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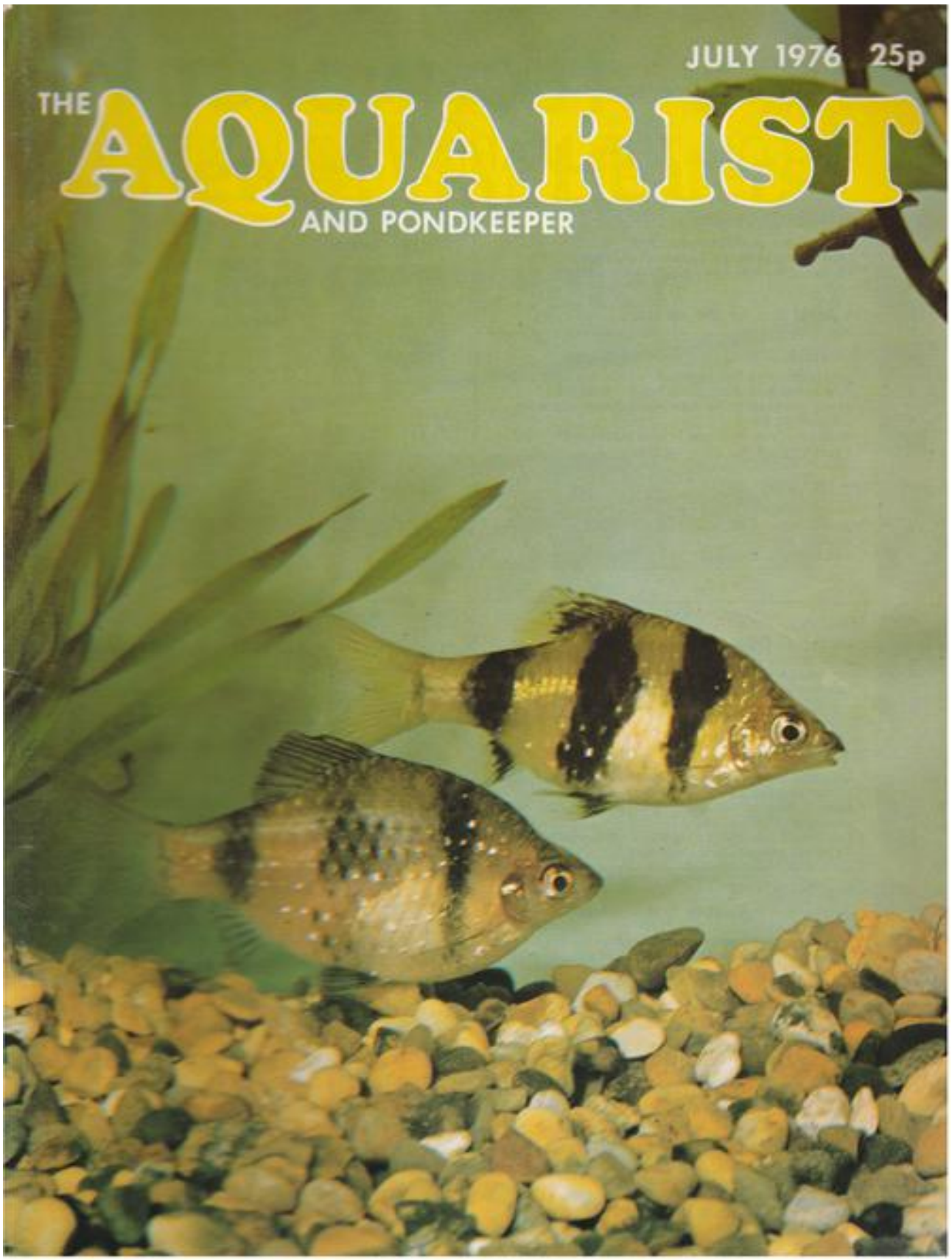
THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

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Contents

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NIGGER BARBS
(*Puntius*/*Barbus nigrofasciatus*)

CRYPTOCORYNES (3)

Cryptocoryne ciliata
C. spiralis
C. retrospiralis
C. thwaitesii

by Vivian De Thabrew, M.A., N.D.T., FL.S.,
Director, Suhada Ltd., (U.K. and Sri Lanka)

THE above *Cryptocoryne* species, though not commonly available to the hobbyist, occasionally find their way to the aquarium shop. In the majority of cases the plant sold to the aquarist as *ciliata* is not the true species. This is entirely due to the fact that the importers and distributors are ignorant of the various characteristics of the many species. Similarly, *spiralis* and *retrospiralis* are sold as entirely different species. However, this is understandable as the difference between these two species can only be detected by a trained and observant botanist. *Cryptocoryne thwaitesii*, on the other hand, has long been neglected and ignored as a useful aquarium species. Even some aspiring botanists who have devoted so much time and effort to presenting their facts in support of changing the nomenclature of long established species have given little consideration to this most handsome species.

Cryptocoryne ciliata (Roxburgh Fischer Ex Schott

Habitat: Sri Lanka, India, Pakistan, Malayan peninsula, Indo-China and New Guinea. Usually in swampy conditions, especially in mangroves.

Description: This is a very tall, stout plant which grows to over two feet (sixty centimetres) and essentially thrives in boggy conditions. Its leaves are approximately five to sixteen inches (fifteen to forty centimetres) long, two to four inches (five to ten centimetres) broad, long and lanceolate. The thick, fleshy leaf-blades are slightly ruffled or undulate at the edges. These are bright green on both sides or, occasionally, depending on the water condition and light factor, light green on the upper side and deeper green beneath. The base of the leaf is rounded, while the tip is acuminate (coming to a sharp point).

One of the main characteristics which distinguishes this species from other Cryptocorynes is its nervation. The blade has a very prominent mid-rib which has six to ten veins running out of it. There are no other intra or subsidiary veins. The petiole (leaf-stalk) is strong, stout, about seven inches (eighteen centimetres) long and has a wide sheath at the base.

