classification was incorrect.

I hope that S. R. Winter knows that most fish have no common name, only a scientific name, because his letter shows a lack of intelligence. Common names of most organisms vary from country to country, and even in parts of a country local names are given to animals and plants. The example of the diamond tetra shows the above point admirably. Some people know *M. pitten* as the diamond tetra, while others know *H. pulcher* as the diamond tetra, the latter fish is also known as the pretty tetra, and the black-wedge tetra. Surely this is confusing if you did not know that one fish was known under three or more different common names in one country?

ANTHONY R. COLES.

"HARDYHEAD"

The discovery of the rare fish was made by a team from the South Australian Museum which also discovered the oasis. The fish, six inches long, was found when the team spent three weeks on an intensive scientific

investigation of springs, bores and waterways in South Australia's far north.

Unknown Fish

According to the team's leader, Mr. C. J. M. Glover, curator of fishes at the South Australian Museum, the oasis is teeming with the hitherto unknown fish. Its home is the near-boiling water of hot springs and pools.

The museum party, comprising the senior curator of vertebrates at the museum, Mr. F. J. Mitchell, and Mr. Glover, followed the western margin of the great artesian basin from Lake Eyre to north of Codnadata early in August.

Mr. Glover said on his return to Adelaide that the oasis there was a group of between 30 and 40 hot springs which flowed into bath-temperature pools many yards long.

The party returned to Adelaide in late August with 600 specimens representing six species of fish, apart from the one thought to be new, as well as many plant and reptile specimens.

Moves to have the area declared a reserve are expected soon.—Reuter.

AQUARIUM EXHIBITION

The 2nd National Furnished Aquarium Exhibition, sponsored by K. B. Tropical Fish, will be held at St. George's Hall, Bradford, from June 18th to 22nd inclusive.

In all, there is over £200 in cash to be won and 100 entries will be accepted. After the tremendous success of last year's exhibition, the sponsors expect a record entry and predict that this will be one of the most interesting exhibitions to be held this year.

Entry forms and rules for the Furnished Aquarium competition can be obtained from K. B. Tropical Fish, 568, Great Horton Road, Bradford, 7, Yorkshire.

The Exhibition will be open daily from 10.30 a.m. to 9 p.m. and from 10 a.m. to 5 p.m. on Sunday, June 22nd.

Parties from Aquarists' Societies will be welcome and refreshments will be on sale at the Exhibition. The entrance fee is 2s. 6d.

BREEDING GOLDFISH

by A. Boarder

IN MY PREVIOUS ARTICLES on Goldfish breeding I have dealt with the procedure up to the time of spawning. The eggs have been taken from the pond for safe hatching away from the parent fish or spawners have been removed from any tanks where they have laid their eggs. At a temperature of about 70°F, one should expect fry to hatch late on the fourth day after spawning. This will depend on whether this temperature has been kept up for most of the time. In cooler water the eggs take longer to hatch, as much as a week at 60°F or just below. If the hatching tank is on the small side and there are plenty of eggs therein, it is essential to provide some aeration.

For normal coldwater fishkeeping in tanks I am not in favour of artificial aeration as I consider that to use this, one is probably over-crowding the fish. However when eggs are developing within a limited area I think that it is a safer way to get a good hatch if some aeration is used. This need not be very strong but even only a rather weak stream of bubbles can cause a slight circulation of water around the tank. This helps considerably as it must not be thought that eggs need no oxygen whilst the embryo is growing. The opposite is the case as many fry can be dead in the egg if insufficient oxygen is not present all the time from the spawning to the hatching.

The fry are very tiny when first hatched and will only make one or two swimming adventures for a day or two. They may be seen swimming up to the surface; thought by many to be filling their air bladder. They then anchor themselves on plants or the sides of the tank. Being born with a yolk sac, they are able to live on this for the first few hours. They must then find some food in the form of tiny infusoria or similar material. The time which will lapse before the fry start to feed

THE AQUARIST

will depend mainly on the temperature of the water. If this is at or about 70°F, it is probable that the fry can be free swimming and feeding within 48 hours. The whole system of feeding and growing is controlled mainly by the warmth of the water. This should be remembered always by breeders as without some form of artificial warmth for the fry their growth will be retarded considerably. Make no mistake about this. Four important points are in evidence during the rearing of fishes. They are warmth, food, oxygen and space. If any of these are missing it is certain that growth will be retarded. Given these four points then the rearing of these fish should present no problems. Some artificial warmth and aeration can be supplied for the first few months of the life of the fry. During the early days it is probable that the fry will be rather overcrowded. This does not seem to harm them at all providing aeration is provided and the water is kept pure.

The first food for the fry once they are free-swimming will be very tiny forms of life such as infusoria. This can be prepared by pouring boiling water on hay or lettuce leaves. When culturing this way one is almost sure to get some polluted water which of course must be emptied into the fry tank when feeding. I have not made any infusoria by the above means for very many years as it is too much trouble, smelly and not worth the time spent. I have used Infusoria formed by "Liquifry" for years and have had great success with it. This provides small particles of food right away when given but any uneaten soon causes infusoria to grow in the tank. When eggs have been placed in a hatching tank and the water temperature is about 70°F, I drop a little "Liquifry" into the water. Within the time the eggs are developing there is usually plenty of infusoria in the water ready for the fry when they start to feed.

The "Liquifry" will keep the fry going for a week or more when some other form of food should be given. When the fry can be seen feeding well some form of dried food can be added and some mashed live food also. For feeding the tiny fry on foods other than the "Liquifry", I find the worm shredders, as often advertised in this magazine, are

excellent. With these it is possible to reduce flaked foods to a fine powder which fry are able to eat soon after a week old. A little of this powder is sprinkled on the surface and a feeding ring is never used at this stage. Live foods can also be given by shredding them up as for the dried foods. I find white worms (*Enchytrae*) excellent for this purpose. As the fry get larger small garden worms can also be shredded and fed to the fish, but be careful with these worms as large ones are too tough and will leave behind uneaten tough pieces which can pollute the water.

Many aquarists have recommended feeding the fry with sifted *Daphnia* (Water fleas), but I do not go along with this idea. If you are successful with this method of feeding all well and good, but I would never feed any live foods to my fish which had come from natural waters. Such foods as I ignore are *Daphnia*, *Tubifex*, mosquito larvae, fresh water shrimps, and in fact any live food whatsoever which has come direct from natural ponds or rivers. Many years ago I introduced a fine crop of flukes to my fry by using *Daphnia* from the village pond. Since then I have never fed with any *Daphnia* and have never had any recurrence of the pest trouble. What live foods I use are bred out of water, these are white worms, garden worms and any maggots I breed.

I must state here and now that it is possible to rear goldfish by the means I have described and there is no need whatever to use the live foods from water which I have mentioned. The times of feeding may present problems to the beginner as one is often inclined to over-feed with dried foods. A little is given and when the fry are seen to be taking it well, some more is given which could be too much. Any uneaten food will soon pollute the water at a warm temperature. I have known aquarists lose a whole tank of fry by just one extra feeding with dried food when it should not have been given.

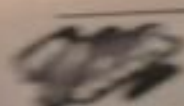
If you have a large hatching in a tank, there is no need to worry about this for a week or so. As long as the water keeps in a pure condition and there is some aeration, the fry will be all right. It is surprising how many fry can be kept in a smallish tank if the above conditions are provided.

"I have used Infusoria formed by "Liquifry" for years and have had great success with it" says A. Boarder.

