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THE AQUARIST AND PONDKEEPER

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THE POND SAGA (2)

by Roy Pinks



MY DE-PLANTING of the big pool had reached the point, after about a week's work in the evenings, where the water lilies would have to be tackled. These, esconced in the truly murky depths of the original pond, were difficult to get at—I had thus far worked in the shallows—and the highly slippery surface of the pool lining, which had attracted a particularly vile alga, threatened constantly to hasten my downfall. It should be said that black mud is not, at close quarters, anything like the horror it is made out to be, and I gradually got used to it. By contrast, neither my family nor my friends saw it quite that way, and I sensed a certain alienation as the project progressed. For this reason I was against total immersion in the fiery brew and had to devise some form of platform on which to operate against the deeper rooted subjects. A portable loft ladder and some wooden boards eventually enabled me to straddle the pool: the ladder was laid against the far side, with its metal feet several linear feet into the shallows, and this made a safe-feeling and portable base for the next phase of the clean-up.

There were three varieties of lily. One, unknown, a large and thrusting white; Graziella, a charming

coppery red, on the small side, with beautiful marbled reddish leaves and Rene Gerard, a pinkish-red of medium vigor, with self coloured leaves. Their spread was becoming embarrassing, even in the case of Graziella, and it was mainly a case of pulling off great lengths and sawing off suitable units to form nuclei for further planting. A problem which besets every pool refurbish is what is to happen to all the displaced plants. The usual advice is to cover them with wet sacking, and to water this regularly until the pool is ready for refilling. The only difficulty about this is that if you choose, as I did, a period during which the temperature reached the eighties every day, even the most conscientious attention will not prevent serious drying of the leaves and the tubers. I therefore chose a number of selected segments and put them temporarily into the Nursery pool, into which almost everything else was gradually finding its way. The remainder, too precious to throw away in view of the high cost of lilies, were grouped together on the nearest garden bed, watered, covered, and given a general blessing in the hope that they would survive their temporary indignity.

Perceptibly the surface of the blackened waters became uncluttered of foliage, and the next operation

"So it had to be a hand bailing job, first with buckets—



appeared to be the removal of the water. However, the discovery of flower pot after flower pot, together with numerous plastic crates suggested that there was a long list of hardware which took priority, and these oddments were gradually and painfully raised to the surface. All were dispossessed of the compressed routage which completely filled them, and they were quickly ready for re-use if needed. It was quite

remarkable that wooden orange crates which must have been in the water for ten years or more were still largely intact, though I would not now recommend their use other than in really extensive ponds, where emptying and refurbishing are not really practicable. They would seem to be ideal as lily crates on a "once and for all" basis, and only fall from grace where manhandling is necessary. For most pools, the modern

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—and later with shallower receptacles."

GOLDFISH BREEDING

SORTING THE FRY AND FEEDING

by Frank W. Orme

IN LAST MONTHS 'Coldwater Jottings' I devoted space to giving advice to the newcomer on the conditioning and spawning of goldfish. In this article I propose going a stage further by describing the necessary sorting of the young fishes, and their subsequent feeding.

It may well be that the fish have not yet presented the longed for spawning; however, this should cause no anxiety. March and April are the months during which most goldfish breeders plan to commence breeding their fishes, and this is quite early enough for the novice. In fact May—June still allows sufficient time in which to grow the season's young fishes to a reasonable size before the onset of the cold months. However, by presenting advice in advance, it ensures that guidance is available as required when the events occur.

Ample space

Essential, if the young are to make satisfactory growth, is the provision of ample space in which to develop and plenty of food in the correct size, quality, and proportion. Few amateurs could satisfy these requirements if they were to attempt to raise the entire hatching to maturity. Unfortunately, too many newcomers do try to raise too many fish in too little space. Whilst the very small fry can be greatly overcrowded there comes a time, and quite quickly, when the fishes will be adversely affected by being crowded—the rate of growth will be retarded at the very least. The obvious solution is to reduce the numbers, thus making more space and food available for those which are retained. It is normally the intention of the breeder to raise well grown fishes which, it is hoped, will be of at least equal quality to that of the parents. Therefore the youngsters are culled, in other words they are sorted for quality, thereby achieving the objectives of reducing the numbers and removing the less desirable specimens which are not worth rearing. In practice it will be found that the fancier the variety of goldfish the greater the number of rejects.

Culling

The initial sorting can be done without removing the small fry from the tank, and can commence shortly after they have become free-swimming. Make a small circular wire frame, about 2 inches in diameter, and stitch a piece of tightly stretched nylon stocking across it, this can then be attached to a handle for ease of use. Study the fry, and, with the net, remove any obviously bent or deformed young together with any that have difficulty in swimming. This routine can be attended to each day, until the fry have grown sufficiently for their tiny tails to be seen. At this stage they will be fractionally over a quarter of an inch in length and will need to be handled carefully as it will be necessary to remove them for closer inspection.

A white hand-bowl will be required in which to place the fry; two containers to hold the selected and rejected specimens separately; a fine-mesh flour sieve with which to catch the fry—an ordinary net would result in many being killed; the small net previously described; a magnifying glass and a pencil and paper with which to keep a count of the selected fry.

Place clean water, at the same temperature as that in the tank of fry, into the bowl and two containers. With the flour sieve carefully catch a few of the fry and gently transfer them to the white bowl. It will be seen that they show quite clearly against the white background of the bowl. Any malformed specimen should be removed with the small net to the reject container. The magnifying glass can then be used to inspect the young more closely. Again remove any apparently deformed fry that may have escaped the first inspection. If the fry are from singletail parents nothing more can be done at this stage, but, those from twintail parents must be studied much more closely.

Use the magnifying glass to intently study the tails; the tail of a twintail fry appears wedge-shaped. Remove all fish that have single tails. Only twintail fry should now remain and the tails of these must be

closely examined to ascertain whether they are divided; again carefully study the tails and remove any fish that does not show a tiny cleft, or split, in the centre of the rear margin of its tail. A joined, or webbed, tail will never split into two divided tails later and to keep such fish will only reduce the amount of space available for the better specimens.

Continue this sorting process, taking only a few fry each time, until the tank has been emptied and all of the fry have been graded into their respective containers of potentially good and those which are of no use; these latter poor quality specimens can be tipped into a tank of adult fishes where they will be greedily eaten as live-food. Place the container of retained fry in a safe place and turn your attention to their tank.

Tank preparation

The tank should be emptied and given a thorough cleaning, being sure to remove any strands of algae—these could grow sufficiently to form traps for the fry—after which it can be refilled with clean water. Be sure to adjust the temperature to equal that of the container of fry so that they are not chilled or otherwise subjected to a great difference in water temperatures. If more than one tank is available, it would be advantageous to prepare those also so that the fry can be divided between them. This will allow more growing space and encourage better growth. When the tanks are ready the fry can be returned. Use the small net to lift the fry from the container into the tank, making a note of the number each time. When all have been transferred the numbers can be totalled and recorded for future reference. During these early days it will be of benefit if the water temperature can be maintained at 70°F (20°C), because this will encourage the fish to eat well which, in turn, will help to promote a steady rate of growth. Poor growth at this stage of the fish's life reflect to a greater or lesser degree in the future development of the fish. A badly 'stunted' fish is unlikely to achieve normal growth or size later—which is another reason to avoid overcrowding.

Feeding

Feeding must now be on the basis of little and often, aiming to keep their tiny stomachs always filled—often they will eat so much that they will appear ready to burst. I am always pleased to see the fry swimming around with bulging bellies, it is proof that they are feeding well. Flat stomachs, on the other hand, give cause for concern; either the supply is not adequate or, for some reason, they are refusing to accept the food which is being given. Whatever the reason steps must be taken to remedy the fault; either increase the supply or change the food, perhaps to a smaller size. If feeding artificial foods make certain that none is left to rot; uneaten food should be siphoned out to prevent any possible chance of the water becoming polluted.

Suitable size

An ample supply of suitably sized foods is the 'order of the day' and this can be a diet of newly hatched brine shrimps, supplemented with micro worms and tiny, sifted *daphnia*. The growth rate of the fry should be sufficiently fast to allow them to be weaned off the expensive brine shrimps within a very short time. Grade the size of food to match the growth rate of the young fish. They can progress to slightly larger *daphnia*, well mashed white worms and sifted dried foods. Later they can be offered chopped white worms, crushed dried foods, *daphnia*, and so on. Always grade the food size in relation to the size of the mouth of the fish—if it is too large it may not be able to get its mouth around the food particle or, if it does, it may choke upon it. Do not give one single large feed; this will only lead to wastage. Feed small amounts often, at regular intervals; a counsel of perfection would be to feed at hourly intervals, but that is seldom possible for the average amateur. The alternative is to feed the dried foods, chopped white worms etc., whilst you are at home, and provide *daphnia* to sustain the fry at other times. The *daphnia*, being live, will not pollute the water; however, caution must still be exercised because they breathe the dissolved oxygen—as do the fish—therefore, too many will lead to a lowering of the oxygen content of the water. This can, of course be overcome to some extent by providing gentle aeration, but, if the supply of *daphnia* is not over-done aeration should not be necessary—in fact, I never use aeration in my hatching or fry tanks—but for the novice it could prove a safeguard for the fry.

Rapid growth

The youngsters can grow quite rapidly, under the right conditions. Notice, as they grow, how the fins develop and the shape of the body gradually changes its form until the baby becomes recognisable as a miniature fish. After a time the colours of the nacreous (calico) varieties will begin to appear; the scales of the metallic types will appear more easily seen as the light hits their small olive-coloured bodies. When the small fish have developed sufficiently for these features to be easily seen it will be time to subject them to a further sorting.

First study the nacreous types as they swim in their tank, and remove any that are obviously metallics—and there will probably be quite a few—because they will be unlikely to change colour from their drab olive unless one of the parents happened to be an orange coloured metallic. Next remove those with a pink, or whitish-pink, body and black button-eyes; these are matt types and few are likely to assume the sought-for multi-colours of the nacreous fish. Take time over this task, so that only the true young nacreous fish are left for further examination.

Nacreous fish

The remaining nacreous fish, and those from metallic parents, are now treated to similar critical inspection whilst still in their respective tanks. Closely examine the fins, paying particular attention to the dorsal fins. Remove any that exhibit a missing or deformed fin; sometimes the dorsal fin grows with a section missing or is incomplete in some other way. If, however, the young fish are from a variety which lacks a dorsal fin they must be checked to ensure that the back is clean; remove those that have any semblance of a dorsal fin, spike or spine which mars the dorsal contour.

Prepare the same equipment as used for the earlier cullings, and place a few of the fish into the white bowl. They should now be sufficiently well developed to make it a fairly easy matter to assess their bodies and tails.

Reject any specimen whose body appears to be slightly bent or curved. Use the magnifying glass to study the tails. Remove any singletail fish if the upper lobe of the tail is twisted or bent. Study the tails of the twintail types, keep only those which show a good division of the two tail sections. This should be based upon the length of the split, rather than the width of the split, because some varieties carry wider spread tails than others. Ideally, the division should

not be less than two-thirds of the length of the tail—if a veiltail type, the tail should be completely divided. Look closely at the length of the upper margin of the two fins. Occasionally one section is shorter than the other, this is a fault which will not rectify itself and the fish is better removed.

Severe cullings

Culling must be severe, or as is often said—ruthless. If there is any doubt about a fish, reject it! Only by being critically severe will the best specimens be retained. Many newcomers to goldfish breeding will be loath to act so ruthlessly, but they must if they wish to be able to provide the ever necessary requirements of food and space. As the fishes grow their demand for both essentials will increase, and the person who has been too 'soft' and has too many fishes will be subjected to increasing pressure in trying to satisfy the fishes' needs. What should have been a pleasure will become a burden and worry.

Surely it is more satisfying to produce say six well grown, decent fishes, than to end the season with tanks full of poor, undersized, nondescript specimens that nobody wants—and which bring no credit to the breeder.

Next month I will describe the points to look for in the young fish of different varieties of goldfish.

The Pond Saga

Continued from page 25

plastic planting crates, available in several sizes, are very efficient and are easily moved around even after immersion.

On Saturday 21 July the position was that the grim process of emptying had to be faced. It was quite impossible to siphon off the remaining water because there were too many bits of debris floating around, and had I put a filter over the end of the hosepipe it would have become clogged very quickly. So it had to be a hand bailing job, first with buckets, and later with shallower receptacles as the depth of water and mud diminished. This was all very hard work indeed, and it looked a long day ahead until I was suddenly reminded that it was none other than the occasion of the Benson and Hedges Cup Final: as an exile from Essex I had more than a passing interest in the proceedings, and when I switched on my hastily-produced portable radio I was given a tremendous fillip to hear the incomparable BBC commentators describing Gooch and later Fletcher in full cry. As the day went on and the tension increased I scarcely noticed the mud and the black water and our rose

beds which were gradually assuming the appearance of the estuary at low tide. The courageous hopes of the splendid Surrey side went out with the last of my own endeavours for the day, and that was that. If you want to make light work of emptying dreadful ponds, programme your work for days like this and perhaps the Gnomes will help you, too.

It was lonely sitting there in the empty pool as dusk came; I sat on an upturned bucket and took stock of the ancient pool lining, heavily laden with algae and indelibly marked with black scribbings. Here and there ugly holes suggested a monster replacement bill, on the assumption that a single sheet of butyl would need to be laid on top of the old Flexilene, which would in all conscience have done good service after something like 17 years. But as I padded around on the pond floor I was astonished at its solidity and resilience, and I began to wonder whether there was the faintest hope that some form of repair might be possible. The following day I dedicated to following up this line of enquiry. Already the feeling of drudgery had slipped away and I was feeling the first stirrings of a new venture.

From a Naturalist's Notebook

by Eric Hardy

CHINESE GRASS-CARP escaped from their experimental tanks last year at Trawsfynydd reservoir in Wales, and anglers captured at least two 12 in. fish in the home bay, with maggot bait.

The CEGB was experimenting with their use in water-weed control, and this is always the risk with alien fish introduced to this country; but they are unlikely to breed here at less than 68°F. The North West Water Authority is also planning experiments with them in Cumbria in land drainage dykes north of Carlisle, using some of the many grass-carp MAFF imported from Siberia, where they inhabit rivers on the Russian/Chinese border. These were very small specimens, being nurtured in the Water Authority warm-water tanks at their H.Q. at Sankey, Warrington. They will be acclimatized for introduction when at least 6 ins. or 8 to 9 ins. next April or summer, Mr. R. Pritchett, the fishery biologist concerned told me.

In their tanks the young grass-carp are fed on trout-food, augmented with some lettuce and grass-cuttings. Anglers have toyed before with the idea of introducing these bronze, chub-like fish, olive-brown above and silvery below, to control weed-growth; but they were not much of a success when introduced too small in 1963 to the warm waters of Cavendish Dock, at the Roosecote Power Station discharge near Barrow. In commercial fish-farms of eastern Europe they are reared primarily for food, their weed-control being secondary. They are stimulated to breed by pituitary-injections, and hand-stripped. Their preference is chiefly for Canadian pondweed, hornwort, stonewort, duckweeds, Potamogetons, water-starwort, water-milfoil and, to a lesser degree, reedmace, reeds, rushes, frogbit, watercress and sedges. But young eat *Daphnia*, *Tubifex*, etc.

Over 10 years' ago the Ministry released in ponds of the Nene and Welland Fens specimens 4-16 ins. were trucked overland in 60 gal. tanks from an Hungarian fish-farm, but this largely failed from predatory pike. In 1964 more were introduced to weedy Kent ponds, and increased by over 3 lb. in 4 months. They withstand brackish and salt-water in the Sea of Azov and the Aral Sea in Russia.

The reason why they have to consume such great quantities of weed is that they have a much shorter intestine to digest it than most vegetarian fish, only a fifth the proportion of most, so that they pass much food undigested in their faeces. The Russians con-

trolled a weed pest with them in their Karakum Canal, but introduced 246,000 to do so. Grass-carp graze like cattle, gripping the plant between lower teeth and upper horny pad to tear it away by strong sideways movements of the body.

Some time ago I mentioned the bucket-transportation of breeding toads across the roadway at one of Britain's largest colonies, of 8,000 at Llandrindod Wells, mid-Wales. Powys county council responded by a Job Creation project erecting warning signs at the crossings, in late February, removing them after each breeding season.

Adders hibernate in all sorts of places. Early last December, a Kesingland, Suffolk man found the reason why his bath-water was not draining away, when he removed the waste-trap. A "3 ft. dead adder" was reported blocking the pipe. As the largest adder in the British Museum was 28 ins. and the biggest I have seen was 25 ins. (in Snowdonia), there was probably some confusion in the Suffolk identification which seems more like a grass-snake, it seeks damp haunts. In 1935 an Aberdeen newspaper carried a story of a 62 in. "adder" killing and eating a grouse in a wood at Cornescorn. Even if that were a grass-snake, a grouse would be well outside the size of its normal frogs, toads and mice, unless it were a newly-hatched grouse-chick. The biggest adder I knew in Cheshire's Delamere Forest was 23½ inches, prewar.

Pike in lock

Manchester Ship Canal's annual staff journal announced with some surprise the discovery of an 18 in. pike in the lock at Latchford, Warrington, where it was probably put in by young anglers. One was taken in their Manchester docks in 1968. Their surprise also included a half-pound perch and some eels there. But this tidal canal, coming from the Mersey at Eastham, is far from fishless. I've often noticed 3-spined sticklebacks at the Eastham end, where autumn shoals of Mersey sprats enter it as well as via the Weaver sluices. Young eels migrate in and old eels out of it, and tides in past years brought in odd whiting, flounder, dabs, codling, sole, plaice, solenette and once a garfish at Eastham Locks. Last century, Morecambe fishermen coming into the Mersey for herring sometimes caught a few in the Ship Canal;

then the migration took the herring the other side of the Irish Sea.