The name *ciliata* refers to one aspect of its flower. The flower is borne on a spadix (flower-stalk) up to sixteen inches (forty centimetres) long. The flower receptacle, known as the spathe, is longish, oval-shaped and purple or purple-red inside with a yellow spot or throat. This spathe is edged with long hairs or fine projections known as cilia, which are half to one inch (one-and-a-half to two-and-a-half centimetres) long. Such an arrangement is said to be 'ciliate', and hence the species bears this term.

Cultivation and propagation: The true *C. ciliata* is rarely available to the aquarist, the species offered being a hybrid or misnamed variety. The true species is a bog plant and is suitable for a heated pool or indoor vivarium. In summer this plant can be grown in the outdoor pool as a marginal. However, in its submersed form it will gow rapidly, erect and tall until the leaves are emersed. Therefore a tall, roomy tank is essential. It will, however, never display its true characteristics in this situation. Its life-span is also considerably curtailed in an aquarium. I, along with two research botanists, have experimented with the true species for three years in order to establish its behaviour in controlled aquarium conditions. Our findings have proven without doubt that the true species is not suitable for the submersed aquarium condition.

During our last plant expedition in 1974, when we visited swampy areas in Sri Lanka and rainy parts of Kuantan in Malaya, we were amazed to see vast clusters of *C. ciliata* growing to a height of over two feet. In both countries we were able to see it thriving in the mangroves, where the water is brackish. The clusters of flowers in full colour presented an unforgettable sight.

The established facts are that it requires a good, muddy bottom with a fair depth of gravel. It also requires plenty of light with high intensity. It prefers brackish or slightly saline water and a temperature of 75°-80°F, with substantial humidity. The mature plant develops strong and long runners which in turn bear plantlets. These plantlets can be separated from the parent plant by cutting the runners on either side of the plantlet, and then should be re-planted in a muddy planting medium with only about an inch of water. Ordinary garden seedtrays are ideal for this purpose. Line a seed-tray with polythene to cover the entire sides, then pack the muddy medium firmly in the tray and fill it with water to a depth of not more than an inch. Plant the runners and cover the tray with another piece of polythene or a 'Stewart' propagator hood. Once the plantlets have established well, they can be transplated in the aquarium.

Cryptocoryne retrospiralis (Roxburgh) Fischer and *Cryptocoryne spiralis* (Retzius) Fischer Ex Wydl.

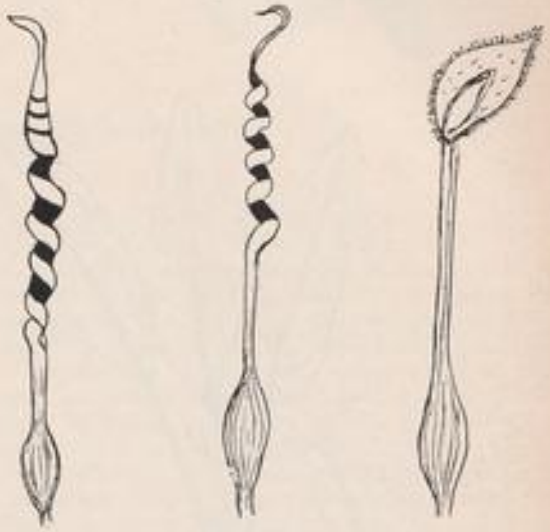
As the above two species are extremely similar in characteristics and habits, these are treated together. However, any divergencies are given due mention.

Habitat: Sri Lanka, India and Malayan Peninsular, growing in calmer and fairly clear waters. It may also be found in clear water springs.

Description: C. retrospiralis is much taller than *C. spiralis*, attaining a height of about twelve to fifteen inches (thirty to thirty-seven centrimetres). It is a sturdy plant with long, lanceolate leaves which are slightly wavy or crinkled. The bright green leaves, which are glossy on both sides, are borne on leaf-stalks of about four inches (ten centimetres) in length. A prominent mid-rib bears six to eight veins, which are wavy. The root-stock is fleshy, thick and can be very long.

On the other hand, *C. spiralis* rarely grows taller than eight inches. The leaves are long and lanceolate, the blade growing up to about six inches (fifteen centimetres) long and nearly half-an-inch (one and a half centimetres) wide. The leaves are bright green in colour, fleshy, prominently twisted, having a mid-rib throwing out four to six fine lateral firm veins. The root-stock is firm and fleshy, but not as stout and long as that of *C. retrospiralis*. In both species the leaves gradually taper to the base and the tip, the tip being considerably pointed.

The characteristics distinguishing one species from the other are visible on close examination of the flower. As the names indicate, the flower-bearing stalk or spathe is twisted to the left in *C. spiralis*, while it is twisted to the right in *C. retrospiralis*. Further, the spathe of *C. spiralis* is finely toothed, while that of the other species is almost smooth.



C. spiralis, C. retrospiralis and *C. ciliata*

Cultivation and propagation: Being another tall plant, *C. retrospiralis* should be given a tall tank. The water should be very clear, and it is best not to grow other plants very near this species. Needless to say, it will not tolerate floating plants, and demands extremely strong and good light. Preferably the light should reach it from above, but light penetrating from the side will encourage bushy growth. Under strong lighting the leaves will turn purplish brown or purple.

Preferred temperature range is between 70°-76°F. Acidic conditions are ideal, but neutral or slightly alkaline water is tolerated. In experiments carried out in Sri Lanka it has been found that it will tolerate a temperature of 64°-84°F. Our own experiments in U.K. aquarium conditions have shown that above temperatures of 74°F the leaves begin to pucker, thus indicating the breakdown of certain cell chains. Eventually these leaves fall off, but the root-stock remains alive. It is doubtful whether this rare species can be grown with other aquarium plants, with the exception of other *Cryptocoryne* species.

C. spiralis, too, is very partial to the same conditions described above. As an aquarium plant it is more suitable than the former. The plant, growing to a

height of about six inches, blends well with other *Cryptocorynes*. Both these species develop strong runners and propagation from them is quite easy, provided the runners are planted in shallow containers with a good mixture of gravel and coarse sand. Once the plants have grown up to about two inches in height, they should be transplated into a mulmy medium. The growth rate of both these rare species is fairly slow.