Over a hundred fry can live quite safely in a 24 in. x 12 in. x 12 in. tank. However once the fry are a month old some extra space must be found for them or they will not grow at their maximum. This is when many fry can be lost. The whole danger arises in the change of water. Many aquarists lose fry by this change. They prepare a fresh tank with tap water and once they note that the temperature is about the same as that of the fry tank, many fry are caught up and placed in the fresh tank. After a few days hardly any fry are to be seen and one can suspect pests in the water which have killed them. The real reason may be the condition of the water. In some parts of the country tap water is heavily dosed with chloride of lime. This can be very strong at times, and in my own area it is possible to smell it quite strongly as the water runs from the tap. This form of treatment is used to kill off any harmful bacteria, etc., which may be in the water. If it can kill small forms of life, what is it likely to do to tiny fish fry?

When any fry have to be moved it is safer to prepare a tank or two a few days before they are used for fry. If possible take some water from a clean established garden pond, but strain such water through a very fine silk cloth first. It also seems safer if water is taken from another tank which contains water plants, and a few cleansed water plants in the fresh tank will tend to neutralise the chlorination of the tap water. When the fresh tank is ready the fry can be transferred very carefully. When very young they are easily disturbed and can be harmed. I find the safest way to move them is to use a small saucepan and dip this quietly among them. When in this the fry can be examined to see that no pests are present. The water with fry can then be gradually tilted into the fresh tank so that as little disturbance as possible is given to the fry.

My next article will deal with the rearing from a month old, foods to give and diseases and pests to watch out for.



THE AQUARISTS' SOCIETIES

Articles from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 5th of the month preceding the month of publication.

A SLIDE lecture was featured at the March meeting of the **Hartleech A.S.** The subjects were "The Braz Walker Show" (held from the Hootforth Aquarium Society) and the film "Coral Wonderland" depicting the fish of the Great Barrier Reef, Queensland, Australia. The evening's table show for Danios, Rasboras and White Cloud Mountain Minnows was judged by P. Bartlett the results being: 1 and 4, P. Garner, 2, Mrs Maureen Payne, 3, Mr P. Hawkins. Meetings of the society see held on the third Tuesday of each month at the Galatia Junior School, Cobwell Road, Cardiff, commencing at 7.30 p.m. and visitors and/or prospective new members are most welcome to attend. Programmes: Slides hired from Mr R. E. Harrison, The Headlands, Scotland Lane, Hootforth, Leeds, Yorks; Film hired from the Central Film Library of Wales, 42 Park Place, Cardiff.

IN the ensuing year the officers elected at the annual general meeting of the **Derwent Aquarist Club** were as follows: Chairman: S. Yeomans; Secretary: D. Gates; Treasurer: T. Swinburn; Librarian: W. Gwynn; Committee: Mrs N. Gates, R. Johnson. The Society has recently installed a large tropical fish tank in the Derby Museum, and have stocked it with forty Angel fish (the four varieties), and Amazon sword plants.

THIRTY-SEVEN members attended the March meeting of the **Barnsley T.F.S.** and the new members were welcomed by Mr Duncan the chairman. The table show for livebearers was won by R. Healy who also took second place. Third place went to Mr. Holmes. After society business was finished members were entertained with a slide show "The Pin & Gill Club" which gives an inside look at the hobby in an American prison. The show was presented by Mr R. Hampson.

IN February the **Hucknall and Bulwell A.S.** were hosts to the **Alfreton and District A.S.** for the return inter-society show. About ninety people attended and exactly one hundred fish were staged in ten classes, the standard of fish was good and were judged by Mr Bruce Inman of Nottingham & District A.S. The results were as follows: Livebearers: 1 and 2, Mr Lindley (A.); 3, Mr Wright (A). Characins: 1, Mr Lindley (A.); 2, Mr Hill (A.); 3, Mr Wright (A). Sharks/Fosco: 1, Mr Pugh (A); 2, Mr Garratt (H and B); 3, Mr Power (H and B). Cichlids: 1, Mr Garratt (H and B); 2 and 3, Mr Lindley (A). Loaches: 1 and 2, Mr Wright (A); 3, Mr Owen (H and B). A.O.V. Trop.: Mr Foster (H and B); 2, Mr Smith (H and B); 3, Mr Richardson (H and B). Pairs Egg-layers: 1 and 2 Mr Lindley (A); 3, Mr Hill. Breeders (Livebearers): 1, Mr Johnson (H and B); 2, T. Garratt (H and B); 3, Mr Lennox (A).

Juniors A.V.: 1 and 3, Miss Susan Hartwell (H and B); 2, Jayne and Paul Harrington (H and B).

A junior section of the **Hucknall and Bulwell A.S.** is to be formed with free membership for those under sixteen years old. Meetings will be held on Sunday mornings and will include lectures by members of the adult club who will help run and finance the juniors. Further details from M. T. Harrington, 5 Greenwood Vale, Hucknall, Notts. The adult section have a full and interesting year planned and it is hoped to stage several public exhibitions in the area. Anyone is welcome at the meetings held twice a month at The Half Moon Hotel, Hucknall.

THE March table show results of the **Coventry Pool and A.S.** were as follows: Pairs (Livebearers): 1, D. Bain; 2 and 3, D. Eastingwood; 4, E. Sheehy. Coldwater: 1, 2 and 3, B. Bromfield; 4, E. Leggett. Pairs (Egg-layers): 1, T. Grant; 2, E. Sheehy; 3 and 4, E. Leggett. The talk for the evening was devoted to the Make-up of a Fish.

IN March **Southend, Leigh and District A.S.** were hosts to the **Thurrock, Basildon and East London Societies** for the first match in the four Societies' annual table show competition. The Society attaining the greatest number of prizes in the year holds a Gavel and Block trophy for the following year. The present holders are Thurrock. The results for this show were: Barbs: 1, K. Baker (East London); 2, P. Campkin (East London); 3, W. Corby (East London); 4, D. Edwards (Southend). Platys: 1, L. R. Baker (East London); 2, J. Hutton (Thurrock); 3, F. Vicker (East London); 4, G. Green (East London). Fighters: 1, P. F. Capon (Southend); 2 and 3, D. Durrant (Thurrock); 4, P. Vicker (East London).

Members of the Societies were entertained by Gerald Jennings of the I.M.S.S. to a talk on the basic facts of Marine fishkeeping. The most important point that Mr Jennings raised was that Marine need not be as expensive as many authorities believe.

THE latest news from **Warrington A.S.** is that at the annual general meeting the committee resigned *en bloc* to give new members a chance to serve the club. The president, Mr. A. Higham, in his address thanked the members for their support during the past year, and hoped that the club would continue to thrive. After the chairman and secretary had read their reports the treasurer, Miss S. Worrall, gave details of the balance sheet and reported that the society of officers followed and these were: President, A. Higham; chairman, L. Crawford; secretary, A. E. Addison; treasurer, Miss S. Worrall; show secretary, J. Higham; assistant show secretary, D. Gavin; F.O.T.M. secretary, M. Baker. Other committee members are Mr. and Mrs. E. Clarke, Mr. and Mrs. J. Alcock, K. Reedy, B. Philcox, A. Blackmore, J. Wootton and D. Healey. R. Tench, the former publicity officer, secretary and chairman, has now moved to Oldham, and to mark the occasion for services rendered to the club he was presented with a plaque inscribed honorary life membership.

The annual presentation of prizes for the F.O.T.M. 1968-9 took place and were awarded

to: 1, B. Worrall; 2, R. Tench; 3, A. Addison; 4, P. Norris; 5, B. Berwick; 6, J. Alcock; 7, M. Baker and all received plaques.

R. Tench then gave a lecture on the feeding and caring of the Albino Clarias, Whiteworm Cultures and Earthworms. The society's headquarters is the Midlands Hotel, Warrington, and club meetings are every fourth Tuesday. For further details please write to A. Addison, 5 Hewitt Street, Latchford, Warrington, Lancs.