Journalists are often criticised for going to a library to "mug up" a subject before writing about it. In science it is said that if you take the information from one publication it is plagiarism, from more than one it is research. One professional fish-biologist, cynical about my writing of other people's research (despite due credit to them) quoted 160 other writer's works in her book. Not only are there 575 quotations from other publications in Professor N. B. Marshall's recent erudite 501 page tome *Developments in Deep Sea Biology* (Blandford £15), but it reflects the change in centres of scientific research that so many are North American or from the Pacific, compared with virtually none in the famous 1950-52 Galathea Deep Sea Expedition book.

This is at least Marshall's 4th oceanic book, and in parts heavy going. Revealing the enormous increase, and still the gaps, in modern knowledge of fish and other life in deep waters beyond the trawlers' continental shelf where 160,000 animal species live it includes physical and biological knowledge of the bed of the ocean, the cradle of life on earth. From the fascination of bio-luminescence whereby animals light the abyssal depths either with their own chemistry of dim, pearl-button light-organs less than moonlight, or by carrying luminous bacteria for identification or counter-shading camouflage, to that of defying gravity by substituting chlorine for sulphates; also filling swim-bladders with oxygen, in order to rise to upper waters, in further details life histories and the food-webs.

Fish have the smallest number of chromosomes among vertebrates. An occupant of almost barren parts of the ocean, *Gonostoma bathyphilum* has only 6, fewer than even the killifish's 8. Rat-tail fish on the ocean bed feed like lake-dwelling cichlids, using the mouth-cavity as a pressure-pump during respiration, plunging it like a snout into the bottom, swallowing ooze-laden water, then "blowing" the sediment out through the gill-rakers which retain any food. One interesting quote is the way in which Beebe, the American marine biologist induced a luminous lantern-fish in an aquarium to respond to his luminous watch, though it ignored an electric torch. A light placed over an aquarium and stepped up in a series of intensities to match the intensity of down-welling light was matched in turn by 5 species of luminous Hawaiian cuttlefish.

Misnomers

Americans (at least those writing in U.S.A.) have a thousand and one ways of messing up the Queen's English. One of these is to use the name of some particular animal that is popularly in the public mind to refer to any entirely different animal. Not only is any insect from a butterfly to a beetle called a "bug,"

and duck-shooting is called "coot-shooting," but this abuse of precise identification comes into their writings of fishes. A foot-long aquarium in Goppingen, in West Germany, and another at Ulm were fitted up with electrodes and dials by the city authorities in order to use a *Gnathonemus* fish which discharges electricity in varying amounts according to quite small amounts of cadmium, zinc, copper and mercury, as pollution-indicators.

This was as ingenious as the pre-war electrical eel in New York Aquarium which, for a dime a time, contacted an electrode and illuminated its name overhead. Only that the *Monitor*, one of the most respected morning papers in the U.S.A., headlined its story: "How Electric Goldfish Trigger the Alert." It continued with: "these very special goldfish emit electricity." The *Gnathonemus* were used for fortnightly periods of discharges, then returned to the holding aquarium for 2 or 3 months, the story adding: "Each of the goldfish thus gets a good vacation in the company of its kind to compensate for its solitary fortnight's vigil." A good story, only that *Gnathonemus* is no relation of the goldfish. It is the 2 in. long, black-striped Nile elephant-fish, a tube-snouted mormyrid long known as an inhabitant of New York Zoo Aquarium. When its impulses or discharges exceed 200 a second, the authorities take notice on their monitoring panel 1½ miles away. It may range from 90-odd to over 1,000 impluses.

Conservation of water-life is not confined to industrialised Britain and commercialised U.S.A. My son sends me an account of biologists' efforts to save the threatened River Frank—in a tributary of Tasmania's largest river, the Gordon, and "the last great wild river in Southern Australia." Dr Bob Brown, Director of the Tasmanian Wilderness Society, is the chief enthusiast. All other rivers are now dammed or diverted. Starting in glacial lakes under alpine conditions, it rushes through several ravines, but plans for a hydro-electric dam on the lower Gordon would flood all the lower Franklin and its famous Splits chasms. Another dam on the Franklin would ruin the gorges in the Frenchman's Cap National Park.

It has interesting rainforest trees (partly devastated by loggers), bog and moss plants like the carnivorous purple-flowered bladderwort, *Utricularia dichotoma* while up among alpine plants in mountain pools and streams is the home of a living fossil, the mountain-shrimp *Anaspides tasmaniae*. The latter has existed unchanged for millions of years since its fossil remains, grazing mosses, liverworts and the micricopic plankton attached to sedges like *Carex gaudichaudiana*. The soft and hard water ferns *Blechnon nudum* and *B. wattsi*, and the shamrock-leaved *Oxalis lactea*, grow embedded in crevices of wet rocks, the flood debris and mossy banks. Tasmanian rainforests are a profusion of mosses.



OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE

All queries MUST be accompanied by a stamped addressed envelope.

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

TROPICAL QUERIES

by Jack Hems



Heterandria formosa

Would *Tanichthys albonubes*, *Oryzias latipes* and *Heterandria formosa* live on peaceful terms in a well-planted tank kept at comfortable room temperature?

All should go well if the temperature of the water ranges from the lower sixties to the upper sixties in every 24 hours.

I understand that the pygmy cichlid popularly known as the ram, and the harlequin fish, flourish best in soft and acid water. Can you tell me how I can obtain these conditions in a tank filled with water from the mains tap?

Install a moss peat filter to acidify the water. The acidification will not be noticeably rapid, so change the peat about every fortnight and take pH tests quite frequently. As evaporation causes the level of the water to go down, top it up with tap water which has been boiled first and then cooled to aquarium temperature. Collect all clean rain water that you can in a plastic bowl and, after straining it through wet peat, add this to the aquarium.

Will it be asking for trouble if I introduce a talking catfish into my community tank?

Acanthodoras spinosissimus—if this is the talking catfish you mean—will not molest any fish it cannot swallow at a gulp. If your tank is well stocked with barbs, platies, well-grown tetras, and the like, you have little or nothing to worry about.



Hemigrammus armstrongi

Would the gold tetra prove a suitable companion for neon tetras, one-line tetras, and harlequin fish?

I have never known a gold tetra (*Hemigrammus armstrongi*) cause any trouble in a community tank. Indeed, it makes a most valuable addition to a mixed species tank, for it is very active, eats anything and lives for upwards of four or five years.

I should like to know the scientific name and country of origin of the crescent betta?

The crescent betta is known to science as *Betta imbellis*. It is native to Malaysia, attains a length of about 2 in. and though it is a contradiction in terms, it is true to call it a peaceable fighting fish.

Can you tell me something about knife fishes?

Knife fishes are represented to aquarists by several families containing perhaps a dozen or more genera and different species. One family of knife fishes is known as the *Notopteridae*. Members of this family are widely distributed over tropical Africa and south-east Asia. The families *Gymnotidae*, *Rhamphichthyidae* and *Sternarchidae* are confined to South America. In the main knife fishes are light-shy and spend a lot of the daytime hours hidden in or behind plants or piles of stone. The anal fin is the chief means of propulsion—dorsal, caudal and pelvic fins are much reduced or

absent—and they can just as easily move forwards as backwards. All knife fishes are characterised by elongated bodies much compressed. Generally speaking they are not faddy about food and accept, and are ready for, the regular live foods and chopped lean meat. Not a few eat flake foods and certain cereal foods avidly. They flourish well at a temperature in the middle to upper seventies (°F) and though they often fall out among themselves, they are usually no trouble (in a community tank) in their smaller sizes. The characin with the technical name of *Ctenopoma spilargenteum* is often called the knife fish. This on account of its very flattened sides. The electric eel (*Electrophorus electricus*) is so closely related to the knife fishes mentioned earlier that it is now included in a super-family called the *Gymnotiformes*. It is not a fish for mixing with other species. The electric shock it can give out can knock a man off his feet, stun a horse, and incapacitate or kill other fishes, which are then eaten.

Please give me some information about the pearl catfish?

The pearl catfish is known to science as *Ancistrus hypoglyptus*. It grows to about 5 in. and appears to be distributed over the northern half of South America. In the main it is a nocturnal feeder and is not faddy about its food. A temperature in the upper sixties to lower eighties (°F.) suits it. It is a non-offensive species.



Brachydanio frankel

Can you give me some information about the leopard danio or *Brachydanio frankel*?

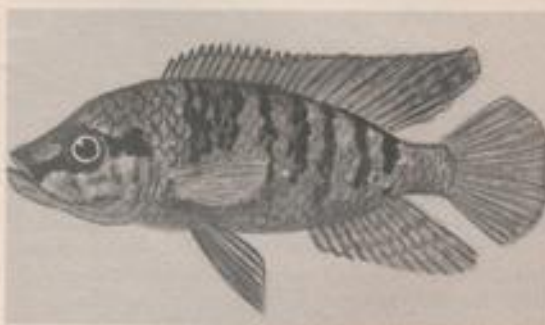
This attractively marked brachydanio appears to have made its entry into aquarium circles in the West via Iron Curtain countries. It probably hailed from India in the first place. It does not call for any special treatment and its food, temperature and conditions in general are those suited to the ordinary zebra danio.

I am in the process of building a fish house 10 ft. x 8 ft. x 7 ft. to the ceiling. Thermal concrete blocks on a concrete base have been used in its construction. There are two doors to minimise heat loss, and no windows. My problem now is heating: I have considered solar heating and space heating by gas. What do you advise?

My advice is to go in for individual heating of well-insulated tanks by ordinary heaters controlled by a thermostat. Gas heating is all very well if you have provided for adequate ventilation; but go along to your local gas offices and discuss the matter with one of their greenhouse heating experts. Forget solar heating. We do not get enough sun over the late autumn and winter months of the year to place any reliance in it.

Today I bought seven rainbow Celebes fish. I cannot find this species mentioned in my books. Please can you give me any information on this species?

The rainbow Celebes fish in your possession is *Telmatherina ladigesii*. This species calls for special conditions: hard and alkaline water, a trifle salty, a temperature in the upper seventies (°F.) and a variety of living food such as whiteworms, gnat larvae, and so on. A good top light is essential, and plenty of feathery underwater vegetation. The male is the larger of the two and attains about 2½ in.



Hemihaplochromis philander

Please give me some information on *Hemihaplochromis philander*?

Perhaps the scientific name of the South African mouthbrooder has been changed. If it has some reader will soon write in to correct me. However, to get on with answering your question. There is more than one colour form of the South African mouthbrooder. This, no doubt, because it is distributed over a wide geographical range taking in S. W. Africa and much further afield including what we used to call Northern and Southern Rhodesia. It grows to about 4 in. and is aggressive. That is to say it is not suitable for a community tank. It eats almost anything and is not faddy about temperature providing the range is kept within the seventies or eighties (°F.).

I have just bought several opalescent danios. How can I tell the sexes apart?

Wait until the fish are quite well-grown (if they are not that at the time of writing) and when they are about

an inch or more in length look for fish with fuller sides and longer bodies than their companions. Almost always these all-round larger fish are of the female sex. If both sexes are in breeding condition, then the female of the species shows noticeably distended sides and her opposite number more vivid coloration.

I read an advertisement in your magazine about large severums for sale. I cannot find any reference to severums in my books, so please could you tell me what they are like in colour and size?

I am afraid the books you have are sadly lacking in the sort of information commonly found in books dealing with the tropical aquarium. For the severum (*Cichlasoma severum*) has been known in aquarium circles for about 50 years. It is native to north-eastern South America and the Amazon Basin and is found in shades of olive-green (almost grassy green when young) adorned with dark vertical bars. The bars are very pronounced in severums under six months old. As the fish increase in size the bars assume a more shadowy appearance. The male is characterised by horizontal rows of red spots and larger and more pointed dorsal and anal fins. Up to a size of about 2½ in., the severum is docile enough to share a tank with peaceable species. Larger fish, however, soon develop into bullies. A full grown severum attains a length of about 7 in.

I have been feeding whiteworms to my community tank fish and now the compost has turned black and there is a nasty-looking greyish mould spreading over the bottom. What should I do?

Take down the aquarium and start all over afresh. You have been feeding more whiteworms than your fish could cope with and the worms have wriggled into the compost and died. In future offer just enough worms for the fish to clear up right away. I hazard the guess that you are a novice fishkeeper. If I am right, go carefully on the dried food too.

My tank is situated on an upstairs landing and receives a lot of natural sunlight from a north-facing 6 feet x 5 feet window as well from the surrounding rooms whose doors are usually left open. My plants are Aponogetons, Cryptocorynes, *Ambulia*, *Bacopa*, *Vallisneria*, and Amazon Swords. I do not use under-gravel filters because I believe they restrict plant growth. Our water is quite hard and slightly alkaline, and I am going to attempt reducing this by filtering the water through peat in an internal box filter. I have about 2½ inches of gravel at the front of my tank and around 4-5 at the back. I should also be grateful if you would tell me how long my lighting should be on. I was thinking of leaving my lights off all day and switching them on

when I come home from school at 4 o'clock and turning them off at 10 o'clock. Would this be sufficient?

First of all let me say that the light intensity you are supplying, i.e. 20 watt Gro-lux and 60 watt incandescent light, is quite adequate for all the species of plants which you have stated. A lighting of 10-12 hours is more than sufficient, but to reduce the acceleration of algae growth, you may certainly reduce this period to 8 hours per day. As your tank is situated at a north-facing window, it obviously does not receive substantial natural sunlight. Therefore, as you suggest, lighting your tank from the late afternoon is essential.

You say that your water condition is slightly alkaline and quite hard. This in itself is not very conducive to good plant growth. Try to bring the pH of your water to about 6.5 to 6.8 by using a peat-based conditioner. The depth of your planting medium should be at least 3 inches to enable the plants to develop healthy rootstock and firm anchorage. Cryptocorynes and Aponogetons generally prefer slightly cooler temperature for a slower but healthy growth. These in their natural habitat thrive in waters of about 65°F, but in heated aquaria they are best grown in a temperature of 74° to 76°F. A temperature of 80°F is of course ideal for Amazon Sword, but as you should reach a compromise in your limited tank area, try to maintain the above recommended temperature range.

How does one keep and breed the golden severum?

The same way as the reliable books advise for the care and breeding of the ordinary green severum (*Cichlasoma severum*). The golden severum is merely a colour variety of the type.

I should like to set up a community of 'sharks' in a 48 in. x 16 in. x 12 in. tank. What do you think of my plan?

Very few species of 'sharks' will live on friendly terms with others of their own kind. Ordinarily they quarrel every time they meet. The silver shark, which appears to keep itself to itself, might live at peace with a ruby shark or a red-tailed black shark. Also, young all-black sharks are fairly placid. However, it is rather asking for trouble to place several 'sharks' of the same species in a tank, or 'sharks' of different species and of different sizes together.

Is it easy to sex the keyhole cichlid?

Not when they are young and small, but when they are quite well grown the dorsal and anal fins of the male develop noticeably longer and narrower tips. Then again a male in breeding condition assumes richer shades of brown and the bloated female accentuates her femininity by a sort of seductive rolling motion on the approach of the displaying male.

BEGINNING WITH TROPICALS

by Roy Pinks

THIS SERIES of articles aims to discuss with the beginner some of the main aspects of this branch of the hobby. It is not a step-by-step guide to setting up that first tank, as there is a multitude of books and articles on this subject already, and I have no wish to repeat the well worn guidance and to record the familiar and often fallacious do's and don'ts. I often think that the beginner is frightened off by too much cautionary stuff because in real life there is much more flexibility in fishkeeping techniques than is commonly supposed. I hope in these articles to help build up the beginner's confidence, and if readers would like me to deal with any broad themes which worry them, I hope that they will write and say what these are. I have been dealing recently with Jack Hem's postbag since ill health is keeping him away from his duties for the time being: one very clear theme has emerged from the bulk of correspondence, and it grows stronger all the time. I am most surprised that so many quite good aquarists lack a really good and reliable reference book to help them on their way. A very large number of the worries which I have tried to help correspondents to dispel have arisen because they see problems as isolated things rather than as interconnected parts of a living system. As an example, algae control is a theme which crops up in every fifth letter. People ask how to cure an outbreak, but it is virtually impossible to give really reliable advice because the consultant lacks access to the tank and its surroundings, and can only guess which of many possible causes might have been the real villain. Had the enquirer really understood the combination of circumstances which gives rise to this bane, he could have experimented for a while, he might have cured the infestation and he would certainly have learnt a lot about tank management.

Reference books

Quite unhesitatingly I would recommend to every beginner the fine book written by McNerny and Gerard—"All About Tropical Fish"—published by Harrap. It has been my companion for many years and I am always thumbing up parts of it. It is clearly written, it is authoritative, it is well illustrated, and you always have the feelings in going through its pages that real fishkeepers have had to do with it—not mere editors of other people's experiences! A book such as this is so much more valuable than a heap of new equipment and a pile of trade literature, because it helps you to sort out one of the most important matters of all—which fish will live happily and tastefully with

what other fish?

For compatibility of fish is not just whether a guppy will go with an angel, but whether this family will live with that. It is quite true that some of the most horrifying of mixtures will in fact live in peace and thrive, to baffle and confound the pundits, but the newcomer would do well to look a little further than this, and to consider whether his selection of fish and the surroundings he provides them with can be contrived in such a way as to be a bit different from all the rest. Perhaps to match his personality or to match her flat and its furnishings. But at any rate we may establish the point that to be a beginner you don't have to be like every other stereotyped beginner. If you put a little time and trouble into prior study and preparation, the actual achievement of your first aquarium will be that much more enjoyable, because you will see your long and careful planning really coming off, and this is not only satisfying in itself, but the visual, long term, delights, will be of a very high order.

So, the essential first steps must be reading and re-reading until some of the main principles begin to establish themselves. A regular subscription to the aquatic press is also important, because this will convey to the beginner that on many apparently simple matters like White Spot control, there is a never-ending debate. This is not to say that the mind needs to take a rest from the welter of conflicting theories, though many beginners do sing out for help because they see no clear way through all the hubbub. All you need to do is to take one general line of advice and to stick to it, as few are so severely wrong that disaster will surely follow.