Left: *C. ciliata* Right: *C. thwaitesii*

Cryptocoryne thwaitesii Schott

Habitat: Sri Lanka. Mainly found in the fast flowing rivers of the central highlands.

Description: This is a relatively scarce plant on the aquatic market, though it is by no means rare. It is named after George Henry Kendrick Thwaites, F.R.S. (1811-1882), who was the Director of the Royal Botanical Gardens, Peradeniya, Sri Lanka, from 1857 to 1879.

C. thwaitesii is a small growing species which barely reaches a height of four inches. The leaves are longish or longish-ovate, pale-green to brownish-green and about two-and-a-half inches long. They are rounded or sometimes tapered at the base and blunt at the tip. The leathery and fleshy leaf-blade is smooth underneath and rough or warty above. It gives the attractive appearance of spots or blotches. The leaf-edge is faintly serrated and blunt. A distinct mid-rib bears four to five or sometimes six lateral veins. The plant is extremely attractive, especially when the leaves turn deep mauve or brownish purple with mottled areas manifesting a deeper shade.

Cultivation and propagation

An easy plant to grow, provided a clear water tank with a medium of a mixture of coarse sand and peat is provided. The addition of a small quantity of loam is beneficial but not essential. The plants can be grown in colonies or clusters to bring out the true effects. If planted individually, they should be planted about three inches apart, as they will then develop long runners.

It is indifferent to water conditions, growing within a range of 6·6 to 7·1, but, like most Cryptocorynes, it prefers water which is slightly acidic. A medium intensity of artificial lighting is adequate, and the temperature range falls between 64° to 76°F. In its natural environment it is subjected to temperatures as low as 60°F and as high as 80°F. Some specimens were collected by us both in the cool mountain streams of the central highlands and from very warm water pools at the extreme southern fringe of the highlands. Those collected from the warmer waters appeared to be more delicate.

Propagation is achieved by dividing the runners or by splitting the root-stock. Plantlets thus separated can be planted in the very same tank. Initially the growth is slow, but once the new roots have become established, the accelerated growth is visible.

Barbus conchonius

Written and illustrated by Jack Hems

THE population of barbs for the tropical aquarium is quite immense. Yet few medium-sized species commonly offered for sale are as attractive to look at as a mature male *Barbus conchonius*.

For the benefit of those new to the fishkeeping hobby (and there are a great number around these days) let me say at once that the colour of this fish is muddy brown on the back and greenish olive on the upper sides, overlaid with a coppery pink to red glow, shading to white on the belly. For the rest, diamond-bright lights flash on and off from dark-edged scales, a dusky blotch ringed with gold is present near the tail, and the dorsal, anal and ventral fins are orange adorned with black along the leading edges and outer margins. The pectoral fins are clear. The red colour is variable in tone, and during courtship and breeding and when the fish is stimulated by, say, a rise in temperature or extra-illumination provided by sun, the body assumes an intense fiery hue; which has earned the species the popular name of rosy barb.

In common with the male, the female has a dark marking posteriorly, and well-defined scales that sparkle before or under a strong light. Nevertheless she looks drab: that is by comparison. For her olivaceous sides have no permanent pink or red glow and her fins are more or less colourless. Hyaline is the correct word.

B. conchonius is widespread over most, if not all, of northern India. In its native waters—moving or still—it reaches a length of at least 5 in. Tank-bred fish seldom, if ever, grow quite so large; though, with good feeding and plenty of swimming space in a well-aerated aquarium, a length of 4 in. is about average. Ordinarily, the life span of this fish is upwards of five years.

B. conchonius first turned up, as an aquarium fish, in Germany in 1903. It is not unlikely, though, that tropical aquarists as far east as the Russia of the last of the Tsars knew it before it made its début over here.

The fish is inoffensive and does not require much in the way of heat. In fact it is a good plan, with breeding in view, to overwinter it at about 65°F (18°C). Besides its adaptability in the matter of temperature, it is not finical when it comes to food. Anything is taken. All the same, a diet composed of swallowable worms, gnat larvae, shredded red meat and a well-balanced dried food is highly desirable. *B. conchonius* displays, also, a great partiality for tender or soft vegetable matter. It relishes, therefore, duckweed, mossy algae and higher plants with tissue-thin foliage. In the absence of natural green-food cooked spinach, turnip tops, kale, scalded lettuce, and the like, make a suitable substitute.

As mentioned above, enhanced coloration is, among other things, a prelude to breeding. That egg-laying is imminent is usually indicated if the couple become very active in all levels of the water and the female develops full sides.

The tank for spawning should not be smaller than 18 in. × 10 in. × 10 in. For clearly, the larger the tank (within reason) the less difficult it will be to grow on a few score of healthy fry. Among the basic requirements for breeding are clean water, slightly aged rather than straight from the mains tap, and some weighted bunches of a feathery-foliaged plant. Some aquarists leave the base of the aquarium bare. This practice is best not followed if the tank has a glass floor because the fish are apt to be put in a state of confusion by mirror-like reflections. Hence a token scattering of well-washed sharp sand or fine grit over the bottom is advised.

After the couple have been introduced into the spawning tank (last thing at night) or have lived in the tank set aside for spawning for a week or two, the temperature should be raised (gradually) from the sixties to the upper seventies or low eighties (°F). This increase in temperature, combined with a strong side or top light, almost always results in

Continued on page 136

Coldwater Fishkeeping

by Arthur Boarder

BREEDING GOLDFISH IN THE POND

THIS ARTICLE is written mainly for the benefit of newcomers to the hobby. I get so many requests for information on breeding goldfish in garden ponds from people who have just started in the hobby that I feel that some general advice may be welcome.

The increase in the number of pondkeepers in this country of recent years has been spectacular as it is now so easy to make a garden pond by using the modern liners. Before this it was a major task as not only had one to dig out the hole, but the job of mixing cement, sand and aggregate three times dry and three times wet, and then the moving it to the site and spreading it, was really very hard work. Nowadays one has only to dig the hole, as before, line it with a good liner, anchor the edges with slabs and the pond is completed.