THE first open show of the **Top Ten A.S.** was an outstanding success, attracting 523 entries. Judges were C. Walker, F.N.A.S., and G. Holmes, F.N.A.S. The results of the show being as follows: Best Fish in Show: R. Taylor (Aireborough). Best Pair: W. Parkin (Huddersfield). Best Livebearer: J. Igoe (Rainworth). Ladies' Prize: Mrs. V. Parkes (Merseyside). Exhibitor gaining Most Points: F. Buxton (Barnsley). Guppies: 1, 2 and 3, W. J. Orton (Salford). Swordtail: 1, B. Kitton (Wakefield); 2, N. R. Gibson (Huddersfield); 3, M. Woodley (Dukeries). Platy: 1, J. Gresty (Sunnybrow); 2, A. G. Esteves (Top Ten); 3, B. Thompson (Gorton-Openshaw). Mollie: 1, J. Igoe (Rainworth); 2, J. & H. Dornie (Dukeries); 3, J. Gresty (Sunnybrow). A.O.V. Livebearer: 1, A. Hirst (Independent); 2, L. Kaye (Top Ten); 3, T. & W. (Sunnybrow). Small Barbs: 1 and 2, F. Buxton (Barnsley); 3, J. & H. Dornie (Dukeries). Large Barbs: 1, K. Parkes (Merseyside); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, J. A. Whiteley (Aireborough). Small Characin: 1, Mrs. P. M. Robinson (Huddersfield); 2, F. Buxton (Barnsley); 3, Mrs. J. Wike (Huddersfield). Medium Characin: 1, J. and R. Robinson (Aireborough); 2, G. Wilkinson (Halifax); 3, A. White (Halifax). Large Characin: 1, K. Parkes (Merseyside); 2, J. A. Whiteley (Aireborough); 3, J. Monk (Aireborough). Apistogramma Spec.: 1, R. Taylor (Aireborough); 2, J. Gresty (Sunnybrow); 3, D. Jackson (Dukeries). A.O.V. Dwarf Cichlid: 1, J. and H. Dornie (Dukeries); 2, A. Hudson (Huddersfield); 3, B. Smith (Merseyside). Angels: 1, D. Trace (Ashton); 2, A. Hirst (Ind.); 3, J. R. Robinson (Aireborough). A.O.V. Cichlid: 1, R. Taylor (Aireborough); 2, K. Parkes (Merseyside); 3, S. Hirst (Miseden). Male Fighters (self coloured): 1, M. Woodley (Dukeries); 2, L. Kaye (Top Ten); 3, R. Bycroft (Top Ten). Male Fighters (multi coloured): 1, C. Asquith (Castleford); 2, D. Smith (Tadcaster); 3, Mrs. Davies (Heywood). Dwarf, Giant, Thicklip Gourami: 1, A. G. Esteves (Top Ten); 2, A. Whitlock (Tadcaster); 3, M. Healey (Barnsley). A.O.V. Anabantid: 1, M. Woodley (Dukeries); 2, A. Hudson (Huddersfield); 3, Mrs. Bone (Huddersfield). Tooth Carps: 1, Mr. Greenhall (Tadcaster); 2, R. Taylor (Aireborough); 3, D. Smith (Tadcaster). Sharks and Flying Fox: 1, Mrs. Hargreaves (York); 2, J. A. Whiteley (Aireborough); 3, F. Gates (Castleford). Danios and Minnows: 1, A. G. Esteves (Top Ten); 2, Mr. and Mrs. Raybould (Rotherham); 3, P. Moorhouse (Bradford). Rasbora: 1, Mr. and Mrs. Webb (Salford); 2, T. & W. (Sunnybrow); 3, Mrs. E. Wilkinson (Halifax). Corydoras: 1, D. Smith (Tadcaster); 2, Master D. Lacey (Aireborough); 3, B. Thompson (Gorton). A.O.V. Catfish: 1, B. Phillips (Ashton); 2, F. Gates (Castleford); 3, L. Kaye (Top Ten). Loaches: 1, S. Hirst (Ind.); 2, T. & W. (Sunnybrow); 3, F. Mulla (Merseyside). Breeders Livebearers: 1, J. Tunney (Stocksbridge); 2 and 3, Mr. Healey (Barnsley). Breeders Egg-layer: 1 and 3, F. Buxton (Barnsley); 2, J. Wright (Alfreton). Female Livebearer: 1, Mrs. J. Wike (Huddersfield); 2, B. Megson (Aireborough); 3, G. Thickbroom (Castleford). Female Egg-layer: 1, B. Megson (Aireborough); 2, Mr. and Mrs. Webb (Salford); 3, J. R. Robinson (Aireborough). Pairs Livebearer: 1, J. Gresty (Sunnybrow); 2, R. Wilkinson (Halifax); 3, J. R. Robinson (Aireborough). Pairs Egg-layer: 1, W. Parkin (Huddersfield); 2, J. A. Whiteley (Aireborough); 3, F. Mulla (Merseyside). A.O.V. Tropical: 1, A. Whitlock (Tadcaster); 2, P. Jackson (Dukeries); 3, J. Wright (Huddersfield); 2, S. Smith (Merseyside). Ladies: 1, Mrs. V. Parkes (Merseyside); 2, Mrs. Moorhouse (Bradford); 3, Mrs. Hooper (Bradford). Fancy Goldfish:

IN AQUARIUM OR POND BE SAFE WITH **halamid** Hillside Aquatics London N12

1, P. Moorhouse (Bradford); 2, Mr. Eden (Sheffield); 3, Mr. and Mrs. Bone (Huddersfield). Common Goldfish: 1, Mr. Eden (Sheffield); 2, Mrs. Davies (Heywood); 3, A. Town (Castletford). A.O.V. Coldwater: 1, Mr. Hooper (Bradford); 2 and 3, Mr. Eden (Sheffield).

With the success of the above show the society have again booked Huddersfield Town Hall as the venue for the second open show to be held on Sunday, 22nd March, 1970. (Secretaries please note).

THE annual general meeting of the East London Aquarist and Pondkeepers Association was held in March, at which time it was decided to hold the annual show on the 9th August. The following officers were elected for the ensuing year: President, P. Campkin; vice-presidents: R. A. Taylor, P. Arnold, F. Petto; chairman, F. Vicker; vice-chairman, A. Field; secretary, P. Harris, 86 Leigh Road, East Ham, E.6; treasurer, A. Harris; show organiser, R. E. Arncliffe; show secretary, G. Green; social secretary, J. Boss; librarian, C. Sweeting; magazine editor, R. Dodkin; press secretary, Mrs. S. Arncliffe; programme secretary, W. Carby; equipment officer, G. Green; assistant, L. R. Baker; Committee, M. Pearson and K. Priest; auditors, Mr. and Mrs. F. Arnold. The society holds its meetings every first and third Friday of each month at the Ripple Road School, Barking, at 8 p.m. New members are welcome and any further information may be obtained from the secretary.

DESPITE the unfavourable weather the March meeting of the Trowbridge and District Aquarists and Pondkeepers Society was extremely well attended and members were treated to a trio of talks given by committee members. Mr. Patrick spoke about fish of the Hasbors family supported by live specimens from his own collection. "How I bred Jewel Cichlids" was the theme of Mr. Hayter, together with hints on breeding Daphnia, and Mr. Scudamore rounded off the interesting talks with his experiences in wholesalers' establishments. Fish on the table were Labyrinth, first prize going to C. Penny with a Pearl Gourami.

THE following committee members have been elected by **Cardford A.S.**: J. Colson, P. Love, S. Pitman, L. Jones, B. Stroner; club chairman, W. R. Illes; secretary, A. McCarthy, 5 Bawdwin Road, Cardford, S.E.8. 01-698 0172. Details for the open show on 31st May from show secretary, J. Wilson, 130 Paston Crescent, Lee, S.E.12. 01-857 4913. The club meets Monday evenings at 8 p.m. in Holbeck Road School, S.E.6, and new members will be most welcome. Further information can be obtained from the club secretary.