Apart from reading, discussion with other aquarists is very valuable, as this will elicit useful information about what fish go best in the local water, and so on. A visit to the local club should further add to one's understanding about what the hobby is all about, but beware of the died in the wool enthusiasts who would have you run before you can walk. Dealers will tend to get you going before you are qualified to get your tank in working order. The word patience is not in their vocabulary, by and large, not so much because they all try the hard sell, but because you don't let them give you the advice you really need.

Keep a tight hand on your pocket, then, until you have done your preliminary reading, and we will consider at a later stage how best to dispose your generosity to best purpose.

COLDWATER QUERIES

by Arthur Boarder

I wish to plant up a coldwater tank, 24 in. × 12 in. × 15 in. How many plants shall I need?

When setting up a fresh tank one should not use too many plants but be prepared to wait a while for the plants to grow and make a good show. It is a waste of cash to fill a tank and then after a few weeks have to remove many of the plants. You can use three stems of *Lagarosiphon major* in each of the back corners. A couple of stems of *Hygrophila polysperma* near the back centre and a few small plants of *Vallisneria spiralis* in the middle of the base. With an overhead lamp these plants will soon grow and be adequate. It is not a good policy to set up a tank for indoors in the same manner as one would set up an exhibition furnished tank. Many such tanks would be very over planted within a few months of setting up.

I intend to make a pond in my garden, 9 ft. × 8 ft. × 3½ ft. for Koi and goldfish. I shall make a concrete base 6 inches thick and build a wall of bricks, 9 inches thick for the sides. Is there a book on pond construction and what type of filter shall I need?

My book "Coldwater Fishkeeping" describes methods of pond construction. I think that you will find it much easier to make the pond with a liner. The type of pond you envisage will not be a natural shape as ponds should have a sloping side. A straight sided pond is liable to crack when thick ice forms on it. You would also have to make a good seal where you start the brick course and this will have to be rendered with a good coating of a mixture of three parts sharp sand to one of cement. The pond will have to be well cleansed before use to remove any loose lime. This process can be obviated when a liner is used.

The pond will be all right for small Koi but these fish grow very quickly and then after a few years you will wish that you had made the pond larger. If you do not wish this to happen you had better forget the Koi and stick to types of goldfish. If you do this you will not require a filter as long as the pond is properly planted and stocked. I do not like recommending filters as few ponds are exactly alike and the needs of the pondkeeper vary so much. Your best idea, if you intend to have a filter, is to get one or two catalogues from dealers who advertise in "The Aquarist" and see which will suit your purpose and pocket the best.

I have had a moor, a London carp, a fantail and a veiltail for four years in a small tank. They have always been healthy until recently

when one or two have become off colour and seem unable to keep on an even keel and often mouth at the surface. Can you give any explanation please?

I think that your trouble is that the fish have grown too large for your tank. When it was first set up the stocking rate may have been all right but with four years of feeding, the fishes would have grown considerably and what seemed a spacious tank four years ago, could now be much too small. At such times the weaker fish will soon become ill and unless conditions are altered will die. See that there are only an inch of length of fish not counting the tail, for each 24 square inches of surface area of water. I do not know what you refer to as a London carp!

I have a tank, 18 in. × 12 in. × 12 in. with a filter and lamp. Recently I have lost two of my veiltails and a moor. They have shown no signs of damage or illness but just seemed to get weaker and then die. The other fish in the tank, mainly comets, seem healthy. Can you tell me why the fish died?

It is not easy to be able to tell why the fish died from the information given. You say that you had been feeding them with *Daphnia* from an unreliable source. This was asking for trouble, as I have so often warned of the danger. I am no psychic and can only give advice from my own experience and I feel certain that the main cause of your trouble was that the tank was over-stocked with fishes. You mention the loss of two of the veiltails and a moor with other fishes mostly comets. Your tank will only hold nine inches of body length of fish and it appears that you must have had more than this. Check up on the sizes and numbers of fishes and then make sure that the tank is not over-stocked. When using live foods try to keep to those which do not breed in waters in the wild. Earth worms, white worms and maggots are safe live foods as they do not bring in pests and diseases from water.

I have noticed in aquatic books that it is necessary to use an aerator in a tropical tank but not essential in a coldwater one. I see that most tropical tanks have very small fishes in, whilst most coldwater ones have much larger fishes. Why should aerators be used in tropical and not coldwater ones?

The main difference in the two tanks is that the tropical tanks are heated to usually about 75°F, whilst

the coldwater tanks are not heated. The warmer the water the less oxygen will it hold, hence the need for aeration. Some coldwater fishkeepers do use aerators in their tanks because they try to keep too many fishes for the size of the tank. This may keep the fishes alive but they are not likely to thrive and grow unless they have sufficient space, whether they have aeration or not.

I keep fancy goldfish in a well kept fish-house but recently I have had a lot of trouble with fungus and all kinds of diseases. I have a compost heap in the garden and have been taking many small red worms from it for feeding to my fishes. Do you think that they are the cause of the trouble?

I and many other aquarists do not like using these small red worms which are usually found in manure heaps. It has been thought that they are very harmful to our fishes and I think that it will be a good idea to discontinue the use of these red worms and stick to the ordinary earth worms.

I have two tanks, 3 ft. x 1 ft. x 1½ ft., with a selection of assorted varieties of goldfish. I have a pump which services 4 under-gravel filters. Most fishes are healthy but recently three fish show strange habits. They float to the surface and seem unable to keep below. Their droppings contain air bubbles. Do you think I am over oxygenating the water?

I certainly think that your surmise is correct. It may seem strange, but I think that it is possible to inject too much oxygen into the water. It is probable that the fish are suffering from a form of Embolism. I remember some years ago at a fish exhibition at the Olympia, some coldwater tanks were filled with a hose direct from a high pressure source. When fishes were placed in the tanks they became very distressed. The insides of the glass were covered with tiny bubbles. Cut out the strong aeration and see that the tank is not over-stocked with fishes. Unless you are either over-stocking or over-feeding, there is no need for a filter nor an aerator.

I have a calico goldfish which seems a peculiar shape and it cannot swim properly. It has an over-shot mouth and a ridge along its belly. What can I do to it?

I suggest that the fish is destroyed. It is obviously a runt and being so misshapen it is useless to waste food on it. It does not seem attractive and is no use for breeding from. There are so many fry hatched from a spawning as a rule, that it is senseless to keep alive throw-outs, which can take up space in a tank and eat other fish's food.

I have a tank in my garage, 60 in. x 24 in. x

18 in. and would like to breed shubunkins in it. How many variations of the shubunkin are there or is it one variation of the goldfish? Shall I be able to buy a pair or shall I have to get a number of small fish? Also where can I get some?

If you intend to use only the one tank, you will have to insert some divisions as you will hardly be able to rear fry in the same tank with the parent fish. You could divide your tank quite easily with glass slides, fixed at the sides with pieces of half rubber tubes. There are two main types of shubunkin, the Bristol and the London. The latter is shaped like a common goldfish and the former like a streamlined version of it with larger and more flowing finnage. Both are well coloured and the ones most favoured have a rich blue background with yellow, red, brown, violet and black on them in a well broken series of markings. Some aquarists find small variations in the transparency of the skin in Bristol shubunkins. All should show no visible scales and their gill covers should be transparent and not hard and glossy. I have included an address from where you can obtain shubunkins. For an adult breeding pair you will have to pay a fair price, but if not prepared to do so you can buy a number of young ones to grow on, but obviously this will take a couple of years.

I have an aquarium 24 in. x 12 in. x 15 in. with ten assorted goldfish, including shubunkins and moors. I would like to breed from them. They are from 1½ to 2½ inches long. Where can I get a book on breeding goldfish please?

Get my book, "Coldwater Fishkeeping" as advertised in the "Aquarist & Pondkeeper." Your tank should only hold 12 inches of length of fish, disregarding the tail. It appears that you may have more than this already in the tank. You must realise that all varieties of goldfish can breed together and provide many mixed types of little use or value. To breed any fishes successfully you will need extra tanks in which to hatch and rear the fry.

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

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

WHAT IS YOUR OPINION?

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

THE DATE, as I begin this month's feature, reminds me that exactly sixteen years have passed since I wrote my first article for *The Aquarist*. When that article was accepted for publication by the then Editor, I had no idea that after sixteen years I'd still be pounding the keys of my typewriter—even if more slowly—for the same magazine. Have any of our present readers been with us for at least sixteen years? If so, drop me a line and let me know how many major changes, if any, you have noticed in the hobby over the years.

From The Bungalow (at rear), 14 West Grove, Walton-on-Thames, Surrey, comes this swap offer for the *Exchange & Wanted* column. It is made by 16 years old Rickey Payne and his telephone number is Walton-on-Thames 45755. He wishes to swap: "two Oscars, both 5in. (one red, one common); also different gouramies: two pearl, one thick-lipped and two dwarf. In return I'd like two breeding pairs of dwarf cichlids. If not, I'd accept a breeding pair of *Lamprologus brichardi* instead. I also have two large sharks—one red-finned and one red-tailed black—and proven pairs of swordtails, and a livebearer of which I do not know the name." Anyone interested in effecting a swap with Rickey should contact him at his home—preferably by telephone in the first instance.

Mrs. Sue Whittenham wrote to me from 37 Crofton Road, North End, Portsmouth, Hants. She said: "I have just received my December 1979 edition of *The Aquarist* and I was interested to read the letter from Miss Helen Adams of Bognor Regis. I don't think her opaline gourami could have been responsible for the death of her bronze catfish—unless she was unfortunate enough to acquire a rogue gourami because in my experience opaline gouramies co-exist perfectly peacefully with the various *Corydoras* species of catfish. It may have been that her gourami considered itself the boss fish of the tank and resented the introduction of a new fish. My male gourami has chased other fish I have introduced into the tank; but once the new fish has accepted that my male gourami is the dominant fish there has been no further trouble. I've certainly not lost any fish due to my gourami.

"Regarding Miss Adams' comments on box filters, I use them in my tanks and they are perfectly satisfactory in performance. Perhaps she ought to run the filter carbon and wool under the tap before putting them in her filters. This seems to get rid of surplus air bubbles and the filter should then give a faultless performance."

(Most aquarists, in their early days, try everything on offer for use in filters. In my earlier days I tried glass wool, ion-exchange resins, peat and activated carbon—possibly all at the same time. Now I'm happy to include nothing other than filter wool in my community aquarium filters; indeed I use only filter wool in the air-operated filters on four of my tanks. The other two tanks are kept clean by power filters that contain filter wool and coarse gravel—as recommended by the manufacturer. All box-type filters should be cleaned regularly and the filter wool changed. B.W.)

Miss S. Andrews resides at 18 Grosvenor Road, Manchester 16, Lancs., and she begins her letter by apologising for her writing—which is perfectly legible. She says her writing is "... worse than usual because I have my arm in a plaster cast. I was mugged the week after Belle Vue show and am on the 3rd plaster cast—making twelve weeks until now. Most people asked if I had any fish with me at the time. Fortunately I hadn't ... I read, nearly every month, about plants. I have a few plants in a few tanks only as my tanks are in a room with hardly any natural light. Well, I decided to light one tank because of the fish I had in it at the time. It was a small, plastic tank. I had about a ½ in. of ordinary, small/medium gravel at the back of the tank, and none at the front. I happened to buy some fish in a dealer's and made up the amount spent with about six *Vallisneria* and three pygmy swords. I planted them in the ½ in. of gravel. I used an ordinary tungsten bulb and took little notice, except to feed the fish, and after 6-7 hours remove the light.

"Well, when the tank was thick with *Vallisneria* around four months later, I removed some plants to a plastic carton of gravel. I took some more into another tank and still have around a dozen *Vallisneria*

and some swords in the $\frac{1}{2}$ in. of gravel, with fish other than the first occupants. I know it's true that some fish eat the plants or chew them up for devilment; but I think that just as some people can grow garden plants, or house plants if they have no garden, others kill even hardy plants that grow as easily as weeds. When I've seen some people planting plants in their gardens and noticed how they covered plants' roots it has been no surprise to me that the poor plants died! I hardly ever use lead weights; the gravel is enough. I used to be told that for a furnished aquarium it was wrong to use lead weights: a judge could uproot a plant and if weighted disqualify it. Perhaps some people can grow anything; other nothing.

"Some time ago I believe you had someone write to W.Y.O. about aquarium shows and fish in sweet jars. Well, personally I cannot seem to manage many shows to look around (*sic*) so usually if I go I take an entry. But I think we must all take *both* sides, which is important. Firstly, the societies' side: mostly a society has a venue for only one day; usually the cost is daily, so whatever is staged has a time limit as well as, perhaps, a space limit. Many coldwater societies arrange for tanks for the exhibits. Now, personally I would pay 10p per entry extra for the use of the tank to have only to carry fish and water. But it is a lot of work for the society to put the tanks out even if not filled with water; and the expense of providing this facility cannot always be met by mixed variety shows. Imagine providing 650 tanks when only 300 are needed; or providing 400 when 700 are needed.

"Now we must consider the exhibitor. Not all of us wish to be dangerous drivers so some of us go by public transport. Even four containers and fish and water are awkward. With only one arm working, I went to a show and a couple of people very kindly helped me to get my fish in containers on the table. But some of us going by public transport have to use a tank a bit smaller than we would like even if we do know that we are going to lose a few points on the fish's deportment. I feel few exhibitors would put a 7 in. fish in a 6 $\frac{1}{2}$ in. container. And a full-sized neon or guppy is all right in a sweet jar. Even a pair of them or a breeder's team of six can be.

"Now the other side: the societies give whatever classification they wish (*sic*) but they have the expense, the venue, printing, prizes etc. They hope people will learn from the show. Maybe some novice with a fish he has just bought thinking it will grow to 4 in. will see an 18 in. specimen at the show. Some fish owner seeking advice may obtain it from a breeder or exhibitor or judge by just coming to a show. As a schoolgirl I went to the Goldfish Society of Great Britain's show, 1948, in St. Martin's School of Art, London, and I learned a little at once.

March, 1980

"There are two sides to all issues. Shows may lack certain things but they can help many novices. Not all shows are the same. Before any person condemns a livestock show I suggest he or she helps at such a show; and when he finds out the work involved he may think before condemning. I used to show pedigree dogs and the pitfalls for exhibitor and society were the same as for fish. Many went just to admire. When the clearing away comes it's a regular band who are at it. It is true that many a first-time visitor is a willing worker by next meeting or event; but before condemning everything out of hand think of the other side. Not all shows are the same. One dog show I remember in particular. I arrived to hear the show manager ordering the chairman out of the show; and a committee member, who worked in a high position where dukes and such were regular clients, said: 'You've just missed X's wife declaring how much she's paid for that—that she is wearing!' The result was an extra-ordinary, special A.G.M. It could have gone further: fisticuffs! Fish shows could be such if allowed to get out of hand. But last year at the B.A.F. one society that had a tableau had a piece of their hard work smashed by a child with its parent. And this year I saw many pulling half of a society display off a tableau. If my parents had encountered by behaving in that way not only would I have had to apologise but I would also have been made to suffer pocket-wise for the damage—and quite correctly. My apologies for airing a serious view on a serious matter. With best wishes for the new year. I hope W.Y.O. continues its success." (Thank you for your kind wishes, Miss Andrews. It's hard enough work filling six pages when I am able to type using only two fingers. Thank you for telling me, in a P.S., the names of the societies that had exhibits damaged. As requested, I will not disclose their names. B.W.)

Mr. A. D. G. Phillips, B. Comm., LL.B., M.A., is a director of Phillips Yeast Products Limited, the head office of which is situated at Park Royal Road, London NW10 7JX. In the January issue I made some observations about the possible reason why I was unable to make a repeat purchase, from an advertiser, of 8 oz. of a particular brand of British-made fish food, at a reduced price, because I was willing to buy the food in a polythene bag instead of a container—such as a tin or drum—carrying the manufacturer's label. I mentioned that I was able to buy, from the same retailer, a quantity of a *foreign* brand of food that had been bought in bulk, I assume, and sold by weight, in smaller quantities, in polythene bags. I mentioned having bought several ounces of the foreign food. I did not name either food, or the dealer from whom I bought the British food on previous occasions or the foreign food in the more recent instance. I ended my paragraph in the January issue by suggesting that: ". . . someone

who knows will explain the situation to me in a letter for publication at a future date. . . ."

No doubt readers are aware of the range of products manufactured by Phillips Yeast Products Limited, including the firm's wide and comprehensive selection of fish foods. Mr. A. D. G. Phillips was kind enough to offer a reply to my comments and I should like to include his whole letter without editing it because it gives an insight into the manufacturing and selling side of the hobby—a side that those of us who are ordinary aquarists who make our purchases from retail outlets do not normally have to consider because we make our purchases from a local dealer's shop. Some aquarists find themselves in a position similar to mine: I live in a town that no longer has a shop selling tropical fishes and allied items and, hence,

this month on the sale of loose fish food.

"In stating that sealed containers are more expensive than loose food sold in a polythene bag you are attempting to compare the cost of a mere package with that of a complete product. Nor does it necessarily follow that an 8 oz. bag of food will cost the hobbyist less than an equivalent quantity in a sealed container. For instance the same January issue of *Aquarist & Pondkeeper* contains a classified advertisement, possibly the one to which you refer, offering 8 oz. of a German food for £3.60. On a cost per ounce basis I estimate this to be 53% more expensive than the standard 4½ oz. size of Phillips Tropical Flaked Fish Food, the recommended retail price of which is now £1.32.

"However I have not yet taken the main point you



Attractive pond in a public Park.

I have to travel 25 miles to Belfast to make most purchases from one or more of its excellent dealers' shops. Sometimes, when I wish to purchase small items, I send for them, by post, because it is cheaper than the cost of the petrol that would be required to take me on the round trip of 50 miles. Sometimes I send to Belfast; on other occasions I buy from advertisers who supply goods by mail order.

Before I quote Mr. Phillips' letter I feel I should point out that neither of the two foods to which I made reference in the January *W.V.O.* was manufactured by his company; and I cannot recall ever having made a purchase from the classified advertiser to whom he makes reference. Mr. Phillips' letter follows, verbatim: "It is several years since I last wrote to you, but I continue to read your monthly feature with interest, and in particular your comments

raised, i.e. Why cannot fish food be offered for sale loose in cheap bags. I believe the answer to lie in the wider issues of what is a branded product; what is fair competition and what is unfair; and, above all, what is the importance of the retail dealer.