Goldfish spawning. The male fish (above) threshes as he releases milt.

Once the pond has been stocked with plants and fishes the owner becomes very interested in the fishes and keen to get them to breed. There is nothing magical about this, as any healthy goldfish will have the urge to spawn when conditions are right. One of the usual questions I receive is, "How can I tell the sexes of the fishes?" I do not think that this is very important, as in a group of six goldfish it is almost certain that the two sexes will be represented; one would be unlucky if this was not so.

Most spawnings take place in the pond during late spring and summer. In some areas spawning can start as early as April and in others may not commence until late May. The condition of the water in the pond is one of the necessary features for urging the fishes to spawn. Of course, the health of them will depend on that condition as one cannot expect healthy goldfish in water which is polluted and lacking in oxygen. The feeding of the fishes can be important as it is necessary for them to obtain extra nourishment to assist in the formation of eggs and milt. This extra feeding must be done with care, as if more food is given than can be cleared up quickly, there is the possibility of fouling the water with decaying uneaten food. This will put the fishes off their breeding condition and so time will be lost. It has often been stated that feeding the fishes with garden worms will bring them on to spawning condition quickly. I have no adverse comments to make on this as in fact any live food or good dried food will keep the fishes in a healthy state.

The condition of the water can be influenced greatly by the number and health of the water plants. This is rather a problem with beginners as too many water plants may mean that most of the eggs will be laid all over the pond and so it is almost impossible to save many of them. Although many fry may be raised in a pond which has a fairly dense amount of water plants, there is no doubt that many eggs and fry will be eaten by the fishes during or soon after the spawning. The safest way to obtain plenty of fry is to use some spawning nests so that they can be removed to a safe place for hatching and subsequent rearing of the fry. The nests can be just a bunch of fine-leaved water plants anchored in the shallowest part of the pond; if no shallow part exists then see that the bunch of plants is situated at the side and practically on the surface. Most coldwater fishes will spawn in shallow water or on plants floating on the surface. Most of our coarse fishes choose such positions as the water is usually warmer in the shallows near the side of the pond or lake and there seems to be an instinct in them which tells them that fishes will not normally swim in such shallow water that their dorsal fins are out of the water, and so the eggs may be safe from the attentions of fishes not actually engaged in the spawning.

For the average pond a nest of about a foot across is large enough but one or two more should be made in reserve so that they may be used when one has been removed with eggs. It is a good idea to get the nest in position well before spawning time so that the fishes may get used to it. However, there is a danger in this if certain precautions are not observed. I found that each day I had to wash the nest up and down in the water to remove any silt or mulm from the bunch as if there was a slight covering of this on the plants, it is probable that many of the eggs would not be able to adhere to the leaves as well as if the plants were quite clean.

I have often been asked how one can tell when the fishes are spawning. There will be little doubt in one's mind as to what is happening once they start in earnest. The evening before spawning it is probable that the fishes may be seen following one another about in the pond. This is a fairly good sign that

Goldfish eggs

spawning will take place in the morning. This can take place as soon as it gets light and go on sporadically until mid-day. When they are actually spawning the males will chase the females about the pond trying to force them into the shallows where the nest is. The splashing can be quite furious and can be easily heard some distance away. Therefore once spawning starts there should be no doubt in the owner's mind as to what is taking place.

As the females thrash about near the surface, the eggs are laid and fertilised by the attending males; the number of males does not matter as the milt from one male could fertilise the eggs of very many female fish. The eggs, laid singly but in many numbers, adhere to the water plants and may be seen as tiny beads of transparent jelly about the size of a pin's head. They are not easy to see whilst in the water but if the nest is raised the eggs will show up more clearly, and with a pale amber colour. Once a fair number of eggs are seen on a bunch, it should be replaced with a fresh one. It is very surprising how soon the fishes will be back to the spot to spawn again on the fresh plants.

Spawning can continue for some of the afternoon but most take place during the mornings.

Further spawnings can happen every month as late in the year as September and it has been known for this to take place in October. Not that this is to be recommended as unless one has a fish house or indoor tanks in which to rear the fry, it is not easy to get them safely through the winter. The earlier in the year that the fry are hatched the easier will it be to get them safely through the winter.

When spawning nests are not used the eggs may be laid all over the pond and many will be eaten. However, if there is a rather dense planting, it is possible for some of the eggs to hatch and some fry may survive; but even when one uses nests, it is probable that many eggs will fall to the bottom but over very many years of breeding goldfish in a pond, I have rarely found more than a very few youngsters surviving until large enough to go through the winter in the pond. Actually I have never found a young fantail of any quality at all which has been reared in the pond. The reason is fairly obvious as young fantails, and others with fat bodies and double tails, cannot swim as fast as a fish with a single tail. There may be some of these in every spawning of fantails, and when a small shoal is chased by a larger fish, the single ones escape leaving the good types to be eaten. Of course, it is not only the fishes which can eat the eggs, water snails will also do so. Therefore one should reduce the numbers of them before spawning time, if they have been introduced into the pond. I do not think that it is advisable to have any water snails in the pond at all as in my opinion they serve no useful purpose. There are other pests which may inhabit the pond which could eat eggs or fry. The larvae of water beetles, dragonflies, etc., will eat fry and so will the adult water beetles and water boatmen. Most of these pests have to come to the surface to breathe and may be netted at this time. A very good plan is for the pondkeeper to visit the pond every night with a torch as it is far easier to catch the pests at this time.

One query is always cropping up with regard to the garden pond and that is to know what to do with the pond when one is going away on holiday. The answer is to leave well alone. If you are looking for trouble ask a kindly neighbour to feed the fishes whilst you are away. The usual happening is that far too much food is given and the water becomes polluted, with the loss of the fishes. Many years ago I left a large number of tropicals in charge of a young man who lived near me. When I returned from holiday, he had kept jars of dead fishes to show me and the tanks were a smelling mess. I have not been able to keep a tropical since seeing that macabre collection of stinking specimens. If leaving a pond or a tank whilst on holiday, never get anyone to feed the fishes and never give the slightest bit of extra food before you go away as this could spell danger. On your return you will find that the fishes have not suffered in any way and your tank or pond is cleaner than it was before you left.