THE first annual meeting of the **Littlehampton & Bognor A.S.** was held recently. This was the first A.G.M. since the club was reformed about a year ago. At that meeting there were ten persons present, whereas the club now has over fifty members. The following committee was elected—Chairman: M. Vermette; Vice-Chairman: D. V. Gallup; Treasurer: R. Hollis; Secretary: Mrs. B. Gallup, 1 Herish Cottages, Yewton Road, Barnham, Sussex. R. Chilcott; P. Everington; M. Booth. The club meets at the Crown, High Street, Littlehampton, on the first Thursday of each month at 8.00 p.m. Visitors are welcome.

THERE was a good attendance at the March meeting of **Tonbridge & District A.S.**, who were hosts to some members of **Medway A.S.** Ken Nutt gave a very interesting talk on the development of the present forms of goldfish and shubunkins, and answered questions on pond-keeping and general coldwater fish-keeping.

The fish were judged by Ted Jessopp, who gave the medallions for the best tropical and best coldwater fish to members of the home club. The best catfish (tropical medallion) was a C. Jullii (81) owned by E. Horsley; 2nd was a C. Palanus owned by K. Fisher (Medway) and 3rd and 4th were a C. Aeneus and Pimilodia owned by J. Bellingham (Tonbridge). In the A.O.S. tropical egg-layer class Mr. Marshall of



1969

BRITISH AQUARISTS' FESTIVAL

18th and 19th October
at Belle Vue, Manchester

Medway got first place with a *Melanotania fluviatilis*; 2nd was R. Taylor (Tonbridge) with a *Madagascar Rainbow*; 3rd A. Clark (Medway), *Australian Rainbow*; and 4th Mrs. I. Bellingham with a *Labeo bicolor*. There was a disappointingly small entry for the A.V. coldwater section which was won by I. T. Mathison (Tonbridge) with a minnow. The runner-up was Mrs. N. Wren (Tonbridge)—goldfish.

The Saturday after the meeting the club held its first social which was attended by more guests than members. Everyone enjoyed their evening and during the festivities Fred Groves, a local aquarium proprietor, presented the Club Championship Shield to John Bellingham, vice-chairman, who had 32 points. The runner-up was Iain Mathies with 30 points and Ron Taylor was third.

THE results of **Swillington A.S.** first quarterly members' show were as follows: Mollies: 1, Mrs. M. Emmett; 2, P. Reynolds; 3, D. Dickson. Platies: 1, Mr. & Mrs. P. Flint; 2 and 3, G. Einks. Guppies: 1 and 2, P. Haigh; 3, P. Reynolds. Sweettails: 1 and 2, P. Reynolds; 3, Mrs. M. Emmett. Plants: 1 and 2, P. Reynolds; 3, Mr. & Mrs. P. Flint. Best Fish in Show: P. Reynolds. P. Haigh received the Harry Spruce Trophy for Guppies.

The entertainment for the evening was a talk on Piranhas by P. Reynolds, other entertainments at recent meetings have been a talk by P. Reynolds on the setting up of a new tank, for the benefit of Swillington's newer members, and a panel to answer any questions put forward by the rest of the members. A list of speakers and entertainment for the next half-year has been drawn up, and if anyone in or around Swillington would like to join, meetings are held on the first and third Wednesday of each month at Swillington County Primary School, Church Lane, Swillington, near Leeds.

THE results of the March Show of the **Suffolk Aquarists' & Pondkeepers' Association** were as follow: Best Fish in Show was W. Card's *Black Widow*. - *Characin* and *Barbs*: 1, W. Card; 2, V. Green; 3, G. Goodchild. *Cichlids* and *Labyrinths*: 1, A. Cook; 2, W. Card; 3, V. Green. *Livebearers*: 1, K. Fellingham; 2 and 3, J. Phillips. *Catfish* and *Loach*: 1, J. Green; 2, Mrs. L. Cook; 3, A. Cook. *Purshaded Aquaria*: 1, D. Barker; 2, J. Green; 3, K. Fellingham. *Coldwater*: 1 and 2, B. Chapman; 3, G. Goodchild. *Reptiles*: 1, G. Goodchild. Winner of the Junior Cup: G. Goodchild.

AT very short notice and despite heavy business commitments Roy Skipper of The House of Fishes, Hemel Hempstead, attended the March 7th meeting of the **Walthamstow & District A.S.** and delivered a very interesting and extremely informative lecture on his personal experiences and methods of keeping, breeding and rearing *Discus*. The lecture was illustrated with some excellent close-up colour slides. All technical information was disclosed and it is hoped that several members will be rearing batches of young *Discus* by the end of

the year. For information of forthcoming Society meetings please contact the Secretary, A. R. Chandler, 66 Uplands Road, Woodford Bridge, Essex.

THIRTY members were present at the February meeting of the **Barry A.S.** The programme comprised a tape and slide show entitled "The London Zoo Aquarium", an interesting and informative commentary, illustrated with fifty colour slides, covering freshwater and marine fishes, both native and tropical varieties.

THE February meeting of the **Cambridge & District A.S.** was the Annual General Meeting when the following officers and members of Committee were elected for the year: Chairman: P. Sanderson; Vice-Chairman: J. Yeats; Secretary: I. Georgetown, 16 Leys Road, Cambridge, CB4 2AT. Tel: Cam. 58933. Assistant Secretary: Mr. MacMillan; Treasurer: Mr. Freeman; Show Manager: Mr. Starrop; Show Secretary: Mr. Dant; Committee Members: Messrs. Radford, Sautrop Senior, Parfitt; Lovy, Senior; Langley; Ryder.

The President, Mr. Elkerton, reviewed the previous year's activities, which had been an extremely good year for the Society. The membership was up to the sixty mark and the average attendance at meetings was some thirty members. He also made reference to the fact that 1968 is the Society's 21st anniversary year and he was pleased to say that there had been a proposal to hold an Open Show in celebration, and also to have other activities which would create interest in the hobby in the locality during the forthcoming year. The Society meets on the first Tuesday in every month at the Rose and Crown public house, Newmarket Road, Cambridge. Visitors are always welcome.

THE speaker at the March meeting of the **Scottish A.S.** was Dr. A. Young. The Table Show was for Reptiles and Amphibia A.O.S. Coldwater. The visitors were Leith and Bruce Peetlin A.S.

THE junior section were in charge of the proceedings at the **Horsforth A.S.** March meeting. The master of ceremonies was Master S. Elstob who introduced Master D. France, who ran a game called "Song Titles" which was extremely interesting. The next junior, Master J. Dugdale, introduced "Canada" and "The Ice Glaciers" a slide show with a very interesting commentary from Master Dugdale.

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Next, came the comedian of the evening, Master D. Shaw assisted by Master R. Williamson. The last junior to entertain was Master K. Kirkbright who put on a "picture quiz" which had about twenty pictures.

The members' fish show was a great success. The "Best In Show" trophy was given and presented by P. Foster. The fish were judged by G. Holmes. Results: Pairs: 1, Miss J. Helm; 2, K. Shaw; 3, R. Hampson. Barb: 1, Mr. Girdham; 2, M. Pollard; 3, Miss J. Helm. Livebearers: 1, D. Corns; 2, Master D. Shaw; 3, Mr. Barker. Cichlids: 1, R. Hampson; 2 and 3, Miss J. Helm. Anabantids: 1, R. Hampson; 2, W. Audsley; 3, A. Wood. Characins: 1 and 2, R. Hampson; 3, M. Pollard. A.O.V.: 1, D. Corns; 2, M. Pollard; 3, Mrs. J. Dickinson. Catfish and Loach: 1, R. Hampson; 2, Master D. Shaw; 3, C. Corns. A.O.V.: Junior: 1, Master S. Ilstob; 2 and 3, Master D. Shaw. Best in the Show: Mr. Girdham.

