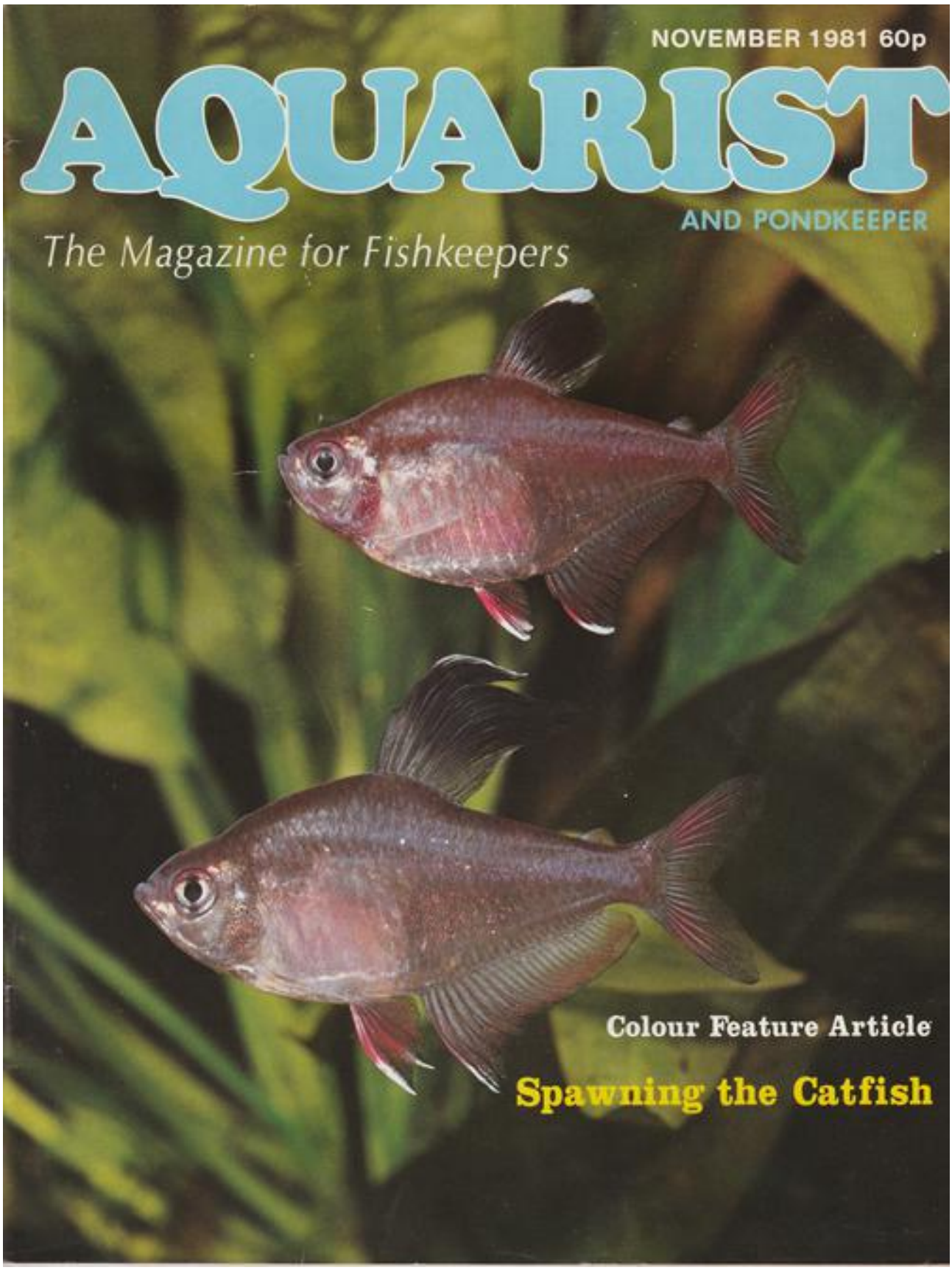
NOVEMBER 1981 60p

AQUARIST

AND PONDKEEPER

The Magazine for Fishkeepers



Colour Feature Article

Spawning the Catfish

THE AQUARIST AND PONDKEEPER

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Editorial

Cats on the rooftops, cats on the tiles . . .

CATS, WE ARE TOLD, were regarded as sacred animals in ancient Egypt. Approaching only closely to this position of deification in Britain cats, nonetheless, enjoy a niche outside the law which controls other animals kept in domestic surroundings. This may well stem from the nature of the beast which virtually prohibits any form of control other than that of confining it to a cage, for cats cannot be trained to remain within the confines of their owners' territory and the law, taking the easy option, decrees that a "cat is allowed to wander." This, as many of us are aware, it does and cats, uniquely among a myriad of domestic pets, may wander willy-nilly where they so desire causing irritation and damage without recourse on the part of their victims to legal redress, the onus of protecting their property residing squarely upon their own shoulders.

As those of us who have suffered from the attentions of visiting pussies can testify, it is far from being a simple matter to keep cats out of one's garden which they are free to use as a latrine, to hunt anything which moves and, in the case of toms, to mark territory in their especially malodorous fashion.

Pleasant neighbours may possess fiendish felines whose machinations will threaten good relationships, while cats from further afield, always preferring to forage in territory other than their own, will make nightly soeties into one's plot, the reslts of their visitation not being evident until the following morning.

Short of enclosing the garden in a cage there is little one can do to keep cats out while keeping within the law. Within the law? Well, most of us are law-abiding citizens and will respect the law even when it is somewhat more than an ass but we may be permitted to chortle at the ploys practised by less law-respecting acquaintences who have resolved their problems in particular cases in possibly reprehensible ways but which we may enjoy hearing about, albeit quite unlikely to emulate.

A friend, whose passion was breeding specific goldfish varieties, was plagued by an angling moggy which could not be deterred from hooking fish from his pond. Very informal in design and with a wealth of tall-growing marginals, netting the pond was quite impractical as well, of course, as ruining the attractiveness of the feature. He tried to make a friend of the animal and bought food for it in the belief that its motivation to catch his fish was from under-nourishment, but it betrayed his friendship and angled on both at night and during daylight hours. It did not come from an immediate neighbour's house and he was unable to determine its home ground.

At length he managed to catch it and, buying a travelling basket, he boxed it up and despatched it to Pitlochry or somewhere up in Scotland, with a note attached stating: 'To be collected by Mr. McNoon.'

He said that he considered the cost of the enterprise was worth it and that he supposed that when the mythical Mr. McNoon failed to appear, the station staff would have adopted pussy which may now be on the strength of British Railways.

There are many cat owners who truly love their pets and who afford them all possible creature comforts but there are those who, while proffessing great affection for their feline familiars, turn them out of the house at night for what good reason one cannot conceive for it smacks of complete disregard for the animals involved and for the sanctity of neighbours' property.

The fact remains though, that keeping errant cats at bay is a most difficult problem to overcome and taxes ingenuity to the full. Any practical and legal solutions would be welcomed by those still grappling vainly with this insupportable hazard to their fish, amphibians and other potential addenda to the menu of hunting cats.

OSCAR **G. Robinson**

Nymphaea Mrs. Richmond
A Marliac introduction

Waterlilies and Man

by Philip Swindells

ALL THE VARIOUS genera of plants that have at different times been given the collective name 'waterlilies' are steeped in history and tradition. This particularly applies to the Nymphaeas or true waterlilies.

The name Nymphaea is a direct transliteration of a Greek word which Theophrastus—a disciple of Plato and Aristotle—used to describe these plants some three hundred years before the birth of Christ, and refers to the practice of early Greeks in dedicating the waterlily to the nymphs. This, however, is not the earliest record of the waterlily being revered, for some 1,700 years earlier the priests of ancient Eygpt and the monarchy of that time were laid to rest with wreaths made from petals of the blue-flowering *Nymphaea coerulea*. The reason for this custom was the belief that the beautiful blooms of the waterlily rising pure and clean from the slimy mud, were comparable with the aspirations of man; those of purity and immortality.

Most of our knowledge of the history of Nymphaeas does in fact come from Eygpt. In tombs at Beni-Hassan, a village alongside the Nile, there are pictures of gardening scenes dating from the XIIth dynasty (3,000-2,500 B.C.). One shows two gardeners bringing water from a pond to give to plants growing in square, evenly spaced beds. A narrow canal leads from the beds and terminates in the pond. It is thought that it was in this type of pond that the white-flowering *Nymphaea lotus* was often cultivated, for the ancient Egyptians at that time were using vast quantities of blooms of this species in their religious

Nymphaea x marliacea chromatella
A Marliac introduction

festivals. Offerings of the flowers being made to the dead, or placed on altars before their gods. They were also given by the noblemen of the day to their guests as a gesture of friendship and goodwill, the visitors being expected to reciprocate by holding the blooms in their hands or twining them in their hair whilst in the presence of their host.

Petals of *N. lotus* and *N. coerulea* were found in the funeral wreaths of Rameses II (1580) and Amenhotep I, the custom being to lay wreaths on the mummy in concentric semi-circles from the chin downwards, until the sarcophagus was packed with floral tributes. Both *N. lotus* and *N. coerulea* were portrayed in the mural decorations, pottery and furniture of the period, and a little later were grown as garden plants solely for their ornamental value.

Amenhotep IV grew them in ponds surrounded by flower beds in his famous palace gardens of Ikhnaton, whilst Rameses III (1225 B.C.) was said to grow 'rushes and the Lotus . . .' and have many tanks and ponds '. . . of the Lotus flowers'.

In China waterlilies are thought to have been cultivated for many years, but the ones commonly grown were the diminutive, white-flowering *N. tetragona*. Chou Tun-I a noted author of the eleventh century writes of the waterlily, in a now much quoted passage, thus: "Since the opening days of the T'ang Dynasty it has been fashionable to admire the paeony; but my favourite is the waterlily. How stainless it rises from its slimy bed. How modestly it reposes on the clear pool, an emblem of purity and truth. Symmetrically perfect, its subtle perfume is wafted far and wide; while there it rests in spotless state, something to be regarded reverently from a distance, and not to be profaned by familiar approach".

It was believed to have been afforded similar respect by the Japanese. For their gardens invariably possessed pools, often dug out in the shape of an animal or bird, with a high bank towards the back tastefully planted with dwarfed gnarled trees overlooking spreading masses of waterlilies in the water below.

Little is known of water featuring in the gardens of the ancient Greeks, until Homeric times, when they were said to have constructed nymphaeums. These were grotto-like structures surrounded by trees and with constant running water, but it is doubtful whether in fact Nymphaeas were grown in these situations for they dislike both shade and moving water. The earliest reliable record of the waterlily being appreciated by the Greeks, is a mention in the first century Herbal of Dioscoridis, De materia medica, and the alleged use of it symbolically in the formation of the Greek fret or meander.

In India it was seldom cultivated, but nevertheless received wide acclaim from all the great literary minds, the flower being likened to, and compared with various parts of the body. Whilst in Britain the rootstock of *N. alba* was used more practically as a dye, and in France as an important constituent in the brewing of beer.

Although waterlilies have been cultivated in various parts of the world for many years, they are of comparatively recent introduction as garden plants in this country. The earliest reference to them seems to have been made in Phillip Miller's Gardeners' Dictionary (1731), in which he writes; 'In some gardens I have seen plants cultivated in large troughs of water, where they flourish very well and annually produce great quantities of flowers'. But few people were interested, or possibly even aware of the brightly coloured species that were being grown abroad at that time.

However, Mr. Paxton, gardener to the Duke of Devonshire awakened everyone's interest in aquatic plants in 1849 by being the first person to flower a specimen of the giant "waterlily" *Victoria amazonica*. Two years later he added further fuel to the fire of enthusiasm for tender aquatics that was sweeping the aristocracy of the country at that time by introducing a very fine hybrid tropical waterlily, *N.X. Devoniensis*. Sadly his work in the field of hybridizing was not followed up until 1912, when Missouri Botanical Gardens embarked upon an extensive breeding programme. Under the very able direction of Mr. George Pring, success was swift, until now there is a truly marvellous selection of varieties in every shape, size and colour imaginable.

Similarly in the hardy field, the work fell almost entirely, upon the shoulders of one man, Joseph Bory Latour-Marliac, who in 1858 was aroused by an article written by the celebrated botanist Leveque, who expressed deep disappointment that the right colours and shapes of the tropical species did not exist in any of the hardy forms. At this time only the white-flowering *N. alba* was commonly grown outside, but Marliac decided that it should not be impossible to obtain coloured hardy varieties by judicious cross pollination of this with various coloured tropical species. So with this in mind he started to collect different species from all over the world and embarked upon a breeding programme.

For several years he worked hard, producing and flowering hundreds of seedlings with little success, until 1879 when *N.X. marliacea Rosea* was evolved. Having obviously discovered the technique of successfully hybridizing hardy Nymphaeas, a secret which he took with him to his grave, new varieties were produced thick and fast. In 1911 he died, but crosses raised by him were being introduced right up until 1937. Over seventy varieties were developed by Marliac, and of these only three, *N.X. fulva*, *N.X. Chrysantha* and *N.X. Ronita*, could be considered to be commercial failures. All the others were huge successes and will be a lasting tribute to one of the greatest and most gifted men ornamental horticulture has ever known.

Several other men, notably Dreer, Richardson, Perry and Buggle can be given a certain amount of credit for having introduced one or two outstanding varieties, but in the majority of cases their successes would appear to be rather a matter of luck than good judgement. Indeed, Mrs. Frances Perry, daughter-in-law of the late Amos Perry and one of the foremost authorities on aquatic plants, states in one of her books on water gardening; 'The hybridization of waterlilies is generally so much fruitless labour, and the results far from encouraging. Out of 159 recorded crosses we made in 1927, only one pod set seed, and the offspring was no better, and indeed, not as good as many of the existing varieties'.

Discover the Fish **BY PISCES**

My first is in Low but not in High
My second is in Mince and also in Pie
My third is in Sole but not in Plaice
My fourth is in Net but not in Lace
My fifth is in Hammer but not in Nail
My sixth is in Sherry and also in Ale
My seventh is in Abbey but not in Church
My last is in Cedar but not in Birch

Answer on page 71

Meet the Aquarist

No 13
Arthur King

AQUARISTS NOT only come from all walks of life but they keep their charges in a variety of unorthodox settings from basements to attics and little sheds at the bottom of the garden. Arthur King, though, has his fish under constant surveillance during his working hours in what must be one of the most unusual situations. Arthur is a signalman at the Arundel signalbox just west of Arundel station and brightening his long stints of isolated duty is a 24 in. × 12 in. × 12 in. community tank of which its owner is justly proud.

Expecting an array of gleaming levers with attendant wall gadgetry comprising brass-bound clocks, bells and other devices, the visitor could be surprised to find instead an illuminated panel detailing thirty miles of track including an important junction where trains from Victoria diverge from the main line to Portsmouth for Bognor and for Brighton.

Built into the control panel are two close-circuit television sets on the screens of which can be seen traffic activity at the level crossings at Lyminster and at Ford Junction. The barriers at these two crossings are controlled from the Arundel box and the press of a button halts the flow of motor traffic and clears the way for oncoming trains.

Arthur King, aquarist, with his community

Arthur King, signalman, at his control panel

Fish among the Chips

While the signalman may now be spared the not inconsiderable manual effort involved in pulling signals on and off with the old-time levers, the silicone chip controlled panel demands intense concentration at busy times and British Rail, in their wisdom, encourage therapeutic relief for signalmen and the installation of aquaria in signalboxes at the signalmen's personal expense is applauded. It is understood that signalboxes at London Bridge and at Portsmouth have their aquarium set-ups and that plans are afoot to so furnish other boxes.

The elevated panel room commands a view of the line in both directions but also the rising embankment opposite. Here a myriad of rabbits were hopping and bobbing among a scattering of burrows but suddenly loud squeals filled the the air and Arthur indicated a stoat which had just made a kill and said that this was a regular occurrence. While we were watching this little saga a brown owl detached itself from a nearby oak and wafted across the track in the brilliant afternoon sunshine. After dark, according to Arthur, wildlife on the embankment continues to impinge for often the eerie cry of a fox comes from the opposite embankment, the fox doubtless appreciating the rabbit dotted site as a fruitful source of food.

Arthur King has not been a life-long aquarist, colour pictures of steam engines adorning the signalbox walls bearing testimony to his long standing love of locomotives but he became a victim of his colleague, Ken Davies' enthusiastic influence a year or so ago when Ken aroused his interest in tropical fish and so it was that the aquarium was set up and, after minor teething troubles and losses, a colourful community of fishes settled down to brighten the sequestered existence of these railwaymen in isolation.

The community comprises:
Pair of Dwarf Gouramies
Pair of Golden Gouramies
Pair of Opaline Gouramies
One Red-tailed Shark
Pair of Pearl Danios
Pair of Zebra Danios
Shoal of Neon Tetras
Three Glowlight Tetras
One Black Neon
Innumerable juvenile Platies, Mollies and Guppies
One Red Siamese Fighter
One Corydoras spp. Catfish
Pair of Cherry Barbs
Pair of Red Swords
Pair of Green Swords
Pair of Blue Limia
One small angel fish.

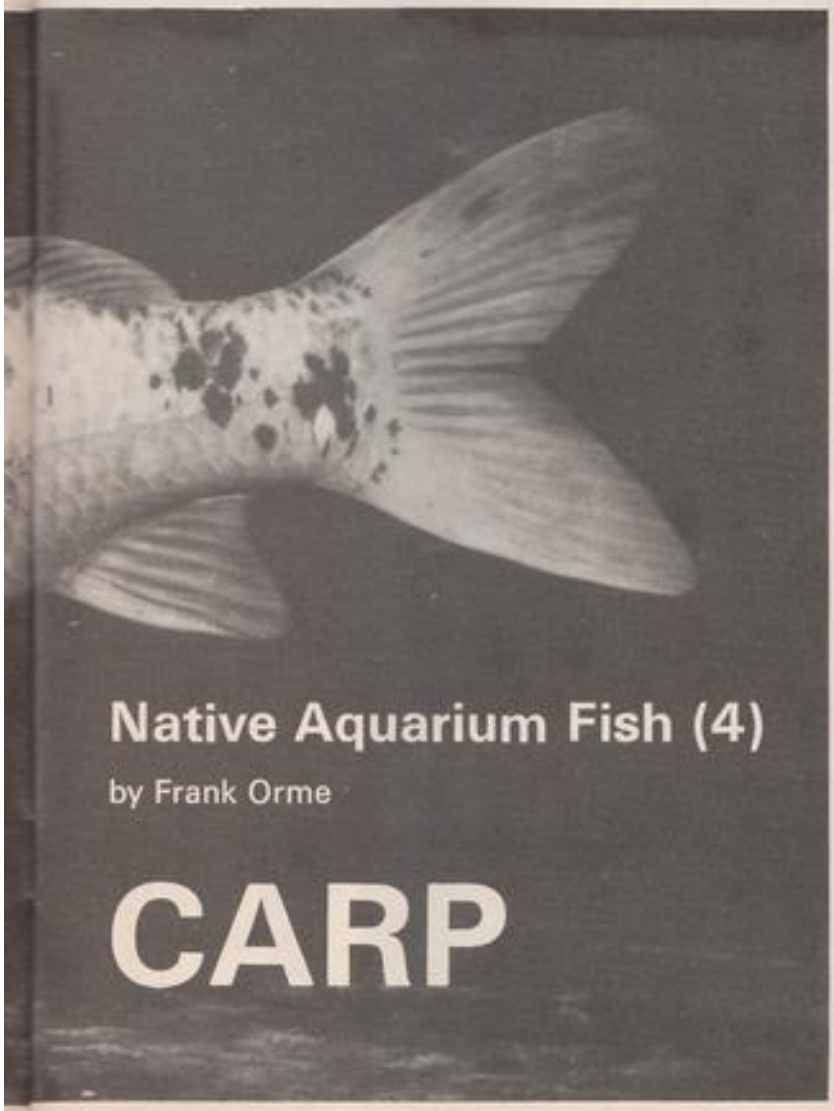
To ensure that fair shares for all maintain at feeding times, Arthur pre-soaks flake food, pellets, freeze-dried *tubifex* and brine shrimp for he found that proffering floating food favoured the surface-swimmers and deprived the species swimming in the lower regions and on the bottom.

A Junior Aquacare filter serves adequately to keep the tank in crystal clear condition, and of course, with either Arthur or Ken or the young assistant on hand at all times, all but the absolute minimum of neglect is impossible. With this inbuilt ability to provide constant attention, there are plans in the pipeline to add another aquarium, this time supporting marines. Arthur has seen the marines Ken has at his home and now wishes to have some of his own in the signalbox but he says they will need to be additional to the tropical set-up to which he has become very attached.

Under the Panel Room is housed a battery of relays and automatic switches chattering and clicking as signals and points along the route are changed. As in a small telephone exchange, modern technology disports itself without human aid while up above fish afford a modicum of serenity in restful contrast.

Without the kind auspices of Mr F. Eady, Station Manager, this report and visit to the Arundel Signalbox would not have been possible and for this we extend our grateful thanks.

Hi-Goi or Golden Carp



Native Aquarium Fish (4)

by Frank Orme

CARP

THE COMMON CARP (*Cyprinus carpio*) prefers still, deep waters which contain plenty of underwater plantlife, most often being found in lakes and ponds where it feeds upon the vegetation, insects, worms and other eatable matter. It has an elongated body, and can grow to a length of around twenty inches or more.

The deep, thickish body is covered with large scales, numbering 34 to 40 along the lateral line. The smallish mouth has four barbels, two at each corner. The long dorsal fin has from 17 to 22 branched rays and a concave upper margin. The caudal fin is quite deeply forked. The back is a dark olive-brown, fading to bronze on the sides and to pale yellow on the belly. The fins are a bluish-green, which may have a reddish tinge.