"When a manufacturer gives his product a brand name and sells it in standard packs this enables the user to know exactly what he is buying, and it not only guarantees the condition of the product but is also a matter of reputation for both the manufacturer and the retailer. The retailer knows that the manufacturer will take responsibility for such aspects as the stated weight of the contents as well as their efficacy and condition, and this is generally accepted to be in the best interest generally. It is also general practice outside the aquatic trade; after all, how many other products can you buy loose in bags?

"If an individual dealer does as you suggest, and breaks open a manufacturer's bulk pack for purpose of resale loose in bags, this alters the normal pattern. From the user's point of view there is no longer any safeguard that he is obtaining what he intends. He might order brand X and be supplied brand Y, or some mixture of inferior quality. From the position of the trade as a whole there is a loss of reputation. Under the present law it is considered fair competition for one trader to try and attract extra business from his competitors by selling at cut prices, but to sell in non-standard packing is I believe a very different matter, and it constitutes unfair competition between retailers. If some retailers co-operate with manufacturers in supporting their brands to the benefit of the reputation of the trade as a whole, then it is

relatively high rate of shop closures, and I believe that retailers in the trade deserve all the support they can get. Any attempt by hobbyists or manufacturers to bypass the retailer, whether directly or indirectly as you suggest, will be harmful to the hobby, for the tendency will be to make trading even more difficult for the retailer, thus reducing his numbers and the availability of supplies to the hobbyist."

Mr. J. D. Gordon lives at 6 Roanshead Road, Easthouses, Dalkeith, Midlothian, Scotland. He says: "Keepers of carnivorous fish may be interested in the device I have for feeding fish that take only live food. I found that if a small piece of steak is pierced with a needle and placed on the end of a springy, thin piece of wire, the fish can see only the

Clownfish and anemones



only fair that all retailers do the same.

"I now reach my point of greatest concern. Implicit in your comments I detect a complete failure to appreciate the importance of the retail dealer to the hobby. I am not suggesting that the hobby exists for the sole purpose of giving retailers a living, but on the other hand we must realise that they are essential to the existence of the hobby. Hobbyists need them for their availability of supplies, and manufacturers need retailers for the distribution of their products. In the aquatic trade retailers do not have an easy time, and considerable specialised knowledge is required in minimising loss caused by death of live fish, which form a significant part of their stock in trade. Mostly they are dealing in items of low price, and it is only seldom that an article of higher price, such as an aquarium itself, is sold. The difficulty they face is evidenced by the

bait. If the wire is then moved or jiggled in the water, the fish will attack the meat. To prevent the meat from falling off the piece of wire, the end of the latter may be twisted, or bent into the shape of a wave."

Mr. L. Kirby says: "I am writing to let you know that if any readers of *The Aquarist* would like a cutting of Java moss they can have some if a s.a.e. and small, plastic bag are forwarded. This is how I started my plant." Those wishing to avail themselves of Mr. Kirby's kind offer should send the s.a.e. and bag to him at 19 Chewton Avenue, Eastwood, Notts.

Even in winter a pond can be an attractive feature. Photograph 1 shows a man-made pond with a tiny, natural stream running into it. It is situated in a public park and although it contains no fish it and the tiny pools formed by the stream do support a limited number of species of water-dwelling life—

such as duckweed, water snails and pond skaters. When I was a child I used to sail my toy yacht on the pond. Please send me details of the present state of any man-made—or protected—ponds in your part of the country. The one in my photograph is very shallow. It is literally a stone's throw from the sea-shore, making the area ideal for the biology teacher who wishes to show his pupils both freshwater and marine habitats.

Photograph 2 shows a delightful, little clown displaying its almost too-good-to-be-true colours. It belongs to Mr. Bob Crossan, photographs of whose garden pond and tropical marines I have included in my feature on previous occasions. Please send me details of your latest experiences with marines. I hope to interview Bob in a new series that will commence in *The Aquarist & Pondkeeper* in the near future.

Readers who live in or around the Belfast/County Antrim area, or in or around London, and who wouldn't mind my calling to interview them and take a few photographs, might care to drop me a line c/o *The Aquarist & Pondkeeper* giving a few details about themselves and their fish and aquaria. An indication of age group, e.g. child, teenager, adult or O.A.P., would be useful. You would certainly not be committing yourself at this early stage; but if circumstances permitted my visiting you, a suitable date and time could be agreed upon well in advance. I should be happy to consider those who manufacture and sell aquarium products and stock—as long as they keep fish and/or plants—as well as the ordinary aquarist in his or her own home. Perhaps other writers, who live in or frequent other parts of the U.K., will interview local aquarists there. However, our Editor will have the final say.

Master Robert Clements is 14 years old and lives at 118 Singleton Crescent, Goring-by-Sea, Worthing, Sussex. He tells us: "For approximately two years now I have been keeping tropical fish. I first began with a second-hand 24 in. x 10 in. x 10 in. plastic-framed tank, standing in the corner of my bedroom, housing zebras, guppies, sucking loaches and a dozen or so neons. From then until now I have gradually progressed to angels, several Peter's Mormyrid's, clown loach, pictus catfish, butterflies, jurupari, red-tailed black sharks, kuhlii loaches, lace gouramies and two young armoured catfish—*Callichthys callichthys*. So far I have had only two casualties—as a result of bullying from the two male gouramies.

"The fish are all housed in an all-glass 36 in. x 12 in. x 15 in. high aquarium. By the way, I must point out that during these two years I have had only two deadly cases of white spot—as a result of transporting a pair of hatchet fish from shop to home and allowing the temperature in the bags to drop below 70°F. So far I have had only these white spot cases and two swimbladder cases in my first tank as a result

of inadequate filtration.

"In the tank that I have in operation at the moment, as decorations I have rocks of varying types—including quartz and granite; three 12 in. high *Cryptocoryne* plants; and two callosale (?) 2-2½ ft. *Cryptocoryne* plants. Each of these has sent out a very long seed runner, with seeds, of 5 ft. 9 in. in length. Please could you tell me about this species of *Cryptocoryne* and how to cultivate it from seed? This tank is kept at an almost constant 80°F, being heated by one 150 watt heater. It is lighted by a 20 watt fluorescent Gro-lux and filtered by a power filter. This makes a current throughout the tank and keeps the water at an even temperature throughout.

"Now I'll explain why I have written to you. After school on Tuesdays, Wednesdays, Thursdays, and Fridays, as well as all day each Saturday, I work and help out as a sales assistant at a well-recommended pet shop. As well as selling hamsters, birds of all sizes, rabbits and tropical fish, all of which I have fed at some time or another, the shop also sells tropical marines of many shapes, sizes, colours and habits. A few weeks ago I decided to have a go, at least, at successfully keeping these creatures for a reasonable length of time. I explained this idea of mine to the manager of the pet shop in which I work. He seemed quite interested and shortly afterwards I found myself being given the responsibility of feeding the marines most evenings.

"Since then I've been involved with arranging the coral in one of the tanks; and also topping up the tanks and maintaining the correct specific gravity. I don't know if I've rushed into it too quickly; but yesterday I bought the filters, salt, sand, hydrometer and a few corals, including a large sea fan. Next weekend I'm going to set up my very first marine tank. I hope I have not bored you too much describing my first two years as an aquarist. I should be pleased to receive answers to the following questions. (a) Is there any chance of a career in this field? (b) Are there any tips you could give me? (c) How can I become manager of my own pet shop?" Robert then goes on to list the subjects he hopes to take in C.S.E. and G.C.E. examinations.

Although I do not normally reply to readers' queries, I did send Robert a reply. Unfortunately I do not know the plant about which he writes. It would appear to be a very strong grower for a *Cryptocoryne* species! Perhaps someone could send Robert a few lines to enhance the answer I sent. Unfortunately my knowledge of pet shops is limited to standing in front of the counter when making purchases.

Photograph 3 shows one of my *Nannostomus anomalus* pencilfish. I should be pleased to hear from you if you have kept this little beauty. It's not too difficult to get this species to spawn.

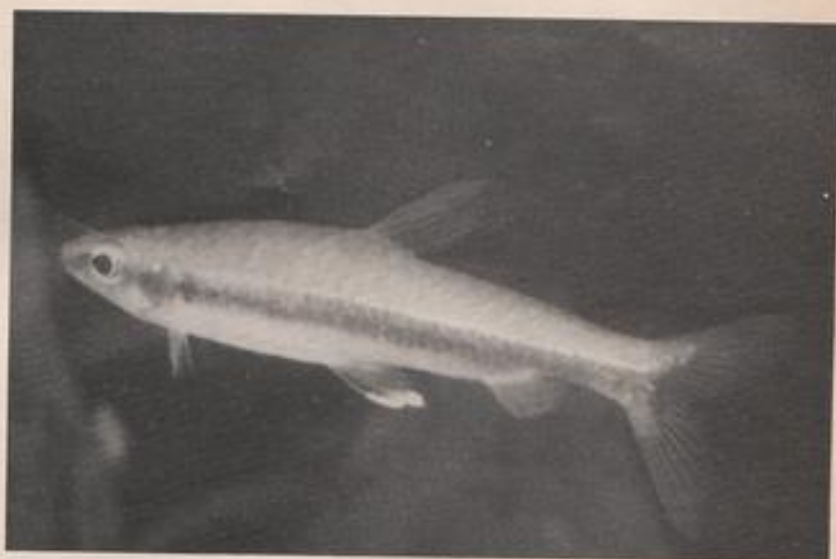
Regular readers of this feature will know that Mr.

R. G. Farrow's address is 9 Wyndham Close, Birch Glen, Colchester, Essex, and that he is a regular contributor to this feature. Mr. Farrow has been an avid reader of *The Aquarist & Pondkeeper* for some years; and this fact is evident in the interesting observations he makes in his letters. In the latest one he says: "... It seems that growing and keeping plants in tropical, freshwater aquaria is, to some, the most difficult part of the hobby. With this in mind, I think that my recent experiences in respect of light duration and algae control may be of some help (to readers).

"Until recently my 27½ in. tank has been set up as follows. I have established what I consider to be a good, nutritious compost consisting of a 3 in. 'sandwich' of gravel/sand and peat/gravel over an under-gravel filter. A 20 watt Gro-lux tube is

"This, then, was the situation until quite recently. On one of my numerous trips to my local tropical fish shop I spotted two beautiful 3 in. *Ancistrus dolichoptera*. I at once imagined spawning this unusual and striking fish. I might add that the two fish were a pair. On getting them home I decided to put them into the 27½ in. tank, already mentioned, until the time seemed right to attempt a spawning. Within a week they had transformed the tank. It sparkled. The rocks, so patiently collected in the Lake District whilst on holiday, showed their true colours, gleaming blue and red. Pieces of slate, so long a green blur, now became a focal point in the tank. The plants were cleaned and recleaned. They took on a new bloom of health and growth. Detritus and the other debris that collect in a tank were pushed into neat, siphonable heaps. A piece of

Nannostomus anomalus



on about 8 hours per day. The tank is planted with *Aponogeton crispus*, *Spathiphyllum wallisii*, *Ludwigia repens*, *Hygrophila polysperma* and various Amazon sword plants and *Cryptocoryne*.

"Two large angel fish, a few barbs, neon tetras, white cloud mountain minnows and various *Corydoras* species are in residence and these supply the only fertilizer for the plants. Although the plants grew fairly well, I was plagued by algae on the tank glass and plants. This could be cleared by scraping and a partial water change. This was not very satisfactory as within a few days the algae were again taking a hold. Cutting down the duration of the light from 8 to 6 hours helped; but then the plants suffered. The tank was rather an eyesore and looked dingy and dull.

bogwood was scoured clean and made a contrast to the bright green plants. I was able to keep the light on for 12 hours a day. The plants flourished—and to supplement the natural fertilizer I began to add small quantities of a well-known garden fertilizer.

"I am now letting the *Ancistrus dolichoptera* clean my other tanks. These fish, which are interesting in their own right, are far superior at algae cleaning to *Gyrinocheilus aymonieri* and as far as I can see have not the aggressive traits displayed by *G. aymonieri*.

"So, before buying that bottle of algae cure think about buying a permanent algae cure in the shape of an interesting and worthwhile fish."

Aquatic Queries, 23 Alan Way, Colchester, Essex, heads a brief letter I received from two young men who, despite being only 14½ years old, imply that

they already know most of the answers. Their names are Jonathan Waters and Grant Whittle. Both boys signed the letter I received; Jonathan wrote it. He stated: "I would like to express, via your column, an aquatic service that my friend and I have recently set up. We intend to deal with all aspects of fishkeeping, e.g. coldwater, tropical and marine, and in the near future we hope to answer queries on coldwater marines. I would also like to point out that this service is a serious venture and has taken many months to prepare. All queries should be sent with a s.a.e. Finally, may I also point out that all queries will be answered and not just 'forgotten about'. Thank you for listening, and long live W.Y.O." (I wish I knew the secret of your knowledge, boys, if you've learned most of the answers in a matter of months. I've kept fish for several decades and still don't know some of the questions, never mind the answers. I envy you the enthusiasm of youth and I hope your venture will be a success, whatever its aim. B.W.)

We all like to have our work praised—especially if the praise comes from abroad or above. While you are working that one out I'll begin to type part of a long, interesting letter written by Mr. Martin Cain, of 855 Woodpark Way S.W., Calgary, Alberta, Canada T2W 2V7. Mr. Cain says: "... I should like to say your column continues to be an excellent forum for aquarists of all ages and experience levels. Mr. Bill Ross (September, 1979 issue) commented on the apparent loss of parental instincts in today's domestic angelfish. During the mid to late 1950s one could still obtain examples of this fish closely resembling their wild ancestors. Compared to the silver angelfish sold today, these were hardier, somewhat larger and more aggressive fish. Quite a number had strong parental instincts and given a tank to themselves a pair would often prove to be devoted parents. Certainly, angelfish were and still are temperamental. Even back in the 'good old days' a number would either refuse to spawn or would repeatedly devour any eggs once laid. Generally it was the more aggressive individuals that were more protective of eggs and fry.

"However, the exotic appearance of the angelfish created a tremendous demand, mainly as a candidate for the community tank. The natural aggressiveness of this fish was its one major drawback for this parti-

cular market and, hence, commercial breeders strove to create a more congenial community aquarium fish. The ease with which angelfish eggs can be artificially incubated enabled the less combative individuals to be bred selectively. As this characteristic became more and more fixed, the chances of acquiring a naturally aggressive pair of angelfish, and therefore fish with strong parental instincts, became very poor indeed.

"Today, the aquarist wishing to witness a pair of angelfish spawn and raise their fry is advised to look for and select potential breeding stock from shipments of wild angelfish. These are occasionally available and recently I was lucky enough to locate some *Pterophyllon altum*, the so-called 'deep angelfish'. I have five specimens, each being approximately 6 in. high and 4 in. long. Although quite aggressive, the scare and bluff tactics used seldom result in any damage. The general appearance and deportment of the fish are, in my opinion, far superior to those of any domestic varieties available today. Should a pair mate and spawn, I expect they will be fiercely protective and devoted parents. . . .

"Incidentally, you asked about the price of cardinal tetras. Here they are the equivalent of 13p. and 26p. for half-grown and adult specimens respectively. Unlike most things, cardinals have actually decreased in price in the past few years."

(I hope to use more of Mr. Cain's letter at a future date. If I recall correctly, when I bought some young cardinals in November they cost me 50p. each. B.W.)

I should be pleased to receive your comments about any of the topics raised in this month's feature; or on any of the subjects that follow: (a) your earliest memories associated with the hobby and how you were introduced to it; (b) the reactions of the other members of your family to your hobby and interest; (c) cultivating *Cryptocoryne* species; (d) whether or not your experiences agree with the interesting points made by Mr. Cain about docile angelfish; (e) the current cost of electricity in your area—if you'll forgive both pun and alliteration; and (f) breeding any species of dwarf cichlids or killifish. Hopefully, by the time you read this, I will be a smoker who has not smoked for a whole year; or I won't.

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KOI QUERIES

by Hilda Allen

In the New Year I am proposing to build a large Koi pond along one side of my garden where the maximum space allowable is some 20 feet by 10 feet. Can you offer any advice how this may best be constructed and what features are considered most important.

A good question (and one which I seem to be asked frequently), it would undoubtedly require a book to answer properly because of the endless variations possible. Choice of material for lining a 'hole in the ground' will be divided between concrete and Butyl and the virtues of both must be considered. It is not advisable to use the cheaper, plastic liners for a major undertaking like a large Koi pond. Whatever is decided upon, do be sure to use the best products available, these are invariably cheaper besides being more reliable over a long term. Any Koi pond should be made at least 4-4½ feet deep, in some area. Deep volumes of water are easier to manage successfully and help to avoid rapid fluctuations of temperature etc.

The need for cleaning the pond should be studied and provision made for bottom drainage and partial water-changing. These will vary according to your stock of Koi, their sizes and rate of feeding. With large Koi this is a very important factor due to the resultant waste products.

Filtration will be essential at some stage to maintain good quality, healthy water and basically it is the water you are keeping rather than the fish as one is wholly dependent on the other.

I cannot possibly repeat at this moment all the information previously given about Koi-ponds, water-pumps, etc. but when you have reached some conclusions on your design and if you have any doubts please write again. I will gladly answer specific questions of interest and benefit to all our readers.

I would suggest that you join a specialist Koi-keeping Society and it so happens your particular area is well covered in this respect. From other enthusiasts you could glean much useful information and personal contact at local level will help you to avoid things which should work, but do not always in practice.

Many Koi-keepers will admit that if having the chance of building another pond, they would build it differently based on their experiences.

There is a wealth of knowledge existing among members of societies in this country that is invaluable. We have our own problems of climate, supply, etc., upon which virtually no-one outside this country can be properly qualified to advise us.