A VERY interesting talk was given to the **Basingstoke and District A.S.** by Mr. T. W. Terry of the F.G.B.S. on all aspects of Guppy breeding and care. At the moment he and some co-members of the F.G.B.S. are trying to line-breed a species of Guppy. This part of the talk was very informative indeed. Table show results: Guppies: 1, A. Blake; 2, I. Lamb; 3, F. Lange. A.O.V.: 1 and 2, F. Lange; 3, A. Clark. A.O.V. Novice: 1, A. Clark; 2 and 3, I. Lamb. Forthcoming events: Three Counties League Boatie Show at Basingstoke on 9th May to be judged by J. Stillwell.

THE **Falmouth and District A.S.** held their March meeting at the "Trelawney Aquarist Shop". It is hoped that during the coming months trips will be made to various Tropical and Marine establishments. Table Shows have started in April and will continue monthly until September showing different species each month.

Any visitors coming to Cornwall on holiday or just visiting, interested in fishkeeping, and would like to come to the meetings and perhaps give a little talk, would be made most welcome. Please contact R. J. Jory, 19 Greenwood Road, Penryn, Cornwall, where arrangements will be made.

THE membership of the **North Kent A.S.** has been steadily increasing and with a full and interesting programme for the year it is expected to gain many new members. A party of members went to the Black and White Minstrel Show recently. The Social Secretary has been busy organising outings for the year among which are: a trip to Brighton Aquarium coupled with a collecting trip at Black Rock.

Meetings during March consisted of an illustrated lecture on the Origin and Development of fishes by Bryon Harvey, the ex-Show Secretary and a lecture by Mr. Maurice the F.B.A.S. judge who spoke on fish that he had bred. Any prospective members are always very welcome at the meetings and anyone interested should apply to B. Bloss, 11 Lane Avenue, Greenhithe, Kent, for information and a copy of the years programme.

THE annual general meeting of the **Federation of Guppy Breeders' Societies** was held recently at the Berkeley Hotel, Cheltenham on 2nd March, when the following Officers were elected: President: H. Esterbrook, F.F.G.B.S.; Vice-President: G. Davis, F.F.G.B.S.; Hon. Gen. Sec., R. F. Bayntum, "Cherry Orchard," Ditton, Nr. High Wycombe, Bucks.; Hon. Treasurer: B. Walker; Hon. Hon. Provincial Sec., Hon. Overseas Sec., Press/P.R.O.: F. D. Hall, Fernham Road,

Shillingford, Nr. Faringdon, Berks.; Hon. Show Sec.: J. Wheeler; Hon. Librarian: Dr. C. Purdom. The result of years of dedication to the Federation, and his work on the Judges and Standards Committee was the award of a Fellowship for Gerry Davis, Chairman of the J. & S. A great deal of discussion took place on the proposals to amendments to the Standards Handbook on Standards and Pointing by the Judges Conference held in January. The result of this will shortly be published in a new Standards Handbook. Section Secretary's report showed a slight fall in membership, mainly in the North and Scotland, but interest by South Coast Aquarists, and Irish Members show that this will shortly be rectified. Specialist breeders will be pleased with the new pointings which favour the small finned varieties, and promise a greater number of entries of the original F.G.B.S. types on the show bench.

THE first spring meeting of the **B.A.S.S.** was held recently when there were two lectures, the first was given by D. Philcox of Kew Gardens on Plant Classification and its problems. This was a very interesting talk which gave special reference to Linnophila (ex Ambulia). The second talk was given by H. Senior, a B.A.S.S. member who works at the London Zoo. His subject was the fish of Lake Malawi with particular interest given to the small cichlids. This extremely interesting meeting was attended by over one hundred people, many of whom were guests of the Society.

AT the March meeting of the **Bournemouth A.C.** a good attendance of members and their guests enjoyed a pleasant evening. Before the meeting commenced, however, the Chairman announced, with deep regret, the death of Mr. Legget. Older members will remember him as a keen member, who seldom missed a meeting.

The main item of the evening was a talk, illustrated by slides, composed and recorded by Jim Kelly, and arranged and presented by Mr. and Mrs. Davis of the G.S.G.B. Results of the Table Show were as follows:—Livebearers (Pairs): 1, B. Poole; 2, Mr. Watkins; 3, Mr. Diggins, Danlos, Rasboras and W.C.M.M.'s: 1 and 3, H. Earl; 2, Mr. Ryan.

In a recent report in this column, it was implied that the Club's Chairman, Mr. B. Coombes, had been upgraded to F.B.A.S. Class "A" Goldwater judge. This is not so. He has not yet received any notification and the Club apologises for the inaccuracy, and any inconvenience that it may have caused.

MEMBERS of the **Castleford and District A.S.** were entertained by Mr. R. E. Hampson of Horsforth at the March meeting with a colour film show. Mr. Hampson and Mr. Town judged the Table Show, the results being: Guppies: 1 and 3, G. Thickbroom; 2, C. Asquith. Livebearer (Pairs): 1, M. Lowther; 2 and 3, G. Thickbroom. Egglayer (Pairs): 1, Mr. and Mrs. Gates; 2, G. Thickbroom; 3, M. Lowther.

PRACTICAL judging occupied the whole of the first fortnightly meeting for February of the **Thurrock A.S.** The fish chosen for the exercise was the Siamese Fighting Fish. Fourteen fish were displayed, one blue, one cambodia, one yellow and one multi-colour, the rest being reds. Result: 1, 2 and 3, D. C. M. Durrant. The second gathering of the month was a business meeting. The Table Show was for E.L.T.C., the results being as follows: 1, D. C. M. Durrant; 2, F. Harkins; 3, H. Junon.

A "Spot the Picture" contest was held by **Enfield and District A.S.** in which 30 pictures of fish and plants were placed around the room and the members had to write down their names. Thirty points were allotted, Miss C. Collins won with 29 points. The Table Show was Labyrinths and results were as follows: 1 and 2, Mr. Howe; 3, J. Whitaker; 4, B. Bird.

AN Extraordinary General Meeting of the **Bracknell A.S.** was called in March to elect a new chairman as A. Kelch, the present chairman,

has had to relinquish his post for the time being due to business commitments. J. Norris, acting deputy chairman, was elected to carry on with his responsibilities and it was also decided to meet every second and fourth Monday in the month as from the Annual General Meeting to be held in October.

Over the past few months membership has been on the increase which may be due to the varied programme the Club has enjoyed of late. On 3rd February the main feature of the evening was a Fish and Junk Sale, the first of its kind to be held at Beckneth, which raised £6 towards the Annual Open Show. A slide and tape show in the form of a quiz was given by M. Carter and enjoyed by all. At the previous meeting R. Armstrong gave a very interesting talk on "Breeding and Attempting to Breed the Difficult Species" and Bob Essem gave an exceedingly excellent illustrated talk on Coldwater Fish which included his experiences in breeding the perfect Fantail (Twin Tail) Goldfish.

A "KNOCKOUT" Table Show was held at the March meeting of **Newport A.S.** This usually attracts a large entry but this time only seven fish were benchd. The winner was Master R. Hewlett with a red swordtail. Following the show E.B.A.S. Judge, Mr. G. James, explained the pointing system and spoke about show standards. He then went on to point various fish on the show table giving the audience a detailed explanation of his pointing.

CHANGES in the committee of the **Chapelton and District A.S.** are as follows: Chairman, E. W. Pearnborough; Secretary, C. Whitehead, 4 Falding Street, Chapelton, Sheffield; Treasurer, J. Waring. Committee meetings are held on the last Friday each month at Midland Hotel, Chapelton.

AN interesting talk on fishkeeping and tanks was given recently by L. Nightingale to members of the **B.A.C. Welfare A.S.** (Rolls Royce, Bristol). The Table Show points were as follows: Open Class: 1, F. Brown; 2, W. Gadd; 3, P. Gadd. Novice Class: 1, D. Gould; 2, J. Sheppard; 3, K. Watkins; 4, P. Jones.