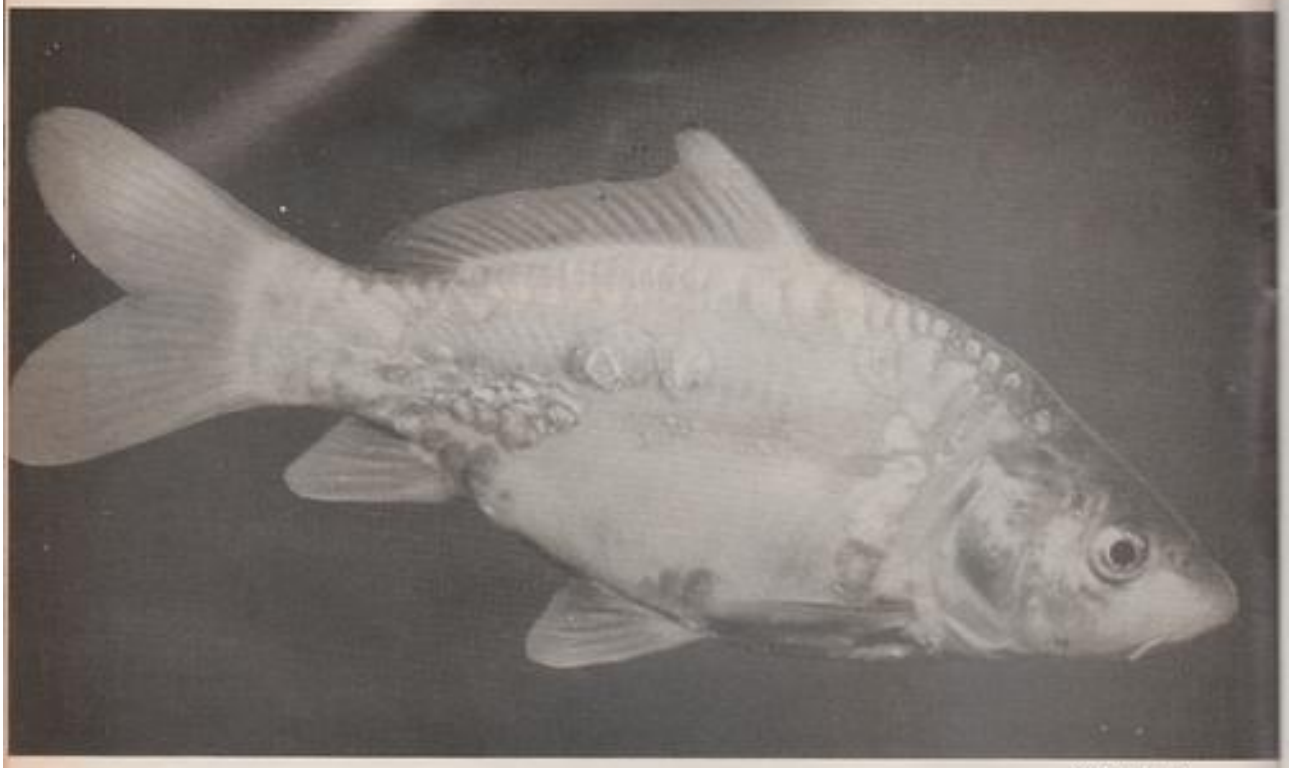
Carp are prolific breeders and spawn towards the end of May in the same manner as the Goldfish. The adhesive eggs are deposited upon weeds in the shallower water, the female often being followed by more than one male. When in breeding condition the males will exhibit the small, white tubercules that are common to the carp family.

Various varieties of the Common Carp have been produced for ornamental purposes, the most outstanding being the popular Koi. The Mirror Carp and Leather Carp are varieties which originated in Germany, by slective breeding. The Mirror, or King, Carp have a very similar appearance to the Common Carp, but the mirror-like scale are larger than normal and are confined to one or two rows on each side of the body with, possibly, a few scattered around the base of the fins. The rest of the body is bare. The Leather Carp has a body which is devoid of scales.

Although not true natives of British waters, the Common Carp has been established here for a great many years—long enough to now be considered a native.

Of more recent introduction is the Crucian Carp (*Carassius carassius*), which has established itself in some areas. Like the Common Carp, it prefers the quite waters of lakes and ponds, and has the same feeding tastes and breeding habits.

The Crucian Carp is a near relative of the Goldfish, but can be distinguished from the well-known Goldfish by its, generally, deeper body, drab coloration and difference in the number of scales along the lateral line; the Crucian Carp has 28 to 35 scales along the lateral line, whereas the Goldfish has only 25 to 30. Like the Goldfish, the Crucian Carp can be disting-



Mirror Carp

uished from the Common Carp by the fact that it has no barbels—the finnage and scale counts also differ.

In general the colour of the Crucian Carp is greenish-brown, olive, or a dull bronze on the back, the sides are lighter and shade to a brassy yellow on the belly. The dorsal fin is long with a convex upper margin. The caudal fin is shallowly forked into two almost equal rounded halves.

Although specimens of this fish have been known to reach a length of 15 inches, it seldom exceeds ten inches.

A natural variation of the Crucian Carp is the Prussian, or Gibel, Carp. It has a somewhat slimmer body and a caudal fin that is more deeply forked.

Being so hardy, and tolerant of conditions to which other types of fish would object, Carp are probably the easiest of fish to look after—although they should be given the same care and attention that would be given to any other less hardy fish. Young specimens will be quite happy in a tank of sensible size, and will accept all those foods which are acceptable to the Goldfish. However, when they have developed sufficiently, they should be placed in a pond where they can reach their full growth potential. Provided that the pond has sufficient depth, Carp will come to no harm during the colder months of the year, becoming torpid as the temperature of the water cools; passing the coldest periods in a state of semi-dormancy at the bottom of the deepest area of water.

Breeding presents no undue difficulties. The conditioning, spawning, hatching and growing-on of the young follows exactly the same procedures as those employed in the production of Goldfish. It should, perhaps, be mentioned that the various Carp that have been described will cross breed; however, the hybrids produced from such crossings would, apart from their novelty, serve little purpose.

SPOTLIGHT

Harrison's Pencil fish

by Jack Hems

THE FORMAL NAMES of some aquarium fishes change as frequently as traffic lights on a busy city road. For nomenclature is a science that is undergoing almost constant, if not constant change as intensive investigation into the scale-formula, dentition, finnage, skeletal structure in general, etc. often requires reclassification of a species, that is to the satisfaction of some, but not all ichthyologists.

The subject of this article is a case in point. In older books and reputable journals it was described by aquarium writers under the formal name of *Nannostomus harrisoni*. Now, however, serious aquarists and taxonomists have discarded the old generic name of *Nannostomus* (for this fish) in favour of *Poecilobrycon* seemingly in need of some revisions itself: but perhaps this has been carried out. Perhaps some well-informed aquarist will tell us. (*Poecilobrycon:* a two-species genus. See J J Hoedeman's *Naturalists'* Guide to Fresh-Water Fish, Stirling Publishing Co., U.S.A., 1974). Incidentally, *Nannostomids, Poecilobrycons* or whatever are ranked as a sub-family of the *Hemiodontidae* (at one time thought to be near blood-relations of the *Characidae*).

But be all this as it may, *P. harrisoni*—to give the fish its generally accepted scientific name—has been around for a number of years though it is not mentioned in the classic work *Fremdländische Susswasserfische* written by Joh. Paul Arnold and Dr Ernst Ahl (Germany, 1936). It is characterised by a torpedo-shaped body (a trait common to *Nannostomus spp.*), large scales, the habit of swimming on a level keel (most species of *Nannostomus* move about with tail-end pointing slightly downward, that is when they are not darting away from some real or imaginary foe, or to snatch food, and a variable greeny olive to muddy brown back darkening to a dusky horizontal line on the upper sides. The ventral surface is yellowish mixed with delicate tones of silver. But what immediately catches the eye is the broad black band or stripe that extends from the lower part of the snout, through the lower half of the eye, to the lower lobe of the widely bifurcated caudal fin. From the upper part of the snout a broad yellow stripe passes through the upper part of the eye and fades away among the delicate rays of the upper lobe of the caudal fin. Where the two stripes pass beyond the root of the tail they are margined posteriorly with an irregular or broken half circle or full circle of poppy red.

A small adipose fin is placed not above but slightly to the rear of the posterior section of the anal fin. The dorsal fin is situated just a fraction behind the anterior base of the ventrals. For the rest, the fins are clear or hyaline—at any rate for the most part; for the base of the caudal fin, as mentioned above, is adorned with a splendid mixture of colour. The anal fin, and sometimes the ventrals, have a touch of red to liven them up. The pupil of the eye is black rimmed with gold. A shaft of strong light striking the mouth will often reflect white gold off the lips.

The fish is native to Guyana and the upper Amazon region. Exceptionally it can reach a length of about 2½ in. As a rule, it falls short of this length and averages about 1¾ in. to 2 in. It demands nothing very special in the way of water but lives longest and best in water that is well matured and clear, with a pH of about 6·8 and a hardness of about 10DH. A temperature in the middle to upper seventies (°F.) is recommended. Feeding is no problem provided all food offered is small as, for example, gnat larvae, chopped full grown whiteworms, Grindal worms, smallish Daphnia and few days' old brine shrimp. Scraped red meat, that is the tiny fibres of meat left adhering to the edge of a sharp blade drawn vertically over lean raw flesh, suits it well (as a change). Flake food should be crushed before sprinkling the odd-sized fragments onto the surface of the water.

Ordinarily the fish keeps moving or hovering between the middle and the upper levels of the water. It is an active swimmer and looks most attractive when viewed against a background of plants such as species of *Cryptocoryne* or *Vallisneria*. In the natural state, the species collect in bunched or straggling schools. In the aquarium it is advisable to keep a small number together rather than two unsexed fish or a genuine sexed pair. There is not very much to go on when it comes to telling the sexes apart. All the same, the well-practised eye can usually pick out a female from a male by her heavier build (deeper and fuller sides). The male fish remains sleek. In breeding condition, sexing becomes easier; for the female's sides show

Continued on page 39

by Frank W. Orme

IT SEEMS STRANGE to be thinking of November in August, but despite the hot sunny day I must turn my thoughts to that month. Often dank and misty during the early mornings and late evenings it can, nevertheless, produce some very pleasant mildly warm days. If your pond has not been given a pre-winter clean, and you consider it would benefit the fish if their home were to be spruced up, then this is the time to attend to the task. I always take this opportunity to inspect the fishes to ensure that they are in good condition, and to select those from which to breed during the following year. The chosen pairs are then taken into the fish house where they are readily available when required—it is so much easier than catching them from the pond, and disrupting everything, in early March or thereabouts.

November is also the time when I make the final selection of the young, which have been raised during the year, and decide which few to retain for future breeding or show purposes. Generally I choose only about six from each batch of youngsters, at times the number may be fewer. These privileged few are then placed into the largest tanks where they have ample swimming room and space to continue their growth. No artificial warmth is provided, and they spend the winter in cold water to become truly hardened. When the following spring arrives they will be accommodated outdoors to continue their development until the following November when the best males and females are finally picked out.

Older stock, together with the rejected young fishes, are subsequently sold off to other enthusiasts. In this way the number of fishes is kept within manageable numbers and the quality continues to improve—or, at least, I hope it does.

Strange, but each year I think that I have removed all of the fry from their hatching tank, only to find, when cleaning the tank, that there are still a number that have not been caught. Normally I syphon these fry away with the other debris, for after sorting those which were caught I have more than enough. However, this year I decided to leave the tanks which had contained the fry of Lionheads and Veiltails. A few *daphnia* were added to each of the two tanks, but no attempt was made to clean them. The water, which had been slightly green, cleared as the *daphnia* multiplied and a few fry could be seen. No food or attention of any form was given—in fact I forgot about the fry for some weeks. Recently I decided to catch these small, neglected fish; they had reached a length of around half-an-inch despite not having been fed, although the tanks did contain plenty of algae. They were found to be quite good little specimens, so much so that I have kept a few which are being grown on under coldwater conditions. I have a feeling that one or two may turn out rather better than those which have received special attention.

This puts me in mind of 1976, the year of that exceedingly hot summer—and the long drought. At that time some goldfish breeders had suggested that high hatching temperatures did not produce young fish as good as those, from the same parents, that had been hatched out in cooler conditions. This theory was eventually put to the test. As temperatures steadily rose so did the water temperatures of the hatching tanks, and the hatchings took less and less time. At one stage the temperature in my own tanks reached 90°F. In next to no time the eggs had hatched, but what a useless lot of fry. Not one had a divided twin-tail—in fact, a very large number were single-tailed—yet the parents had always previously produced a very high percentage of double tailed young. Whether the disastrous result was attributable to the high temperature, I cannot say with certainty. It could, perhaps, be proved by splitting a spawning into two and hatching one half at say 65°F. and the other at 85°F. and carefully observing any noticeable differences in the quality of the resulting fry and/or young fishes which developed from each. However, in order to produce conclusive evidence the tests would need to be repeated over a period of time, and accurate records made.

Not so long ago I received a letter which asked whether I could recommend a source of 'disease-free broodstock which should be especially free of any viral infection which could be transmitted through, or to, the eggs.' It was stressed that the source should be 'a small amateur or semi-professional breeder/supplier with a limited virus-free stock of breeding fish. The stock should be home-bred for some years, and no imported fish should have entered the establishment during that time.' With such exacting, and stringent, conditions one would imagine that the writer was looking for very good examples of fancy goldfish; however, a little further on it was stated that the varieties sought were 'Goldfish, Comet Shubunkins, Blue Comet Shubunkins, and Telescope-eyed Fantails.' Whilst I do know of some breeders of the Common Goldfish, I know of no breeder of any of the remaining three types which, as most readers will realise, are not

recognised varieties of goldfish—although they can be obtained from pet shops—and are usually imported fish. The strange thing was that, according to the letter, the enquirer had read my book, 'Fancy Goldfish Culture', and a number of others and could not understand why 'the many varieties of Shubunkin are not mentioned', the answer, of course, is that there are only two varieties of the Shubunkin—the Bristol and the London.

Replying to the letter I tactfully pointed out that the types of goldfish, which were listed, were mostly imported types of fish, and suggested that the search would prove more likely to succeed if the recognised varieties were chosen. If, however, he insisted upon those mentioned, then he would have to obtain imported specimens—and the pet-shop seemed the most likely source of supply—and the risk of disease would have to be taken. Wherever the fishes were obtained from, all new stock should be given a period of quarantine before joining any healthy fishes. Despite an appearance of apparent good health, a new fish may be carrying a latent disease which a change of water conditions and management may cause to become active, or it may already be about to break out but, at the time of purchase, has not developed any obvious signs of impending trouble.

Commonsense in the selection, care and treatment of any newly acquired fish will help to avoid the anguish of introducing an infection into known healthy stock. Not to subject a new fish to quarantine is to take a totally unecessary risk, and could prove very foolish.

SPOTLIGHT

Continued from page 34

some bloating and the male enhances his colours to show what a grand fellow he is. An 18 in. × 10 in. × 10 in. tank can be prepared for breeding. Set it up with the right sort of aged water, some bunched feathery-leaved plants (previously washed clean in tepid water and picked over for snails), and bring the temperature up to that of the home tank. Transfer the ripe-looking pair to the breeding tank last thing at night, and then adjust the thermostat so that the temperature rises gradually overnight to the upper seventies or eighties (°F.). Keep this temperature up and even while the picked fish eggs and fry remain in the tank. It is not unreasonable to hope that next day will see spawning in progress. There is the usual Characin-like driving among the greenery and the female will distribute her 100 or so eggs here and there among the plants. The parent fish are not averse from egg-eating, so it is best to remove them from the tank after all driving is over or appears to be about over. The eggs take about 24 to 36 hours to incubate. After incubation the fry hang where they are or drop to the floor. Some may not reach the floor but stay head-up like fine silver bristles dangling—where they have come to rest—among the foliage. Later more of the silvery fry will be seen swaying gently to and fro from the plants or hanging almost quiescent from the sides of the tank. Before a week is out, the baby *P. harrisoni* becomes free-swimming. The aquarist who has bred a few fish will know what to do next. To risk boring those who know it all, just introduce clean infusorians, or freshly hatched brine shrimps. The smallest food first, followed by larger, then larger as the fry grow. All should go well. Artificial aeration helps a lot. But not a gushing stream of bubbles rushing up through the water but a gentle plume of bubbles to keep the water sweet and moving about, and the food moving about, and the fry moving about. One can hardly say or do more. But wait. Intense or prolonged bright top lighting is not required. A diffused light is better; for sometimes it inhibits the development of suffocating blanket weed: and plants and fry often meet trouble when they are in close contact with this.

Finally, *P. harrisoni* is an inoffensive little fish. It settles down well in a properly cared for community tank stocked with other species as gentle mannered as itself. But this is the right place to interpolate a word of warning. Larger fishes with gentle manners do not make suitable companions for Harrison's pencil fish. Their size and pushful habits at feeding times tend to scare the pencil fish away from food. It is of supreme importance, then, to keep pencil fish with fishes of about their own size.

Spawning *Rineloricaria latirostris* (Boulenger 1900)

by D. D. Sands

I IMPORTED several fine specimens of *Rineloricaria latirostris* from São Paulo, Southern Brazil after my visit there in 1979. Up to date a pair have spawned on three occasions and provided me with some interesting new facts.

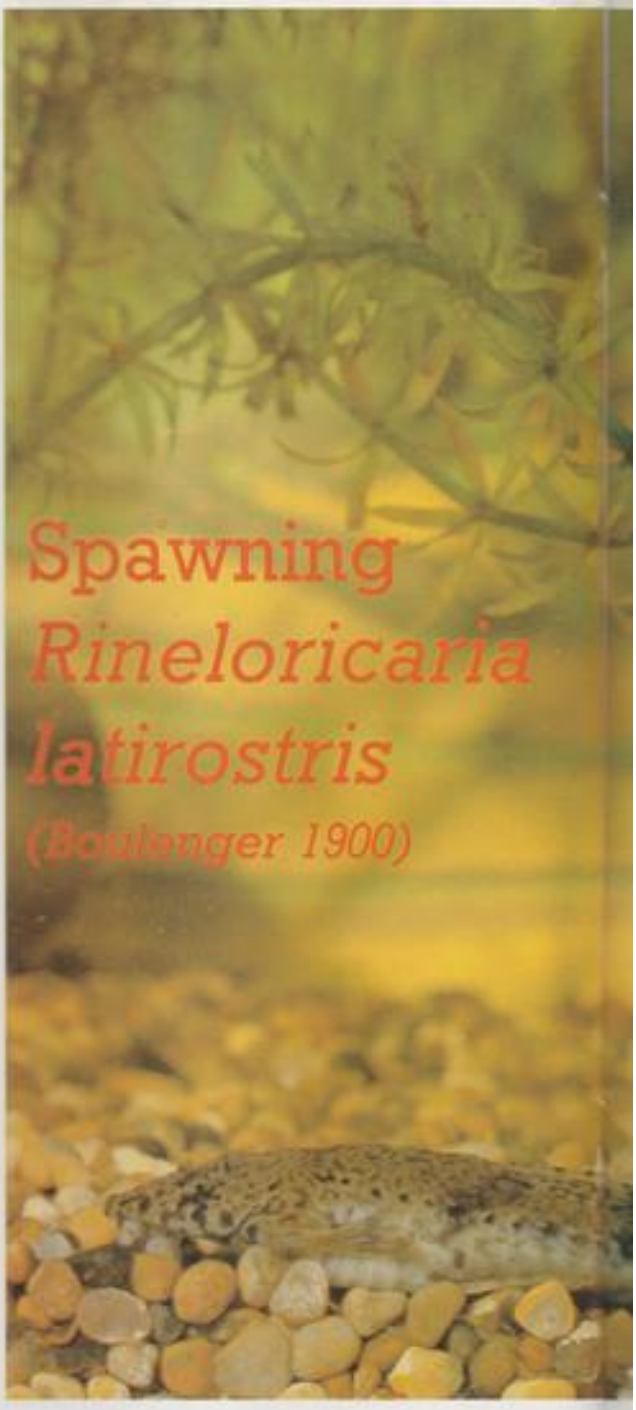
I have tentatively identified these fish from the almost inseparable group because, according to Isbrücker 1980, only two species occur from São Paulo—the other being *Rineloricaria kronei* A. de Miranda Ribeiro 1911. *R. latirostris* is the largest of the genus; my specimens are about 10" (25 cm) and still growing; whereas *R. kronei* is not recorded as large.

The few reports of spawning *Rineloricaria* (often referred to as *Loricaria* in error) differ slightly from my experiences and seem worth recording against other magazine accounts.

The genus *Rineloricaria* contains forty one species; they generally differ from *Loricaria* by being smaller in size and males usually display cheek and head bristles in maturity. There are only two or three *Rineloricaria* species mentioned in commercial literature: *R. parva* (Boulenger 1895), *R. fallax* Steindachner 1915 and *R. lanceolata* (Gunther 1868); all occur in Brazil but are not recorded as occurring in the river systems of the state of São Paulo, Southern Brazil.

I placed a pair (easily sexed) into a 36 in. × 18 in. × 12 in. aquarium together with a trio of wild-caught *Corydoras paleatus*. The tank, substrate, 50% gravel 25% sand 25% glass, contained a few *Aponogeton* and *Echinodorus* plants, was filtered by sponge and box filter and received only natural lighting.

Continued on page 46



***R. latirostris*: male on aquarium glass, female below**

Close up of male's head showing enlarged mouthflap

Continued from page 42

I placed a 2 in. diameter plastic pipe (they refused to use a 3 in. diameter tube offered as an alternative in later spawnings) into the set up and this was at once the residence for the male. On the 18th November, 1980 I checked all the aquariums in my fish house during feeding as I had been away for three days. (no room lighting over this period so the shed remained dark day and night) I shone a light into the tube and observed the male mouthing forty/fifty large green eggs, slightly under 3 mm.

The same day two separate pairs of *Corydoras barbatus* had spawned also a pair of *Rineloricaria (parva? ? ?)* spawned but the eggs seemed minute in comparison with the *R. latirostris*.