I have a 10-inch Koi which I bought during the summer and whereas it appeared to be a full-bodied healthy fish it has steadily got thinner although it fed until more recently. My other Koi all seem to be in good shape for the winter and I wonder if you have any idea what may be wrong with this one fish.

From the date of your letter and the really cold weather arriving in late December, I would not expect any fish to be active or feeding with the temperature falling to freezing. However, this applies to all outdoor pond fish and so is not peculiar to the Koi with which you have a problem.

I do not usually publish letters about disease simply because their identification from the sparse details usually given is virtually impossible. Treatment recommended could be misleading to others who may think they have the same problem.

Your Koi may be suffering from a form of fish tuberculosis if it appears to be "wasting" and the chance of a cure can only be a probability I am afraid. In so many cases disease has gained a strong hold and progressed beyond the stage where treatment might prove effective.

In its present dormant state your Koi will probably survive the winter, but spring may find it in a thinner, weakened condition and prey to fungus or fin rot. I would suggest that the Koi is isolated in warmer water at about 65°-70°F and treatment could be the careful and restricted use of the antibiotic at the dosage and periods quoted separately. If the fish shows any signs of recovery and will feed, some chopped earthworm should be offered.

This situation leads on to the mention of Avitaminoses (lack of vitamins), and it is important

to understand that treatments involving certain chemical substances can result in a deficiency of vitamins essential to good health; or to the stage where the fish is unable to absorb vitamins although they may be abundant in the food. If the affected fish will feed the diet should include a maximum of "B" vitamins as in wheat-germ, together with worms or scrapings of raw, fresh beef.

It is recognized that Koi suffer considerable stress arising from a long airfreight journey in a semi-starved condition followed by various changes of water, temperature etc.

The resistance of the fish is lowered and general lethargy, lack of appetite and progressive emaciation are signs of trouble. I hope you will understand that I can only list some of the problems, I cannot say what is affecting your particular Koi.

During the early part of summer I installed a large ornament for water return to my pond but after a few weeks the Koi seemed quiet and I suspected some pollution.

I changed some water and, because of a noise problem with the return from the ornament, this was disconnected.

When talking to friends they did not seem too happy with the possible effect of the metal pipe running up through the ornament and I wonder if this could cause any trouble?

You did not state the metal of the pipe and this could be checked by scraping away any discoloration due to ageing in order to determine whether it is copper. This is a very dangerous metal to have near water containing fish, even a trace dissolved in water can be fatal. It will also kill algae and can quickly lead to pollution in the warm conditions of summer.

Even if the pipe is of iron, this may be equally suspect and whereas some metals can develop a passive coating, the point to remember is that pond water is not pure and reaction can take place to dissolve away the metal over a period of time. If the pipe can be replaced by plastic this should be done or, dependent on size, a length of tubing could be pushed through the existing metal pipe to isolate this from contact with the water.

The known problems of water in contact with metal is the reason why I advise that the first water from a hose connected to the mains supply should be run to waste before going into a pond.

In the November 1979 issue you mentioned a rapid sand filter and I would be grateful for an address. My pond is largely above ground and measures 18 feet by 7 feet and is 2 feet deep, my garden is of solid clay and I cannot possibly dig any deeper or accommodate an under-gravel filter.

In May 1977 I started with 4 Orfe, 3 Goldfish and 3 Koi and in 1978 I bought 4 small Koi to rescue

them from a local dealer who should never be allowed near any livestock. All have survived so far but as I have no pump or filter the water resembles pea-soup for most of the year. The fish seem to like it and have grown but the trouble is their owner cannot see beyond about 3 inches down and I would appreciate some advice.

Oh dear, 3 inches down is really not very good and I do think you could use a little advice before another summer arrives. My problem is where to start, but I would not start by advising the use of a rapid sand filter in the present state of your pond. You will need to begin by cleaning out your pond as soon as weather conditions allow.

A pond partly above ground makes syphoning-out quite easy and you should be able to remove much of the settled sludge by this method, then top up with fresh water from a hose. This operation can be done on a weekly basis until the pond is acceptably clean.

I can understand your problem with clay as my own garden is the same, perhaps you could consider the use of an external filter and I have sent you a suitable diagram. A pump is a necessity for most Koi-keepers and to have one without benefiting from some form of filtration in the process is wasteful.

I hope you will be able to follow at least the advice given on cleaning up your pond. Koi are unlikely to survive indefinitely in dirty conditions. In fact many Koi have died in similar circumstances because their owners preferred to have so-called "natural" ponds. Actually, most fish do well in slightly green water provided it is healthy and well oxygenated. Stagnant, pea-soup is strictly to be avoided, especially for Koi, so please take the first steps towards keeping these magnificent fish in the manner to which they deserve to become accustomed.

The alternative may well be that as their living conditions steadily deteriorate, their owner may not have the problem of only seeing them about 3 inches down. One summer morning he may be able to see them all at the top, but quite dead, from suffocation. Now that would be a pity, especially when small Koi had been previously rescued from a watery grave and had grown.

NEWS RELEASE

Due to the rapid expansion of the firm's business, Aquarium Safe Products, Inc., has moved to new quarters at 3615 Superior Ave. 20, Cleveland, Ohio 44114; phone 216-881-8540. The 12,000 sq. ft. building will enable Aquarium Safe Products, Inc. to facilitate the increase of manufacturing and shipping of their TRI-S Brand Products in the U.S.A. and abroad.



MARINE QUERIES

by Graham F. Cox

READERS' SERVICE

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

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

Please can you advise me if it is possible to keep two different species of dragonfish, e.g. *Dendrocheirus zebra* and *Pterois volitans* in the same aquarium? Will these fishes eat invertebrates? Also I have read of a coldwater seahorse. Please do you have any information on keeping these?

1. *Dragonfishes*. As long as your two specimens of dragonfish (or scorpionfish as they are sometimes called) are roughly the same size there will be no trouble. However I strongly advise you to practise scrupulous fairness in your feeding of these fishes since, should the growth of a more successful specimen outstrip that of a weaker specimen it won't be long before the latter winds up inside the former fish.

Although you have not asked this question, I think a word or two on feeding might be in order for other marine aquarists who might be contemplating keeping one of these superb fishes for the first time. You will usually find that the stressful events along the route from a zillion gallon, Indo-Pacific coral reef to a North Yorkshire lady's twenty gallon sea aquarium usually conspire to shock dragonfishes so badly that they develop *anorexia*, i.e. they lose the habit of feeding. You may well do the same if you were to be suddenly transferred from your snug little Scarborough house through a Time-Space continuum, arriving shortly afterwards in an alien colony on another planet in a different galaxy at a different time.

Just think what jet-lag can do without even leaving the planet! Imagine also that your new masters were no longer Mum & Dad/Marks & Spencers/the Transport and General Works Union, or what have you, but a group of really weird, cold-blooded fish-like

water-dwellers, who kept you in a rectangular air-tank about the size of your front room. Imagine further that, instead of having done their homework properly and feeding you cornflakes, etc., these fishy aliens threw a couple of live octopi into your tank each morning and again in the evening when they came home from work. Would you feel like eating? Might you not develop "anorexia nervosa" and refuse all future octopi?—Live or dead? Cooked or fresh?

If we are to break down a newly-arrived coral fish's nervous refusal of strange foodstuffs we must attend to the following sequence, asking ourselves these questions in this order and correcting any "NO" answers immediately:

- (i) Have I created a habitat which as nearly as possible replicates the creature's natural environment? i.e. Have I used my rocks, corals, algae, shells, invertebrates to best effect?
- (ii) Is my lighting of a correct intensity and duration to simulate a tropical photoperiod? i.e. Few coralfishes will feed at night-time.
- (iii) Are all the chemical/physical/biological parameters of my system sufficiently like those obtaining on a healthy coral reef to ensure that the fishes *SHOULD* feed?
- (iv) Is this fish diseased? Please obtain the wall-chart "The diagnosis, treatment and prevention of fish diseases"—and read it 10 times at least before buying any fishes at all! If the answer to this question is "Yes," then you'd better set about curing the disease(s) first before offering any food. Precious few diseased fishes will eat anything anyway.

Now, having successfully run the gauntlet of (i) to (iv) above, we must assume that the fish has been given 24-36 hours to settle down into its new micro-habitat, and is now in a frame of mind to consider the pangs of hunger and begin eating—PROVIDED that we give him half a chance by offering something reasonably palatable. In the case of all the dragonfishes—(all rank predators!) this will be an appropriately-sized live molly or platy. The dragon will pursue its quarry round and round the tank until it eventually swallows it alive. Now wait 48-72 hours before offering the dragon a freshly-stunned (but still alive) molly or platy. Seventy-two hours after this offer the now almost hand-tame dragon an appropriately-sized chunk of *freshly-thawed* (i.e. not putrid) gamma-ray sterilized lance-fish or silver-fish—and when he successfully takes this you're home and dry.

2. *Dragonfishes and invertebrates.* In my experience, all dragonfishes are safe with all invertebrates except for the following two exceptions which prove the rule:

- (a) *Octopi and squid* will often catch and devour baby/juvenile dragonfishes, and;
- (b) *Dragonfishes* will often catch and devour any crustaceans (e.g. shrimps, prawns, softshelled crabs, etc.) small enough to fit into their enormous mouths.

3. *Coldwater seahorses.* The "coldwater" seahorse—*Hippocampus guttulatus* is only really common in the shallow warm water of the Mediterranean and on the Biscay shores of Portugal, Spain and France, I sincerely doubt that any reach the bracing waters off N. Yorkshire! However, keep your eyes peeled when enjoying summer holidays around Devon, Cornwall and Dorset—especially during scorches like 1976.

I have in my living room a marine tank which measures 42 in. x 22 in. x 12 in. It is stocked with: 1 Royal Gramma (approx. 1 in.); 1 Chequered Angel (*H. xanthurus* approx. 1 in.); 1 All Blue (*A. cyaneus* approx. 1 in.); 1 Spotted Goby (approx. 1 1/2 in.); 1 Powder-Brown Surgeon (approx. 3 1/2 in.).

I would like to know if you consider it possible to introduce 2 anemones and 2 pairs of clownfish, either *A. ocellaris* or *A. sebae* into this set up. If so how would I feed the anemones. Lighting at the moment is by 1 x 20 watt Northlight tube lit for approx. 8 hours per day. This produces sufficient algae for the surgeonfish to browse on. I intend to instal a timing switch to control the light and give approx. 12 hours light per day. If it is not possible to introduce the clownfish, what is your opinion on the introduction of 1 lionfish (*P. volitans*) of approx. 2 in. in length.

I may add that the surgeonfish has killed a

small *P. volitans* of approx. 1 in. by biting its pectorals down to short stumps.

The tank has been set up for 3 months now, nitrites are nil pH is 8.1 to 8.3 and S.G. is 1.022. I am using only under-gravel filters and an air diffuser. I would be grateful if you could tell me if in your opinion 3 *Chaetodon chrysurus* would be compatible together and whether they would be all right with the Powder-brown Surgeon.

(i) *Two anemones.* Yes in a tank as large as yours you have the room for two Med./Large anemones of either the *Radianthus* or *Stoicactis* spp. Anemones of both these genera are attractive to clownfishes.

(ii) *Two pairs of clownfish.* Both the species which you mention are similar (black and white) in colouration and would be expected to bicker incessantly amongst themselves. If you must have two pairs of clownfish I would recommend you to a pair of *A. ocellaris* and a pair of similarly-sized *A. percula* (Common Clownfish—orange and white). The ideal sequence of addition would be:

First — the anemones, then after 1 week;

Second — the Common Clowns, then

Third — the *A. ocellaris*.

This sequence is the one least likely to cause inter-specific aggression.

(iii) *Lighting.* For a tank as deep as yours you need three (3) feet of fluorescent lighting per each one square foot of surface area if you are ever to succeed with invertebrates. This statement is particularly relevant to the family *Coelenterata* to which the anemones and living corals belong.

Thus, since the surface area of your aquarium is approx. 3.5 sq. ft., you would need ten (10) feet of fluorescent lighting as a *minimum* if you are to succeed with invertebrates. Initially you might try the following compromise solution:

1 x 36 in. (30 watt) "Gro-Lux"

2 x 36 in. (30 watt) "Northlight"

This nine feet of lighting might be adequate if you can get the anemones to settle down somewhere near the water's surface.

(iv) *Lionfish.* Not a good idea with clownfishes in the tank. Their lives would be at risk every time they left the anemones' protective embrace.

(v) *General water quality.* Although you don't mention your mean water temperature, I imagine it is in the normal 75°-80° F. range, at which temperature S.G. 1.022 is a little high for Indo-Pacific species of the types you are keeping. An S.G. of 1.020 would be metabolically less stressful for the creatures.

(vi) *Chaetodon chrysurus* (Pearlscale Butterfly). In a tank like yours I would not recommend more than one specimen of this beautiful species. Additionally, I strongly caution that you "lock up" the Powder-brown Surgeonfish in a "Cox-box" (i.e. a well-perforated plastic sandwich box) for seven (7) days after unpacking the Pearlscale Butterflyfish.

Coldwater jottings

by Frank W. Orme

MAN HAS KEPT FISHES under domesticated conditions since pre-Christian times, particularly in the Orient. It is known that the Romans maintained fishpools in the grounds of their villas in Britain. Later, the fishpond grew in importance, every medieval castle, abbey, and monastery had one. However, these ponds served a utilitarian purpose, rather than decorative, being a readily available source of fresh fish for the table. The Chinese were probably the first to realise the ornamental quality of fish; they created the fancy goldfish by selective breeding.

Goldfish

Although goldfish were known in Britain it was not until Victorian times that the people of this country really began to get interested in fishkeeping—the aquarium often serving as an educational parlour ornament.

In 1850 P. H. Gosse, ALS., a Naturalist and pioneer aquarist, who was the author of "*A Manual of Marine Zoology*," helped to establish the original aquarium at the Gardens of the London Zoological Society. Henry Gosse was the first person to use the word 'aquarium,' in 1853. From then on, during Queen Victoria's reign, public aquaria were established in the Surrey Gardens, Belfast, Edinburgh, Scarborough, Yarmouth, and the Crystal Palace. Later, Aquariums were built in Manchester and Southport and in 1872 the Brighton Aquarium was opened.

During the reign of King Edward VII the interest in public displays of fishes lessened; however, it remained a popular pursuit of many schoolchildren. Of course, a small nucleus of enthusiastic adults continued to keep and breed coldwater fishes. One of the best known of this small band of fishkeepers was the Reverend G. C. Bateman, A.K.C., whose rectory was in Jacobstowe, North Devon. He wrote two books that became widely read. One was "*Fresh-water Aquaria*" which included particulars of some tropical fishes—such as Paradise Fish, Gouramies, and Siamese Fighting Fish. His other book was "*The Vivarium*."

During the time of King George V's reign there was a remarkable revival in the interest shown by people in keeping aquatic creatures. Not only did the number of people, both young and old, who took up the hobby of keeping goldfish, increase very rapidly but the early 1920s saw the development of serious tropical fish-keeping.

The Aquarist & Pondkeeper

In 1924, the late Mr. A. E. Hodge founded the forerunner of this magazine, under the title of the "*Amateur Aquarist & Reptilian Review*"—making the "*Aquarist & Pondkeeper*" Britain's longest established aquatic magazine. He and a small band of enthusiasts spread the gospel at a time when many were ready to listen and anxious to learn and become active aquarists themselves. Within two years it had become possible to stage an exhibition of coldwater and tropical fish. Progress was rapid and within a short time the leading fish-breeders decided that it was necessary to create a National organisation, this was brought into being under the title of "The British Aquarists' Association." For various reasons the B.A.A., was liquidated in 1935 and then reconstituted under the same name.

British Standards

In those days the hobby had become sufficiently important for the B.A.A. to consider it worthwhile drawing up a set of standards for exhibition goldfish. The B.A.A., issued the first British standards for the goldfish varieties in 1935.

It was during the early part of King George V's reign that the London Zoo Aquarium was built. Bristol Aquarists' Society was founded in 1929. In 1934, London saw a very large all-pets show which incorporated an aquaria section surpassing anything of its kind previously staged. The mid-1930s witnessed a continued growth in the fishkeeping hobby with the formation of numerous societies—mainly with a bias towards the interests of the tropical fishkeeper.

War

By the time September 1939 dawned everything was set for the hobby to progress by leaps and bounds. Then, in that month, the country was plunged into the hostilities of the Second World War. Despite the difficulties of those years, during which many men were forced to give up their hobby in exchange for less peaceful activities, a few aquarists managed to maintain their stock of fishes right through the duration of the war. Had it not been for those enthusiasts the hobby might have died out completely.

With the cessation of the war those aquarists who had survived the fighting and bombings could again turn their minds to other activities. Many again took up the hobby of fishkeeping with renewed interest and attempts were made to re-establish the hobby on a firm footing. The Federation of British Aquatic Societies, which had been inaugurated in 1938, became active again, and issued its "Show Standards for Cultivated Fishes" in 1947. In that same year the Federation of Northern Aquarium Societies was formed. At the end of 1946 there were 45 active societies. This number grew rapidly during the following years—the majority being devoted to tropical fishkeeping.

G.S.G.B.

The Goldfish Society of Great Britain was formed, under the leadership of the late Capt. L. C. Betts, M.B.E., when a group of enthusiasts met together in December 1948. This National Society issued their own standards for four basic varieties of goldfish in August 1950. Bristol A.S., produced a further set of standards during 1952.

Although there are goldfish enthusiasts in many parts of the British Isles few have formed themselves into societies, which is rather surprising. However, there are strong goldfish keeping areas in London and the Home Counties, Bristol, Lancashire, and the Midlands. Each area has its own well-established specialist society to cater for the interests of the goldfish hobbyist.

During more recent years there has been a tremendous increase in the number of people keeping Koi and this branch of the hobby has grown at a phenomenal rate. In fact, the British Koi-Keepers Society, which is the National Society with sections in many parts of the country, is the largest individual society in the United Kingdom—the membership is around 1,000. In addition to the B.K.K.S., there are koi societies in both Yorkshire and the West Midlands.