THE **Gosport and District A.S.** had a very interesting talk recently by J. Stillwell of Portsmouth A.S. on the subject of water, this talk being illustrated by some simple tests on the water of the community tank. The February Table Show results were: A, V. Labyrinth; 1, Mr. Elick; 2 and 3, Mr. Littlewood; 4, Mr. Bridgen. A.V. Catfish: 1, Mr. Elick; 2 and 3, Mr. Littlewood. The annual home furnishing aquaria competition was won by Mrs. J. Wright.

FOR the March meeting of the **Brighton and Southern A.S.** a slide show was held, most of the slides having been taken by the members themselves. These slides covered a wide range of fish, from Cichlids to Killifish, as well as illustrating some of the many varieties of tank decoe. Much lively comment was caused by some of the slides and those members present had a most interesting evening.

In March also a Table Show was held for A.V. Catfish, also for Livebearers (breeding pairs). The total number of entries for this joint show was eighty-seven, a fine effort by all concerned. The pointings in the two classes were as follows: Livebearers: 1 and 3, Miss M. Scott; 2, Mr. Lucas; 4, K. Williams, who was also placed first in the junior section. Catfish: 1, H. Cox; 2, P. Tighe; 3, Mrs. M. Tighe; 4, C. West. In the junior section K. Williams was again placed first, E. Williams being second. Also at this meeting a new Treasurer, R. Dec, was elected.

THE officers elected at the annual general meeting of the **East Dulwich A.S.** were as follows: Chairman, R. Salmon; Secretary, Miss V. Tillyer, 90 Grierson Road, Honor Oak Park, London, S.E.23; Treasurer, H. Waters. At the meetings on the second and fourth Mondays of each month, new members will receive a warm welcome. The meetings are held at Dulwich Baths (Reception Hall), Crystal Palace Road, East Dulwich, S.E.22.

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THE main item on the agenda of the March meeting of the **New Forest A.S.** was a talk by Mr. Stillwell. His subject was "Elementary Genetics for Aquarists." In this lecture he tried to give a simple outline of the main principles of a complex subject, so that members could have more success at breeding desirable specimens and avoiding less attractive varieties. The meeting was chaired by J. Jeffries who welcomed the visitors and also reminded members that nominations for the Committee and alterations to the Rules should be submitted next month in preparation for the Annual General Meeting in May.

The results of the Table Show were as follows: Melies: 1, D. Hare; 2, A. Williamson; 3, R. Moseley; 4, M. Ault. Plaxies: 1 and 4, A. Williamson; 2, D. Tuckwell; 3, K. Newton.

A STRONG note of optimism appears in the **Leamington and District A.S.** newsletter for April, in which it is stated that "we have good attendances at meetings, some fine fish in the Table Shows, an excellent library and some wonderful programmes lined up for the near future."

The newsletter contains a good selection of aquatic news and tit-bits, of interest to all aquarists.

FROM the second issue of "Torax Topics" the newsletter of **Torbay A.S.**, it would appear that there is plenty of interest in aquatic matters in this part of the world. The Editor is J. Hayes, 6 Cleveland Road, Paignton, Torbay, Devon.

THE March meeting of the **Taunton and District A.S.** was mainly concerned with a discussion on the recently revised society rules and the regulations for future inter-club and open shows.

There was an unusually large table show, resulting from a combination of last month's postponed table show with the current show, involving four classes. Prize winners were: Barbs under 3 ins.: A. Crell; Novice: G. Butt. Barbs over 3 ins.: N. Larcombe. Catfish and Loaches: G. Milton; Novice: S. Pike. Home-bred livebearers: G. Milton; Novice: E. Earnshaw. The Barb Bowl was won by N. Larcombe and the Livebearers Cup by G. Milton. The First Annual Open Show is to be held on 24th May, 1969.

THE **Boreham Wood & District A.S.** held the best table show to date recently when Characins were the fish featured, after a very interesting slide show and discussion on community tank fish, by C. Withers of Mid-Herts Club. The results were as follows: 1 and 4, N. Toulmin; 2, J. Burrows; 3, G. Cherry. New members would be welcomed. Meetings are held on the second and fourth Monday each month, at the Community Center, Allum Lane, commencing at 8 p.m.

A MOST interesting and informative talk to approximately thirty members of the **Harrow A.S.** was given by R. O. B. List at one of the March meetings. He outlined what one should do when showing fish—and what not to do—and it is hoped that this will encourage even more people to enter Table Shows arranged during the year. The Barbs and Cichlids Table Show was then judged by Mr. List, the results of which were as follows: Barbs: 1, J. Parker; 2, P. Wales; 3, W. Little. Cichlids: 1, R. Morris; 2, M. Field; 3, T. J. Marcher.

At the second meeting of the month, Roy Skipper showed a very good selection of slides consisting mainly of furnished aquaria and fish houses in this country and abroad and rounded up the evening with some excellent slides on "you know what"—Discus. It is hoped that Mr. Skipper will make a return visit to the Society later in the year to give a more detailed talk on Discus.

THE **Bracknell A.S.** is pleased to announce the appointment of Maurice Carter as a B. Class judge. The proposal was put forward by Basingstoke Club and confirmed by the F.B.A.S. Judges and Standards Committee. The first

round of the three counties bottle league was held recently. Bracknell has a very good record in this competition, having won it for the last five years. The four clubs taking part in the competition are, Bracknell, Basingstoke, High Wycombe and Reading. Brian Baker, an F.B.A.S. judge from Uxbridge had a very arduous task in judging the twenty-four entries. Eventually the following results were announced. 1, Bracknell 102 points; 2, Basingstoke 83 points; 3, High Wycombe 73 points; 4, Reading 42 points.

MARCH was a busy month for the **Farnborough and District A.S.** There was a return contest with Didcot and District A.S. which was a twelve-a-side A.V. table show, the result being a win for Farnborough. 1, Didcot, Mr. Wilkinson; 2 and 3, Farnborough, D. Jones; 4, Didcot, Mr. Wilkinson.

During the four days 26th-29th March inclusive, the Society had a stand at the Festival of Arts held at the Farnborough Town Hall. On display were a three-foot community tank and two twenty-inch tanks, one set up with breeding livebearers, the other with spawning Blue Gouramis. A keen interest was shown in the exhibit, by both children and adults, and it was a great success.

On 28th March the Society had an away inter-club contest with Basingstoke A.S. The evening was a success for the visitors as they won all nine places in a three-class, six-fish, table show. Labyrinth: 1 and 2, R. Wynd; 3, R. Armstrong. Barbs: 1, 2 and 3, D. Jones. Livebearers: 1, 2 and 3, D. Armstrong.

THE first meeting of the **Faling and District A.S.** new year was held at the beginning of March.

An interesting lecture on Gouramis was given by club member P. Heal, who brought along many Gourami fry, and pointed out various stages in their growth rates, together with some of their feeding requirements.

The Table Show categories were Livebearers and Corydoras, the winners being: Livebearers: 1, M. Sadler (junior member); 2, G. Burgin; 3, J. Irvine. Corydoras: 1, R. Savage; 2, T. Tagg; 3, P. Carter (junior member).

A slide/tape show held on the second meeting of the month, proved to be of special interest to the Club, featuring, as it did, a slide of the Club's successful Tablert at last year's Aquarium Show. A lively discussion took place afterwards, when the new Club badge designs were voted on; the evening ended with a mini-lecture on Treatment of Fish Diseases, given by Charlie Ankin, the resident expert on the subject.

A GOOD attendance, including many new members, supported the March meeting of the **Burton & District A.S.** The programme included a slide show and tape lecture on "Killifishes."