I removed the female to another aquarium together with the *Corydoras* and fitted a power filter to the aquarium, which contained the male and eggs. The temperature over the next week fluctuated between 65°F and 75°F depending on the winter weather. It was not until the 1st December, thirteen days after I has first sighted the eggs, that fry began to emerge from the tube—the final ten or so

Head of male showing enlarged mouth flap which develops along with cheek bristles during breeding period

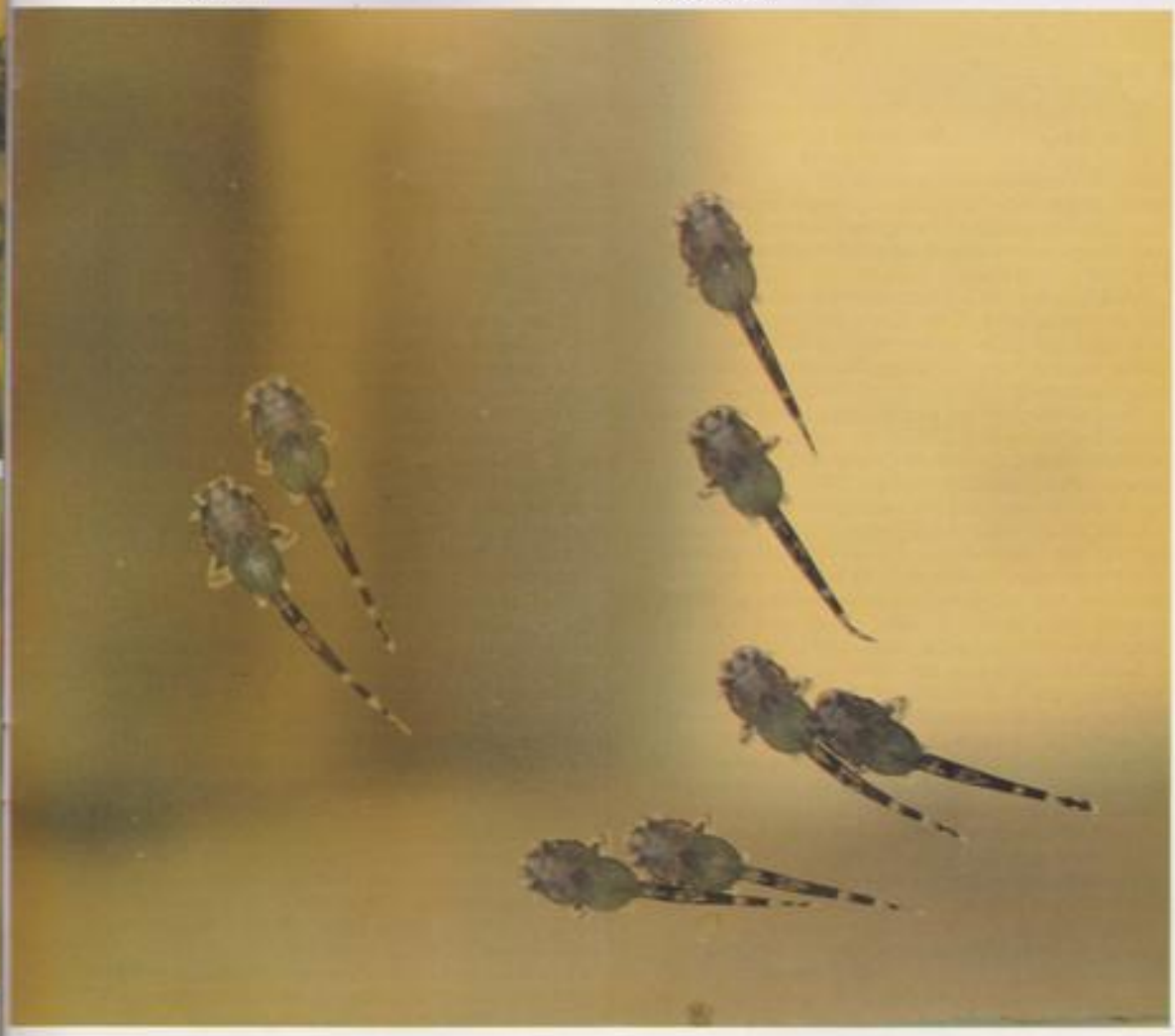
hatched on the 15th day! I cannot recall a two week hatching time given in other breeding accounts of *Rineloricaria* but I wondered if the low temperature could have been the deciding factor.

As usually recorded, the fry had full 'green' stomachs and the only sign of feeding came when I noticed holes in a *Barclaya longifolia* plant two days later. I fed egg-layers powdered flake and microworm every day and on December 5th fed blanched dandelion and lettuce leaves. I removed the male to the aquarium which contained the female. The fry congregated around the power filter inflow and proved difficult to feed (or to see clear evidence of feeding) and within days the aquarium glass became covered in Hydra—I have since discovered the microworm creates this kind of bloom.

On the 17th December, the pair had spawned again, this time almost one hundred eggs inside the tube; this seemed to be too easy or so I thought. By the 1st January, '81—2nd January '81 all the eggs had hatched and my wife had counted ninety six fry. (Temp. 66°F—74°F, hatching time fifteen/seventeen days!)

The first batch began dying like flies on the fourth/fifth weeks so I split the second batch up into several tanks. On the 10th January, '81 disaster struck—the male who had spent most of the previous weeks caring for eggs was dead—no wonder really, because he had probably eaten very

3 mm long fry at one day old—the green egg sacs can be clearly seen



Rineloricaria (parva?) perhaps the most recognised species in literature but often mistaken for many of the 41 species known. This specimen is unique because of its rayed adipose, a characteristic unknown in this species andamongst the hundreds of species in the family *Loricariidae*

little. It is moments like that which help me to realise how stupid we can be when 'caring' for animals. I hate to count the losses on both batches but to date, June '81, I have three fry remaining from the two spawnings; they are about 2 in. in length.

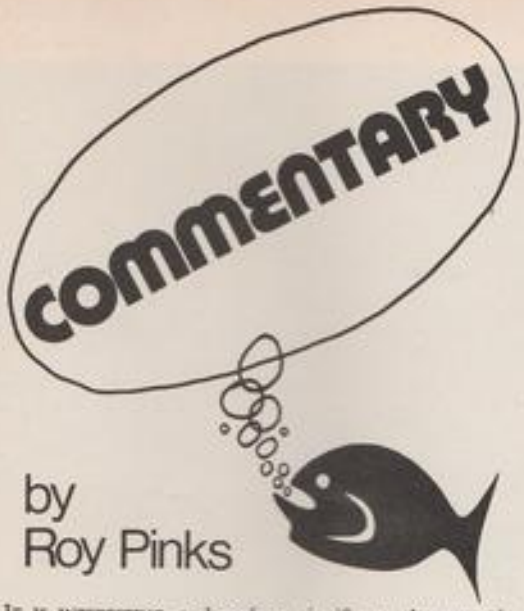
I had little hope of finding a new male as I imported so few, perhaps thirty or so, but in desperation I introduced a large *Rineloricaria (lima???)* in the hope the female would release her eggs (she had fattened considerably over the following weeks).

Then, remarkably, late in February this year I went to visit a local aquarist dealer and in a lounge community aquarium buried in some sand I recognised a *Rineloricaria latirostris* male—the Gods prevail. They had purchased one of the few remaining fish I had imported the previous year and as luck would have it they agreed to swop him for my 'false mate' the *Rineloricaria (lima???)* I introduced the new mate on the 25th February, '81 and on the 9th May, '81 after I had transferred the pair to another aquarium, both fish finally entered the tube. The following day the female had left the tube and the male could be seen mouthing a batch of eggs—this time well over 140-150. The temperature was 82°F (Ph 6·8). I removed the female and decided to telephone Bert Rogers for advice—I intended not to lose the fry this time.

Bert advised me to set up a separate aquarium, in which to place the fry, which would not contain any gravel so that I would be able to syphon any uneaten food from the bottom (every day, Bert said!) The tank should contain tap water, free of bacteria, so I filled an 18 in. × 10 in. × 10 in. tank and allowed it to stand a day in the fish house until a temperature of 80F° had been reached. Bert advised transferring fry (once hatched) to this tank but I moved the male, plus 150 eggs and tube, over to this new tank and placed a sponge filter into it. The Ph difference did not seem to affect or distract the male from his duty and on the 20/21st May, '81 all the fry had emerged from the tube. (Note the hatching time at a higher temperature was cut to 11-12 days but still longer than normal for other species). Remembering clearly the sad loss of my previous male, I removed the new male to a separate aquarium from the female and fed him well!

Up to date Bert's advice has worked wonders—the losses number eleven, all of which died during a period between 31st May and 19th June, '81 four weeks after hatching and I put this down to over-feeding brine shrimp. I photographed the dead fry because their stomachs seemed enlarged and brine shrimp coloured—they are now over the previous danger period and, thanks to Bert, doing well. I introduced another sponge filter to the 18 in. × 10 in. × 10 in. (a Tetra filter) which allowed me to feed extra crumbled flake and blended peas, as they increased in size. I did not feed microworm to this batch and thankfully the aquarium was clear of hydra—if others have had this problem please advise. On the 4/5/6 weeks I removed 50-80 fry and placed them in three other aquariums to check on growth rate. The first (twenty fry), a 24 in. × 18 in. × 12 in. containing an undergravel filter, trio of *Corydoras*; second (twenty/thirty fry) into another 18 in. × 10 in. × 10 in. with undergravel filter containing dwarf cichlids, and a third, (twenty/thirty fry) also a 18 in. × 10 in. × 10 in. with sponge filter, bare glass bottom and containing fifty *Corydoras nattereri* fry. The results of this distribution of fry might make an interesting continuation article for a later date.

The start of an excellent spawning run of fish came with my fish house being in darkness for seventy-two-hours—I wonder if we could all test if this aids spawning?



by
Roy Pinks

IT IS INTERESTING, and perhaps significant, that even in the depths of the most intense depression in trade most of us have known, the pet keeping and leisure industries have held their own. Indeed, it may be said that many branches are positively flourishing. Presumably this is because even folk on the breadline will invest in some diverting activity to take their minds off some of the more worrying aspects of everyday life, and the companionship of a dog, the grace of a flight of pigeons or the fascinations of a tropical aquarium go a long way towards satisfying an important social need. So it may be concluded that the fishkeeping trade is well up to the challenge, and that the accompanying technology is well in line with the times. But what new things might be expected within the next five years, for example? If one had some money to invest, what aspect of aquatic activity might bring in the best yield? What, in other words, do fishkeepers really want the trade to present to them during the next decade?

When you wander around well equipped premises like Tachbrook Tropicals, for example, you wonder just what can be produced which isn't already on the shelf, and although one eminent authority has a theory that a certain white coated expert is about to spring plastic fish on us all, it is probable that success will lie in an altogether different direction. For some time to come it looks as though supplies of most things are assured. There is hardware in plenty, imports of quality fish are regular, and there are so many books on every aspect of aquarium keeping that the shelves are bending under their very weight.

Analyzing the correspondence I have in the past received about fishkeeping in general, there is a recurrent theme on the subject of plant survival and the associated problems of algae, and it would seem that one of the first factors which lead to beginners throwing their hands in is the steady failure of plants to fulfil their promise. Algae, either on their own, or in conjunction with rapidly ailing plants, continue to baffle so many of us. If this serious difficulty persists we may find one class of aquarist departing altogether. He will be the one who only wants a decorative feature for the home, with no maintenance responsibilities. The possibilities of video bring nearer the production of an aquarium-looking screen fed by a cartridge depicting endless underwater bliss, all switchable on or off by remote control. Those who buy live things just for viewing should never really do so, in the interests of the luckless creatures involved, so maybe the electronics industry can do something to ease their burden.

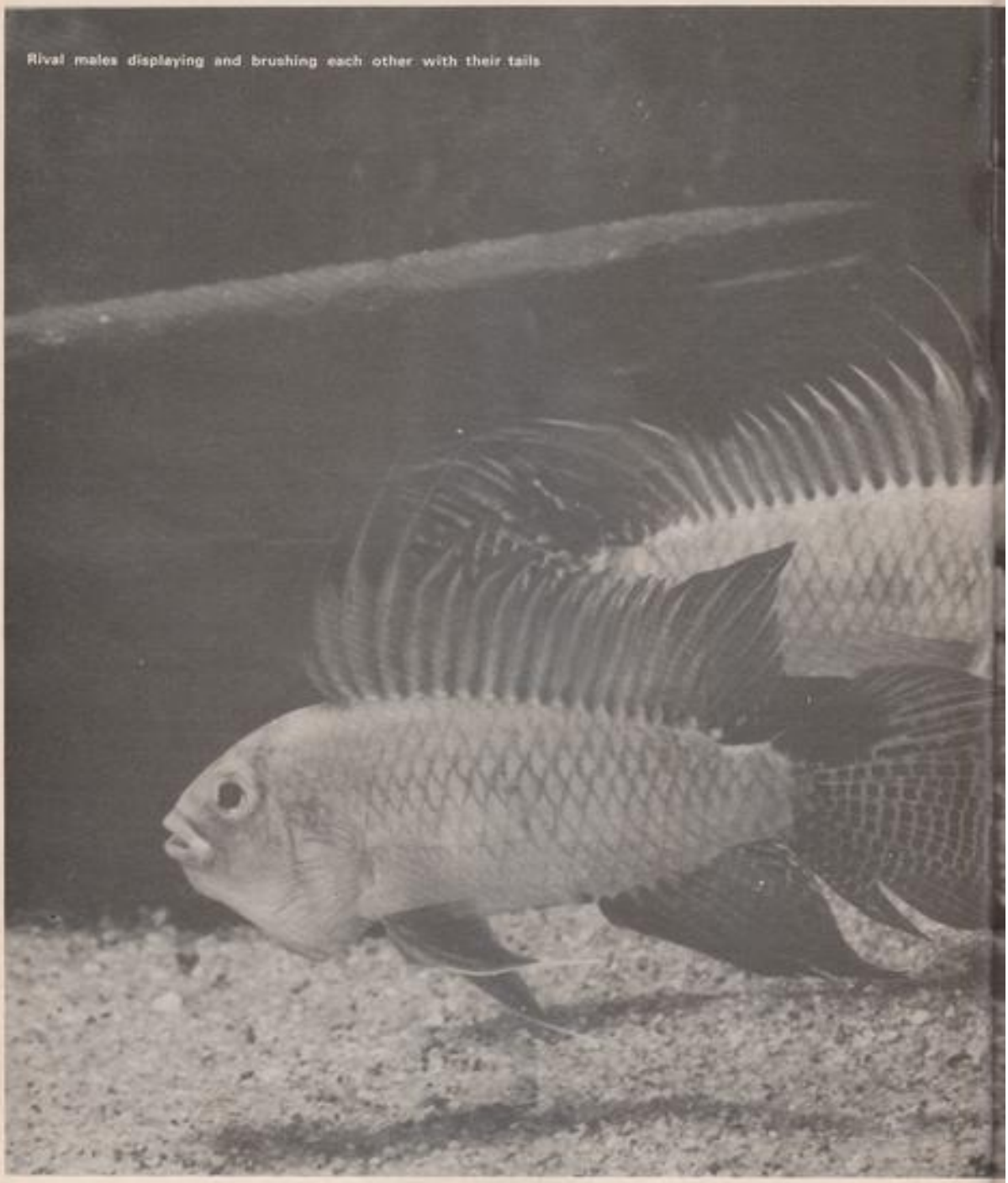
But there are many well-to-do people who genuinely want nicely set up and maintained aquaria, but who shy away from it all because they have the perception which acknowledges that there's too much responsibility in it for them, and that they really have not the time to devote to the study of needs and routine maintenance. Supplementing this there are numerous owners of tanks (but not enthusiasts) who could do with readily available specialist attendance and who would pay for it if it were there to have. Vets are not in the argument, really. Generally they are not too interested in fish, nor do they have the right answers. And as for attendance at one's home to give advice, this would not really be on.

So perhaps the more enterprising undertakings could work out some form of aquatic advisory or consultancy service, closely linked with the supply of materials if needed. There are scores of garden maintenance and planning concerns springing up, and they seem to be doing rather well, so perhaps there is scope for parallel service in the overall field of pet keeping. I think it likely that individual retailers already offer limited services in this direction, but because they are such busy people they cannot devote the time to it which the market could absorb. It would be interesting to establish just what the demand for this sort of thing might be—no doubt some market research team could find out the answers for anyone tempted to take the plunge.

Pond Algae

Pondkeepers are divided into two camps—those who religiously clear out their pools every year, and those who leave things too late. I always think this is a pity, as I believe the former to be too frequent and the latter is clearly an invitation to complete disaster at regular intervals. A lot depends on the terrain and the type of vegetation in the neighbourhood of the pool. If you have sited your pond away from deciduous trees and leaf-shedding garden plants, and if it can in some way be protected from the blown debris of the autumn winds, a total clear out every fourth or fifth year will be ample. However, if there is a heavy entry of extraneous materials, it may be necessary to take steps to remove them every year. It helps a lot if the environs of the pond are planted with heathers and dwarf conifers, as these are not only clean in terms of shed material, but they are also so undemanding of maintenance that one hardly knows they are there until they break into bloom.

Continued on page 58

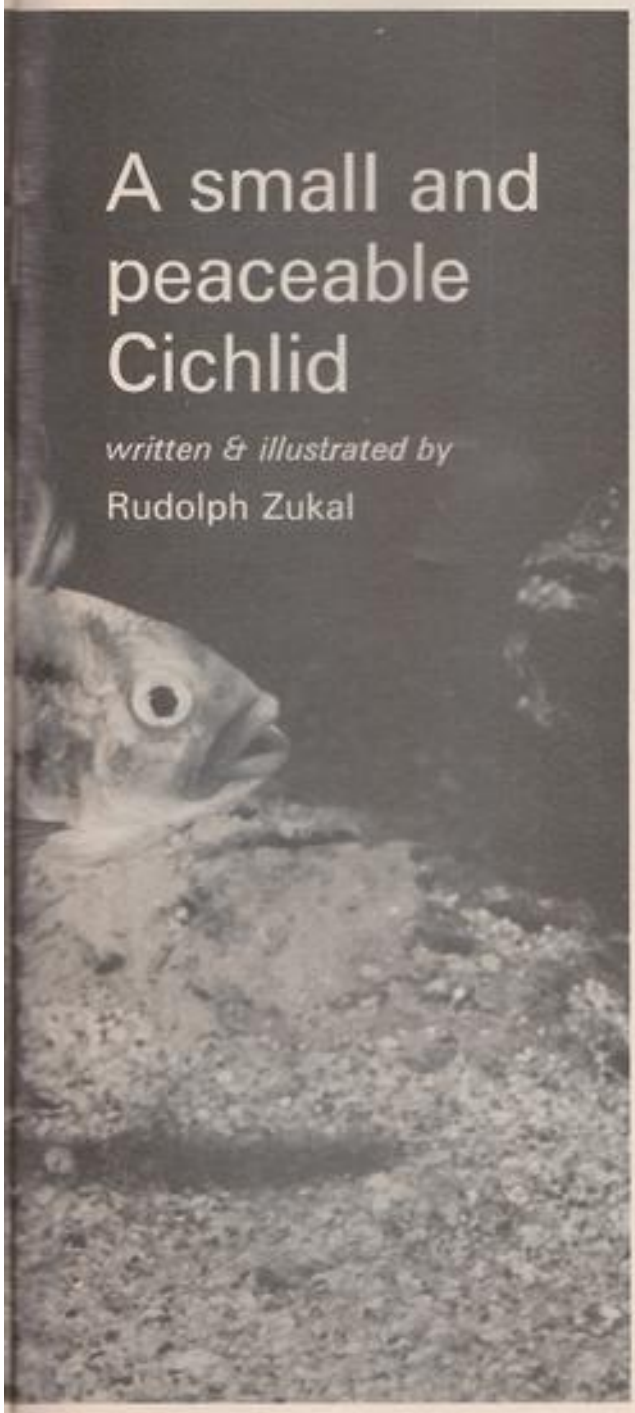


Rival males displaying and brushing each other with their tails

A small and peaceable Cichlid

written & illustrated by

Rudolph Zukal



From Matto Grosso, Rio Paraguay, south as far as Argentina, *Apistogramma borelli* was imported for the first time in 1936 to Europe. It is a very attractive and rather shy fish which is seen fairly infrequently in our aquaria. The male is dark brown with a splendid bluish shimmer along the sides of its body. The anal and ventral fins are slightly bluish with a dark border and often with white tips. The soft parts of the dorsal and anal fins are often speckled with bluish green. The caudal fin is yellowish. The female on the other hand is plain without bright coloration and her fins are not drawn out as is the case in the male.

The coloration of both the male and the female is very variable. During spawning times, courting displays and fights between rivals, the colours of the male fish become deeper and even more attractive. The female sometimes takes on a bright yellow colour, with black bands adding to the striking appearance. The male attains a size of about 7 cm, with the female quite a bit smaller. Consequently these fish can be kept in a medium-sized tank together with other peaceable species. If one wants to keep several specimens of this species together, however, an adequate number of hiding places must be created in the tank, as not only the males but also the females defend their territory vigorously. The fish can not withstand low temperatures so it is necessary to keep the normal tap water in the tank at a temperature of at least 22°C. These cichlids are particularly vulnerable to drops in temperature.

The tank should be well planted, the water soft preferably, rather acid, not too old and well aerated. As already mentioned these fish are placid, sociable (towards other species but not always amongst themselves) and do not dig up the base medium (except at spawning times). In the community tank they live in a rather retiring fashion, are shy and are not very lively. They are adversely affected by any chemicals in the water and sudden changes of water. When possible, live food should be fed to them. All in all, it must be said that they are not fish which would suit everyone. On the contrary, the keeping and breeding of these fish demands a certain amount of experience.

Rival males just before indulging in a mouth-locking contest watched by female in background

Reproduction follows the pattern of most cichlids. The fish spawn in hollows in a firm base medium, or sometimes on the leaf of a plant. During spawning the female lays a few, brownish eggs, whilst the male guards in close attendance. In doing so the female turns with her back uppermost, just as all other fishes of the genus *Apistogramma*. Given that there are rare exceptions in which the eggs are extruded in the same manner as in the genus *Aequidens*. The male does not fertilise the eggs whilst turning with his back uppermost, but merely takes up a diagonal position, trembles slightly throughout his whole body and at the same time emits his milt. This is lighter than water and floats up to the eggs where fertilisation takes place.