Barbus conchonius *continued from page 133*

nuptial chasing. The male is an ardent pursuer. About a dozen or more sticky eggs are released by the female almost every time she is rammed or driven against or into the plants. As a rule, a few hundred eggs are laid at a spawning.

When chasing is over, or the participants appear to be losing interest in each other and show signs of exhaustion, they should be netted and placed in fresh quarters. If this is not done almost immediately, the fish soon regain enough energy to set to and eat the eggs.

Incubation of the eggs is completed within the space of two days and for another two days the glass-splinter-like fry dangle tail-down from the plants or whatever they happen to be clinging to such as the slightest film on the water. Their source of nourishment before they became free-swimming is contained in the yolk-sac carried abdominally. As soon as the yolk-sac is absorbed, they hunt high and low for microscopic green and animal food. Hence free-floating algae, infusorians or a proprietary first food for fry (obtainable from any well-stocked dealer) should be given for the first week. Thenceforward micro worms, brine shrimps, micro eels and powdered dried food. At six weeks or thereabouts, and with no overcrowding or fouling of the water (bear in mind that feeding of the fry of all fishes must be carried out with care), the baby barbs should average 1 in. in length. Full size is reached in about a year. It is interesting to note that, if conditions are right, healthy and sexually mature fish will spawn more than twice or thrice within the space of a few months. Not all fry hatched out stay alive for long. Competition for food is great and there are always those that are weaklings from the start and fall behind. If they live a month they are lucky.

About two years' ago, a variety of the rosy barb made its appearance in East Germany whence it had arrived (so it is said) from Russia. This splendid-looking fish is distinguished by prolonged fins. The dorsal fin in particular is of an exceptionally good shape and colour.

I hope that, unlike the fugitive *Tanichthys albonubes*, with streamer-like fins (said to have been developed in Australia), it will soon become common in dealers' tanks.

WHAT IS YOUR OPINION?

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

Photographs by the Author

PHOTOGRAPH 1 shows Mr. Bob Crossan's attractive, little pond; and the subject of ponds brings me to a letter on the subject from Mrs. Hilda Allen of The British Koi-Keepers' Society. Mrs. Allen writes from 1 Anthony Close, Peterborough. "We have two irregular shaped Koi ponds, 3½-4 ft. deep in the deepest areas. This depth, and even greater, is desirable for satisfactorily overwintering Koi in the U.K. In any case, a large body of water is far less subject to rapid changes of temperature than shallow stretches of water.

"Both ponds, built several years ago, were made of concrete slabs set in cement, with raised sides. The water level is maintained about 10 in. below the height of the walls by means of built-in overflows. This is a very practical idea for several reasons: (a) surface debris floats away during heavy rain; (b) the reduced level deters marauding cats etc.; and (c) more protection is afforded to the Koi when, like all carp, they decide to leap during warm weather.

"The largest pond, 22 ft. × 18 ft., holding approximately 5,000 gallons, is also served by a bottom drain to dispose of mulm and soiled, oxygen-depleted water from the lowest level. Both ponds have U/G filtration in continuous operation to combat the green water problems especially troublesome to Koi-keepers. This home constructed method of U/G filtration was devised by Eric Allen, then B.K.K.S. Chairmen.

"After determining a number of factors this method was fully described in a B.K.K.S. Newsletter in 1973 and has since been shown to be most satisfactory by many members. When Koi are given good living conditions their appetites and growth rates are excellent and then some of the ingenious methods of external filtration may be examined and adopted. Koi, of course, live perfectly amicably with all other cold water fish and enjoy the same sort of varied diet, including green vegetables, although of course in larger quantities, depending on their size.

"For us, waterlilies are a useful and beautiful addition to both our pools. Most oxygenating plants do not last very long in a pool with active Koi, but waterlilies survive and provide necessary shade during hot, bright weather. Koi bask under the leaves, tails gently waving, and the scene is one of utter content and beauty—surely the greatest reward for any fish keeper. Every aspect of Koi keeping, feeding and breeding, and information on pumps, filtration and breeding rates, has been included in B.K.K.S. Newsletters and Magazines since 1970." (Mrs. Allen kindly sent me a copy of the May edition of the B.K.K.S. Magazine, the standards of which are well up to those of earlier issues.)

My local dealer recently began to stock a wide variety of cold water fish, including a few Koi. Although none of the cold water fish was seen spawning, one tank that previously housed some adult shubunkins now contains hundreds of baby fish that were noticed, by chance, when the tank was about to be cleaned out. The babies are now growing well on a popular brand of liquid fry food. Obviously the adult fish, imported from England, found the local conditions conducive to spawning. Other customers and I are looking forward to seeing the young fry develop. I must say that in my opinion many of the fancy cold water fish are at least as attractive as a lot of the available tropicals. There are several beauties that I've had my eye on for the past couple of months. If I had a fairly large, unpopulated aquarium available, plus somewhere to site it, I would snap them up. It's a very long time since I last kept coldwater fish, but if my memory serves me right, the quality of present day specimens seems to be generally higher than it was, say, twenty years ago. What is the opinion of older aquarists who have been keeping coldwater fish for many years?

I was delighted to receive the following letter from a young aquarist who must live very close to the school in which I teach. I hope the letter will prompt other Ulster aquarists to write to this feature. The letter crossed the Irish sea in both directions to reach me from 10 Laral Park, Monkstown, County Antrim, BT37 0LH. The writer says: "In the May issue you said you would like to hear from any of Ulster's many aquarists. I am one such person. My name is Alan Lee and I am fifteen years old. I have a 30 in. × 12 in. × 15in. tropical tank in which I keep an assortment of fish including ghost fish, tetra species, glowlights, swordtails and gouramies. I was so very pleased with my tropical tank that I decided to diversify; and over Easter I built a pond with the help of my father.