The results of the table show for Rashoras, Danios and White Cloud Mountain Minnows were as follows:—1, D. Toplis; 2, B. Poisson; 3, K. Smith; 4, G. Mead. The date for the Burton & District A.S. members' show has been fixed for Saturday, 10th May, at the Friars Walk School. Judging of the exhibits will take place during the morning and the show will then be open to the public for viewing in the afternoon and evening.

THE **Nottingham and District A.S.** monthly bulletin contains reports of recent social activities and the section reports prior to the annual general meeting. There is also the conclusion of an article on "Breeding Goldfish out of Season." The general tone of this issue, however, is a request for more support and interest in the Society and its activities.

AN informative lecture on fish diseases was given recently to **Uxbridge and District A.S.** by J. Thorne of Hounslow A.S. This was greatly appreciated by those present, as was a second lecture to the Society by T. Summers on Catfish, with the aid of an epidiascope, which is the Club's latest acquisition.

A VARIED selection of articles of interest to all aquarists appears in the March issue of "Lateral Lines" the journal of the **York and**

District A.S. The table show results were:—Open Class (Section 1): Barbs: 1 and 3, M. H. Cooper; 2 and 4, P. Curry. Novice Class: 1 and 3, M. Allison; 2, D. Hinkley; 4, A. Turner. Junior Class: 1, 2, 3 and 4, Master N. Rhodes.

A BRIEF summary of the **Blackwater A.S.** activities is as follows: February: The normal monthly meeting was attended by eleven members, who managed to find their way through a blizzard to be present. The results of the table show, which was A.V. Characins was 1, Master M. Puller; 2, Master E. Ruffell; 3, Master J. Devall.

On Sunday, 23rd February, members gathered at St. Peter's Hospital, Malden, where a 4 ft. tank, complete with fish, plants, etc., which had been donated by members and friends, was installed in the Old Peoples' day ward. The tank was officially handed over by our Chairman, Mr. E. Gee, and was accepted on behalf of the hospital by Mr. Woods. At the same ceremony the Matron of the hospital, Miss M. E. Judd, agreed to become the Club's first President.

Members who attended the March meeting heard a very interesting talk by Mr. D. Malton, President of Witham and District A.S., on coldwater marine tanks. The talk was illustrated with a number of specimens, which had been collected by the speaker around the shores of the British Isles.

The result of the table show for A.V. Coldwater was as follows: 1, Master C. Wallock; 2, J. Grace; 3, Master J. Devall.

We regret that owing to pressure on space the Show reports of the Association of Manchester and District A.S. and Huddersfield T.F.S. have been held over until the next issue.

NEW SOCIETY

THE formation of the **Amesbury & District A.S.** was decided at the inaugural meeting held on Wednesday, 19th March. The meeting was attended by twenty and a committee of six was elected. The Chairman is M. Sainsbury, 17 Water Lane, Salisbury and the secretary, R. S. A. Harvey, "Sha-Tin," Kitchener Road, Amesbury, Wiltshire. It was an active meeting and the interest and ideas at this, the first meeting, showed promise for the future of the society. It would be appreciated if anyone willing to give lectures or talks would contact the secretary.

AT the March meeting of the **Southampton and District A.S.** the home team in a knock-out Quiz Competition were beaten by one from Winchester with 22 points to 14. The quiz was one of a series being organised by the Association of Southern Aquarist Societies, whose sphere of activities extend from Weymouth to Bognor.

A table show for Characins judged by Mr. Armitage of Portsmouth was well supported in both sections with the following results: Advanced Class: 1 and 4, Mr. Russell; 2 and 3, Mr. Jones. General Class: 1 and 4, Mrs. Russell; 2, Mr. Gilbert; 3, Mrs. Rows.

The meeting concluded with a general discussion on Characins and survey of the specimens of the Show bench which was pointed out represented only a few of the species available to aquarists these days.

THE main March meeting of the **Bradford A.S.** was very well attended. The speaker was H. Fudens, one of the Society experts, and it was a pleasure to listen to him recount his experiences.

The second monthly gathering was also a very good meeting, the speaker being A. Firth another Bradford Society expert. His subject was "Easier Big Layers," a topic of great interest to the members present. After discussion on breeding such egg layers as the Flame Tetra and Emperor Tetra, the meeting turned into general discussion.

A very good attendance of sixteen Bradford members travelled to Wakefield for an inter-society show at very short notice, being rewarded by the following show results, two firsts, one second and one third.

AQUARIST CALENDAR

1st and 3rd May: Southend, Leigh and District A.S. Open Show, Municipal College, Victoria Circus, Southend-on-Sea (close Southend (Victoria) Station). Full details from Show Secretary, R. Passmore, 39, Grafton Road, Canvey Island, Essex.

3rd May: Trowbridge and District A.S. and P.K.S. Open Show, Trowbridge Nelson Haden Girls' School. Show Schedules can be obtained from G. Penny, 122 Trowbridge Road, Bradford-on-Avon, Wilts.

4th May: Leigh A.S.

4th May: Dukeries A.S. First Open Show at the Winifred Portland Technical Grammar School, Sparken Hill, Worksop. Schedules available shortly.

4th May: Derby Regent A.S. Open Show at the Railway Institute, Siddals Road, Derby.

10th May: Uxbridge and District A.S. Open Show at Meadow School, Royal Lane, Hillingdon, Middx. Schedules and full details are available from N. Lee, 46 Avidale Road, Ealing, London, W.5.

10th May: Bridgend and District A.S. Second Annual Open Show, Y.M.C.A., Bridgend.

11th May: Workop A. and Z.S. Open Show at North Notts College of Further Education, Blyth Road, Worksop.

11th May: Midland Association of Aquarist Societies: Moseley Secondary School, College Road, Moseley, Show Secretary, A. E. Allsopp, 50 Cutley Road, Hall Green, Birmingham.

17th May: Cardiff A.S. Third Open Show, St. Margaret's Church Hall, Roath Park, Cardiff. Details from Show Secretary, Colin Harding, 168 Pearl Street, Roath, Cardiff.

18th May: Coventry Pool and Aquarium Society, Midland Aquarist League, Table Show, Foleshill Community Centre, Foleshill Road, Coventry.

18th May: Maresfield A.S. Open Table Show at the Montrose Social Club.

18th May: Rainworth and District A.S. Open Show at the Showrooms of E. Taylor and Sons, West End Garage, West Gate, Southwell, Notts.

18th May: Hull A.S. Second Open Show at the Railway Institute, Anlaby Road, Hull. Details from P. M. Shepherdson, 11 Beech Grove, Beverley Road, Hull.

24th May: Kingston and District A.S. Annual Open Show at St. Luke's Social Centre, Elm Road, Kingston. Schedules from G. E. Greenhalf, 39, Garth Close, Morden Surrey.

24th May: Taunton and District A.S. First Open Show at Priory Secondary Modern School, Cranmer Road, Taunton. Schedules available from Show Secretary, D. J. Rumsey, 52, Parklands Road, Wellington, Somerset.

25th May: Warrington A.S. Open Show. Show Secretary, J. Higham, 42 Wood Lane, Warrington. Telephone Warr. 36939. Further details to be announced later.

31st May: Harlech A.S. First Annual Open Show at Gabalfa Junior School, Colwill Road, Cardiff. Details from Mr. P. B. Garner, 71a Moorland Road, Cardiff.

31st May: Catford A.S. Open Show, Catford School, Stainton Road, Catford, London, S.E.60. Details from K. Owen, 196 Langley Way, West Wickham, Kent.

1st June: Boston A.S. First Open Show at Blackfriars Theatre, Boston, Lincs. Schedules from D. Moody, 56 Kingsway, Boston, Lincs.

1st June: (Provisional Date) Nuneaton A.S. Second Annual Open Show. Particulars from Show Secretary, G. Cox, 36, Manor Court Road, Nuneaton.