The brood hatches after three days and is cared for by the female in previously prepared sand pits. The male must be removed immediately after spawning, otherwise he will be angrily rammed and nipped by his smaller partner. During spawning the fish must not be disturbed, and also whilst the fish are caring for the eggs and the brood the greatest caution must be exerted, otherwise the eggs and even the already hatched young will be eaten out of fear. It is advisable (in cases in which the fish have not spawned in a community tank) to lower the level of light to which the spawning tank is exposed. The brood is supplied with very fine food, but not until they have consumed their yolk-sacs. After fourteen days, when the brood is fully independent, the female too is removed. A spawning nearly always produces more males than females.

With mouths locked, the males engage in a pulling contest

Male (right) and female after spawning

WHAT IS YOUR OPINION?

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

RECENTLY I heard an amusing story from an aquarist friend. His elderly mother had retired to bed quite early and he was downstairs watching television. He heard shouting and banging that seemed to come from a distance and thought that it was background sound FX on the television sound channel. The television picture changed but the shouting and banging got louder and when he heard his name he realised that his mother was having problems in her bedroom. She is somewhat disabled so he rushed quickly upstairs.

"Get my walking-stick quickly!" his mother shouted from the dark bedroom. "There's an animal banging in the corner of my room. Don't switch on the light until you get the stick!"

Somewhat alarmed he got a walking-stick and switching on the bedroom light pounced in ready to engage in armed combat with cat, rat or what have you. There was nothing to be seen and nothing to be heard. He thought that his mother had had a nightmare and was just about to tell her so and depart—when he heard the noise: Flap! Flap! Flap! A close examination behind a chair revealed a brute—a thick-lipped gourami that had managed to jump out of one of the two aquariums in the bedroom and was flapping round on the carpet in and effort to find water. The fish was managing to make quite a lot of noise, bearing in mind its relatively small size. It had managed to awaken the elderly lady, whose hearing is not the best anyway; and the fish was lucky to have done so because it managed to save its own life. It was quickly picked up in a wet net and returned to its tank—where it still swims around normally, none the worse for its session around the bedroom carpet. I've kept fish in my bedroom for many years but I'm pleased to say that I have not been awakened by any of them jumping onto the floor. Have you?

Livebearers

Master Simon Wells is 14 years old and his address is 22 Christian Smith House, Heywood Avenue, Woodlands Park, Maidenhead, Berkshire SL6 3HZ. Simon writes: **"I am replying to your query about livebearers in the August issue. I have kept tropical fish for three years now and have five tanks at the moment; and I hope to have more soon! I have one tank of sailfin mollies which have been easy to breed, in my experience. At the present time I have about thirty young babies. The adult population consists of two male green sailfins and one female, one male golden sailfin and three females, and one male speckled black sailfin and one female.**

"When the mothers are ripe I put them into a five-way breeding trap and all goes well—or has done so far; then, when the young fry are about two to three days old, I start them onto Liquifry and, eventually, powdered flake food; then they are able to go into the other tanks with their parents, as they grow rapidly. The eldest babies are about four months old and are fighting fit.

"I have read in various books and magazines that sailfin mollies must definitely *not* be put in breeding tanks as they will not produce any young for some reason; but obviously I have proven the books wrong!" (As I point out occasionally, fish just will not read those books that tell *us* how they should behave. B.W.)

Simon continues: **"I have one tank of sailfin mollies, one tank containing community fish, one tank that I am trying to breed thick-lipped gouramies in, one tank with guppies and a selection of *Corydoras* species, and one tank in which I am going to try to breed angelfish. Could you possibly suggest any books that could be useful to me before I try to breed angels?"** (Most good aquarium books that include a section about cichlids should contain the information you require. Dr. F. N. Ghadially wrote an interesting little book, entitled *Angelfish—the King of the Aquarium*, quite a few years ago. It was published by *The Aquarist* and can be obtained from that address, price 65p including post and packing.)

No. 26 Siminster Green, Siminster Village, Prestwich, Manchester M25 5RY, heads a neatly-typed letter I received from Mrs. Margaret O'Neill, who said: **"I have been meaning to write to you for some time, and have finally got round to it. I enjoy your article immensely, and always turn to it first before reading anything else. I first became interested in fish-keeping after seeing my father's tropical aquarium; from that moment my husband was subjected to many months of hinting, pleading and threats before he secumbed and bought my first tank. Of course, as many other aquarists will understand, after a while one tank wasn't enough; my interest —and number of fish—grew and grew.**

"During this time my husband professed complete indifference; but that changed when we bought

Monodactylus argenteus—the mono

a beautiful *Monodactylus argenteus* (photograph 1). **Now he's as besotted with fish as I am although the mono will always be his firm favourite. We use no salt in the aquarium, except an occasional tonic. The water, which is fairly soft in our area, is kept at around 79-80°F. The mono is perfectly happy and growing at an incredible rate on a widely varied diet that includes live food once a week, and a 30% water change every fortnight.**

"I would be pleased to hear from anyone who keeps these gorgeous fish, especially from anyone who can tell me anything about their breeding habits—a topic about which, I believe, little is known.

"I have just moved my breeding pair of angels to a separate tank as they are spawning again. Until now they have spawned in the community tank and of course the fry have been eaten before the free-swimming stage. This time I am going to leave them in peace and see if they will rear the fry themselves. They have always tried to be conscientious parents and maybe without the interference of their anabantid tank mates they will succeed! Keep up the good work."

Plant profile

Mr. Paul Olsburgh, English Solicitor, of 40 La Motte Street, St. Helier, Jersey, Channel Isles, was one of a number of readers who wrote to me following the publication of my *Plant Profile* article about *Lilaeopsis novae-zelandiae* in the July issue. They wanted to know from whom I obtained the species. I bought my plants from Everglades Aquatic Nurseries, the proprietor of which is Mr. Barry James. The firm has a full-page advertisement each month in this magazine. Other firms may stock the plant but to date I do not know of any. Readers with additional information should drop me a line.

Master David Underhill is 16 years old, lives at Bryn Afon, Penmon, Beaumaris, Anglesey, Gwynedd, N. Wales, and tells a tale that raises that strange mixture of amusement and shock in those of us who have had experiences similar to his. David says: **"Two days ago I noticed fungus appearing on the side of a black molly—a poor specimen; the result of not choosing my own fish in the shop. I decided swift action was necessary. I netted the fish, placed it on a damp cloth and dabbed methylene blue onto it. When I had returned the fish to the tank I picked up the bottle of methylene blue by its top—oh what a fool! The bottom fell away and the kitchen work top became covered to a depth of 2mm. with methylene blue—and boy does it stain! I closed the door to deter any unwanted discoverers, e.g. mum; then I set about cleaning up. The dye came off the kitchen work top quite well, only leaving a light stain, but all mops quickly changed colour.**

"The dye had dripped—well, poured—down the side of the white cooker and this could not be removed. Each time I thought I had won, a new spot would appear and each time somewhere more obvious.

"The result is that my family are the . . . well, not too proud owners of matching kitchen accessories, i.e., blue floor cloth, blue dish cloth and blue tea towel all match the now blue cooker." (I'm glad your letter was not addressed from the orthopaedic ward of a hospital. I too know how well methylene blue can stain various objects! Did the dye cure the fungus on the molly? B.W.)

A well-planked tank

Photograph 2 shows a variety of plants growing in one of my tanks. Have you successfully grown any of the species shown? If so, please send me details.

Master B. McFadyne lives at 34 Brownside Drive, Glasgow, and he is 16 years old (I did mention the fact that more younger readers tend to write to me during the summer holidays when they are free from the constraints of school). Master McFadyne says: **"Regarding**

Mrs. Powell's letter in the April issue, in my opinion the only way to stop the bad conditions in many shops in which fish suffer is to form a fish licensing board. Shops could be inspected regularly and if the majority of tanks were found to be well below fish tolerance level, on two occasions, then the licence could be withdrawn for a year. In my opinion this is the only way to stop these so-called fish dealers from making their fish suffer.

"I am maddened even more when I see fish swimming in a cloudy tank. One shop in Glasgow had about a dozen tanks in which half the fish were either dying or were dead. Every tank contained at least five dead fish—I am not exaggerating. If my letter is printed I hope it will start some discussion on bad aquarium shops. These are why many newcomers give up. They buy diseased fish from these bad sources, the fish die, and the newcomers give up because they think fishkeeping is too hard work."

Mr. J. E. Morris lives in Ross-on-Wye. He writes: "...I have been keeping fish for some 60 years, on and off, and keeping tropicals since 1938—apart from the war years. Now that retirement has come I am finding a little more time—only a little—to keep tropicals. This year's events are worth recalling. When my wife and I returned from our holiday last April we found on our arrival home the following: (a) nothing to do with fish—but our hot water tank had burst and shed its contents; (b) of three tanks of tropicals, one had cracked and dried out completely; in the second the heater had overheated and finally burst, fusing the electric circuit; and thus the third tank therefore became cold; no fish at all were left; and (c) my wife's new electric oven became u/s. The disaster to the fish was my worst ever over the years. I have since re-organised the electrical circuit to ensure that apart from a mains failure only a single tank can become affected by any local failure. Anyway, as I had a birthday in June my wife set me up with fish again, and as a start two community set-ups are running.

"I bought a quantity of plants from an advertiser in *The Aquarist* who advised, in his accompanying leaflet, a ¼ in. layer of sphagnum moss peat under the usual layer of gravel. I set up one tank as suggested, the first time I have ever used peat; the other tank I fitted with washed gravel. All went well for 10 days; then some of the fish in the peat tank died very quickly indeed. One minute they were swimming apparently okay; you looked away for 10 minutes or so and then you saw them dead. I have never before experienced this sort of death in all my years of fishkeeping. The fish in the gravel-only tank have had no trouble at all, apart from one that was evidently wasting. I did a quick strip down and set up the peat tank again, this time without any peat, only fresh gravel, put the remaining fish back, and all are merry and bright again.

"We also have a pool in the garden. It is 9ft. × 6ft. and contains 13 fish. I stripped it down on 8th July, a bit late in the year, but it needed it. I have a Derbert Minor filter driven by a Beaver 1200 pump, but although it's only a week ago, it's having a hard struggle to keep clear; in fact I think it's losing the battle.

"One of the nicest public aquariums I have seen is in Edinburgh Botanical Gardens. It is always in immaculate condition; one you can go round very slowly absorbing all the information. Also very important, it is free of charge."

Dragon Fish—*Pterois volitans*

London Zoo Aquarium

Mr. D. Smith wrote from 86 The paddocks, Stevenage, Herts., and said: "In the July issue you had a feature entitled *A Visit to Britain's Largest Aquarium*. After reading this article we decided to visit London Zoo and Aquarium for we have a tank with guppies, neons and other fish in it and thought it would be nice to see other fish; but your prices in the article differ from those at the Zoo. You said that entry for an adult was £2·75 and £1·25 for a child; plus 30p and 10p to get into the Aquarium. The Zoo prices were £3·50 and £1·50; free to get into the Aquarium. It doesn't sound much more but when there are four adults and three children the difference is £2·35."

I'm sorry about that problem of price change, Mr. Smith. I wrote the article in April, 1980, and sent it to our Editor at that time—when the prices were correct. It wasn't published for 15 months—during which time prices obviously changed. As you will gather, I have no control over prices, or when my articles will appear in print. I'm sorry that you had to pay an extra £2·25—if my sums are correct. I hope you and your party enjoyed the visit despite the increased charges. I'm glad to hear that entry to the Aquarium isn't extra now. I thought it unfair that one should have to pay more to see fish and aquatic creatures after paying a fairly

hefty charge to get into the Zoo in the first place. After all, fish are animals—just as much as are elephants and lions.

In the August issue Mr. R. Freestone, B.Sc., took me to task; and I responded in a manner I thought appropriate. The exchange—and let's be honest, dear reader, such exchanges in print can be quite entertaining if one is not involved oneself—attracted the following comments from Mrs. Jenny Deadman, of 7 West Park, Mottingham, London SE9 4RY. **"Just a line with reference to Mr. Freestone's comments regarding 'the never ending saga of Mr. Belshaw' and to 'so called experts who set up small practices . . .' as quoted in the August, 1981, issue of** *The Aquarist*. **I agree that experts' advice is always valuable and I too have an excellent veterinary practice in my area. They freely admit that they have very little knowledge of fish diseases and until the advent of Mr. Gawor and his partner's shop/laboratory facilities opening in our area, the vets' only recourse was referral to London Zoo—both impractical and difficult for the amateur.**

"Contrary to Mr. Freeston's experiences, I have received consistently courteous help and advice from Aquality at little or no charge at all. I have recommended many fellow aquarists to (*sic*) **Mr. Gawor, including those attending the veterinary practice. I am advised by Aquality that they have to make a small charge to cover laboratory expenses, and a copy of their August Newsletter, quoting charges, is attached. I hope that this will help to 'put the record straight'. I am always ready to listen to experts—including advice in your excellent contribution to a much appreciated magazine. Many thanks."**

Thank you for your kind comments, Mrs. Deadman. Aquality News contained some useful advice about ponds, coldwater fish, tropical fish, marine aquaria, and amphibians, reptiles and insects. Towards the end of the leaflet is stated: **". . . The Aquality Laboratory for fish disease diagnosis, water quality analysis and general scientific/technical enquiries is always open and ready to help and advise you. Fee structure: Standard internal/external fish diagnosis—£4·00; Water quality analysis—£1·50. A written report with recommendations is always provided. Dead fish must be brought to us as soon as possible. Water samples for analysis must not contain fish, for analysis to be accurate. . . ."**

I have no connection with Aquality Ltd. and have not yet used their services, but their fees seem perfectly reasonable to me. A month ago I returned a tape recorder to the distributors to have the machine serviced. I still await its return; but I had to pay for three hours' labour at £7·00 per hour—plus VAT, parts and carriage. £4·00 for a P.M., with written report and recommendations, seems very reasonable. What is your opinion?

This morning's post brought a thank-you letter from Mr. Paul Olsburgh for a small sample of *Lilaeopsis novae-zelandiae*. It was sent in a polythene bag in an ordinary envelope and travelled from N. Ireland to St. Helier, Jersey, arriving **". . . perhaps a little dehydrated due to the hot weather. . . ."** The same postwoman also brought me a letter from Mr. J. A. Dean, of East Molesey, asking where the plant can be purchased. It's attracting the interest I thought it would! By the same post came second letters from Master Lindsey Harrison and Master David Underhill.

Public Aquarium

David, who is 16 years old, still resides at the address mentioned earlier despite his episode with the methylene blue. He writes: **"This summer I was lucky enough to visit Dubrovnik on my holidays. For people who do not know this beautiful city, it is a Yugoslavian port on the Adriatic Sea. It is an ancient fortified city and in one of the castles guarding the old port is an aquarium.**

"The aquarium itself is small but contains interesting and some very colourful species of fish and invertebrates found in the sea near Dubrovnik. I found it particularly interesting because I had seen some wild specimens of species exhibited while snorkeling off the coast. The entrance fee is not high and the aquarium is worth a visit on one of the occasional dull days during the Yugoslav summer.

"Two years ago I visited Copenhagen and during my stay I went along to Denmark's Aquarium, which is near the city. I found the Aquarium to be excellent. The tanks contain fish from all over the world—both freshwater and marine. The displays were very clean and healthy looking and the fish showed their colours very well. The end of the building contains five room-size tanks forming an incomplete circle. One contains brackish water, one sea-water and three fresh-water. One freshwater tank contains a large shoal of piranha and is particularly striking. I would strongly recommend this Aquarium to anybody.

"My father has been to Chicago's Aquarium and found it to be excellent also. I wasn't invited!"

Photograph 3 shows the dragon fish, *Pterois volitans*. Have you kept this interesting but unpleasant species?

That plant prompted the following letter, written by Mr. Lorenzo Porrelli, 174 Pappert, Bonhill, Alexandria, Dunbartonshire G82 9LG. **"I was most interested in your** *Plant Profile* **in the July issue. I have been growing** *Echinodorus tenellus*, **but I find this plant to be rather variable in habit; sometimes it will stay at a little over 2 in. and then, for no obvious reason, it will start to grow and can reach a height of 5-6 in. This can be a nuisance in a show tank when the aim was to cover the gravel at a low level.**

"I think the plant you describe, *Lilaeopsis novae-zelandiae*, **should solve this problem, growing to a height of 1-2 in; and the bright green leaves should look great under darker** *Cryptocoryne* **species. I also agree with you that anyone really interested**

in growing plants should try to acquire a good book on the subject. I have a number of books on plants. In my opinion the best is *Aquarium Plants*, by Rataj and Horeman. Anyone seriously trying to grow aquatic plants will find a new and fascinating dimension to his or her hobby, and the challenge of finding the correct lighting levels and pH and DH requirements of plants gives one a great sense of achievement when one is successful. I am sure that other aquarists would like to know where this plant is available. I do not see it advertised by Everglades Aquatic Nurseries, who usually offer a good selection of plants. I would be very pleased if you could publish the name and address of your supplier. I am keen to grow this plant; and if I am successful in growing it well I will be glad to report to you such conditions as water, growing medium used, temperature, etc.

"I hope you will write more *Plant Profiles* in the future. I am sure they will get aquarists more interested in trying to cultivate aquatic plants—especially those aquarists who have not concentrated on plants before. There is no doubt in my mind that to grow aquatic plants well you should lavish on them the same care and attention that you give your fishes. If you give them such care the plants will respond and reward you with their beauty. Surely anyone who calls himself an aquarist cannot fail to be moved when looking at a super, planted tank; if not, forget about plants.

"I will be pleased to hear from other aquarists who are keen on plants, the species of plants they have grown, and the methods used. I think an exchange of ideas is a great stimulant for the hobby. That is where the real value of *W.Y.O.* lies: in being able to tell what other hobbyists think and do." (I bought my *Lilaeopsis novae-zelandiae* plants from Mr. Barry James, of Everglades, just over a year ago. The species was advertised under an incorrect name in his catalogue at that time. The firm advertises in this magazine each month. B.W.)

Photograph 4 shows the proverbial plant with specimens of *Echinodorus*, *Hydrocotyle*, *Hygrophila* and *Microsorium*.

Master P. Crofts is 15 years old and resides at 27 Bradstock Close, Parkstone, Poole, Dorset. His subject is the dwarf Egyptian mouthbrooder. He says: "My pair of *Haplochromis multicolor* proved very easy to induce to spawn. They were living in one of my two 36 in. tanks along with some breeding angels and my two discus. Planting was dense, the temperature was 78°F and the water was hard and alkaline. They had been eating a lot of live food and beef heart as these are what I feed the discus and angels on.

"Both fish darkened in colour, the male more than the female, and they circled each other slowly head to tail, occasionally stopping to move a plant leaf or chase off an angel. They then started spawning. Still swimming head to tail against a

Lilaeopsis novae-zelandiae in foreground

piece of concave rock the female laid the eggs, the male fertilized them, and the female put them in her mouth. The eggs were orange in colour and large and about 40 were laid before the male starting chasing the female. At this stage I removed the female by catching her in a jam jar and placed her in my 24 in. breeding tank. She did not eat the eggs. The temperature was 77°F.

"After two days the unhatched fry's eyes could be seen through the mother's mouth; after seven days the fry could be seen moving. They were not released until the twelfth day. There were 40 fry. They were quite large and grey in colour. The female developed a black spot on her 'throat' and if frightened the fry would swim towards it and she would take them into her mouth. However, I did not trust her and I removed her.

"It was interesting to note that during the incubation period if the female was offered *Tubifex* worms she would accept them but then eject them through her gill slits, leaving the eggs safe.

"The fry grew at an average rate on brine shrimps, dry food and chopped *Tubifex*. At the age of three-and-a-half months, when they were 1½ in. long, I sold them to a local retailer for 15p each. I may have made a loss because of food costs, but it was worth it. What prices do other aquarists get for home-bred fish? I have received 10p each for small angels and 8p each for small Zebra fish.

"One last point: does anyone know anything about *Lamprologus brichardi*, as shown on the cover of the June magazine? I have three. They live with my angels and discus and seem hardy; but I can find no literature on them. I am not overcrowding this tank as my mouthbrooders now live in my 36 in. community tank. I hope that my notes on

breeding *Haplochromis multicolor* will be of interest to readers in the unlikely event of this letter's publication."

In *A Dictionary of Proper and Common Names of Freshwater Fishes*, F.B.A.S., 1976, the species *L. brichardi* is listed under 'Rift Valley Cichlids' and given the common name lyretail lamprologus. A search through all my other reference books failed to unearth any further information about *L. brichardi*—although other species in the genus are mentioned. Perhaps it's a fairly recently imported species; or it goes to prove the point that my reference books are out of date in some sections.

I must apologise to Mrs. Pauline Hodgkinson, secretary of the Northern Goldfish and Pondkeepers' Society. She sent me an interesting letter about the society's open show, to be held on 15th August. Unfortunately the letter got buried amongst numbers of others; and now that it has reached the surface there is little point in printing it as the show will be history by the time this article appears in print. No doubt the show will have been as successful and interesting as Mrs. Hodgkinson made it sound.

Well, that's this month's space filled up—even though numbers of letters remain unpublished so far. I hope readers didn't mind my concentrating on correspondence from younger readers, in the main. Most have to study hard at school during term time and July and August are the months when they have more time to write to me about their hobby; however, I'll look forward to letters from all age groups and from all parts of the country. One point may be useful to those who have yet to see their letters in print: shorter letters often have a better chance of being selected for publication. I often have quite small spaces to fill and, hence, tend to go for shorter letters on such occasions. If possible, or relevant, give your age in your letter; and please PRINT both your Christian name and your surname.

Please send me a letter about any of the following: (a) air pumps; (b) *Echinodorus* (Amazon sword) species; (c) breeding catfish; (d) your local aquarium club; (e) the most attractive, decorative aquarium of which you know; (f) your local dealer's shop; (g) breeding tetras; (h) cultivating aquarium plants in pots or tubs in decorative tanks; (i) tortoises; and (j) what types of filter do you favour, and why? Drop me a line also if you have any comments to make about recent developments in attempts to stop the killing of whales.