"The pond is kidney shaped, within a 9 ft. × 6 ft.

rectangle. I got my plants from a firm that advertises in your magazine and they arrived in A1 condition. My plants have started to grow and are very impressive. I really enjoyed picking my fish—at a local tropical shop that also has a pond department. I find that cold water fish have more character than tropicals and would strongly recommend anyone to start a pond. If through reading this anyone decides to start a pond I can only hope that he or she will get as much pleasure and satisfaction out of it as I am still enjoying. If anyone reading this has a second-hand pond pump, in good condition, I would be more than pleased to hear from him or her."

Mrs. J. H. Partridge writes to us from 29 Dedishorn Close, Furnace Gr., Crawley, Sussex. "My husband and I kept and bred tropical fish since 1965, but 15 months ago, when the price of electricity kept going up and our local club, Crawley College A.S. foldep, we decided to give up fish keeping; so we have been

out of touch with the fish keeping world since then. Recently we decided that life was not the same, that we missed our hobby and all our friends in the fish keeping world; so we decided to start again. The first thing we did was to re-order our monthly copy of *The Aquarist*—which we have just received.

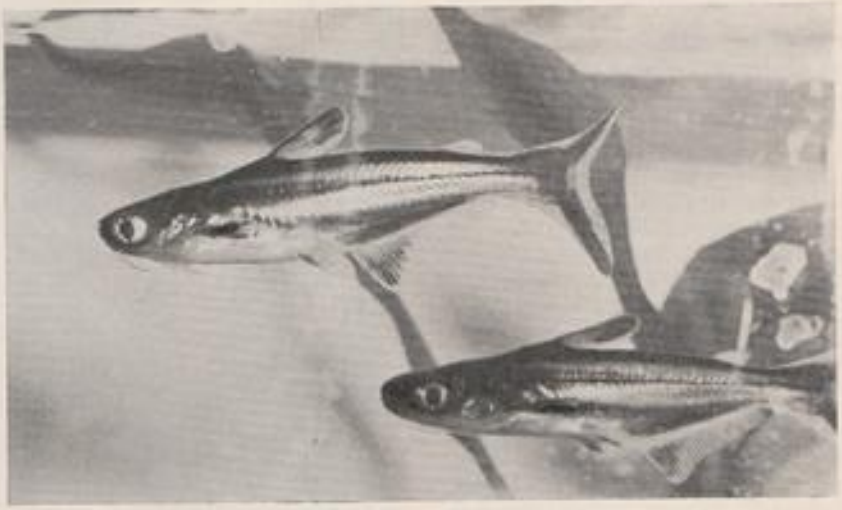
"When we were reading our magazine, eagerly catching up on the latest information, we arrived at *W.Y.O.?*—and our hearts sank. We had encountered most fish diseases during our 9 years of fish keeping; but to find that we had yet another one to watch out for was, to say the least, upsetting. We eagerly went on reading to learn what we could about this new danger—*Plasticitus dothreatemus*. A smile came to our faces when we realised that you were talking about plastic plants and equipment! As you say, plastic items have been on sale in the shops now for a few years, but we are pleased to say that the shops we frequent still stock a good selection of real tropical plants as well as the plastic kind.

"During our nine years of fish keeping we have bred many varieties, ranging from live bearers, characins, barbs and anabantids to cichlids, etc. We have found that plastic tanks and filters are much easier to sterilize. As you are aware, the larger cichlids have the habit of pulling up plants and moving them around the tank. Pounds can be lost on natural plants from these activities so, for us, it is plastic plants in a cichlid tank. They give the fish a sense of security and the cover they like when breeding; and if the fish move the plants no harm is done. Plastic plants are also useful in a tank containing plant eating fish; quite a lot of money can be saved by using plastic plants and feeding lettuce, spinach, peas, etc. While we understand your concern about plastic plants, etc. they have their uses. Quite a lot of traders rely on this side of their business to keep them viable. Most beginners in the hobby start off with a tank of plastic plants and ornaments, but soon become aware that there is nothing more beautiful than a tank of natural plants and rocks for their fish. So, let us not knock the plastic world too much because without it I think we would find it much harder to keep out hobby alive." (I agree that we would be much worse off without plastic equipment; however, I would like to think that all respectable dealers would encourage beginners to start with real plants and discourage them from indulging in plastic mermaids, galleons, etc. I can accept plastic plants in tanks where real plants are unable to grow; but I don't think I could find valid any argument for plastic toys in an aquarium).

No. 102 Carisbrooke Road, Walton, Liverpool, is the address from which Mr. S. R. Goodman writes. "I read with interest the letter from Miss Bailey about silver sharks (April issue), and her remarks about

sharks not being bred in this country makes me wish to try to breed them. In *All About Tropical Fish* (McInerny) the same observations were noticed in an old flower pot; so this makes me feel there must be some inclination to spawn there in the case of red tailed sharks at least. I would appreciate any information about this from readers who may have tried to breed red tailed, red finned or silver sharks. I have filled in the questionnaire for Dr. Phillips and am looking forward to his findings later on. Thank you for the many items of interest in *The Aquarist*. Keep up the good work!" (Anyone with information that would be useful to Mr. Goodman should write to him at his home.)

The following letter reached me from Mr. Peter Fox, of 76 Lodge Crescent, Walthamcross, Herts. "I have just read the letter by Mr. D. A. Holder about his yawning rams. I have seen this behaviour twice before but on both occasions the fish were marines. I first observed it in a blue ring angel fish and then in a



big scorpion. I think the fish could have been stretching their mouths and gills. I have two 36 in. × 12 in. × 15 in. tanks; one is all-glass and cost £10·95. This houses my marine collection: one spotted sweetlips, one common clown, one tomato clown and a tubeworm. I hope to build this up to form a flourishing fish/invertebrate community. The second tank cost £20·00, complete with hood, a year ago; it contains a collection of mixed tropicals. Both tanks were bought from a private dealer. I buy all my fish from one of two private dealers as they are much cheaper then the retail shops. One dealer allows us to catch our own fish and this is an advantage to both: we get the fish we want and he doesn't have to work so hard.