Other Coldwater Fish

Of course, goldfish and koi are not the only cold-water fish to interest aquarists. A society which caters for these wider interests can be found in the South Park Aquatic (Study) Society of London. A society with a different approach is the Ichiban Rancho

Society, which also meets in the London area, was formed in 1976. This society caters for those who are interested in the Japanese Rancho—to the exclusion, at society functions, of other varieties of goldfish.

Fishkeeping, as I hope this 'potted-history' has shown, has advanced slowly but steadily from the days of the stew-pond to our present day hobby. The signs are that the coldwater fraternity will continue to increase in numbers within the foreseeable future. So, what of the future? Hopefully we shall see more enthusiasts forming specialist coldwater societies—especially in those areas which are not within reach of one of the established groups. There must be many fishkeepers who are not attached to a society, who would welcome the chance of joining an active group of hobbyists with similar interests. However, for the benefit of those readers who are fortunate enough to live within reach of any of the following mentioned societies—or would like further details—I would suggest that they contact one or other of those named in the following brief résumé of the respective societies.

Goldfish Society of Great Britain—Meets five times each year on a Saturday afternoon, in the Conway Hall, Holborn, London. The society issues five Bulletins during the year to all members, plus occasional technical papers; it also stages an open show during each September or October. Membership covers Britain and overseas. Secretary: Mr. A. C. Law, "Bracken," 4 Elgin Crescent, Caterham, Surrey CR3 6ND.

Association of Midland Goldfish keepers—Meets once every two months, on a Sunday afternoon, at Foleshill Community Centre, Coventry. Issues a newsletter, prior to each meeting, to all members. Membership open to all goldfish enthusiasts—and has many who live outside the Midlands. Secretary: Mrs. J. Amos, 31 Greenview Drive, Kingsley, Northampton NN2 7LA.

Bristol Aquarists' Society—Meets once every month, on a Tuesday evening, at St. Ambrose Church Hall, Whitehall, Bristol. Issues a newsletter to all members prior to each meeting. Membership open to all fishkeepers. Stages an annual open show each September. Secretary: Mr. V. Cole, 10 Hardwick Close, Brislington, Bristol BS4 4NL.

Northern Goldfish and Pondkeepers Society—Meets every month in Lancashire. Issues a quarterly newsletter containing articles of interest to goldfish keepers. Stages an annual open show in Bolton which is fast gaining a premier place in the show calendar. All goldfish enthusiasts are welcomed as members. Details from: Mrs. P. Hodgkinson, 291 Plodder Lane, Farnworth, Bolton, Lancashire, who is the society's Public Relations Officer and magazine editor.

Ichiban Rancho Society—Details of meetings not known, although they are held in the London area. Issues a newsletter and holds an annual open show. Further information from Mrs. Eileen Davidson, 14 Garnets, Takely, Bishops Stortford, Herts.

British Koi-Keepers Society—The largest of the British societies and the national organisation of the U.K. koi-world. It has a number of strong regional sections, holding regular meetings and arranging visits to other sections. Stages an annual open show, usually at a prestige venue, at which Japanese koi authorities are invited to judge the entries. Produces a very professional printed, monthly magazine, which is issued to all members. Further details of the society and its activities obtainable from: Mr. M. Waumsley, 165 Woodside Road, Amersham, Bucks. HP6 6NR.

Yorkshire Koi Society—Founded by Mr. F. J. Ayres, 35 Manor Drive, Hilton-in-Cleveland, Yarm, Cleveland, from whom details of this northern society can be obtained. Although I have not heard from Mr. Ayres recently, when last he was in contact with me the society was very active; a most informative, monthly magazine was issued to members. Three years running an open show had been staged at Harewood House, and they had proved highly successful. Members lived in parts of the country, apart from the Yorkshire area, as far away as Wales.

Midland Koi Association—An active society which caters for the interests of Midland koi fanciers. It stages an annual open show at the Baginton Village Hall, Coventry; holds regular general meetings; a

monthly newsletter is issued to all members. Full details can be obtained from: Mr. R. Causer, 8 Swinburne Road, Mill Hill East, Hinkley, Leicestershire.

South Park Aquarist (Study) Society—Meetings are on the third Tuesday of each month, at the Wimbledon Community Centre, London SW19. As mentioned earlier, this society welcomes all coldwater fishkeepers and full details are available from: Mrs. M. Dudley, 163 South Park Road, Wimbledon, London SW19 8RX.

Readers who decide to write to one or other of the societies should bear in mind the high cost of postage; please show the courtesy of enclosing a stamped and self-addressed envelope with the enquiry—it is much more likely to bring an early response.

In the November, issue of this magazine last year, I extended an invitation to the secretaries of all cold-water orientated societies; I mentioned that I would be giving details of these specialist societies in a future issue, and requested them to send me details of their society. I fail to understand why, but few took up the offer—perhaps they did not desire their societies to be given any publicity—and this may have resulted in some of my information being out of date, if that is so I apologise. As I stated at the time, secretaries and venues do change!

To those readers who do not belong to a fishkeepers society, I recommend that they should seriously consider becoming a member of one; perhaps even try to form a society within their own area. There are many benefits to be reaped from such an alliance, not least being the opportunity to form new friendships and exchange experiences—it adds another dimension to the interest of the fishkeeping hobby.

BOOK REVIEW

How About Keeping Fish? by Valerie Singleton and Dick Mills. EP Publishing Limited. £1.50.

Understanding the Sea by Denis Sanderson. Ladybird Books.

How About Keeping Fish? is a practical guide to aquarium keeping for the beginner. It is well and interestingly written, generously illustrated with excellent line drawings, many of them of an amusing nature, and black and white reproductions of photographs of tropical and coldwater fishes, proven underwater plants, equipment and so on, including some livefoods. It is regrettable though, that the excellence of the writing and information given is marred by some faulty captions and misspellings of scientific names.

Ladybird Books are justly famous. Denis Sanderson certainly deserves a vote of thanks for his guide to the sea and its wonders. All youngsters, and not a few of their parents, will enjoy their visits

to the seaside all the better by learning what can be found under large stones left uncovered by a receding tide. This fascinating little book is wonderfully illustrated in colour by talented artist Sean Milne.

JACK HEMS.

Correction

In the *Aquarist* and *Pondkeeper*, October 1979, Jack Hems wrote in his Book Review of my book "*Making your own Aquarium*:"

—"a book put together by two such competent aquarists"—I would like to make it clear, that I wrote the book, and I made all the illustrations for the book except the front cover. I do not think that the translator should have the credit for all the books and articles I write.

The information on the cover of my book is not correct. I am married to Lisbeth Hansen and not to anybody else.

JØRGEN HANSEN.

TROUBLES OF A PONDKEEPER

by F. N. Culley

HAVING READ a few articles in the past two to three months on pond cleaning, I feel that some have got very close to a half suggestion which to me proved fatal.

On moving to my present abode I decided that a pond in the back (lower) lawn was a must, coupled with the fact that anything except high-summer sun missed the front of this ground, it being shaded by the garage.

At that time our elder son married and very soon moved near to us; (this has a later bearing) he was also "pond interested," as well as having about 10 tanks of tropicals.

I produced my pond 10 ft. x 8 ft. x 1 ft 3 in. and duly stocked with Goldfish, Cambridge Blues and Orfe, Water Hawthorn, Lillies and Canadian Pondweed. At the front end I built a rockery-waterfall with "4 drops" and had a "fish boy fountain" in the pool middle.

The fish thrived, and the plants, and I appeared to have reached "the ideal," that is except that I was not too happy with the pond surround which was created with 6 in. square stable tiles, which were not easily placed at a satisfactory level.

We had two very mild winters and plants did well at a very late time. Marginals had thrived too and the waterfall surround was becoming quite a jungle and had to be pruned.

With the advent of a few Koi on the market I decided to add a few small ones to my collection in the pond and about this time my son decided to stock his pond with Koi, some of which were quite big.

The arrival of winter appeared to be a more harsh event than the previous years and I constructed "an ark" over the pond, wood sides 9 in., one end 9 in. to 24 in. pyramid, the other end open to the waterfall,

this kept out leaves, and covered with polythene, it also kept out frost aided by a 100W pool heater. We had Water Hawthorn flowering over Christmas and New Year and the fish were "very comfortable."

The following year frost appeared in mid-October and stayed intermittently for about four weeks, but with the cover on, and the heater, on the colder nights, all was well. Although I had not taken too much notice, the weather had become much milder—we were working long hours at work as we were stock-taking and at the end of three weeks, at 3 p.m. on the Sunday afternoon, we went home with the job completed. On arrival—first daylight viewing for three weeks—I was staggered to see how some of the marginals at the foot of the waterfall had shot up and amongst these were dead fish; in fact all the fish except one Goldfish (which I still have) were dead amongst the marginals, due to the lack of oxygen. This was a considerable shock as it was never anticipated that this could happen with the lowest part of the cover 15 in. above water level and the top 30 in. above, plus one end wide open except for the marginals which grew within part of it, a four drop waterfall, and a fountain; needless to say "the ark" was dismantled and the marginals all removed.

At that time my son decided to move, and had not the time to prepare a pond in advance; this seemed to me a convenient time to modify my pond plus the incentive to solicit some help to facilitate the accommodation for "the lodgers." The stable tiles were removed, the pond emptied and the rockery dismantled; a new pump house built with the rockery and the pond made 2 ft. 3 in. deep to 2 ft. 9 in. and an undergravel filter installed at the far end to the dimensions as then thought to be the requirement, and constructed of $\frac{3}{4}$ in. plastic waste (since modified to 1 $\frac{1}{2}$ in. as the pump (S/T 18) was being starved of



View of waterfall showing amount of water passing through filter and dropping to create turbulence and good aeration.

water when the filter had been running for 3 months) and the surround was completed with 18 in. (etc.) coloured patio tiles.

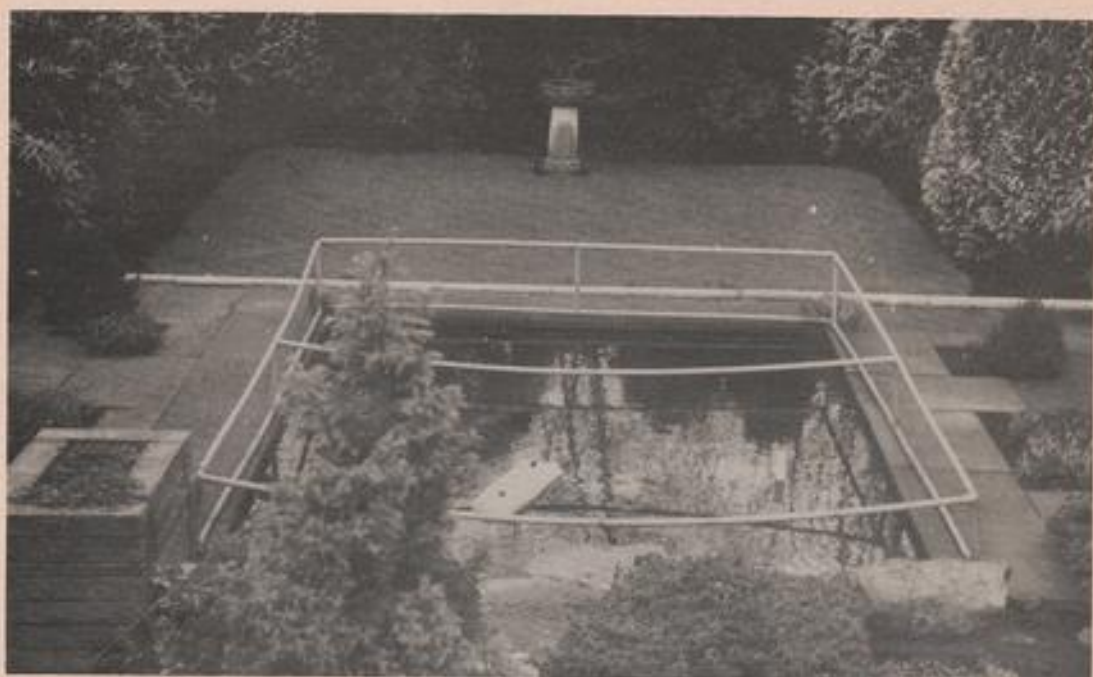
I had been an open admirer of Koi from first sight but the price and the losses entailed with 4 to 5 in. youngsters was too much and as I was now to be "the landlord" for my son's stock. Apart from being apprehensive regarding losses, I was happy to see these do well in this new environment. I bought a few more 4 to 5 in. specimens but had losses with these again. Six years later I still have "my lodgers," some now over 20 in. and in beautiful condition. I bought some more youngsters and brought them along over winter inside, in 36 in. tanks. They did well, at least 50% did; the rest died within 7 to 21 days of making their journey here. I bought 8 about 2 in. long or less, locally; still in their "infant colour" they were cheap and at the price 50% loss would have been the price of 1 of the previous purchases. I had enormous pleasure in watching these mature over winter and progress after installing in the pond. They all turned out to be nicely marked fish and are doing fine. They grew about 4 in. in length making 6 in. when put in the pond.

When I found I was having trouble with the $\frac{1}{2}$ in. filtration system due to water starvation, I wrote to Hilda Allen and asked for an opinion. I got some very good advice and guidance from her and, as the

pond was modified for Koi before bottom drains, etc. were considered necessary, I "adapted" my clearing system by putting an Otter 52 into the pond between the waterfall and the filter. I fitted a $1\frac{1}{2}$ in. plastic waste pipe 7 ft. long, plugged at the end and drilled 3 in. holes as appropriate, I have an 18 in. pipe on the outlet to which I fit a portable extension which extends to the Heather beds in the border, I switch this pump on from time to time to remove "bottoms" and add fresh water to compensate.

After having negotiated these various obstacles I am delighted to say I have beautiful Koi (although they are not all my own) which I can see in beautiful clear water. I should add, I prune my Lily leaves as they die to ensure they do not contaminate the pond and I can net the odd leaves which blow into the pond, which are not too many. I arranged the surrounding garden to trap stray leaves in the Heathers, and I constructed a frame from $\frac{1}{2}$ in. waste 18 in. high and covered it with fine (1 in.) netting, this keeps out leaves, cats, birds etc. and allows the Koi to jump within the pond without damage on the surrounding flags, and no height restriction.

I am afraid I am an U/G filter enthusiast, and I find if there is a facility to remove mulm etc. it works wonderfully, it has to be raked over now and again particularly if you cannot keep pace with dead foliage or you acquire an amount of blanket weed as this can



General view from waterfall and showing net in position and pump house on left. Photographed in December the corygreens are much in evidence.

spread a fine blanket over the pebbles which tends to reduce the flow through so a rake over every 6 to 8 weeks keeps the filtration efficient. I should imagine if you are a "no plants in the pond" enthusiast it must be easier still, myself I have 2 large Lillies, a small amount of Elodea round the edges, and a fair sized patch of Duckweed on top, this I keep to about 3 ft. dia., or the fish do, as the Koi take quite a lot of it.

So if bred Koi have appeared, and have been allowed to over winter in the pond when only 2 in. to 3 in. long, they have survived when larger sizes of

bought fish, flourishing before hand, have died.

My advice to anyone buying Koi less than 4 in. to 5 in. is put them into inside large glass tanks, they thrive once they are "over the move," you can watch them for "trouble" and treat in good time for any problem. As for the pond fish, I treat the pond with a Steragin course in spring and in autumn and I am delighted with the results.

Any thoughts of covers to keep out frost etc. should be dismissed, add a 125W heater to the pool and keep the waterfall running and feel safe.



ADVANCE NOTICE

THE FEDERATION OF NORTHERN AQUARIUM SOCIETIES

Members of The Confederation of United Kingdom Aquarists

in collaboration with

THE AQUARIST AND PONDKEEPER

present

THE 29th BRITISH AQUARISTS' FESTIVAL

at

BELLE VUE MANCHESTER

on

SATURDAY and SUNDAY 8th 9th NOVEMBER 1980

Cryptocoryne usteriana

AN IDEAL PLANT FOR HIGH WATER-LEVEL AQUARIA

by Dr. Jens V. Brunns

Chairman of the Danish Aquatic Union



Cryptocoryne usteriana

C. usteriana is one of our most elegant aquatic plants and originates from The Philippines.

The plant can obtain a length of up to 150 cm. and its leaves have hammer imprints in the length, and are lance-shaped. The imprints on its side are in contradistinction to *C. balansae*, which it is easily mistaken for. The stalk can obtain a length of up to 40 cm.

Care

The plant is comparatively hardy and is one of the few plants that can be kept in a high water level aquarium without many problems. Among other things, it is the only plant that Denmark's Aquarium could preserve through the years without dying out. On the contrary, they reproduce themselves in the

March, 1980

aquariums. The height of the tanks in Denmark's Aquarium is about 120 cm., or slightly more. A well-known problem is how to get light on the plants at these depths, as light is most often the crucial factor in determining if the plants can thrive. In the care of our modern aquariums, with the artificial light source, we calculate about 50 cm. above the limit which is allowable for all the plants to grow and reproduce themselves.

C. usteriana can tolerate hard water splendidly (20 dh). The hard water is thought to protect against that well-known phenomenon cryptocoryne-melting to a certain degree.

By this, it enters into some osmotic factors that are not scientifically understood completely. Frequent changing of the water (once a week 10%-30% of

water) is considered a good form of protection against cryptocoryne-melting. The bottom layer should have small gravel the size of 1-5 mm. per grain. It is always an advantage to provide for good bacteria circulation on the bottom layer. In this way it forms a quantity of nitrogen products that the plants utilize in their formation of plant (egg protein white) substance, that is a necessary condition for the plants to grow. Furthermore, it liberates phosphate etc. that facilitate the formation of the substances that are part of the plant cells.