Continued from page 49

One very important point which I have recently noted is that if your underwater plants carry any form of alga when you replant the cleaned pool, you may well have a couple of seasons of hideous battling with it, which only begin to tail off as the plants themselves become established. The speed with which this takes place depends, again, on the situation of the pool in relation to available light—or, rather, optimum light for the overall composition of the pool. Some of the more useful plants in terms of algae-reduction like lilies are quite slow growers, and if they are continually upset by being taken out of their element whilst cleaning is in process, they will not develop at the right pace to stifle the astonishingly rapid build up of the lower forms of plant life which turn pond water into peat soup. One device, unfortunately not available to those with limited space, is to have a reserve pond of similar depth to the main one, in which lilies and the more fretful plants can be submerged during the periodic clean. This should result in a rapid turn round of stock and in minimizing the check which sometimes takes place during this process. You should plan against unexpectedly long outages of the main pool, which can occur if you accidentally puncture the lining or discover a leak in the concrete. These misfortunes may take up to a fortnight to rectify, depending on the weather in some cases, which is usually at its most frivolous when you decide to tackle this particular job.

Coldwater Queries

by Arthur Boarder

READERS SERVICE

Our experts are always pleased to receive your letters which should be addressed to: **Readers Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.**

All queries requiring a personal response **must** be accompanied by a stamped addressed envelope.

I have three red-cap orandas in a tank which is 24 in × 12 in. × 12 in. The fish are 1½ inches long and so I think they are young ones. They have not yet developed the hood. When will this happen please?

Orandas and lionheads develop their hoods as they grow. There is no set time as fishes vary in the time taken to get the hood. A lot depends on the temperature of the water and if it is kept at between 65°F., and 70°F., the fishes grow more quickly and the hood develops sooner. Some get a hood in two years and others may take three or four. It must not be expected that all the fry from a spawning will get a good hood. Some never get more than a small protuberance on the top and never get a full hood covering the head and gill plates. Even from the best of parents it must not be expected that all the youngsters will be near perfect, and the longer one breeds fancy goldfish the more does this fact become apparent.

I have a garden pond and wish to keep and breed Perch, can you give me any information on these fishes?

The Perch is one of the most handsome of the British coarse fishes and can reach a weight of about 5 lbs. The fish is mature at about three years of age when it can be expected to spawn. Unlike most other coarse fishes, the Perch lays its eggs in the form of strings or ribbone and not separate. Prior to spawning the fish congregate in shallow water and this takes place in late March or in April. At a water temperature of about 50°F., the eggs take about 18 days to hatch. Your pond of 6 ft. × 4 ft., is very small and so I do not give you much hope of being successful at breeding these fishes. As you probably know, perch are carnivorous and so will only take live foods such as small fishes, garden worms, etc.

One of my fancy goldfish is unable to keep on an even keel. I have been told that it is swim-bladder trouble. What is the cause of this please?

It has been the idea for years that this trouble is caused by a chill. Although this may be so in some cases I am sure that it is not the only cause, or why is it that some fishes will be troubled by this when they have not been subjected to a chill in a tank based in a living room with central heating? The swim-bladder may be adversely affected by constipation, fatty tissues near it or parasitic influences. How to determine the cause is very difficult. The usual treatment recommended for this swim-bladder trouble is to keep the fish in shallow water and raise the temperature of the water to about or just over 70°F. A little sea salt can be added to the water at the rate of a dessertspoonful to the gallon of water. This will do no harm but could help in cases of constipation. After a few days of this treatment the water can be gradually reduced in temperature and salinity. It is a very good idea to feed only on garden or white worms after treatment and to refrain from using any dried foods. When dried foods are started again it is well to soak them first for a few days, so that if the trouble was caused by constipation this will help.

What is a Twintail goldfish and are there any standards for it?

There is no such fancy variety called a twintail. This term was thought up by the Goldfish Society of Great Britain over thirty years ago. At that time there were the following recognised varieties of goldfish for which standards had been brought in by the Federation of British Aquatic Societies. They were: Goldfish; comet; shubunkin; fantail; veiltail; moor; oranda; lionhead and celestial. These varieties were all scrapped and four basic types were introduced. They were: Single tail; twintail; globe-eye and bramblehead. One then found all shapes and coloured fishes competing in a singletail class and differing shapes and colours in the twintail class. It was many years later when the Goldfish Society decided to reintroduce the old recognised varieties. In my opinion the quality of some of the varieties has never reached the old standard of excellence found in the early 1940s. The terms singletail and twintail should be forgotten.

I have been informed that for a garden pond the Roach is a hardier fish than the Rudd. Do you agree with this?

I do not agree and consider that the opposite is the case. Many pondkeepers have found that the Roach is very liable to become infected with Fungus disease and this is the case if any of its very heavy coating of mucus is disturbed. I would always recommend the Rudd in preference to the Roach for any garden pond.

Tropical Queries

by Dr. C. Andrews

Could you please send me some information on the blue limia and the Cuban limia?

The blue limia (*Peocilia* (*Limia*) *melanogaster*) comes from Jamaica and Haiti. Males may grow to 4 cm., females around 6-7 cm. This is quite an active species, preferring a temperature in the region of 22-26°C, in a well planted tank with some open water areas. Breeding usually occurs at a temperature of 25-28°C, with the female producing up to 25 young every 6-8 weeks. Feed on a flaked diet specially developed for livebearers (e.g. *Guppy Food*), with an occasional feed on a vegetable conditioning food. A little safe live food will also be appreciated.

The Cuban limia (*Peocilia* (*Limia*) *vittata*) inhabits small streams and brackish waters in Cuba. Males may reach 6 cm., females around 10 cm. Basic care and breeding is very similar to the blue limia; about one tablespoon of marine or aquarium salt should be added to each 10 litres of aquarium water.

Can you send me some information regarding the use of antibiotics to treat fish diseases?

I have sent you an information sheet on antibiotics and fish diseases. Whilst such drugs are extremely useful for treating certain (but not all) fish diseases, they must be used properly. Before hobbyists undertake any form of antibiotic treatment of their fish they must consult a local vet (see "Yellow Pages"). The incorrect use of antibiotics (including too low dose rates, for inadequate periods, and/or to treat diseases for which they are not indicated) must be avoided, since this may result in the development of dangerous strains of antibiotic resistant bacteria.

The administration of a commonly used antibiotic—oxytetracycline hydrochloride—is described in the leaflet. For further information contact a local vet, or the Tetra Information Centre.

Can you send me some information on the aquarium care of *Haplochromis moori*?

This fish is relatively hardy, and quite easy to care for and even breed. It may reach a length of 20 cm., and prefers an aquarium with a deep, sandy bottom, with plenty of plants, and one or two caves or bogwood hiding places. A temperature of about 20-25°C is about right. *H. moori* can be maintained on a good mixed flaked diet, including a cichlid flake. If the water in your area is very soft, you should harden it to at least 10°dH (general hardness) using limestone chips or Plaster of Paris blocks. Do not forget the importance of regular, partial water changes.

This fish is a typical mouthbrooder. The male should be removed as soon as the eggs are fertilised. After about 10 days the fry will begin to leave the mouth of the female, retreating there if danger threatens. The fry can be reared on newly hatched brineshrimp, moving on to a finely powdered baby fish food, and eventually the same food as their parents.

I am an aquatic wholesaler, and would like some information on the chemicals suitable for use as disinfectants.

May I refer you to a paper by J. Finlay entitled "Disinfectants in Fish Farming" which appeared in the *Journal of Fisheries Management* 9 (1974), 18-21. This contains a wealth of information which you will find useful. I suggest that you consider the use of household bleach ("hypochlorite"), or perhaps one of the iodophor disinfectants. Both these types of chemicals are toxic to fish, and hence all equipment has to be well rinsed after disinfection. For further information on iodophor disinfectants you should contact Ciba-Geigy Agrochemicals, Whittlesford, Cambridge, CB2 4QT (re. *Wescodyne*), or Vanodine International Ltd., Chadwick Estate, Eccles, Manchester M30 OWT (re. *FAM* 30).

Can you give me some information on *Mystus tengara*, and is there a specialist society for catfish enthusiasts in this country?

Mystus tengara is a catfish of the family Bagridae, and comes from Northern India. It inhabits sluggish and still waters and may reach up to 15 cm. in length. *Mystus* is largely nocturnal, coming out at night to feed on all manner of live foods, even small fish. In the aquarium it requires plenty of hiding places, but is not fussy over pH and water hardness. A steady temperature around 25°C will do fine, and you may be able to get it to take tablet or pellet foods. As far as I am aware, there is little information available on the breeding habits of this fish.

The address of the Catfish Association (GB) is c/o J. Carpenter, 10 Thornbank Close, Stanwell Moor, Staines, Middlesex. Do enclose a large S.A.E. for further details of its activities.

How can I calculate the capacity of my aquarium, and calculate a safe stocking level for tropical freshwater fish?

Multiply the internal dimensions of your tank in centimetres together thus: length × width × height, and divide the result by 1,000. The answer will be the capacity of the tank in litres. Deduct about 10% from this figure to allow for gravel, rocks, etc. in a set-up tank.

As a rough guide, each centimetre of fish (excluding tail fins) requires about 25 square centimetres of water surface. This will allow a certain margin for errors, mishaps, fish growth, etc.

Marine Queries

by Graham Cox

I am writing to you to see if you can give me some information about setting up a salt water tank. Could you please tell me a rough price of what it would cost. I am thinking of having a four foot, is it wise to use a power filter or not. Could you please tell me the best equipment but not too pricey please?

Dear Mr. Hunt, thank you for your query concerning the cost, etc., of setting up a marine aquarium.

Based on a 48 in. × 18 in. × 18 in. tank, and assuming that you were starting without any equipment whatsoever, I would predict a final costing in the range of £120—£180 depending on precise ultimate specification.

In the Yorkshire village where I was raised, there lived a very old and very wise man. As a child and youth I used to spend a lot of my time listening to him and his advice. He was the most successful gardener I have ever met before or since and always won all the prizes at the local shows for veg., fruit and flowers. He totally despised and distrusted all the "magic" new products so expensively advertised in my Grandad's gardening magazines which I used to discuss with him during those long, hot, seemingly endless childhood holidays and Summer evenings spent in his allotment.

One evening, whilst weeding and talking, I suppose I must have exasperated him much more than usual and slowly, with great dignity and I now realise not a little pain, slowly he straightened his normally bowed back up to its full height. Turning to face me he said "Look 'ere lad, the's one thing tha's got to learn—and learn well if tha't ever gunner mek 'owt of a gaardener. Tha' can spend all't brass tha' likes on them fancy bits an' pieces. But—until tha' learns that nowt beats haard diggin' an' horse muck, tha' might just as well pack it all in".

At this stage in our narrative, the more intelligent and sensitive reader may be forgiven for wondering what the deuce equine faeces has do with fishkeeping. This is a reasonable question. Well, Mr. Hunt, what I'm trying to illustrate to you as cogently as one's native wit permits, is that neither power filters, nor ozonisers, nor protein-skimmers nor U/V sterilizers, etc are *absolutely* necessary in the successful maintenance of a marine aquarium but probably won't do much harm either except to your bank balance. The true essentials are:

(1) an all-over fitting U/G filter covered with a 1 in. layer of crushed shells and topped off with a 2 in.-4 in. layer of oolitic coral-sand.

(2) the patience to fully mature this filter-bed with "Sea-mature" until the nitrite toxins totally disappear, followed by 3-4 weeks taking care of a pair of Damselfishes before introducing the showfishes such as angelfishes, butterfly-fishes, surgeons/tangs, wrasse, etc.

(3) the strength of personal resolve **never** to exceed a stocking ratio of 1 in. of fish to each 3 gallons of seawater, no matter how strong the temptation.

(4) the ability to so "meanly" feed the creatures that you achieve the magic balance between healthy livestock and healthy seawater, and

(5) a *conscientiously* maintained water management routine firmly based on a 25% partial seawater changes conducted at regular fixed intervals of time.

NB: These regular partial water changes must always be used as an opportunity to flush all the sea-humus from the coral-sand layer. This fluke-encouraging material is then syphoned off with the 25% old, chemically-exhausted seawater before topping up with your clean, sparkling new seawater.

There is, of course, rather more to being a successful horticulturalist than following the milkman's dray around with bucket and shovel poised at the ready. Similarly there is a little more to successful marine aquarium keeping than the five principal guidelines listed above. I have therefore forwarded with this reply a colour leaflet entitled "Starting a marine aquarium" which explores the entire subject much more fully than we have space for here.

Of about 103 British species of aquatic beetles, no less than 69 species have been found in 13 chalk streams and a limestone stream in southern England in research subsidised by the Thames Water Authority and the Nature Conservancy. The strong-flying beetles were typical of waters which dry-up in summer or then have only a subterranean existence, when the insects move at night to other waters. Flightless species were found in the permanent streams. Rivers ranged from the Frome to the Coln, Test, Ichen, Kennet and other famous waters.

Recent grants by the Natural Environment Research Council include £33,321 to Prof. A. E. Walsby of Bristol for a 3 years study of osmotic relations and buoyancy of blue-green algae; £19,455 to Dr. T. J. Shuttleworth for a 2 years study at Exeter University of the effects of detergents on the gills of fishes; £22,750 to Dr. M. Crisp of Dundee University for a 2 years study of the function of the gut during development of periwinkles; £19,505 for a 2 years controlling of feeding in freshwater branchipod crustaceans by Dr. S. Young at Imperial College. Dr. M. J. Manning of Plymouth Polytechic has a £28,219 grant for a 3 years study of the development of immunity and tolerance in fish, Dr. A. Ferguson of Queens University, Belfast has £42,248 for 3 years studying the population-ecology and genetics of brown trout in County Fermanagh's Erne and other lake systems. Dr. P. J. W. Olive has £22,703 for a 3 years on reproduction and population dynamics of 4 Nephtys (polychaete or bristle-worms) with overlapping distribution around British shores, and Dr. S. J. Hawkins at London University College £33,023 for a 3 years study of distribution competition and behaviour in British limpets.

Tortoise Trade

In its campaign to control the tortoise trade, the R.S.P.C.A. sent me its 17 page booklet summarising a 2 years survey, reporting a mortality rate over 80% in the first year of captivity. Nearly 200,000 a year are imported, mostly the spur-thighed Greek (Morocco-Algeria, Turkey, etc.) species *graeca*, but over a third *hermanii* and a few Russian *horsfieldii*, etc. This is about a third the post-war peak period of imports in 1967 and a quarter of a million came in 1938. The trade is hardly a hundred years old. Wild stocks have been depleted around Casablanca, Yugoslavia and Thrace-Anatolia. Ten species of Salmonella have been traced in the faeces of imported specimens. Over a third of the samples are infected.

Several years ago, Proctor and Malone drew attention to what should have been an obvious conclusion, the passive dispersal of small aquatic organisms (amoeba and algae for instance) in the intestines of birds either drinking or ingesting them with food. Guerlesquin and Podlejski's recent study of the stoneworts and other aquatic plants of the famous Camargue reserve at the Rhone delta suggests that wild duck are responsible for the distribution of the stonewort *Nitellopsis obtusa* in the major river systems of France. This aquatic rarely fruits, but produces bulbils which in France are its only means of propagation.

by Eric Hardy

A discovery which inhibits the first cleavage in a fish's developing egg and the second meiotic division, may be able to be used to isolate stocks of desired characteristics in fish-breeding, as with catfish, trout and salmon. It was the outcome of recent experiments with cyprinoid zebra fish, *Brachydanio rerio*, whose haploid (reduced half-number chromosomes) egg was converted to diploid (normal specific number) by heat shock, or hydrostatic pressure, at the U.S. Institute of Molecular Biology, in Oregon. Three or four generations produced homoygous diploids, with factoes inherited from both parents by heat-shock.

Many sedges, rushes and quillworts are not included in Francis Rose's new *Wildflower Key, British Isles-N.W. Europe* (480 pp, Warne £5·95 paper-back, £8·95 hard cover) but these and most aquatics are included in a useful vegetative key to identifying plants not in flower, and in the descriptions of over 1,450 species, with over 1,050 detailed colour illustrations including floral parts. It is by far the best pocket-guide for identifying wild flowers in and beside the water as well as elsewhere, although the cord-grass *Spartina townsendii* of most muddy estuaries and tufted *Saxifraga caespitosa* are only mentioned in a key while *Cotula* the South African yellow buttonweed is described as located in dunes. The latter's habitat in its classic and most abundant site at Meols Common in West Cheshire is the dyke, having come into the remnant dune area by coincidence from the former pond on the adjoining Leasowe Common where it was tipped from a garden last century. It is essentially a plant of wet places, in water rather than out.

General keys are given for each family to sort them out, stage by stage in the only exacting way, when in flower. But no attempt has been made to sort out the complexity of willow hybrids and hybrid willowherbs. I suppose we must continue to suffer the name "Hampshire purslane" for *Ludwigia palustris* because it lingers in a New Forest ditch near Brockenhurst; but it is also in Epping Forest and Lancashire aquarists introduced it to Failsworth Canal. The American willowherb *adenocaulin* should be noted in Scotland (Kircaldy, St. Andrews and Edinburgh) as well as England and Wales. Our increasing streamside New Zealand colonist *pedunculare* (*nerterioides*) is mentioned in the identification key but not described or portrayed, yet one comes upon it from Lakeland becks to 5,000 ft. in Snowdonia. Since it was first noted in Edinburgh's Craigmillar Park in 1904 it spread to 72 British vice-counties and 21 in Ireland in 60 years. It first reached Wales at Pen-y-Gwryd in Snowdonia in 1930. With so many plants the book has to be a cram. Lady's slipper-orchid, recorded in only "West Yorks" should also have Lancashire (Eaves Wood, Silverdale) for an introduced site now preserved on a reserve as well as its Yorkshire preserve on the rocky slope above Dibscar Beck, on the north side of Grass Wood, above Grassington. The red-throated chilean riverside musk. "Blood Drops Emlets" is given only in Scotland, but I've seen its crowding all down Inn Dale Beck from Derbyshire's Thorpe Cloud to Dovedale stepping stones, and in Wales in the brook, right of the cattle grid main road entrance to Gorswen nature reserve near Ro-wen in the Conway Valley. It grows in other waters from upper Teesdale to the North Wales River Alwen at Llanfihangel-y-Pennant and was at Hartside Fell in Cumbria so far ago as 1887.

In Pembrokeshire streams and marshes near Solva, Trefin, Hundleton, Ludchurch and the Afon Wern at Maenclochog, it hybridises with common American monkey-musk.

Mink

While some aquatic colonists of our waters in modern times are welcome to join our fauna, notably the little bitterling ranging from the Shropshire Union Canal at Whixall and Waterloo to many waters in Lancashire, the mink is the most unwelcome American predator since the grey squirrel. Like a black stoat with a white throat, it continues its predatory progress and this year appeared at the national nature reserve of Rostherne Mere in Cheshire. Killing mallard and moorhen, and suspected of taking a nesting great crested grebe, it is presumably there to stay, the warden told me, despite 6 having been killed. It reached nearby Tabley Mere and Peover Brook some time before. Since chub were introduced into the Welsh Dee just after the war, they've increased to dominate the lower reaches as dace did.

1981's wet spring and summer proved to be a great impetus to bog-plants. Our Southport-Formby dunes revealed pink sheets of bog-pimpernel before the autumn appearance of white cups of our locally large-flowered, short-stemmed grass-of-parnassus, and the white spikes of the locally maritime form of round-leaved wintergreen, whose leaves aren't quite round. But it was the marsh-orchids which proliferated, especially in clay soils all over the wet countryside. The densest population-explosion of common spotted marsh-orchid, *fuchsii*, I found were 3,233 spikes I counted in 320 square yards beside the gallery-pool by the Dee steelworks marsh at the end of July. Another 300 were within a few yards of these. This orchid has a great propensity for hybridizing with southern and other marsh-orchids, as in the old overgrown lime-pits at Witton Flashes and the Plumley reserve down Ascol Lane End, near the roundabout the Northwich (Cheshire) by-pass, usually growing taller, more vigorous, and often with leaves unspotted. Older books describe the slender pink spike and long-spurred flowers of fragrant orchid as one of dry calcareous limestone haunts, as we see it near Pantymwyn, above Mold in North Wales, and in Nimble Jack lime-stone-quarry near Matlock, as well as Millers Dale, in Derbyshire. But a marsh form of this, *densiflora*, with thicker spike, broader leaves, taller and later flowers with the lip broader than long and a scent of carnation, has been upgraded to a separate species, the Marsh Fragrant.

This summer, we had a colony of this marsh fragrant orchid flourishing among spotted and early marsh-orchids on the steelworks side of the Dee marshes' rifle-range, including some white albino spikes (which also occur among it at Northwich Witton flashes). I noticed some still in flower in August, typical of this species' later flowering than the dry limestone fragrant orchid.

In the industrial north, we have to be thankful for waters in less picturesque surroundings than the aristocratic south. Our colliery-flashes are well known for their rich fish-fauna. Old brickworks clay-pits fill with water and become equally interesting when stocked with fish, luring waterbirds too. At the time of writing, an action group is trying to save those at Littlewood's pits, by Radley's lane near Croston, in West Lancashire, from becoming a tip. A haunt of great crested newts which have few Lancashire haunts nowadays (another introduced site is a "slack" on Ainsdale dunes), it is also Lancashire's first nesting haunt of the increasing North American ruddy duck, as well as of tufted duck, great crested and little grebes, grasshopper and reed-warblers.

Too often our pits are filled-in. A few years ago, Figure-of-Eight Pond and Darky's Dock, two field-ponds long known as Cheshire's sites of prolific water-soldier, by field-paths from Meols' Acres Lane and Fornall's Green, in Wirral, were filled-in without a protest. We still have ponds of water-soldier on private land by Raby's Thornton Common Road, by Heswall and by Street Hey, Willaston-in-Wirral, and Saughall near Chester. This plant, which has only female flowers in this country, soon chokes any shallow water it is thrown into unless thinned annually. At the time of writing, a Wirral lady is trying to find someone to accept it from her garden pool which has become choked with it. This relative of frogbit has usually been introduced when found outside East Anglia.

OBITUARY

TRIBUTES TO COLIN ROE AND ROGER LUBBOCK

from R. D. Sankey

Colin Roe

On the 1st September Colin D. Roe, of Shirley Aquatics Limited died. He will be missed by all his customers as with him has gone an expertise and attention to detail that will never be replaced. He was genuinely an expert, and in a trade that is full of supposed experts, the likes of Colin Roe are extremely rare. He will be remembered by all his friends for his warmth, sense of humour and above all his generosity.