"Both my tanks are filtered by U/G filters; in the marine tank we have two lifts to each base plate. We have used nothing else since I started eight years ago. There are eleven fish dealers locally and fish prices vary considerably. I seem to find the newer the shop the dearer. Recently I sold twenty-six young 'kribs' to a dealer and received £3·00. Our regular dealer allows half price for fish taken back. This is dearer than the trade price but most of the fish are better. Dealers make 300 per cent profit on fish as a trade price list I have proves. An adult pair of golden gouramies recently died. Each fish slowly went white and madly dashed round the tank twisting and spiralling. Any suggestions?

"The only plants we have been able to cultivate and multiply are swords and umbrella ferns. We first started to keep marines two years ago, cutting corners on expenses. All the fish died—even common clowns. We have tried again using, in my opinion, the best products developed by Mr. Graham Cox, and following the information in his excellent book *Tropical Marine Aquaria*. We haven't lost a single fish. We have just tried the new British range of dried foods. Our fish are always on the lookout for more. I don't know whether they like it a lot or whether it isn't filling them up. We used to use the popular German brand and for the same amount of food the fish seemed satisfied; so we have gone back to the German brand as it is no dearer and we don't have to feed so often. My marines are fed every other night with a frozen, sterilized food and every other day with flake food. We were unable to keep guppies for some unknown reason. Over-night their tails would become shredded or non-existent. We quickly found a cure for this: it was being caused by a well coloured female fighting with the males. After she was removed peace reigned. I do not belong to an aquarists' club yet as I can't find one locally.

"The water used to top up my tank comes straight from the tap—pH 7·4. I don't try to alter this as it gradually creeps back. What's happened to all the cardinals? I haven't seen any for sale for about two years. Is this just in our area?" (Some weeks ago I had a telephone chat with an importer in England and he said that drought in some foreign countries was affecting supplies of particular fish. The cardinal was one of the several he mentioned by name. My local dealer obtained some recently but they were very tiny and hadn't travelled very well. Perhaps readers in other areas could let me know if cardinals are commonly available at the moment. No doubt we'll all be suffering from the effects of severe drought by the time this month's feature appears in print!) Mr. Fox continues: "Angels cost about 50-75p each; neons 20p each; guppies—males 30-50p, females 20p; dwarf gouramies £1·00 per pair; 2-2½ in. red discus are £6·50 each; and red swordtails 25p each.

"I would like to see coloured photographs in the magazine—and captions under them; otherwise an excellent magazine. Keep up the good work; it is much appreciated. I know what hard work it must be but the results are very enjoyable."

Unfortunately our first letter from a Guernsey reader begins with a complaint. It comes from Mr. J. Le Moignan, of 9 Dalgairns Road, St. Peter Port, Guernsey. He writes: "After having seen the advertisement by a large plant firm, coupled with the excellent write up given by you to the proprietor, I was prompted to write for the list as advertised and I enclosed a s.a.e. approximately one month ago. As I have spent a considerable amount of money in the past on collectors' plants, mainly *Echinodorus* and *Nuphar* species, and not always being satisfied with the items received at the prices paid, I requested this firm to inform me, if possible, if their *Nuphar* species were reasonably sized with regard to rhizomes and if the cut ends of the rhizomes were reasonably cured against rot. A fortnight after the original letter, having received no reply, I wrote again stating that even if they did not wish to answer my queries they could still supply me with the list as advertised. Another fortnight has now elapsed with no communication whatsoever and I am afraid that I am greatly disillusioned with these firms that consider themselves the elite of the trade, in this case in the plant field, charge fairly high prices, which I am willing to pay for good stock, and then fail to reply to enquirers." (I know that the drought has affected supplies of some plants; I know of at least one firm that now keeps a very small selection of plants during the winter because of heating costs; some firms can no longer afford to employ secretarial staff to answer letters and prefer a telephone call—which could well be cheaper for the enquirer and would certainly be quicker; and some firms no longer publish separate lists: they rely on their advertisements in the aquatic press. However, I'm not trying to excuse poor service or lack of courtesy. I've mentioned your complaint to the person concerned.)

Mr. Le Moignan continues: "With reference to your request for information about clown loaches, I have six *B. macs.*, all now between five and six years old, in a 24 in. × 12 in. × 16 in. tank, heavily planted with Java fern. There is 5 in. of air space to allow the plants to make their tripartite leaves, and only ¼-½ in. of sand on the bottom of the tank. It is also heavily stoned, a long and narrow one standing in one

corner and leaning outwards at the base to allow the fish to 'stand on their tails' behind it. There are also three flatter ones on the bottom, lifted off the surface of the sand by small, flat stones to allow the fish to go underneath. I have never had any trouble with these fish in all these years. The only snag is that they live naturally in their various holes and, therefore, do not display as one would expect with a normal, community tank. The only refinements are two filters—one in each corner—and two gallons of clean rain water added after cleaning the bottom—usually every three weeks. I should also add that even at this interval the bottom of the tank is not really dirty at all as the filters do a marvellous job."

"The knifefish shown in your May feature are, I

believe, 'clown' knifefish, originating in S.E. Asia," begins Mr. J. Russell, from 5 Calmore Crescent, Calmore, Southampton. He continues: "I have two 7 in. specimens that inhabit a densely planted corner of their tank, and during the day they are generally inactive and peaceful, emerging mostly at night when they are most active. They are very rapid swimmers—backwards and forwards—and can easily outpace and devour many small, swift species capable of being swallowed whole. I have also two 6 in. African and two 8 in. green knifefish and all live in harmony with each other—plus the several large catfish in the tank, which is 4 ft. long and heavily planted. Water temperature is 77°F and the water moderately soft and slightly acidic. They are all fed on earthworms, ox heart and small unwanted fish, and have grown very rapidly in the three months that I've kept them. In my opinion they're the most beautiful fish I've ever kept."