In order to help the bacteria in their decomposition of the different substances in and on the bottom, it is a big advantage to keep snails (*Melanoidea tuberculata*). These snails produce an effect by digging

shoots. Reproduction of the flower consists of the formation of a long, irregular cone-shaped pipe. In the bottom lies the female flowers. The function of the insect is to crawl down into the pipe. If the insect has pollen with it from an earlier plant visit the female flower is fertilized. Simultaneously, the lid closes on the pipe and the female flower closes itself tightly; then the male flower part in the pipe opens itself. The insect gets pollen from the plant on itself, which will be able to pollinate the plant next to it. The attraction of the insects takes place with the help of some strong smelling particles. Reproduction with the help of root shoots is almost universal in our aquariums. If the plant grows fast and well it can produce 1 or 2 new plants per week. In half



in the bottom layer, thus encouraging matter to circulate. Simultaneously, by supplying oxygen-rich water to the highest part of the layer, an aerob transformation can occur. Again, that brings about a reduction of putrefaction in these layers with a reduced risk for suddenly poisoning the water. Furthermore, it has been clearly demonstrated often that the roots of plants in aquariums in which *Melanoidea tuberculata* lives, are significantly shorter than in aquariums where these snails do not live.

The interpretation for this is that the snails bring about a nurturing substance for the plants and not the opposite; that the roots go to the bottom in order to search for their food.

Reproduction

C. usterriana, like so many other plants, can reproduce itself in 2 ways: either with the flower or the root

a year, for instance, it is very possible to attain a generously large background of *C. usterriana*. I usually place them behind my Amazon sword plants in one-half of the aquarium. When the plant is in the shade too often, then it is necessary to use very strong lighting over the back part of the aquarium in order for the Amazon sword (*Echinodorus* spp) to thrive well. They can also be put behind in combination with stones and roots, and in front of the smaller cryptocorynes. In that way, a beautiful, impressive interior can be obtained. Many aquarium enthusiasts have tried in vain to get the plant to blossom, among other things, by lowering the water level, but without success. This can be the cause of why many cryptocorynes have a triploid chromosome composition. These plants are capable of surviving by reproducing themselves by root shoots, but are sterile if an attempt is made to reproduce by flowers.



from AQUARISTS' SOCIETIES

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

THE Wycombe Marsh A.S. meet at the Social Club, Railko Ltd., Loudwater, High Wycombe, Bucks, at 8 p.m. At the A.G.M. the following officers were elected: chairman, Johnny (Catfish) Johnson; secretary, Mike Fox; treasurer, Mike Knight; social secretary, Ann Snapes; P.R.O., Stephen Friend. Details of meetings can be obtained from Mike Fox (secretary), 24 Kelvin Close, High Wycombe. Tel: H.W. 38823.

At the annual general meeting of the **North Wilts A.S.** the following officers and committee members were elected: chairman, P. Monk; vice-chairman, L. Eagle; secretary, G. Reynolds; treasurer, M. McCloskey. Committee: M. Brown, P. Brown, G. Palmer, J. Eagle, I. Markham, S. Markham.

A NEW society has been formed in the Stoke-on-Trent Area, called **The Potteries and District Aquarist Society**. Meetings are held at the Bircheshead Community Hall Addison Street, Bircheshead Stoke-on-Trent, Staffs, on the second Tuesday of the month. Anyone interested should contact the Hon. Secretary, John Sanders, 20 Earsbrook Drive, Trentham, Stoke-on-Trent, Staffs. Tel: Stoke-on-Trent (0782 658822).

The January meeting of the **New Forest A.S.** was held at the Community Centre, Lymington. The main item was a colour slide show on the subject of aquatic plants, which gave much information on common plants and was well received by all. Final arrangements were also made for an inter-club quiz, **Faces A.S.** of Christchurch being the hosts. Table-show results: Labyrinth; 1, T. Kirby; Guppies; 1 and 2, R. Menhennet; A.O.S. Catfish; 1, T. Kirby; Corydoras and Brochis Catfish; 1 and 2, T. Kirby; 3 and 4, R. Menhennet.

At a recent A.G.M. of the **Novo's T.P.C.** the following were elected: chairman, M. Hall; secretary, P. Caddle; treasurer, T. Bolam; show secretary, J. English; assistant show secretary, J. Doughwaite. Any enquires to P. Caddle, 47 South St, Shipcote, Gateshead.

Wyke Show Society held their A.G.M. at the Park Hotel Beverley Road, Hull. Here the following were elected to serve on the Committee: chairman, T. A. Tolhurst; secretary/events officer, A. Frisby; treasurer, Mrs. H. Tolhurst; show secretary, Mrs. G. Frisby; assistant show secretary, R. Gee; Public relations officer, A. Dudding; librarian, M. Ashton; junior representative, N. Metcalf.

The table show results for that evening were: Juniors: 1 and 3, N. Metcalf; 2, T. Gould. Seniors: 1 and 3, A. Dudding; 2, Mr. and Mrs. Ashton. The results of the club's competitions for 1979 were: Mens: 1, T. A. Tolhurst; 2, E. Lough; 3, R. Gee. Ladies: 1, H. Tolhurst; 2, G. Frisby; 3, E. Ashton. Juniors: 1, A. Dudding; 2, T. Tolhurst; 3, N. Metcalf. Partnership: 1, Mr. and Mrs. Ashton; 2, Mr. and Mrs. Lough; 3, Mr. and Mrs. Honger. Growing on: 1, T. Tolhurst; 2, A. Frisby; 3, D. Tolhurst; Fish of the year: 1, C. Quatock; 2, A. Frisby; 3, V. Quatock.

The Society now meet at 7.30 p.m. on the 2nd and 4th Thursday of each month at The Rose public house, Beverley Road, Hull. Visitors and New Members all welcome.

At the A.G.M. of the **Fleetwood and District A.S.** the following officers were elected: president, D. Sands; vice-president, B. Black; chairman, T. Dean; secretary, B. Frost; treasurer, Mrs. B. Frost; show secretary, Mrs. A. Stanhope, 6 Ryd Street, Fleetwood; equipment officer, Mrs. T. Woods; social secretaries, Mr. and Mrs. B. Gouldbourn; committee members, Mrs. E. Munner, T. Ballam; show and technical advisers, Mr. and Mrs. G. Moseley. The meetings are held at the Strawberry Gardens Hotel, Poulton Road, Fleetwood, every first and third Wednesday in the month at 8 p.m.

Numeston A.S. held their A.G.M. at the "Fleur-de-Lys," Public House, Coventry Road, Numeston, when the following officers were elected: chairman, S. Deeming; vice-chairman, G. Cox; secretary, George Hayes, 35 Gwendoline Avenue, Hinckley, Leics. (Tel: Hinckley 612741); assistant secretary, M. Hall; treasurer, Mrs. I. Cox; show secretary, G. Hemmings; asst. show secretary, M. Crane; P.R.O., K. Griffiths; librarian, Mrs. M. Griffiths; committee members, M. Short, and Mrs. M. Hayes. Meetings are held every 3rd Tuesday of the month at the "Fleur-de-Lys," Public House, Coventry Road, Numeston, at 8 p.m. Old and new members always made welcome.

At the A.G.M. of **Bradford and District A.S.** the following were elected: president, K. Avison; vice-president, D. Sugden; secretary, A. Fisher, 2 Sherborne Road, Idle, Bradford; treasurer, A. Daugherty; publicity officer, R. Bullock; committee, I. Barford, E. Mottershead, L. Gatenby, D. Moorehouse, B. Isaacs.

The following were winners of their annual trophies: Thornley Memorial trophy, D. Sugden; Juniors' trophy, Miss L. Mottershead; A.O.V. trophy, Miss L. Mottershead; Open Show shield, Miss L. Mottershead; Fish of the Year, D. Sugden.

Evesham Fish Keepers Society held a very enjoyable and well attended coffee evening in January. The Miniature Aquarium competition and a class for A. V. Cichlids was judged by Mr. Norman Binding, chairman of Cheltenham Tropical Fish Club, and Mr. Graham. Results: Mini. Aquarium—1 and 2, and Trophy winner, Mrs. J. Hessel; 3, F. G. Thornton; 4, Miss J. Chester; A. V. Cichlid—1, 2 and 3, F. G. Thornton.

The society meets on the first Wednesday of every month, at 8 p.m. at the Hampton Scout Hut, Pershore Road, Hampton, Nr. Evesham, Worcs. New members and visitors are welcomed. Secretary, E. M. Thornton, 41 Crooks Lane, Studley, Warks. (Tel. Studley 7125).

The inaugural meeting of the first chapter in the U.K. of **Zen Nippon Airinkai**, took place at the "Bull Hotel," Gerrards Cross, Z.N.A. is a Japanese koi society dedicated to spreading the appreciation of nishikoi and their well-being throughout the world.

The meeting was well attended with 60 koi fanciers travelling from various parts of the country to participate in the opening of this new chapter. The President (Dr. Paul Cook), displayed the official scroll (the seal of approval for the chapter) which had been presented to him by the Chairman of Z.N.A. (Dr. Takeo Kuroki) while on a recent visit to Japan. The three guest speakers, Mr. R. Hodgson, Mr.

M. Hardy and Mr. C. Roe, each gave very informative talks on the varieties of koi, the source and history, and new methods of water management.

Beautiful full colour koi calendars were distributed to all members present. There followed a draw for 39 very high quality koi, a very generous gift to the U.K. chapter by Mr. Yosaburo Tsuchiya, Mr. Y. Tsuchiya is director of the Tokyo chapter of Z.N.A.

Dr. Cook then announced his plans for a combined Koi Show on 6th July with the Midland Koi Association and that Mrs. Gill Minchin would be the Z.N.A. Show Secretary. If you would like more information on the chapter, please write to the Membership Secretary, C. Roe, Zen Nippon Airinkai, P.O. Box 30, Windsor Road, Uxbridge, Middlesex.

FOLLOWING December's most interesting and enlightening lecture by Dr. David Ford, members at the January meeting of **Malvern and District A.S.** were entertained by a fish knock-out competition which was won by a junior member, Martin Twizberrow, who also won the table show. New members are always welcome and the society meets on the first Monday of each month at St. Joseph School Hall, Newtown Road, Malvern.

At the monthly meeting of the **Mid-Sussex A.S.** held on 10th January, the main part of the evening was taken up by a very good tape/slide show—"Cichlids of West Africa and Lake Tanganyika" by Ian Sellick. The monthly table show was judged by Martin Rooney, and cards were awarded to: Guppies—Pairs: 1, P. Levine; 2, T. Pidgeley. Female: 1 and 2, P. Levine; 3, E. and T. Tester. Male: 1 and 2, P. Levine; 3, C. Slade. The monthly 50 club draw winners were J. Smith, Y. Perrin and H. Slade.

Meetings are held on the second Thursday of each month at Oakley Lodge, Keymer from 8 p.m. Further information from the secretary, Mr. John Birch, 11a Sandrocks Way, Haywards Heath. (Tel: H.H. 50585).

On 31st January, **Sandgrounders A.S.** were delighted to have their Vice-President and Chairman of the recently formed Northern Area Group of the Catfish Association of Great Britain, as lecturer for the evening, on "The World of Catfish". His slides were excellent, his information was first rate and up-to-date, and his subtle wit spontaneous. He had arranged that Mr. and Mrs. B. Baldwin brought along three fish to illustrate his lecture. The gathering of over 40 was full of praise for Mr. Sand's lecture and his slides. The Chairman (Mr. George Waterhouse) thanked the speaker. Meetings are held fortnightly on a Thursday evening at 8 p.m. Venue—the "Mount Pleasant" hotel, Manchester Road, Southport. Visitors and members welcome. The meeting sent best wishes for a speedy recovery from illness to Mr. Jimmy Tinsley, President of the Society. Further details from Mr. Steve Horton, 81 Radnor Drive, Southport, Merseyside. Tel: Southport (0704) 24743.

At the January meeting of the **Catfish Association of Great Britain**, Northern Area Group which met at the R.A.O.B. Club, Quarry Bank, Wigan Road, Skelmersdale, 45 enthusiasts were welcomed by the Chairman (Mr. David Sands), who explained the agenda for the year's meetings. Table shows would be held at almost each monthly meeting, pairing together two of the six main families of Catfish, plus a class for any other family not catered for in the six mentioned, i.e. Callichthyidae, Pimelodontidae, Loricariidae, Bagridae, Mochokidae and Doradidae. Culminating in December with the final—the Championship show. Explanation and information on the families bench was dispensed by Mr. D. Sands and illustrated by slides. Judges for the evening were Mr. Ian Puller, who travelled from his home in bad weather from Rugeley in Staffordshire, and Mr. George Waterhouse, of Sandgrounders A.S., Southport.

Table Show winners were: Callichthyidae: 1, with a *Corydoras Melanostomus Brevis*, Mr. and Mrs. B. Baldwin, of Sandgrounders A.S. (Best in Show); 2, with a *Corydoras Saramaccensis*, B. D. and G. Harvey, Sandgrounders A.S.; 3, with a *C. Melanostomus Brevis*, Mr. and Mrs. B. Baldwin, Sandgrounders A.S.; 4, Mr. and Mrs. A. Waterhouse, Leigh A.S., with a *C. Paleatus*. Pimelodontoideae: 1, with a *Pimelodus 'Pictus'*, Mr. and Mrs. B. Baldwin; 2, *Pimelodus Ornatus*, Mr. D. Laking, Hoylake A.S.; 3, *Pimelodus 'Pictus'*, Master Ken Corbett, Merseyside A.S.; 4, *Pim. species*, Miss J. Lawless, Leigh A.S. Any other Family: 1, *Heteropneustes Fossilis*, Miss Janet Baldwin, Sandgrounders A.S.; 2, *Paraschepteris Fisheri*, Mr. and Mrs. David Sands, Sandgrounders A.S.

Families to be benched on Friday 21st March at 8 p.m. will be Mochokidae, Doradidae and A.O.V. There will be a slide lecture by David Sands, followed by discussion of the families benched at the Table Show. Please bring along specimen fish for identification. Further details from Steve Horton, hon. secretary, on 0704 24743, or George Waterhouse, P.R.O., on 0704 213904.

A MEETING of hobbyist was held in the Ganolan Centre, Llynwyl. As a result the Cader A.S. was formed. The officers elected were: chairman, A. Caley; secretary, G. D. Lacy; treasurer, K. Weeks. Anyone interested in fish of all types or wishing to become a member please contact D. Lacy, 2 Godre's Gar', Llynwyl, Gwynedd or phone 0341-250574.

TWENTY-FOUR members attended the A.G.M. of South East Cornwall A.S. The chairman, Fred Dack said, that after a very successful Honey Fair the club hoped to go to the National Show in London this year. Election of officers: president, A. Tuffs; chairman, F. Dack; vice-chairman, M. Lander; treasurer, Ed. Smith; secretary, Mrs. Margaret Lander. Committee members: D. Woodman, L. Tonkin, Mrs. Linda Prout, Mrs. Iris Toms, K. Wood. The chairman announced that Keith Wood had won the Jack Pengetley Memorial Shield for the most points acquired in the year from fish shows.

Newcastle Guppy and Livebearers Society 1980 Committee: president, G. Martin; chairman, D. Renton; vice-chairman and treasurer, J. English; secretary, John Renton, "Halfback House", 146 Chillingham Road, Heaton, Newcastle-upon-Tyne; P.R.O., R. Gledhill, 13 Brancepeth Close, New Marske, Cleveland; librarian, R. Kerr. Booklet One and Slide/Tape Talk available. Details from both addresses. New members both corresponding and attending welcome.

Hucknall & Bulwell A.S. seek new members. Meetings held at "Half Moon" public house every other Wednesday, 8 to 10 p.m. April 23rd, Guest Speaker, Dr. Chris Andrews, of TetraMin products. Contact Mick Wedge on Nottingham 273132.

CHANGE OF OFFICERS

DUE to the recent A.G.M., the following changes have occurred at Leigh A.S.: secretary, G. Williamson, 56 Hillcrest Avenue, Leigh, Lancs. (Tel. Leigh 603456); new show secretary, Mrs. B. Waterhouse, 416 Liverpool Road, Platt Bridge, Wigan, Lancs. (Tel. Wigan 863738).

AT the A.G.M. of Goole & District A.S. the following officers were elected: chairman, G. Collier; treasurer, P. Shipley; show secretary, J. Goacher, "Green Rooves," The Tubary, Belton, Nr. Thorne (Tel. 0427-872127); secretary, Mrs. C. Collier; programme secretary, D. Kirby; catering secretary, Mrs. M. Shipley.

NEW officers of the Accrington and District A.S. are as follows: chairman, P. Foote;

secretary, I. Entwistle, 30 First Avenue, Church, Accrington. (Tel. Accrington 384342); treasurer, A. Burwistle; show secretary, S. Walsh, 133 Lammack Road, Blackburn; public relations officer, J. Holding.

Monthly meetings held at the "Blockade Hotel," Accrington on first Wednesday of every month.

A most interesting lecture on economic fish keeping was given by Mr. Brian Walsh on 9th January, a member of Darwen and Blackburn A.S. He demonstrated how to construct an all glass fish tank which was later a prize in the raffle. They were then treated to an excellent slide show illustrating insulation of the fish house and making your own equipment—filters, airlifts, etc. The talk continued with collection and propagation of live foods suitable for fish and problems which might ensue.

AT the A.G.M. of Bristol A.S. the following officers were elected: president, S. Lloyd; vice-president, H. C. B. Thomas; treasurer, Mrs. J. Day; reporting sec., Mrs. J. M. Thomas; committee, Messrs J. Day, W. G. Ham, R. Pincock, C. Spence; registrar, Miss H. Morgan; secretary, V. Cole, 10 Hardwick Close, Bristol BS4 4NL.

Awards for High Points for Table Shows 1979: coldwater: 1, W. G. Ham; 2, R. Pincock. Tropical: 1, Miss H. Morgan. The evening concluded with an illustrated talk on the show points for the common Goldfish.

THE A.G.M. of the Trowbridge and District A.S. was held on 8th January. The chairman reflected on the past year which included a very successful Open Show, the winning of the Inter-Club Competition and a very rewarding financial year. They also had a very good evening with Dr. Foed from Aquarian Foods. The following committee were elected: chairman, W. Burton; treasurer, J. Burton; secretary, M. Bennett, 30 Lewis Crescent, Frome, Somerset; librarian, M. Patrick; show secretary and public relations officer, J. Bennett; committee member, P. Grist.