Colin Roe took over Shirley Aquatics Limited in the early 50s' and within a few years had firmly stamped his very personal and professional image upon the Company. Above all he had come into the aquatic trade as an aquarist. He ran his business as an aquarist, and his love for the world of water, was with him until he died. During the 60s' Shirley Aquatics Limited was a name known to every serious aquarist in the country. For the really dedicated it was almost obligatory to make regular "pilgrimages" as they knew they would always be excited by something new or rare. For those of you that have read this magazine since its inception I am sure you will always remember the very distinctive style of advertisement that featured on the back cover.

During nearly 30 years Colin Roe ran his aquatic business quite like no other. Although in recent years he was often criticised for not moving with the times, he made sure that he never lost sight of being an "aquarist". His technical expertise was very diverse in all facets of the business, his success with aquatic plants has never been equalled. Often Kew Gardens have called upon his help in classifying new aquatic plants.

Colin Roe

In the days before the polythene bag, Colin Roe was chartering small aircraft decked out with metal water tanks, hopping around Asia buying and collecting fish. He would precariously fly back to Birmingham, a journey that took several days. Over all those years he introduced so much to the British aquarium market. It is hard to believe these days that Colin Roe was the first to introduce to the U.K. tropical marine fishes, Japanese Koi, Rift Valley Cichlids and countless aquatic plants.

Let us hope that his sense of occasion and adventure lives on within the trade.

Dr. H. Roger Lubbock
Fellow Churchill College, Cambridge

To a few very dedicated marine aquarists and marine biologists, the name Roger Lubbock is and will remain almost legendary. In his 29 years he had managed to travel and dive on the coral reefs of the world. There was almost no place that he seemed not to have been, and from his work he managed to form a very deep knowledge and understanding of his specialised subject.

His scientific creativity was based on original thought, a talent that is very rare. Without realising it many marine aquarists owe an enormous debt to Roger Lubbock. His many quiet hours in his laboratory at Cambridge over the last few years have helped us to understand so much more about a subject of which we know very little. On his world travels he discovered countless numbers of new species of coral fish.

Roger Lubbock's academic success was phenomenal, he was revered and admired by his Cambridge colleagues. But at the same time he loved talking to marine hobbyists no matter how ignorant they were as long as they were enthusiastic, then so was he. In fact he despised anything that was second-rate or shoddy. He admired perfection, I think it was that appreciation that drew him to the coral reef, for there is nothing more perfect.

Dr. H. Roger Lubbock died in a car crash along with a good friend in Rio de Janeiro, Brazil on Saturday, 5th September 1981, aged 29.

PRESS RELEASE

New improved Gussie air pumps

ARMITAGES have reintroduced their Gussie Aquarium Air Pumps with important modifications.

Airflow is now calibrated to one litre per minute at 1 lb pressure, which is equivalent to a 2 ft. depth of water.

The pumps are exceptionally economical. Used continuously for a week, the single pump will consume only ¾ of a unit of electricity (approx 3p), and the double pump only 1 unit (approx 4p).

A metal plate has been moulded within the rubber base as a required safety measure. This protects the live electrical parts within the unit so that access can only be gained by the use of a tool.

Suggested retail prices have been reduced to the extremely competitive level of £3·25 for the single outlet pump, and £5·99 for the double outlet pump.

Silicone chip heater

THE ELECTRONIC AGE has come to the aquatic hobby with the new "Microtronic" heater from Armitages. This thermostatic heater incorporates the latest in advanced electronic technology with a silicone chip that controls temperature to an accuracy of ¼°C. There are no moving parts to wear out or go wrong, and it is therefore especially reliable.

The "Microtronic" is the brainchild of the Armitages technical Research Team at their Penryn, Cornwall factory. For several years, they have been working on electronics,

but only by 1980 had electronic components dropped sufficiently in price to bring the dream of an electronic aquarium heater into a reality. During 1980 prototypes were made, tested and perfected in Armitage's labs in Penryn. The first full scale production run of the new "Microtronic", as it was called, took place in February 1981. All the units from this initial production run were sent out as trial samples to leading aquatic wholesalers and retailers throughout the U.K. Only by useage trials in a widely differing range of aquarium conditions could the Armitages Research Team be sure that their new product was ready for sale. The result of these trials were uniformly successful—all the units worked perfectly, and aquarists were generally delighted at the accuracy and stability of the water temperature in their tanks.

With this final green light, Armitages were satisfied that the "Microtronic" could be put on the market. It was launched at the Harrogate Trade Fair in mid-April this year, and created tremendous interest and enthusiasm—after all, many of Armitage's trade customers had already tested the product and proved how accurate and reliable it was. By May, the "Microtronic" will be widely available in aquatic stores throughout the country.

An important feature of the "Microtronic" is the detailed installation advice given on the box. Electronic temperature control is far more accurate than that of the traditional aquarium heater. Only a very small adjustment to the temperature control knob will cause a significant change in temperature, so care must be taken to follow the instructions carefully. The happy result will be exactly what the aquarist wants—a high degree of accuracy and consistency of water temperature in their aquarium.

Aquashelf

IT HAS BEEN scorned as a 'gimmick' by fishkeepers who consider themselves 'serious' aquarists and admired—without exception—by every visitor to my home.

What is it?

The Aquashelf.

That innovative fishkeeping concept that has taken aquarists back to their roots and probably converted more people to the hobby than any other single thing in the last twenty years.

I have to admit that when I first heard of the idea of a four foot long tank that was just 4½ inches wide and 4½ inches deep I was rather sceptical to say the least. In fact it is probably true to day that I was among those who shook their heads sagely while intoning "It'll never catch on."

That, however, was before I had actually seen one or even read much about it.

The more I discovered the more I was intrigued. Here was an idea that went right back to my first faltering dips into the world of aquariums. No pumps, no filters, just a tank, gravel and fish—and the idea that if you have the right area of water surface and don't overcrowd, pumps and filters are totally unnecessary.

But to enclose the whole idea in that size of cockleshell is totally unfair to the inventor of the Aquashelf, Mike James.

Mike has put together a package that is just about the closest we will ever get to instant fishkeeping. You literally just have to add water—and the fish of course.

And that package is contained in an extremely elegant piece of furniture.

In effect he has brought the goldfish bowl into the 1980s and in so doing has made fishkeeping fashionable again. He had also removed some of the mystique from the hobby, and has pointed out that anyone can keep tropical fish healthy and happy without the trapping and paraphenalia that so often become the hallmark of the experienced aquarist.

After testing one of Mike's units for the last few months I have to applaud his idea, and his bravery in bidding to overcome the ingrained ideas of the aquatic hobby and trade. And I can only hope that true aquarists will recognise the aquashelf as probably one of the best things that could have happened to fishkeeping.

But let's have a closer look at both the unit and how it came into being.

Mike James is a Liverpudlian who has kept fish for more years than he probably cares to remember. His flat was already graced with a 90 gallon tank in 1976 when he wanted to expand his fishkeeping activities, so he did the only thing possible when there was no more floor space available—he went up the wall!

His first efforts were ten inches wide which worked well, but protruded rather too far out into the room an eventually became rather a nuisance to maintain properly.

The next stage came when Mike bought three 4 in. × 48 in. glass window louvre blades and silicone sealed them together to make his first strip aquarium. A pair of guppies had the honour of testing the new design and dutifully fulfilled all expectations by living together quite happily and raising a family.

The fittings for that tank were housed in a piece of PVC guttering which served admirably as a fully fitted hood, and the admiration of his friends for the idea, and the fact that many of them asked Mike to make a similar tank for them, soon led Mike to realise that here was a marketable idea.

He wasn't the only one, and a string of awards came his way culminating in a second prize in the Liverpool Enterprise Competition which saw him with 5,000 square feet of factory space a £15,000 prize and a £10,000 overdraft.

Mike was in business.

He produced his Aquashelf in a standard and 'de-luxe' model with the only change being in the cabinet which houses the tank.

One is white resin-bonded birch plywood and the other is in kiln dried brazilian mahogany which is selected for colour and attractive grain. The white cabinet is trimmed in polished aluminium and the mahogany one in cast brass.

Suggested retail for both is over £100, but that all-in price includes everything you could possibly need, even colour co-ordinated gravel and rocks to match your decor if you wish.

The tanks are double sealed float glass, each individually tested for leaks. Temperature control is provided by the UNO Supreme heater/stat and lighting supplied via a

three foot gro-lux tube housed in the hinged lid of the cabinet. Electrical fittings are arranged so that cable emerges on either the right or the left to fit in with your installation plans.

Barbara, the author's wife, points out the screws which do the main job of holding the unit to the wall. These are hidden by the coloured pvc sheet Barbara is holding out of the way with her right hand, when the tank is installed

The accessory pack with each unit is identical, apart from colour, and contains gravel, rocks, artificial plants, net, glass cleaner and even fish food. Colours available for the decorations are red, cobalt blue, green, yellow and black/amber.

Once again I can almost see the 'purists' quietly gagging on the thought of coloured gravel and artificial plants! (Shock! Horror!) But the simple answer to them is: "Don't knock it unless you've tried it yourself."

I literally threw all my preconceived ideas out of the window when I began to install the tank. I was determined to give it a fair trial even if I was apprehensive about hanging a fish tank on the wall.

As everything, including screws and wall plugs, is included in the kit all you need to fix it to the wall is a drill, screwdriver and spirit level. It does need to be level otherwise you will lose something of the overall effect.

Once I had rammed home the last of the screws holding the cabinet to the wall I wasn't sure that the brackets underneath (anodised scrolls on my unit, now changed, I understand, for inch thick mahogany on the later models) were at all necessary, but I fitted them anyway to add to the effect.

The gravel was arranged in the tank before it was slotted in its cabinet (the pack I had chosen was the green one—obviously I was still unable to shake off my conventional ideas completely) and I had to be a little careful not to knock the fluorescent tube while arranging the coloured glass 'rocks' in place.

The artificial and plastic plants—which incidentally do look very lifelike—were installed when the aquarium was half-full of water and the heater/stat arranged so it was well hidden.

Topping up posed little problem even at the eye-level height I had chosen, because two buckets of water fills the tank.

As I was determined to test the tank like an eager novice I used dechlorinator on the water and installed the fish once the temperature had stabilised at 75°F.

I chose a shoal of Harlequins (*Rasbora heteramorpha*) so their pink and black would contrast with the green background, and added a couple of catfish for good measure.

And that was it. I haven't had a bit of trouble since.

Cleaning has been simplicity itself once I rid myself of a few more preconceived ideas and harked back to the goldfish bowl concept—with modifications.

I carefully siphon four-fifths of the water out once a month and put it to one side. The fish are caught and swim happily around in the bucket while I remove the plants and rocks for washing, then stir up the gravel and siphon out the rest of the water. I then move the tank into the kitchen, give the gravel a quick wash and the tank a wipe round, then back it goes into its cabinet.

Back go the rocks and plants then most of the saved water and the fish before a final topping up with clean water. The result is a sparkling clean tank that has effectively had a 20% monthly water change. With no filters to worry about there is no need to be concerned about upsetting the bacterial balance of the gravel because it simply doesn't matter. The whole procedure takes less than half an hour (unless you are particularly artistic then rearrangement of the rocks can take a bit longer!)

It is simply worry-free fishkeeping. You don't even have to lift the lid off the aquarium to feed the fish. That is done through a hole in the lid with its own cover.

However, having enthused about the tank and its concept with all and sundry for the past few months there are one or two points that I think could be looked at for the future.

The author tops up the half set-up tank prior to installing the fish

With the advent of micro-chip technology into the aquarium thermostat field I would have thought here was a golden opportunity for its use. The conventional heater/stat, while being comfortably lost in a large conventionally shaped tank, takes up a little too much room for my liking in such a narrow space.

Something like a 'Nova' thermostat with just a probe into the water, connected to a small 50 watt heater, would reduce the bulk inside the tank and make it easier to hide.

I would also welcome a small pump and airstone. Not, I hasten to add, because they are necessary, but I feel they would add to the movement in the tank by providing the column or even curtain of bubbles. Perhaps someone will come up with a tiny pump to do the job that will fit snugly into the cabinet top?

Finally, I wonder if Mike has thought of selling "re-decoration packs"? That way, once the conservative conventional aquarist (like I used to be), has finally shed his inhibitions, he can experiment with different colours, or even change the decor in his tank when he changes the wallpaper!

Barry Durham

The finished aquashelf complete with shoal of Harlequins *(Rasbora heteromorpha)*

Book Reviews

ILLUSTRATED GUIDE TO AQUARIUM FISHES *by Dick Mills*, published by Kingfisher Books Ltd., £6.95 and distributed by Ward Lock Ltd., P.O. Box 111, Great Ducie Street, Manchester M60 3BL.

When faced with the task of writing a book on aquarium fishes, the adoption of a new approach must be a daunting prospect for the author, faced as he is with a plethora of established works on the subject. Dick Mills has successfully accomplished this task by utilising a wide canvas and reviewing, in chapters, the complexities of fishes' Shapes and Styles, their Colour and colour's uses, Lifespans, Respiration, Protective and Offensive Devices, Feeding, Navigational Aids, Touch, Taste and Smell, Hearing and Lateral Line System, and Reproduction. Thus does part one of this excellently illustrated book (photos and drawings in colour and black and white) introduce the reader, painstakingly, to the strange world of water and the multiplicity of needs for the survival of the myriad forms its denizens display.

The shape of a fish tells us much about its mode of life and its colour pattern can indicate whether it is an aggressor or a defender or whether it is poisonously inedible or pretending so to be.

Methods of respiration supply clues to the purity or otherwise of fishes' native swims. Navigational aids other than sight are accorded some varieties of fish which frequent muddy waters and highly sensitive barbels enable some bottom foraging species to detect their food.

Ensuring the survival of the young fish takes many forms, the most common of which is the prodigious number of eggs deposited by the female but this haphazard method of perpetuating the species is so inelegant when compared with those employed by species which lay relatively few eggs which are then protected in a variety of ways by the all-caring parents. Mouthbrooding cichlids whose capacious mouths provide sanctuary for both eggs and fry; the Bitterling which so carefully sequesters its eggs in the fastness of a mussel's gill chamber, and the male seahorse which incubates the eggs in a pouch with which he is equipped for the purpose.

Having alerted his readers to the fact that there is much more to the lowly fish than meets the unobservant eye, the author devotes part two, the larger part, of his book to the business of keeping fish in aquaria, maintaining them in good health, breeding them and showing them competitively. There follows a section on Fishes for the Aquarium depicting most of the popular tropical, coldwater and marine species and supplying comprehensive notes on each with accompanying full-colour drawings of high quality.

From over twenty years of enthusiastic and intensive fishkeeping, Dick Mills has learned much which he skilfully passes on to his readers in this comprehensive guide for aquarists.

L. E. Perkins

A MILLSTONE ROUND MY NECK *by Norman Thelwell* published by Eyre Methuen Ltd., 11, New Fetter Lane, London, EC4, £6.95.

Although this is not an aquarist's book, no apology is made for reviewing it within these pages for it must appeal to anyone who experiences delight in water and its environs and who enjoys graphic descriptions and detailed drawings of the rustic scene. Anyone who has read *A Plank Bridge by a Pool* by the same author will find even more to his taste in this often very amusing but always delicately drawn saga of the part restoration of a dilapidated Cornish watermill.

The author's first viewing of the ruined mill rendered the prospect of restoring it and living in it irresistible and he wasted no time in settling the details of purchase. Later he stood with his wife regarding his new property and: "A brilliant blue point of light volplaned towards us from the field beyond the hedge and lit on a thin hawthorn wand not ten feet away from us. The kingfisher was clearly in focus for perhaps ten seconds as his claws grasped the swaying twig, then he was gone, a tracer bullet of colour whistling down the slope to the river. I felt quite guilty that I should ever have haggled over the monetary value of such an earthly paradise."

There is, of course, a darker side to things when wrenching a ruin into the late twentieth century and many near disasters befall the restorer before domesticity reigns untrammelled but horrific happenings are described with such wry humour that comedy prevails.

Norman Thelwell has three loves: drawing and painting, fishing, and restoring near-condemned buildings. The essential ingredients of these respective pursuits shine brightly from the pages of his books, tremendous attention to detail, an abiding rapport with water and all life associated with it, and a great regard for the craftmanship and beauty inherant in old buildings left to the reclamation of nature.

L. E. Perkins

Beginning with tropicals

Part 12

Botia lohachata

by Roy Pinks

THIS ARTICLE CONCLUDES MY commentary on the performance of a number of easy and attractive species of tropicals for the beginner which I tried out during 1980. After dealing with the one remaining species included in my trial I will examine a number of desirable alternatives which, for one reason or another, were omitted. To conclude the part of this series on the subject of fish I will then mention a few species which are in common supply, but which are best avoided until some experience has been gained.

Snail Trouble

It may be recalled that I was having snail trouble in the mixed collection: one of the tiny Planorbis species, possibly spirorbis, had penetrated my precautionary screening and was multiplying alarmingly. This was doubly regrettable because plant life was not all it might have been and the ravages of these nuisances threatened to reduce the vegetation still further. I hesitate to recommend the use of chemicals in the beginner's tank because whilst they may solve one problem they tend to cause others, and it is best,

in the long run, to apply physical or biological controls. A long but unsuccessful squashing campaign merely reduced the numbers, but still they came. It was at this point that Mr Cossette of the Barrier Reef of Cheltenham suggested that I should try one of his favourite species—either *Botia lohachata* (the Pakistani Loach) or the *Botia strigata* (the striped botia). They look rather alike, having the typical botia body shape ,but the former has a lighter overall colour with brownish black bars which break the body into some seven sections; the latter has a darker general appearance, with a succession of thinner vertical stripes, seemingly with pinkish-orange intervals between them. I had not previously kept either of these, but as they were reputedly reliable snail hunters I went straight home and went through all my references to try and discover some fundamental defect. The size was about right—they are listed as growing to about 3 in. their habits were stated to be undemanding and peaceful, and I could indeed discover nothing I could legitimately complain about. I had one mental reservation—botias are not, as a group, usual species for the beginner, partly because they are often very retiring (some bury themselves in the gravel), and partly because they are not very active even when they are visible. So the beginner rejects them before he has given them a chance—they are really best appreciated at a later stage in the hobby, when they are acquired for a defined and recognizable purpose. I only bought one of these fish—a *B. strigata*, as it happened, because it appealed to me visually on account of its unusual and fascinating body pattern. It was quite expensive, if I remember rightly—something just under £2, but this was some of the best money I have spent for a long time, as the snails thinned out visibly within a few weeks, and they have now completely disappeared. This little botia, which is still only at the 2 inch mark, has not only done its pest control work very effectively, but it has shown itself as a lively and peaceful inhabitant of the tank, to the extent that I now wish that I had invested a few pounds more and included a trio. There is nothing, either in print or performance, which prevents my giving this species full marks. It hovers in mid water, enquires of this or that, and whisks away to repeat the act in another quarter of the tank. It is equally at home in the upper and lower levels of the water—somewhat like *B. nigrolineata*, which is more of a familiar favourite, but which probably spends more of its time perched on something and not actually in motion.

Summing up, then, the Cardinals, the Yellow Honey Dwarf Gouramis, the Pearl Gouramis and the Striped Botia were the signal successes of last year's trials. An interesting point which emerged was the outstanding excellence of the Cardinal over the Neon. This was a tendency I had noted previously, but the experience of 1980 seemed to suggest that, whereas the Neon merely grows bigger with age, the Cardinal positively improves in size and sheer radiance as it ages, and for this reason the species may be regarded as more of an investment than most fish. I would emphasize that my comments and recommendations must be qualified by relating them to local conditions, but I believe that most of the species would perform similarly in much of the British Isles.

Omissions

It will be obvious to the reader that there are some notable omissions from my list. In many cases they were forced on me, just because the species were not available, or were available but of such poor quality that they were not worth buying. I was constantly reminded during the year of the need to plan my purchases of fish more sensibly, and the beginner will do well to keep this very much in mind, too. I was unable to implement what I am now about to recommend because my tanks were being changed around to accommodate some freshwater trials, but now that these are on a better footing I propose to supplement my main display with a shallow reserve tank immediately below it. This will simply contain a gravel base, one or two rocks, and some unanchored plants like Hornwort. It will form the reception tank for all new fish, and they will remain in it for several months at a time. I shall buy healthy smallish fish—they are cheaper, usually, when immature, and I shall grow them on, probably feeding them with a touch of luxury. By this means I stand a good chance of collecting, say, replacement Cardinals at bearable prices, and other less frequently available species to fill the gaps in the larger tank. If disease does strike, then my eggs will be in different baskets, and I shall be filling vacancies *after* they have come to exist, thus avoiding overcrowding. So many tanks are on the razor edge of safety because they have been stocked to capacity, and disease outbreaks often follow the introduction of new fish. The provision of a "holding tank", in which impulse purchases as well as planned acquisitions can be accommodated on a temporary basis, may well lead to greater long term stability. At any rate I shall try to operate on this basis during 1981 and I will provide some notes on the process in about a year's time.

Answer: Lionhead

News from Aquarists' Societies

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

SOUTH EAST

THE September meeting of **East Kent Aquatic Study Group** attracted 48 members and five visitors to St. Barts' Hall, Herne Bay. The Chairman, John Edwards, assisted by Bob Spoore and C. J. Bridgeman answered many questions put to them in an open forum. The questions covered many aspects of fish keeping. Keith Bedle was the guest judge for the evening and judged the table show consisting of 21 entries of the Shark and Loach families. He remarked that the fish lacked body size but the condition and deportment of the fish was very good. Results:—Sharks: 1, J. Edwards; 2, H. Piggott; 3, P. Sanby; 4, R. Mathews. Loaches: 1, J. Edwards; 2, E. Hazon; 3, D. Hills 4, R. Mathews. Congratulations go to H. Piggott and E. Hazon on attaining their first card. There followed an auction of fish, Plants and Equipment. A trip to London Zoo has been arranged for October when members will be able to go behind the scenes in the Aquarium the Reptile House and Laboratories will also be visited. Fish enthusiasts are always welcome at meetings held on the second Tuesday of each month at 7.45 p.m.