1st June: Bournemouth A.C. Annual Open Show at Kinross Community Centre, Pelhams Park, Kinross, Bournemouth. Show schedules and entry forms available after 1st April from Show Secretary, J. V. Jeffery, 30, Brisemar Avenue, Southbourne, Bournemouth, BH36 4JF.

1st June: Bradford and District A.S. Open Show at Textile Hall, Bradford. Schedules available from A. Carruthers, 4 Mayfield Grove, Wildend, Bradford.

7th June: Yeovil and District A.S. Show Secretary, K. Blake, 13 Glenville Road, Yeovil.

8th June: Stretford and District A.S. Open Show, A.B.I. Club, Moss Road, Stretford.

8th June: Lincoln and District A.S. Open Show. Show schedules available from E. Cassidy, 56 Hollywell Road, Cliff Gardens, Brant Road, Lincoln.

8th June: Glossop A.S., The Adult Education Centre, Talbot Road, Glossop, Derbyshire. Schedules, etc. from, The Secretary, D. R. Chambers, 86 Old Road, Hyde, Cheshire.

8th June: Loughborough and District A.S. Second National Open Show, Town Hall, Market Square, Loughborough. Schedules will be available later from the Show Secretary, I. Purdy, 61 Poplar Road, Loughborough, or from the Secretary, Fred Howell, 61 Morley Street, Loughborough, Leicestershire.

14th June: Southampton and District A.S. Open Show at St. Denny's Church Hall, Southampton. Details from Show Secretary, C. McCann, 7, Waterhouse Way, Southampton, SO1 3PA.

14th June: Llanrwst Major A.S. Annual Open Show in the Llanrwst Major Town Hall.

15th June: Brighton and Southern A.S. Open Show, Marmion Centre, Marmion Road, Hove. Schedules can be obtained from R. Browning, 34 Rowan Close, Portslade, Sussex.

15th June: Swillington A.S. Open Show, will be held at Swillington County Primary School, Church Lane, Swillington nr. Leeds. Schedules are now available from the Show Secretary, W. R. Gæthorne, 6 Manston Lane, Leeds, 15, Yorks.

21st June: Bracknell A.S. Annual Open Show, at the Priestwood Community Centre, Priestwood Court Road, Bracknell. Show Secretary, Mr. Len Little, 126 Shepherds Lane, Bracknell.

21st June: Cambridge and District A.S. Open Show at the Guildhall, Market Square, Cambridge. Schedules and enquiries to I. Georgeson, 16 Leys Road, Cambridge, CB4 2AT.

22nd June: Salisbury and District A.S. Fifth Open Show. Details from Show Secretary, R. Brown, 20 St. Birinus Road, Woodfalls, Nr. Salisbury.

22nd June: Alfreton and District A.S. Annual Open Show, at the new Adult Education Centre, Alfreton Hall. Details from Show Secretary, Mr. S. Hill, 35 South Street, Riddings, Derbyshire.

22nd June: Open Show Coventry Pool and Aquarium Society, at Foleshill Community Centre, Foleshill Road, Coventry. Schedules from C. J. Grant, 26 Cecily Road, Coventry.

28th-29th June: Bristol Tropical Fish Club. Open Show. Details from E. Newman (show secretary), 71, Somerdale Avenue, Knowle, Bristol 4.

29th June: Medway A.S. Further details to follow.

29th June: Medway A.S. Third Annual Open Show at St. John Fisher School, Ordinance Street, Chatham. Show Secretary, C. A. Craft, 75 Dargets Road, Walderslade, Chatham, Kent.

6th July: Leamington and District A.S. 4th Annual Open Show.

6th July: Lytham A.S. Annual Open Show, Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

6th July: High Wycombe A.S. Open Show at Bovingdon Green Hall, Nr. Marlow, Bucks. Schedules available shortly from Show Secretary, Mrs. S. Thomas, Farnmore Wood Camp, Lane End, Nr. High Wycombe, Bucks. Tel: Lane End 659.

6th July: Tadcaster A.S. Open Show at St. Joseph's School, St. Joseph's Street, Tadcaster. Details and schedules from Show Secretary, J. W. Holmes, Newsagent, Collingham, Wetherby.

6th July: Northwich and District A.S. First Annual Open Show at the Scout Hall, Cuddington, Nr. Northwich, Cheshire. Full details from Show Secretary, C. Davies, 70 Haybust Avenue, Middlewich, Cheshire.

10th-12th July: Aquarist and Pondkeeper Open Show, Alexandra Palace, London, N.22.

12th July: Basingstoke Open Show incorporating the Three Counties and Three Counties Section F.G.B.S. Shows, to be held at the Carnival Hall, Basingstoke. Details from Show Secretary, A. Blake, 50 Bounty Road, Basingstoke.

12th July: Newport A.S. Open Show at St. John's Parish Hall, Victoria Avenue, Maindee, Newport, Mon. Full details available from I. G. Phillips, Show Secretary, 34, Brangwyn Crescent, Newport, Mon. NPT.7 QY.

12th, 13th July: Romford and Becontree A.S. Dagenham Town Show. Enquiries to Mr. P. P. Pyne, Show Secretary, 3, Ashvale Drive, Cranham, Upminster, Essex. Tel: Upminster 28435. Schedules available shortly.

20th July: Gosport and District A.S. Third Annual Open Show at Bridgemary Community Centre. Show Secretary, K. Clough, 16 Newport Road, Gosport, Hants.

20th July: Gosport and District A.S. Third Annual Open Show.

2nd August: Stroud and District A.S. Open Show, Archway School, Paganhill, Stroud.

2nd August: Hull Show. Aquarist Open Show at East Park, Holderness Road, Hull. Details from P. M. Shepherdson, 11 Beech Grove, Beverley Road, Hull.

9th August: East London Aquarist and Pondkeepers' Association. Annual Open Show.

9th-16th August: Portsmouth A.S. Open Show, Portsmouth Community Centre, Twyford Avenue, Portsmouth. Open to the public from 11th August. Show schedules and information obtainable from Mr. J. Stillwell, Show Secretary, 34 Salcombe Avenue, Copnor, Portsmouth.

13th-16th August: Midland Aquatic Open Show at Bingley Hall, Broad Street, Birmingham. Show Secretary, J. Witts, 120 Franklin Road, Kings Norton, Birmingham, 30.

24th August: Oram A.S. Open Table Show, Recreation Hall, Refuge Street, Shaw, Oldham.

6th, 7th September: Mid-Herts A.S. Open Show. Show Secretary Charles S. A. Withers, 15, Charmouth Road, St. Albans, Herts.

14th September: Oldham and District A.S. Open Show, Werneth Park, Oldham.

20th September: Hounslow and District A.S. Annual Open Show (date to be confirmed). Show schedules available from F. Smith, Anafra House, 7, The Greenway, Hounslow, Middx.

28th September: Hucknall and Bulwell A.S. Second Open Show to be held at Bulwell Youth Club, Coventry. Further details from T. H. Smith, Show Secretary, Longmead Drive, Daybrook, Nottingham, NG5 6DP.

28th September: Medway A.S. Convention. A new venture for this club with an interesting speaker and a chance for an aquarist get together. Details from Secretary, A. Clark, 6 Holland Road, Chatham, Kent.

5th October: Castleford and District A.S. First Open Show.

18th, 19th October: British Aquarist Festival, Belle Vue, Manchester.

9th November: Hartlepool A.S. Eleventh Annual Open Show. Langscon Hall, Seaton Carew. Schedules available from J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham.

14th December: Horsforth A.S. First Open Show. Further details to follow.

SECRETARY CHANGES

Catford A.S.—A. McCarthy, 5 Baldwin Road, Catford, London, S.E.6.

Cambridge and District A.S.—L. Georgeson, 16 Leys Road, Cambridge, CB4 2AT. Tel: 58593.

Chapelton and District A.S.—C. Whitehead, 4 Falding Street, Chapelton, Sheffield.