OFFICERS elected of the A.G.M. of the Tonbridge and District A.S. chairman, Andrew Feast; vice-chairman, D. Purchard; secretary, Mrs. Wendy Price, 32, Oast View, Horsemonden, Kent; treasurer, B. Price; show secretary, Guy Woodhams. Committee: Mrs. D. Farnell, F. Farnell, P. Mitchell, D. Cook.

Taunton & District A.S. Club Secretary for 1980 is Mrs. P. Cooper, 14 Rochester Road, Taunton and the show manager is R. Cooper, 14 Rochester Road, Taunton.

AT the A.G.M. of Bridgewater A.S. the following were elected: chairman, R. Free; secretary, K. Buckley; treasurer, D. Mason; show secretary, S. Ainscough. Breeders Award Scheme, E. Calow; working members, W. Edwards, G. Chadwick, D. Jones, T. Hinsley.

THE following were elected to office at the A.G.M. of the Blackpool and Fylde A.S.: president, Ron Haigh; vice-president, Brian Simmons (honorary); chairwoman, Kathleen Smith; vice-chairman, Dave Wright; treasurer, Dave Schofield; secretary, Janet Briery, 20 Hathfield Close, Thornton Cleveley S. Blackpool. (Tel. 869819); show secretary, Stella Merchant; pub. relations, Shirley Casey; committee members, Arthur Casey, Jeffrey Thomas, Arthur Mellor, Steve Wilson.

CHANGES to the Morley A.S. committee: chairman, R. Brown; vice-chairman, J. Britten; treasurer, J. Dyson; secretary, M. A. Church, 5 Pyenot Avenue, Cleckheaton (Tel: Cleckheaton 875039); show secretary, J. Muryka, 43 Pippins Green Avenue, Kirkhamgate, Wakefield (Tel: Wakefield 62144); ticket secretary, P. Bentley; other members of the committee, D. Smith, Mrs. C. Cash, Mrs. P. Muryka, D. Copey.

AT the A.G.M. of the Loughborough & District A.S., the following officers were elected: chairman, Mrs. E. Hallam; secretary,

P. A. Hughes, 35 Packington Hill, Kegworth, Derby; treasurer, N. Hallam; show secretary, I. Purdy; show manager, A. Onslow; social secretary, A. and Mrs. E. Young; news letter Ed., A. Onslow; P.R.O., S. Purdy.

Meetings are held at the "Charnwood Inn." The Rushes, Loughborough on the second and fourth Thursday of the month, starting at 8 p.m. All new members welcome.

OFFICERS elected at the A.G.M. of the Sherwood A.S. were: chairman, J. Colley. Secretary, M. A. Hollingsworth, 9 Vesper Court, Forest Town, Mansfield, Notts. NG19 0AN. (Tel: Mansfield 647491); treasurer, Mrs. F. E. Johnson. The meetings are held at "William IV," Sutton Road, Mansfield every two weeks at 7.30 p.m. on Thursday. Newcomers are welcome.

CHANGES in the Southend Leigh & District A.S. Committee: Hon. Secretary, A. R. Cooper, 98 Anson Chase, Shoeburyness, Essex. (Tel. Shoeburyness 2743); hon. president, D. M. Chenswright; open show secretary, J. London, 145 Whitmore Avenue, Grays. (Tel: Grays 30841).

AT the A.G.M. of Brighton and Southern A.S. the following committee were elected: chairman, Tony Martin; vice-chairman, R. Rice; treasurer, C. Raggio; secretary, T. Ramshaw, 26 Wilmot Road, Shoreham, Sussex; show secretary, M. Rooney; P.R.O., Edna Smith; committee members, M. Smith, B. Sayers and R. Goscher.

THE Bexleyheath and District A.S. newly elected officials are: chairman, D. Goodwin; deputy chairman, M. Balcombe; secretary, D. Smith, 59 Penthill Road, Bexley, Kent; treasurer, M. Martin; show secretary, N. M. Raven; asst. show secretary, M. Carter; P.R.O., D. W. Barnett; librarian, R. Mitchell; social secretary, R. Liddiard; floor member, E. Dixon. Junior Section: chairman, M. Buttery; committee, D. Dixon, A. Reid, M. Archer. The society meet every other Thursday at 6.30 p.m. for juniors and 8 p.m. for seniors, at the Committee Room, A.B.C. Cine Bowl, Broadway, Bexleyheath, Kent. New members always especially welcome.

SECRETARY CHANGES

Stafford A.S.: Mr. L. P. Lainton, 280 Sandon Road, Stafford ST16 3HP.
Cheltenham Tropical Fish Club: Mr. G. Emptage (new address), 25 Hayden Court, Staverton, Nr. Cheltenham, Glos. (Tel. 856057).

CHANGE OF VENUE

BECAUSE of unforeseen circumstances the Brighton and Southern A.S. annual open show on 9th March will now be held at St. Barnabas Church Hall, Sackville Road, Hove.

THE newly formed Newark & District A.S. have had to move to new premises further meetings will be held at the Vine Hotel, Barnsbygate Newark, at 8 p.m. every 1st and 3rd Tuesdays of the month. They have gained so many new members that they have had to move to larger premises. Any enquiries to Secretary, Mrs. Griffin, 3 Welbeck Avenue, Newark (Tel: Newark 71402) or chairman, Mr. R. Worth 21, Russell Avenue (Tel: Newark 705439).

OBITUARY

A nationally known Aquarist, Mr. Ken Harvey passed away in January. He was one of the countries leading aquarists for many years and was the founder member of Stone A.S. He also was a past member of the B.K.A. and The Northstaffs A.S. His death is a sad loss and all his friends offer deepest sympathy to his wife and family.

CALENDAR

2nd March: Keighley A.S. open show at The Victoria Hall, Keighley. Please return trophies

to Secretary, Mrs. B. Pickles, Flat 3A The Parade, Cottingham, Bingley, West Yorkshire (Tel: Bingley 66493).

9th March: Workshop Aquarist and Zoological Society open show at the Lady Margaret Hall, Holbeck, nr. Workshop. Also bring and buy sale. For details ring Workshop 81361 or Gainsborough 890618.

15th March: The British Aquarists' Study Society First Spring meeting at 2 p.m. in the Meeting Rooms of The Zoological Society of London, Regents Park, London NW1. Marine biologist and diver John Hancock will give illustrated talks on the United Services Expedition to the Chagos Islands in the Indian Ocean where he collected, observed, photographed and kept hundreds of tropical marine specimens from starfish to sharks. The meeting will be followed by a visit to the London Zoo Aquarium by kind permission of the Curator, Dr. H. Gwynne Vevens.

Tickets from W. Goodwin, 14 Dawlish Drive, Devon Park, Bedford.

16th March: Halifax A.S. section of fish, plants and equipment at Forest Cottage Community Centre, Cousin Lane, Halifax. Details from John Shackleton (Tel: Halifax 55214).

22nd March: Hendon & District A.S. 21st annual convention at the Grahame Park School, Grahame Park Way, Colindale, London, N.W.9 (near R.A.F. Museum) 6-10 p.m. Guest speaker Dr. G. S. Azeled.

23rd March: Runcorn A.S. open show at St. Edwards Church Hall, Ivy Street, Runcorn. Benchings 12-2 p.m.

31st March: Nelson A.S. annual open show at the Civic Theatre, Stanley Street, Nelson. Details from show secretary R. McKenna, 52 Bath Street, Nelson, Lancs BB9 0NP.

6th April: Hyde A.S. open show at the Hattersley Community Centre, Hattersley Road East, Hattersley via Hyde, Cheshire. Further information and show schedules from Show Sec. K. J. Sherwin, 14 Lyme Grove, Denton, Manchester (Tel: 061-336 0574).

7th April: Southampton A.S. open show at the Avenue Hall, The Avenue, Southampton. Schedules from Show Sec. D. Mills, 30 Fernside Way, Bitterne Park, Southampton SO2 4SZ.

12th April: Catfish Association of Great Britain open show at Raynes Park Methodist Church Hall, Worples Road, Wimbledon, S.W. Schedules from Terry Cruikshank, 82 Stanley Avenue, Greenford, Middx. (Tel: 01-878 0194).

13th April: Moseley A.S. open show at Newlands School, Wide Lane, Moseley, exit off M62, follow arrows from then on. Schedules from J. Muzyc, 43 Pippins Green Avenue, Kirkhampton, Wakefield WF2 0RX.

13th April: Taunton & District A.S. open show at the Corfield Hall, Magdalene Street, Taunton. Schedules from Show Manager, R. Cooper, 14 Rochester Road, Taunton.

13th April: Kettering A.S. open show at the McInlay Theatre, Forras available from I. Lloyd, 32 Hawthorn Road, Kettering, Northants. (Tel: 519492).

20th April: Reading District A.S. open show at St. Peter's School, Church Road, Harley, nr. Reading. Specialist class fish not on F.H.A.S. size sheets. Schedules from P.C. Rushbrooke, 34 Melrose Gardens, Arborfield Cross, Berks. (Tel: A.C. 760903).

20th April: York & District A.S. open show at York Livestock Centre, Mutton. Schedules from Show Sec. R. Slee and S. Wyatt, 56 George Street, Pookington, York YO4 2DQ.

20th April: Leigh A.S. open show at Leigh C. of E. High School, Leigh Road, Leigh. Further information from Show Sec. Mrs. B. Waterhouse, 416 Liverpool Road, Platt Bridge, Wigan (Tel: Wigan 861738).

20th April: Malvern & District A.S. open show at Christ Church Hall, Barnards Green Road, Malvern. Schedules from J. V. Walton, 1 Beaver Close, Lower Wick, Worcester WR2 4EG (Tel: Worcester 422002).

26th April: Bristol Tropical Fish Club open show.

27th April: Aberdeen A.S. open show at the Club Centre, Southfield Road, Hilton, Aberdeen. Schedules from Secretary George Merrile, 200 Southfield Avenue, Aberdeen AB2 3YN.

27th April: Merseyside A.S. open show at the Rainhill Village Hall, Rainhill, Lancs.

27th April: Skegness and District A.S. open show at Imperial Cafe, North Parade. Further details from Secretary, Mrs. G. Faer, 6 Albany Road, Skegness (Tel: 66261).

27th April: Yeovil and District A.S. open show at Parish Hall, Martock, Somerset. Schedules and details from A. Holt, 45 Glenville Road, Yeovil, Somerset BA21 5AF.

3rd May: Southend Leigh & District A.S. open show.

4th May: Hull A.S. open show.

11th May: Corby A.D.A.S. open show at the Civic Centre, Corby. Schedules from C. MacAllister, 18 Maidford Road, Corby, Northants.

11th May: Goolle & District A.S. open show at the Shire Hall, Howden, nr. Goolle.

11th May: Throckley A.S. open show at the Grange Welfare Association, Newburn Road, Throckley. Benchings 12-2 p.m. Schedules from Mrs. D. Lakey, 51 Howley Crescent, Throckley, Newcastle on Tyne. (Tel: 6632 67236).

11th May: Bournemouth A.S. open show at Kinson Community Centre, Kinson, Bournemouth. Show secretary, Jack Jeffery, 30 Besemar Avenue, Bournemouth Dorest BH6 4JP.

17th May: Port Talbot A.S. open show at the Talbach County Youth Centre, Margam Road, Port Talbot, West Glamorgan. Trophies, cards and plaques for all classes. Schedules from early March from Show Secretary, A. E. B. Fouracre, 3 Cross Street, Velindre, Port Talbot, West Glamorgan SA13 1AZ.

18th May: Scarborough Fishkeeping Society open show at Friargate School Hall, Friargate, Scarborough. Schedules from Miss J. E. Short, Show Sec., 17 Cross Street, Scarborough, North Yorks. YO11 1HP. S.A.E. please. Tel: Scarborough (0723) 68056.

18th May: Medway A.S. open show. Details from K. Grubb, 66 Norman Close, Gillingham, Kent.

25th May: Bridlington & District A.S. open show at the Hilderthorpe Junior School, Shaftesbury Road, Bridlington, N. Humberside. 38 annual trophies. For further details contact the Show Secretary, R. Walker, 30 Rosebery Avenue, Bridlington, N. Humberside YO15 3PR.

25th May: Portsmouth A.S. inter-club show at the Portsmouth Community Centre.

1st June: Loughborough & District A.S. open show at the Bureleigh Community College, Thorpe Hill, Loughborough. Schedules from Mr. I. S. Purdy, Show Secretary, 10 Cleveland Road, Loughborough, Leics. LE11 2SP.

1st June: Accrington & District A.S. open show at Antley Methodist Church Hall, Blackburn Road, Accrington. Details from Secretary Ian Entwistle, 30 First Avenue, Church, Accrington (Tel: Accrington 384342).

1st June: Mid-Sussex A.S. invitation inter-club, Sidney West Sports Centre, Leylands Road, Burgess Hill, West Sussex. Information from Show Sec. T. Tester, 19 Cyprus Road, Burgess Hill, West Sussex RH15 8DX. (Tel: Burgess Hill 43202).

1st June: Redcar A.S. open show at the Coatham Bowl, Redcar. Benchings 12-2 p.m. Details and schedules from the secretary, D. Readman, 1 Lovat Avenue, Redcar, Cleveland TS10 5BS.

8th June: Northwich & District A.S. open show at Hartford High School, Greenbank Lane, Chester Road, Northwich, Cheshire. Further details from Show Sec. D. Valentine, 43 Hartford Road, Davenham, Northwich, Cheshire (Tel: Northwich 6624).

13th, 14th, 15th June: Three-Rivers Aquarian Fishkeeping Exhibition at the Crowtree Leisure Centre, Crowtree Road, Sunderland. For further information contact G. Liddle, 17 Palmerston Avenue, Walkergate, Newcastle upon Tyne.

13th, 14th, 15th June: Tyne-Tees Area Association of the F.H.A.S. open show.

13th June: Salisbury & District A.S. open show at the Activity Centre, Wilton Road, Salisbury. Over 40 classes, including six cichlid classes and eight coldwater classes.

Schedules from R. F. Adams, 26 Empire Road, Salisbury (a.a.c. please), or ring 0722-25380.

21st June: South Park Aquatic (Study) Society cold water open show at Wimbledon Community Centre, St. George's Road, Wimbledon. Schedules from Show Secretary, L. B. Clapp, 16 Overhill Way, Beckenham, Kent (Tel: 01-650 6954).

June 29: Sherwood A.S. open show at the Lady Margaret Hall, Workshop.

29th June: St. Helens A.S. open show at Rainhill Village Hall.

6th July: South East London A.S. open show at 141 Greenwich High Road, SE10. Details from Show Sec. C. Osborn, 64 Guild Road, SE7.

13th July: Scarborough & District A.S. open show at Gladstone Road Junior School, Wooler Street, Scarborough. Schedules (April) from J. P. Richardson, 5 Keld Garth, Pickering, W. Yorks. YO18 8DG (Tel: Pickering 73964).

20th July: Sandgrounders A.S. 10th open show at Meols Cop School, Meols Cop Road, Southport. More than 30 trophies; plaques for each class winner. Inquiries to Mr. B. Baldwin, show secretary, 10 Olive Grove, Southport, Merseyside PR8 6BG. (Tel: 0704 43384).

3rd August: Blackpool and Fylde Aquarium Society open show at St. Kentegans's Parish Centre.

10th August: Grimby & Cleethorpes A.S. open show at the Memorial Hall, Cleethorpes. Benchings 12-2 p.m. Show schedules from Mrs. B. Mathews, 16 Swales Road, Humberston, Nr. Grimby, South Humberside (Tel: 0472 814438).

16th August: Northern Goldfish and Pondkeepers Society 4th open show at the Sports Centre, Silverwell Street, Bolton. Enquiries to B. Rothwell, 4 Whalley Road, Hale, Cheshire.

17th August: Cheltenham Tropical Fish Club open show at St. Mark's Community Centre, Hesters Way, Cheltenham. Schedules from M. Jenkins, 3 Marlborough Place, Prince's Street, Cheltenham (a.a.c. please).

24th August: Fleetwood & District A.S. open show.

24th August: Long Eaton Aquarist open show at Gregory's Rose Garden, Toton.

31st August: Nuneaton A.S. open show. Schedules from Show Secretary G. Hemmings, 182 Tomkinson Road, Nuneaton, Warwickshire (Tel: Nuneaton 325271).

7th September: North Wilts. A.S. open show. Further details from secretary, G. Reynolds, 29 Almswell Way, Wroughton, Swindon, Wilts. (Tel: 0793 812107).

7th September: Huddersfield Tropical Fish Society open show at Slaithwaite Civic Hall. Show secretary, Mrs. P. Toon, 187 Abbey Road, Shepley, Nr. Huddersfield. (Tel: Kirkboston 7640).

14th September: Harlow A.S. open show at Moot Hall, The Stow, Harlow. Details from Dave Henman (Tel: White Roding 275) or Peter Murdoch (Tel: Epping 72214).

14th September: Bridgewater A.S. open show at the St. George's Community, Little Hulson. Details from the Show Secretary, S. Ainscough, 33 Oaktree Close, Howe Bridge, Atherton (Tel: Atherton 891899).

21st September: Tonbridge & District A.S. open show at the Hadlow Community Centre, Hadlow, Kent. Schedules from Mrs. V. Feast, 5 Pollards Wood Road, nr. Oxted, Surrey.

28th Sept.: Half Moon A.S. open show at the Corporation Hall, West Row, Stockton, Cleveland. Schedules from C. W. Buck, 22 Danby Grove, Thornaby, Cleveland TS17 8BX (Tel: Stockton 65284).

4th October: South Park Aquatic (Study) Society cold water inter-club show for tropical and cold water plants at Wimbledon Community Centre, St. George's Road, Wimbledon. Details from Show Secretary, L. B. Clapp, 16 Overhill Way, Beckenham, Kent (Tel: 01-650 6954).

19th October: Basingstoke A. S. Open Show at the Carnival Hall, Basingstoke. Show Manager, B. Chaplin. Show Sec. T. Franer. For further information phone Basingstoke 51817.