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ON 15th September **South Park Aquatic (Study) Society** had an evening dedicated to ponds. Experienced aquarist Roy Trim, assisted by his wife Helen, gave a very interesting and informative talk, illustrated by numerous slides showing the life cycle of algae and Daphnia, and on the construction of his own ponds, which contain a mixture of Koi, Rudd and Carp. Roy favours a natural method of keeping the water free from the normal, early season 'pea soup' conditions by circulating the main pond water through a culture of Daphnia in a separate container. This strain of clean Crustaceans has been used by the 'Trims' for ten years with great success, which besides combating 'algae bloom' also provides a large quantity of live food. Marguerite Dudley kindly donated a number of young Globe-eyed Moors to the club, which were distributed amongst the members for the purpose of growing on. Results of the 19th novice table show: Fantail: 1, 2, and 4, Paul Oldridge. Red Cap Orandá: 3, Ken Seaton. Paul recieved the Ron Dudley Memorial Trophy from last year's winner, Mrs. Joan Collins. The society specialises in coldwater fishkeeping and meets at 8.00 p.m. on the third Tuesday of every month at the Wimbledon Community Centre, St. George's Road, London S.W.19. New members and visitors always welcome. Details from: Mrs. Marguerite Dudley, 163 South Park Road, Wimbledon London SW19 8RX. (Tel No.: 01-540 5662).

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AT the September meeting of the **Southern Area Group of the Catfish Association of G.B.** an excellent lecture and slide show was given by Mr. Derek Lambourne on Catfish. Meetings are held on the first Friday of every month at St. Richards' Church Hall, Egmont Road, Hove. Hon. Secretary Mike Cooke (Brighton 739019 daytime).

SOUTH WEST

AT **North Wilts A.S.** open show there were 410 entries. Best in show was won by N. Jackson with a superb *Microlestes moesi* in Class Cr. F.B.A.S. Trophy was Class Ag and was won by Mrs. Stallwood. The highest visiting team was Newbury. Highest North Wilts. member was a junior, Mathew Taylor. Results: Furnished Aquaria: 1 and 2, Mrs. E. Stallwood (Newbury); 3, Mrs. B. May (Reading); 4, C. Tonna (Reading). Barbs: 1, R. F. Adams (Salisbury); 2, M. Strange (Basingstoke); 3, D. Brown (Portsmouth); 4, S. Norris (Bracknell). Characins (Cak): 1, Mrs. B. May; 2, S. Norris; 3, G. Bridgeman (Swindon); 4, J. Hanley (Portsmouth). Characins (Ch): 1 and 2, N. Jackson (Reading); 3, D. Fitzgerald (Dorchester); 4, Mr. Hancox (Banbury). Characins (Ca): 1, N. Jackson; 2, W. Hastings (SEAAS); 3, R. Collier (Swindon); 4, J. Hanley. Angels: 1, A. Chaplin (Basingstoke); 2, Mrs. G. Illick (Nailsea); 3, Mrs. Cripps (Newbury); 4, W. Holland (Nailsea). Dwarf Cichlids: 1, L. Gale (Newbury); 2, W. Hastings; 3, P. Pitchett (Nailsea); 4, S. Norris. Rift Valley: 1 and 2, W. Knight (Havant); 3 and 4, B. Symes (Dorchester). Large Cichlids: 1, P. Taylor (NWAS); 2, W. Knight; 3, F. Cripps (Newbury); 4, F. May (Reading). Fighters: 1, Mrs. Walter (Nailsea); 2, C. Tonna; 3, Mrs. M. Illick (Nailsea); 4, D. Brown (Portsmouth). Labyrinths: 1, S. Norris; 2 and 3, N. Johnson (Bexley Heath); 4, P. Hanley (Portsmouth). Killies: 1, Mrs. L. Paxton (Basingstoke); 2, J. Jackson (Basingstoke); 3, W. Holland; 4, S. Norris. Cats: 1, R. F. Adams; 2, A. Brown (Portsmouth); 3, H. Johnson; 4, J. Hanley. Corydoras: 1, P. Hanley; 2, W. Knight; 3, A. Brown; 4, L. Gale (Newbury). Rasboras: 1, C. Tonna; 2, N. Jackson; 3, F. Cripps. Danios: 1, W. Hastings; 2, C. Tonna; 3, J. Jackson; 4, Mrs. B. May. Labeos: 1, L. Gale (Newbury); 2, W. Knight; 3, Mrs. P. Cripps (Newbury); 4, H. Brown (Portsmouth). Loaches: 1, R. Collier (Swindon); 2, D. Fitzgerald (Dorchester); 3, W. Hastings; 4, F. Cripps. A.O.V. Egglayers: 1, Master D. Wilton (Abingdon); 2, Mrs. S. Walters (Nailsea); 3, T. Dowell (Swindon); 4, P. Hanley (Portsmouth). Pair Egglayers: 1, J. Jackson; 2, Mr. and Mrs. Vallance (Dorchester); 3, S. Nobes (Basingstoke); 4, F. Frost (Gloucester). Pair Livebearer: 1, N. Binding (Cheltenham); 2, W. Hastings; 3, M. Stanley (Swindon); 4, F. Cripps. Male Guppy: 1, C. Tonna; 2, Mr. Wilson (Abingdon); 3, Mrs. B. May; 4, Mr. Hancox (Banbury). Female Guppy: 1, K. Grace (NWAS); 2 and 3, C. Tonna. Swords: 1, Mrs. P. Cripps; 2, C. Tonna; 3, M. Taylor (NWAS); 4, S. Norris. Platy: 1, 3 and 4, C. E. Curtis (Swindon); 2, P. Hanley. Mollies: 1, Mr. and Mrs. Vallance; 2 and 4, M. Taylor (NWAS); 3, P. Pitchett (Nailsea). A.O.V. Livebearer: 1 and 2, C. Howe (Newbury); 3, M. Strange (Basingstoke); 4, W. Hastings. Goldfish (Shubunkins): 1, 2 and 4, R. Thackway; 3, R. Adams (Salisbury). A.O.V. Coldwater: 1, S. Norris; 2 and 3, D. Brown; 4, D. Fitzgerald. Team of Egglayer: 1, W. Holland; 2 and 4, H. Brown; 3, T. Monk (NWAS). Team of Livebearer: 1 and 3, C. Howe; 2, A. Chaplin (Basingstoke); 4, N. Jackson.

The Show Committee wish to thank competitors, judges and everybody who made it such a successful show.

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THE popularity of the **Bristol Aquarists'** show was again evidenced by the large entry (347) of quality fish from all parts of the country. Lionheads again attracted a good entry as did Comets. Moors were in better evidence than previously, but London Shubunkins were poorly represented. Needless to say the Bristol Shubunkin classes were very well supported with entries of 49, 30, 32 in the principle classes. The Best Fancy Fish was an excellent Lionhead benched by R. Pinnock, while an alert and colourful Bristol Shubunkin shown by B. Cook was runner-up. Congratulations to Bill Ramsden on making a 'clean sweep' of the two classes for Moors. Prior to the prize-giving, President Stan Lloyd presented Secretary Vic Cole with his Life Membership Badge in appreciation of the work he has done in raising and maintaining the standing of the Bristol A.S. Mr. J. R. Amos, A.M.G.K., presenting the awards, congratulated the Society on the excellence of the show and spoke of the good fortune of the hobby in having three shows of national status. Judges: Messrs. J. Bundell, V. Capaldi, V. Cole, L. Dodge, L. Emery, G. King, R. King, W. Leach, J. Linale, S. Lloyd, W. Ramsden, B. Rothwell, C. Spence, H. C. B. Thomas.

Results: Special awards—Eric Butler Cup for Best Fancy Goldwater Fish, R. Pinnock, who also won *The Aquarist* Gold Pin; B. T. Child Challenge Shield for Second Best Fancy Coldwater Fish B. Cook; Mabel Davis Trophy for Best Exhibit, B. Rothwell; F. G. Denman Cup for Highest Number of Points, V. Cole; S. J. Davis Trophy for Best Breeders Team, V. Cole; E. R. Blunsden Cup for Best Shubunkin exhibited by Member, V. Cole. Class results—Common Goldfish: Red: 1, W. Ramsden and B. Rothwell; 2, W. Ham; 3, J. Mildon; 4, C. Hayes. Common Goldfish, Yellow and Variegated: 1, 2 and 3, D. Garland; 4 H. C. B. Thomas. Comets: 1 and 2, H. C. B. Thomas; 3 and 4, P. Norman. Bristol Shubunkins (3 inch): 1, B. Cook; 2 and 4, J. Whiting; 3, T. Ball. Bristol Shubunkins (5 inch): 1, 2 and 3, V. Cole; 4, V. Capaldi. Bristol Shubunkins (Novice): 1, 2 and 3, Mrs. L. Day; 4, Mrs. M. Mildon. Bristol Shubunkins (Matched Pairs): 1, T. Ball; 2 and 4, V. Cole; 3, G. Bell. Fantails (Metallic): 1 and 2, V. Capaldi; 3 and 4, R. Bennett. Fantails Calico: 1 and 2, R. and P. Hodgkinson; 3, L. Day. Veiltails: 1 and 2, B. Rothwell; 3 and 4, J. Day. Orandas (Self Red and Calico): 1, D. Lord and W. Gregory; 2, S. Howells; 3 and 4, J. Day. Orandas (Red Cap, Chocolate, Blue): 1, G. Bell; 2, D. A. Brooks. Moors: 1, 2, 3 and 4, W. Ramsden. Pearlscales, Jikins, Tosakins: 1 and 2, Mrs. M. Dudley; 3, T. Jacques. Lionheads: 1, R. Pinnock; 2 and 4, V. Capaldi; 3, J. Pollard. Bubble Eyes, Celestials, Pom-poms, Telescopes: 1 and 2, D. Lord and W. Gregory; 3, R. Speaks; 4, L. R. Amos. A.O.V. Fancy Goldfish, A.O.V. Variegated: 1, D. Lord and W. Gregory; 2 and 4, Mrs. J. Amos; 3, P. Norman. A.O.V. Goldfish (Novice): 1 and 2, Mrs. M. Mildon; 3, D. Garland; 4, A. Hughes. Bristol Shubunkins (bred '81): 1 and 2, P. Davies; 3 and 4, V. Cole. Veiltails (bred '81): 1, J. Day; 2 and 4, B. Rothwell; 3, V. Cole. Orandas (bred '81): 1 and 3, J. Day; 2 and 4, G. Smith. Moors (bred '81): 1, 2, 3 and 4, W. Ramsden. Lionheads (bred '81): 1, 2 and 3, R. and P. Hodgkinson; 4, D. Paul. A.O.V. Goldfish (bred '81): 1, 2 and 3, D. Lord and W. Gregory; 2 and 4, J. R. Amos. Team of 4, Bristol Shubunkins (bred '81): 1, 2 and 4, V. Cole; 3, B. Rothwell. Team of 4, Veiltails, Orandas, Moors (bred '81): 1, 3 and 4, W. Ramsden; 2, V. Cole. Team of 4, A.O.V. Goldfish (bred '81): 1, 3 and 4, R. and P. Hodgkinson; 2, D. Paul. Bitterling, Sunfish, Basses: 1, G. Kuchanny; 2, C. Hayes; 3 and 4, C. Packer. Orfe, Tench, Rudd, Carp: 1, J. Mildon; 2, G. Kuchanny; 3, J. Day. Minnows, Sticklebacks, Eels, Loaches, etc.: 1, C. Packer; 2, G. Kuchanny. Koi (9 in. limit): 1 and 3, J. Mildon; 2, G. Smith; 4, S. Lloyd. Koi: 1, 3 and 4, Mrs. J. Matthews; 2, A. Cole.

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THE spectacular Class M which has become something of a hallmark at **Salisbury A.S.** in recent years, again stole the limelight when the Society held their annual open show on 6 September. Although the entry in the A.O.V. Egglayer class was not especially large, the fish that were benched proved the greatest crowd-pullers on the day. The class was won by Salisbury member John Hoare

with his rare Freshwater Dragonfish (*Gobus brasiensis*), but the same exhibitor's 20-inch Snakehead failed to make the cards. The Dragonfish also won the coveted "Best in Show" award, making it the third year on the trot that the top prize has gone to a member of the host club. The FBAS Championship award for Rasboras was won by Tonbridge member, Mr. A. Feast, with a Rasbora sarawakensis, runners-up being N. Jackson and D. Goss of Reading. Best Pairs title went to Bournemouth's Mrs. Iris Bebb with a pair of *Hasemaniaa hanroni* pencilfish, best breeders award to A. Chaplin, of Basingstoke, with a team of *Livela nigrofasciata*. Total entry at the show was 387, which was 99 down on the 1980 figure, but the organisers were delighted with the standard of exhibit and extend their thanks to the nine judges, who got through their work so quickly and uncontroversially! A total of 17 clubs competed; Salisbury coming out best by winning seven classes, with Portsmouth next on six, Havant with four, and three apiece for Bournemouth, Newbury and Yeovil. Best supported classes were E, G, H and J, all of which attracted more than 20 entries. Salisbury's secretary, Mr. Des Adams, won the Mike Glossop Trophy for emerging as the most successful member of the host club.

Key: S—Salisbury; N—Newbury; R—Reading; Br—Bracknell; Po—Portsmouth; B—Bournemouth; D—Dorchester; Na—Nailsea; Bl—Havant; LC—Leigh Community; NW—North Wilts; T—Tonbridge; Y—Yeovil; Ba—Basingstoke; Pe—Petersfield; C—Chard.

Class Ba: 1, and 2, R. F. Adams (S); 3, F. Cripps (N). B: 1, R. F. Adams (S); 2, 3, and 4, D. Goss (R). Ca: 1, and 4, O. Kerr (S); 2, J. Handley (P); 3, S. Norris (Br). Cb: 1, and 4, N. Jackson (R); 2, D. Goss (R); 3, Mrs. I. Bebb (B). C: 1, and 2, J. Handley (P); 3, D. Ford (Br); 4, B. Symes (D). Da: 1, S. Tibbenham —; 2, A. Chaplin (Ba); 3, Mrs. P. Cripps (N); 4, J. Hill (S). Db: Mrs. I. Bebb (B); 2, P. Fincham (Na); 3, D. Symes (D); 4, S. Norris (Br). Dc: 1, W. Knight (H); 2, D. Eidlestein (S); 3, and 4, B. Symes (D). D: 1, W. Knight (H); 2, F. Cripps (N); 3, R. Bartlett (LC); 4, P. Taylor (NW). Ea: 1, A. Feast (T); 2, R. Forward (Y); 3, D. Brown (P); 4, P. Handley (P). B: 1, Mrs. P. Cripps (N); 2, D. Cox (Y); 3, S. Norris (Br); 4, R. F. Adams (S). F: 1, and 3, R. Bond (Y); 2, J. Handley (P); 4, M. Foster (B). G: 1, W. Knight (H); 2, and 4, A. Brown (P); 3, Mrs. I. Bebb (B). H: 1, and 4, P. Handley (P); 2, W. Knight (H); 3, R. F. Adams (S). J: 1, A. Feast (T); 2, N. Jackson (R); 3, and 4, D. Goss (R). K: 1, V. Hunt (P); 2, Mr. and Mrs. A. Vallance (D); 3, R. Biggs (D); 4, N. Jackson (R). L: 1, F. Cripps (N); 2, W. Brown (LC); 3, A. Feast (T); 4, D. Brown (P). Ma: 1, Mrs. I. Bebb (B); 2, A. Feast (T); 3, D. Cox (Y); 4, H. Brown (P). Mc: 1, J. Hoare (S); 2, W. West (S); 3, Mrs. I. Bebb (B); 4, A. Feast (T). Nb-a: 1, Mrs. I. Bebb (B); 2, Mr. and Mrs. A. Vallance (D); 3, E. Binstead (P); 4, P. Fitchett (Na). Nc-t: 1, R. F. Adams (S); 2, E. Pankhurst (Br); 3, D. Goss (R); 4, A. Chaplin (Ba). Q: 1, J. Crockford (Pe); 2, D. Cox (Y); 3, M. Taylor (NW); 4, Master Cox (Y). P: 1, 3, and 4, D. Cox (Y); 2, Mrs. I. Bebb (B). Q: 1, E. Gray (C); 2, Mrs. P. Cripps (N); 3, M. Taylor (NW); 4, J. Crockford (Pe). R: 1, and 4, Mrs. P. Cripps (N); 2, P. Stevens (Br); 3, P. Handley (P). S: 1, and 2, M. Taylor (NW); 3, Mrs. I. Bebb (B); 4, P. Fitchett (Na). T: 1, and 2, D. Eidlestein (S); 3, F. Cripps (N); 4, J. Crockford (Pe). Uad: 1, W. Knight (H); 2, 3, and 4, R. F. Adams (S). Ubc: 1, and 3, D. S. Langdon (Y); 2, R. F. Adams (S); 4, E. Binstead (P). Va-g: 1, E. Binstead (P); 2, M. Sheldrake (S). V: 1, E. Binstead (P). Wc: 1, E. Binstead (P). W: 1, and 4, S. Norris (Br); 2, and 3, V. Hunt (P). Xb-m: 1, P. Fitchett (Na); 2, and 3, H. Brown (P); 4, T. Cockett (Br). Xo-t: 1, A. Chaplin (Ba); 2, Mrs. I. Bebb (B); 3, N. Jackson (R); 4, M. Foster (B). Xu-w: 1, R. F. Adams (S); 2, and 3, W. West (S).

EAST

RESULTS of **Wellingborough and District A.S.** open show: Class B: 1, R. Bryan; 2, M. Craddock; 3, R. Stanforth; 4, Mr. and Mrs. Sutton. Ba: 1, E. Davies; 2, P. Bradley; 3, J. Ellingford. C: 1, J. Partt; 2, P. Moye; 3 Mrs. C. Wainwright; 4, P. and J. Robinson. Ca: 1, E. Davies; 2, J. Partt; 3 and 4, Mrs. C. Wainwright. Cb: 1 and 2, E. Davies; 3 and 4, Margaret Henderson. D: 1, Martin Wright; 2, J. Partt; 3, N. F. Campbell; 4, M. Such. Db: 1, J. Ellingford; 2, Steve Delaney; 3, P. Chapman; 4, R. Stanforth. E: 1 and 3, P. Moye; 2, Mr. H. Johnson; 4, R. Stanforth. Ba: 1, Tony Ward; 2, M. and B. Coe; 3 P. and J. Robinson; 4, H. Johnson. F: 1 and 2, H. Johnson; 3 and 4, J. Ellingford. G: 1, H. Johnson; 2, J. Partt; 3, E. Davies; 4, M. Rubenser. H: 1 and 2, P. Moye; 3, H. Johnson; 4, P. and J. Robinson. J: 1, J. Partt; 2, E. Davies; 3 and 4, A. Brown. K: 1, P. Moye; 2 and 3, W. Hastings; 4, Mr. and Mrs. Sutton. L: 1, Tony Ward; 2, Mr. and Mrs. Sutton; 3, P. Chapman; 4, M. Wright. M: 1 and 2, P. Chapman; 3, E. Davies; 4, H. Johnson. NBM: 1 and 2, E. Davies; 3, M. Such; 4, H. Johnson. NOT: 1, J. Partt; 2, E. Davies; 3, P. Chapman; 4, Mr. and Mrs. Sutton. O: 1, 3 and 4, Mr. and Mrs. Sutton; 2, J. Partt. P: 1, R. Stanforth; 2, A. Brown; 3, J. Partt; 4, M. Craddock. Q: 1, N. Craddock; 2, P. and J. Robinson; 3, R. Stanforth; 4, F. Chapman. R: 1, P. Moye; 2, Mrs. C. Wainwright; 3, Ann Chapman; 4, R. Vickers. S: 1, Mr. and Mrs. Sutton; 2, H. Johnson; 3, F. Chapman; 4, R. Vickers. T: 1 and 4, M. Craddock; 2, Mr. and Mrs. Sutton; 3, N. Craddock. U: 1, R. Vickers; 2, Nicola Ellingford; 3 and 4, Stuart Vickers. W: 1, A. Barton; 2, F. Chapman; 3, Ann Chapman; 4, Genny Parker. XOT: 1 and 2, R. Vickers; 3 and 4, R. Bryan. XBM: 1, P. and J. Robinson; 2, Mrs. C. Wainwright; 3, M. Such; 4, A. Brown. Best Fish in Show: E. Davies, Class Cb, Nan Equus.

MIDLANDS AND WALES

AT the last meeting of **Forest Town Show Society** the new officials elected were: Secretary, Mr. M. A. Hollingworth, 9 Vesper Court, Forest Town, Mansfield, Notts. NG19 0AN (Tel: Mansfield 647495); Chairman, Mr. A. Smith; Treasurer, Mrs. A. Smith. The Society meets at "White Gates" Public House, Clipstone Road, East, Forest Town, Mansfield, Notts. The next meeting is Thursday, 7th January, 1982 at 7.30 p.m. and every fortnight from then on.

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RESULTS of **Castle Ichthyologist A.S.** member's Show:—Class C: 1, M. Thomas; 2, K. P. Davies; 3, L. Gregory; 4, Bowyer/Nelder. E: 1, and 2, K. P. Davies; 3, S. W. Ouseley; 4, Bowyer/Nelder. H: 1, K. Harris; 2, and 4, S. W. Ouseley; 3, L. Gregory. L: 1, S. W. Ouseley; 2, and 3, Bowyer/Nelder. N.B.M.: 1, and 2, Bowyer/Nelder; 3, M. Thomas; 4, L. Gregory. O: 1, and 3, Bowyer/Nedler; 2, and 4, M. Thomas. S: 1, F. Spink; 2, and 3, K. P. Davies; 4, Bowyer/Nelder. B.M.Y.: 1, Bowyer/Nelder Jnr; 2, D. Johnson; 3, P. Merrior; 4, S. E. L. Thomas. O.T.Y.: 1, Bowyer/Nelder Jnr.; 2, S. E. L. Thomas; 3, and 4, D. Johnson. Best Junior: Bowyer/Nelder Jnr. Best Senior: K. P. Davies. Judges were Mr. W. G. Best and Mrs. M. Davies. Total of entries, 73 fish. The slide lecture was by Mr. Colin Turner.

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Gloucester A.S. held its a.g.m. at Chequers Bridge Centre, Gloucester. Officer for the Society elected: chairman, Mr. R. Young; vice-chairman, Mr. J. Sparey; treasurer, Mrs. T. Tapping; secretary, T. Tapping, 66 Blenheim Road, Gloucester; committee members, R. Clark, D. O'Connor, F. Frost. Aquarist of the year: 1, R. Young; 2, P. King; 3, T. Tapping; 4, D. O'Connor. Junior aquarist of the year: 1, P. King; 2, A. Frost; 3, N. Frost; 4, C. Sparey. Champion of champions: 1, T. Tapping; 2, P. Frost; 3, R. Young; 4, F. Frost. Trophies were presented by the retiring secretary, Mrs. P. Grainger. Champion of champions judged by Mr. S. Grainger. A short talk was given by Mr. R. Young on the subject of open shows. Details of the society trip to London Zoo were also discussed. The newly elected committee is now working on a programme of society activities for the forthcoming year. The society meets at 8 p.m. on the 1st Tuesday of each month at the Chequers Bridge Centre, Painswick Road, Gloucester, where new members will be welcome.

NORTH

Oldham & District A.S. open show results: Guppies: 1, A. E. Berry (Bridgewater); 2, M. Collins (Leigh); 3, G. Barlow (Accrington); Mollies: 1, M. I. Crowther (Nelson); 2, J. Roberts (Nelson); 3, D. Meadows (Leigh). Swordtails: 1, M. I. Crowther; 2, L. Penney (St. Helens); 3, K. Corbett (Merseyside). Platies: 1, Mr. and Mrs. J. Riley (Leeds P.O.); 2, A. Bibby (Sandgrounders); 3, Mr. and Mrs. White (Bury). A.O.V. (Livebearers): 1, J. Corbett; 2, E. and B. Calow (Bridgewater); 3, Mr. and Mrs. Underwood (Bridgewater). Anabantids: 1, Mr. and Mrs. Underwood; 2, A. Darby (Pisces); 3, R. W. Carter (St. Helens). Fighters: 1 and 2, Mr. and Mrs. J. Riley; 3, Mr. and Mrs. Toombs (Wythenshawe). Small Barbs: 1, E. Coope (Oldham); 2, Mr. and Mrs. Goddard (Macclesfield); 3, Mr. and Mrs. Underwood. Large Barbs: 1, Mr. and Mrs. Stevenson (Oldham); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, J. Lynch (Merseyside). Dwarf Cichlids: 1 and 2, Mr. and Mrs. Underwood; 3, Mr. and Mrs. Briers (Blackpool). Large Cichlids: 1, Mr. and Mrs. Briers; 2, Mr. and Mrs. Underwood; 3, P. Stanhope (Fleetwood). Angels: 1 and 2, Mr. and Mrs. Stevenson; 3, E. Coope. Rift Valley Cichlids: 1, Mr. and Mrs. Underwood; 2, A. Toombs; 3, Mr. and Mrs. White. Small Characins: 1, E. and B. Calow; 2, Mr. and Mrs. A. L. Morris (Sandgrounders); 3, R. W. Carter. Large Characins: 1, E. and B. Calow; 2, Mr. and Mrs. Underwood; 3, Mr. and Mrs. Baldwin. Rasboras: 1, R. I. Payne (Merseyside); 2, J. Corbett; 3, M. and D. Hartley (Sandgrounders). Danios: 1, Mr. and Mrs. Baldwin; 2, J. Lynch (Merseyside); 3, K. Corbett. Minnows: 1, I. Tomlinson (Macclesfield); 2 and 3, Mr. and Mrs. Baldwin. Breeders (Egglayers) 'D': 1, Mr. and Mrs. Hulse (Oldham); 2, M. and D. Hartley; 3, W. Drake (Bury). Breeders (Livebearers) 'C' and 'D': 1, A. E. Berry; 2, Mr. and Mrs. Baldwin; 3, J. Corbett. Breeders (Livebearers) 'A' and 'B': 1, 2 and 3, Mr. and Mrs. Chadwick (Oldham). Pairs (Egglayers): 1, Mr. and Mrs. Underwood; 2, E. Coope; 3, R. W. Carter. Pairs (Livebearers): 1, M. and N. Rimmer (Sandgrounders); 2, J. Corbett; 3, Mr. and Mrs. Underwood. A.O.V. (Tropical): 1, J. T. Morris (Sandgrounders); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. A. L. Morris. Mini Jars (Furnished): 1, 2 and 3, Mr. and Mrs. Stevenson. Goldfish and Comets: 1, Mr. and Mrs. Chadwick; 2, Mr. and Mrs. Colley (Oldham); 3, Mr. and Mrs. Underwood. Shubunkins: 1, A. E. Berry (Bridgewater); 2, C. Wallbank (Accrington); 3, Mr. and Mrs. Casey (Blackpool). Sharks: 1, Mr. and Mrs. Stevenson; 2, Mr. and Mrs. Underwood; 3, R. I. Payne. Flying Foxes: 1 and 2, Mr. and Mrs. Stevenson; 3, Mr. and Mrs. Kenyon (Sandgrounders). Toothcarps: 1 and 2, E. Jones (Atherton); 3, E. Birchwood (Oldham). Corydoras: 1, Mr. and Mrs. Baldwin; 2, Mr. and Mrs. Kenyon; 3, J. T. Morris. A.O.V. Catfish: 1, 2 and 3, J. T. Morris. Loaches and Botias: 1, Mr. and Mrs. Underwood; 2, Mr. and Mrs. Hulse; 3, Mr. and Mrs. Baldwin. Breeders (Egglayers) 'A': 1, K. Corbett; 2, R. Scoltock (Oldham). Breeders (Egglayers) 'B': 1 and 2, E. Jones (Atherton). Breeders (Egglayers) 'C': 1, Mr. and Mrs. Hulse; 2, Mr. and Mrs. Briers; 3, E. and B. Calow. Fantails: 1 and 3, Mr. and Mrs. Underwood; 2, Mr. and Mrs. Colley. Veiltails: 1, Mr. and Mrs. Colley; 2, B. Frost (Fleetwood). Lionheads: 1, S. Walsh (Accrington); 2, V. Beanis (Ind.). Moors 1, Mr. and Mrs. Chadwick (Oldham); 2, Mr. and Mrs. Colley; 3, Mr. and Mrs. Casey (Blackpool). Orandas: 1 and 3, Mr. and Mrs. Colley; 2, Mr. and Mrs. Williamson (Leigh); A.O.V. Fancy Goldwater: 1, Mr. and Mrs. Colley. A.O.V. Asian or U.S.A. Goldwater: 1, S. Walsh;

2, Mr. and Mrs. Colley; 3, B. Frost. A.O.V. European (Coldwater): 1, A. E. Berry; 2, C. Wallbank; 3, B. Frost. A.V. Marine: 1 and 2, B. Leylands (St. Helens); 3, F. Banks (St. Helens).
Entries were up on last year with a total of 480. The Society would like to thank all who donated towards the prizes, and the competitions and public who supported the show. Best fish in show went to Mr. E. Jones (Atherton) with a Cynolebias nigripinnis.

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THE **Bridgewater A.S.** are holding a non-profit making dance on Friday 6th November to coincide with the British Aquarist festival at Belle Vue. This is to enable aquarists from societies throughout the country to get together for a social evening. The venue is at Farnworth, half a mile from Manchester motorway network and on an overnight bus route to the city centre. For further information tel: Farnworth (0204) 705031. Roger Free 17 Windermere Road, Farnworth, Bolton BL4 0QH.

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RESULTS of **Bridgewater Aquarist** Open Show—Guppies: 1, and 2, K. Buckley (Bridgewater); 3, A. Slater (Blackpool). Swordtails: 1, M. and L. Crowther (Nelson); 2, Mr. and Mrs. Hands (Accrington); 3, K. Corbett (Merseyside). Mollies: 1, M. and L. Crowther; 2, M. Laverty (Sandgrounders); 3, Mr. and Mrs. Baldwin (Sandgrounders). Platies: 1, E. and B. Calow (Bridgewater); 2, A. Darby (Phoenix); 3, B. W. Carter (St. Helens). A.V.O. Livebearer: 1, J. Corbett (Merseyside); 2, Mrs. S. Underwood (Bridgewater); 3, E. and B. Calow. Small Anabantids: 1, A. and J. Slater (Blackpool); 2, A. Darby; 3, R. Birchwood (Oldham). Large Anabantids: Mr. and Mrs. Underwood; 2, M. Hardley (Sandgrounders); 3, S. Talyor (Fleetwood). Fighters: 1, A. and J. Slater (Blackpool); 2, F. and M. Watts (Independant). Small Cichlids: Mr. and Mrs. Underwood; 2, Master G. Batough (Sandgrounders); 3, L. Fountain (Runcorn). Large Cichlids: 1, and 2, Mr. and Mrs. Underwood; 3, S. Davids (Bridgewater). Angels: 1, K. Buckley (Bridgewater); 2, Mr. and Mrs. Stephenson (Oldham); 3, Miss R. Carter (St. Helens). Rift Valley: 1, and 2, Mr. and Mrs. Norton (Sandgrounders); 3, Master G. Batough. Small Barbs: 1, Mr. and Mrs. Goddard (Macclesfield); 2, F. and A. Hopwood (Darwen); 3, Mr. and Mrs. Baldwin. Large Barbs: 1, Mr. and Mrs. Baldwin; 2, Mr. and Mrs. Underwood; 3, J. Kidd (Macclesfield). Small Characins: 1, Mr. and Mrs. Baldwin; 2, Master G. Batough; 3, B. W. Carter (St. Helens). Large Characins: 1, Mr. and Mrs. Baldwin; 2, E. and B. Calow; 3, F. Slater (Blackpool). Killifish: 1, F. and A. Hopwood (Darwen); 2, K. Buckley; 3, Mr. Parkinson (Skelmersdale). Rasboras: 1, F. and A. Hopwood; 2, J. Corbett (Merseyside); 3, Mr. and Mrs. Stephenson (Oldham). Danios: 1, Mr. and Mrs. Baldwin; 2, A. and E. Berry (Bridgewater); 3, A. Cook (Buxton). Minnows: 1, and 3, Mr. and Mrs. Underwood; 2, Mr. and Mrs. Baldwin. Corydoras and Brochis: 1, Mr. and Mrs. Baldwin; 2, J. T. Morris (Sandgrounders); 3, Mr. and Mrs. Underwood. Loaches: 1, Mr. and Mrs. Baldwin; 2, and 3, Mr. and Mrs. Underwood. A.O.V. Catfish: 1, 2, and 3, J. T. Morris. Sharks: 1, Mr. and Mrs. Underwood; 2, Mr. and Mrs. Stephenson; 3, L. Fountain. Flying Foxes: 1, Mr. and Mrs. White (Bury); 2, K. Buckley; 3, A. J. Slater. Breeders (A and B) (Egg layers): 1, K. Buckley; 2, K. Corbett; 3, R. Scolock (Oldham). Breeders (C and D) (Egg layers): 1, and 2, J. T. Morris; 3, Mr. and Mrs. Briers (Sandgrounders). Breeders (Livebearers): 1, J. Corbett; 2, and 3, A. and E. Berry. Pairs (Egg layers): 1, Mr. and Mrs. Underwood; 2, and 3, B. W. Carter. Pairs (Livebearers): 1, J. Corbett; 2, and 3, Mr. and Mrs. Underwood. A.V.O. Tropical: 1, Mr. and Mrs. Baldwin; 2, L. Fountain. Junior Livebearer: 1, Miss J. Baldwin (Sandgrounders); 2, L. and M. Buckley; 3, K. Corbett (Merseyside). Junior Egg layers: 1, Miss J. Baldwin; 2, Miss S. Jones (St. Helens); 3, D. Hartley (Sandgrounders). Common Goldfish: 1, Master Chadwick (Oldham); 2, Mr. and Mrs. Underwood; 3, L. Fountain. Shubunkins: 1, A. and E. Berry; 2, Mr. Platt (Bolton DPK); 3, Mr. J. Crowther (Nelson). Fantails: 1, C. Wallbank (Accrington); 2, Mr. and Mrs. Underwood; 3, C. H. Whitney (Accrington). Veiltails: 1, B. Frost (Fleetwood); 2, C. H. Whitney (Accrington). Moors, Orandas and Lionheads: 1, S. Walsh (Accrington); 2, Mr. and Mrs. Weaver (Independent); 3, Mr. and Mrs. Williamson (Leigh). A.V.O. Coldwater: 1, S. Walsh (Accrington); 2, A. and E. Berry; 3, C. Wallbank (Accrington). Marines: 1, 2, and 3, F. Banks (St. Helens). Mini Jars: 1, F. and A. Hopwood; 2, Mr. and Mrs. Stephenson; 3, Mr. and Mrs. White.

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Huddersfield Tropical Fish Society 19th open show was held on 6th September. Entries totalled 416. Results: Guppies: 1, Mr. and Mrs. P. Hovell (A&D); 2, Mr. and Mrs. Farrow (Worksop); 3, Mr. and Mrs. Starbuck (Castleford). Mollies: Mr. and Mrs. Brackenbury (Ashby Fishkeepers); 2, A. Marples (A&D); 3, R. M. Smithurst and Son (A&D). Swordtails: 1, Mr. and Mrs. Fawcett (York); 2, M. Johnson (Forest Town); 3, Mr. and Mrs. Wall (Barnsley). Platies: 1, Mr. and Mrs. Wall; 2, Mr. and Mrs. P. Hovell; 3, F. S. Draycott and Sons (A&D). A.O.V. Livebearer: 1, F. S. Draycott and Sons; 2, Mr. and Mrs. M. Farrow; 3, F. S. Draycott and Sons. Small Characins: 1 and 3, Miss J. Lee (2nd.); 2, P. Lane (Hallcroft). Large Characins: 1, R. M. Smithurst and Son (A&D); 2, R. Gatenby (Bradford); 3, Mr. and Mrs. Colley (Ashby Fishkeepers). Small Barbs: 1, A. Marples (A&D); 2, N. Turner (Halifax); 3, Mr. and Mrs. Farrow. Large Barbs: 1, Mr. and Mrs. I. Sykes (Hudds.); 2, A. Marples; 3, N. Turner (Halifax). Danios: 1, Mr. and Mrs. P. Hovell; 2, Miss L. Mottershead (Bradford); 3, M. Chadwick (Doncaster). Rasboras: 1, E. Mottershead (Bradford); 2, Miss J. Lee; 3, R. Gatenby (Bradford). A.O.V. Killifish: 1, R. Brown (Bradford); 2, L. and M. Price (Castleford); 3, D. Clark (Bradford). A.O.V. Aphyosemion: 1, D. Gibson (Hudds.); 2, F. S. Draycott and Sons; 3, H. Ackroyd (Doncaster). Angels: 1, Mr. and Mrs. Starbuck (Castleford); 2, J. Rhodes (Otley); 3, R. M. Smithurst and Son. Dwarf Cichlids: 1 and 3, M. and L. Price; 2, R. M. Smithurst and Son. Large Cichlids: 1, K. M. Fisher (Forest Town); 2, T. Standfield (Leeds P.O.); 3, Mr. and Mrs. Silk (Sheaf Valley). Rift Valley Cichlids: 1, L. and M. Price; 2, M. Hollingworth (Forest Town); 3, R. M. Smithurst and Son. Small Anabantids: 1 and 2, R. M. Smithurst and Son; 3, Mr. and Mrs. D. Penny (Doncaster). Fighters: 1, Mr. and Mrs. Fawcett (York); 2, F. S. Draycott and Sons; 3, P. Lane (Hallcroft). Large Anabantids: 1 and 2, Mr. and Mrs. P. Hovell; 3, Mr. and Mrs. Kenworthy (Otley). Corydoras and Brochis: 1, Mrs. G. Marples (A&D); 2, F. S. Draycott and Sons; 3, Mr. and Mrs. P. Hovell. A.O.V. Catfish: 1, K. M. Fisher (Forest Town); 2, Mr. and Mrs. D. Penny; 3, Mr. and Mrs. W. Wright (Darfield). Loaches and Botias: 1 and 2, Mr. and Mrs. P. Hovell; 3, R. M. Smithurst and Son. Shark and Foxes: 1, Miss J. Lee; 2, E. Mottershead (Bradford); 3, Mr. and Mrs. P. Hovell. A.O.V. Tropical—15 cm: 1, Mr. and Mrs. J. Riley (Leeds P.O.); 2, Mr. and Mrs. P. Hovell (A&D); 3, Mr. and Mrs. Ashton (Wyke). A.O.V. Tropicals (over 15 cm): 1, Mr. and Mrs. Scott (Ind.); 2, Mr. and Mrs. P. Hovell; 3, Mr. and Mrs. D. Penny. Breeders (Live) A and B: 1, Sutton and Harris (Barnsley); 2, Miss J. Lee; 3, Mr. and Mrs. Fawcett. Breeders (Live) C and D: 1, P. Lane (Hallcroft); 2, Mr. and Mrs. Fawcett (York); 3, M. Johnson (Forest Town). Breeders (Egglayers) A and B: 1, Mr. and Mrs. N. Bolton (Pocklington); 2 and 3, F. S. Draycott and Sons (A&D). Class 30: 1, M. and L. Price; 2, Mr. and Mrs. N. Bolton; 3, Mr. and Mrs. Wall (Barnsley). Pairs Live: 1, F. S. Draycott and Sons; 2, P. Lane; 3, Miss J. Lee. Pairs Egg: 1, R. M. Smithurst and Son; 2, Miss J. Lee; 3, M. and L. Price. Common Goldfish and Comets: 1, Mr. and Mrs. K. Allard (A&D); 2, Sutton and Harris (Barnsley); 3, Mr. and Mrs. Silk. Fancy Goldfish: 1 and 3, B. Brook (Hudds.); 2, Mr. and Mrs. Silk. A.O.V. Coldwater: 1 and 3, Mr. and Mrs. Silk; 2, P. Lane. Furnished Jar: 1, 2 and 3, Mr. and Mrs. Brackenbury (Ashby Fishkeepers). Novelty: 1 and 2, Mr. and Mrs. Brackenbury; 3, K. Lancashire (Doncaster). Furnished Tank: 1, Mr. and Mrs. Brackenbury; 2, Mr. Ainger (Hudds.); 3, Mrs. V. Farrow (Worksop). Best in Show: F. S. Draycott and Sons (A&D) with A.O.V. Livebearer: Gambusia Marsh. Best Exhibit: P. Lane (Hallcroft).

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ON 2nd September **Accrington and District A.S.** held their leg of the inter-club Churchill Trophy which is contested by Accrington, Blackpool and Lytham Societies. There was a large attendance from all three clubs. Best in show was an angel fish owned by J. Holding of Accrington. Results: Angels: 1, J. Holding (Acc); 2, Mr. Slater (Bl); 3, Mr. Ham (Ly). Large barbs: 1, J. Roberts (Acc); 2, Mr. Hardley (Ly); 3, I. Saunders (Bl). Swordtails: 1, Mr. Slater (Bl); 2, Mr. Ham (Ly); 3, P. Hands (Acc). Pairs: 1, Mr. Slater (Bl); 2, Mr. Whitney (Acc); 3, Mr. Townsend (Ly). Guppies: 1, Mr. Slater (Bl); 2, I. Haworth (Acc); 3, Mr. Ham (Ly). Mollies: 1, Mr. Cooke (Bl); 2, Mr. Whitaker (Ly); 3, J. Roberts (Acc). Fantails: 1, C. Whitney (Acc); 2, Mr. Slater (Bl); 3, Mr. Whitaker (Ly). Breeders: 1, Mr. Townsend (Ly); 2, J. Roberts (Acc); 3, Mr. Slater (Bl). On 7th October there will be an open night at the "Blockade Hotel", Accrington.

Dates for the diary

A monthly information column to keep you up to date on forthcoming events.

NOVEMBER

1st November: Halifax A.S. open show. Benching 12-2 p.m. Schedules (s.a.e. please) from Mrs. M. Swales, 34 Eastwood Avenue, Bradshaw, Halifax. (Tel. Halifax 248069).

7th 8th November: British Aquarists Festival at Belle Vue, Manchester Details and schedules from John Hall, 54a Carr Road, Calverley, Pudsey LS28 5RU

8th November: Bradford and District A.S. open show at Textile Hall, Westgate, Bradford. Details and schedules can be obtained from the show secretary. Mr. A. D. Fisher, 2 Sherbourne Road, Idle, Bradford (Tel: Bradford 614160).

15th November: Essex & East of London A.S. 1st Convention. Speakers: Ian Sellick (Cichlids); Mike Sandford (Pond Life); Joe Linale (Coldwater); and a speaker from the Characin Society. To be held at St. Augustine's Church Hall, Birbeck Road, Rush Green, Romford. Tickets: £1·00 (s.a.e. please), available from Dave Henman, 1 Windmill Meadows, Aythorpe Roding, Dunmow, Essex.

15th November: Bradford and District A.S. have changed the date and the venue of their Open Show to Sunday 15th November, at Clayton Village Hall, Reverside Road, Clayton, Bradford. This is due to a fire at the former venue. Details can be obtained from the Show Secretary Mr. A. D. Fisher, 2 Sherborne Road, Idle, Bradford (Tel: Bradford 614160).

16th November: The Southern Area Group of the Catfish Association of G.B. are holding an informal open evening. Non-Members are welcome and refreshments will be provided. 8 p.m., at St. Richard's Church Hall, Egmont Road, Hove. Further details from Mike Cooke, (Brighton 739019 daytime).

21st November: Goldfish Society of Great Britain general meeting, 2 p.m., Conway Hall, Red Lion Square, Holborn, London.

28th November: CAGB Convention: (Speakers—Dr. Keith Banister (BMNH), "Catfish Anatomy" and "The Zaire Expedition"; Ian Fuller, "Breeding Corydoras". To be held at Aylward Lower School, Windmill Road, Edmonton London N18. Tickets priced £1·50, £2·00 to non-members and are available from S. Pritchard, 12 Widgeon Way, Watford, Herts WD2 4RG.