A healthy interest in aquarium photography continues to be shown by readers. Photograph 2 shows a common error made when photographing fish in close-up: dirty glass—in this case caused by water marks on the outside (see centre and right hand side of print). As such marks are sometimes invisible to the photographer's eye, it is safer to clean the outside glass before taking any photographs. An aerosol can of window cleaner is a useful aid—but make sure that the cleaner itself is completely polished off the glass before shooting. I've seen some shots ruined by streaks of *cleaner* on the glass. By the way, I'd be pleased to hear from those who have kept the species shown in the photograph.

Mr. P. D. Roe is 17 years old and resides at 26 South Road, High Etherley, Bishop Auckland, Co. Durham. He writes: "I have been keeping freshwater tropicals for four years. During the last year I have had a fish house built which is 12 ft. × 12 ft. and contains 10 aquaria. I have also an old enamel bath which proves very useful for raising my young tropicals in. I keep three Malawi community tanks but these contain only two different species: *P. pindanni* and *P. zebra* blue-black morph. I have three pairs of *P. pindanni* which are all breeding and I have ten pairs of *P. zebra* which have not bred yet. The *P. pindanni* are kept at 80°F, pH 7·0, in a 3 ft. tank. They are fed on various flaked foods, earthworms and *Daphnia*. The three pairs usually spawn in the same week and I think that maybe one spawning triggers off another. I have no problem rearing the young as they live quite happily with their parents. I went to the fish house this morning and opened up the bath top where I had a (brand name) brine shrimp hatcher floating on the water surface to hatch some shrimps for my baby velifera mollies. I found that it was floating vertically in the bath. In the bath I keep 10 small *kribsensis* and six baby firemouths. I took out the hatcher and found three baby kribs inside it; all the shrimps were eaten. I have found out an interesting fact while breeding golden velifera mollies. Although both parents were gold all the babies except one were born green; and they kept this colouring until a few months later when they went a dusky gold—but not the same colour as the parents. Now at 1 in. long those that were green are bigger than the original gold one. They have not got very big dorsals.

"The gold one, on the other hand, does display quite a big dorsal for its size. Although the adults were bought as a true pair I can only conclude that at some time before I bought her the female had been impregnated by an ordinary green velifera male. I have been a regular subscriber to your magazine for two years and find it a great help to the hobby."

Photograph 3 shows a young angel that got its fins chewed by two adult angels—my pair that used to spawn regularly, and eat their eggs just as regularly. Unfortunately the two fish have not spawned now for some considerable time although they have grown very large. I imagine the fish are now quite old as I cannot remember when or where I got them. The surface of their tank is regularly coated with a thick mat of crystalwort, large handfuls of which I regularly give away or flush down the toilet. This floating plant is attractive but it tends to grow quickly, cutting off the light from the bottom rooting plants and inhibiting their growth. Obviously light intensity and duration affect the spawning cycles of many fishes. Please send me details of your latest experiences with the breeding of angels; and any of your findings about the effects of light on spawning behaviour in specific species.

Mrs. Pat Houghton writes from 3 Sandhall Cottages, Long Row, Ulverston, Cumbria. "I would like to tell you about my *Pseudotropheus auratus*, or Stripey as he is affectionately known. I bought him—or her— nearly two years ago and, not knowing anything about the species, put him in a tank with other fish including a male Siamese fighter. Within a few days the fighter's fins were in tatters and some other fish were in a very sorry state. Plants began floating and holes appeared in the gravel. My husband decided he should have a tank to himself, with a box filter—the U/G type being useless. He was quite content in a 24 in. × 12 in. × 12 in. tank and he responded when we spoke to him. He even lets us know when he required food by splashing the top of the water, than hanging half way down the tank and staring at whoever was nearest, until he was fed. Everything went well until a few months ago when my husband and I decided to get rid of our 24 in. tanks and buy a 4 ft. tank. Stripey was housed in an 18 in. plastic tank until my husband could make a 3 ft. one for him. Much to my surprise Stripey sulked, would not eat,

and went black as though he were covered in fungus. It was about a month before his new home was ready; but within 24 hours he was back to normal: beautiful bright colours, dorsal fin erect, and eating like a horse. The bottom of his tank looks like the craters on the moon—and they change every day. I must admit that at first I was annoyed to think that one fish should need a tank to itself; but now I would not part with him for anything. Can you tell me how long this cichlid can be expected to live?" (Several years, according to one book.)

Mr. R. Love's home is at 211 Portsmouth Road, Cobham, Surrey. He says: "I would like to begin by giving a tip on how to reduce rust on angle iron frames. The cheapest and easiest way to do this is to smear Vaseline all around the inside edge of the upper frame. The Vaseline will in no way affect the health of the fish if used in this way; and the advantage of this method is that it can be applied to already established tanks. The fastest growing plant that I can recommend is *Egeria densa*. This is a plant that grows so rapidly in my tank that I have to thin it out twice per month. Another plant that reproduces rapidly, once established, is *Cryptocoryne affinis*. Although *Cryptocoryne* species are generally said to be slow growing I find that this plant will soon form a dense thicket if left undisturbed. I also recommend wistaria and *Hygrophila polysperma* to be used to provide contrast, both being light green. I have never used any planting medium other than ordinary gravel as I don't think anything else is necessary for the majority of plants in an established aquarium. I do, however, think it is beneficial to add a full dose of liquid aquarium fertilizer and, perhaps, some (brand) tonic to a newly planted tank.

"In answer to your question about fish prices: a pair of medium sized neons—50p; ditto cardinals—90p; 'ordinary' guppies—65p; medium sized tiger barbs—60p. Finally, I would like to ask if anybody has been having difficulty in buying *Tubifex* recently. All the shops that I used to be able to buy it from have told me that they haven't been able to get it recently. Is there a shortage or is it just a bad time of the year—March?"

That's all the space used up for this month. For a future feature please send me your opinion on any of the points raised above or in the list that follows. Remember, I'm always pleased to receive opinions on any branch of the hobby; and I'm always pleased to publish any queries on which you would like to have other readers' opinions. (1) Please send me details of your experiences with native British marines. (2) Have you tried any native river or pond plants in your pond or aquarium? (3) On what kitchen foods have you fed your fishes? (4) How much bother is associated with waterfalls or fountains in garden pools? (5) What species of waterlilies would you recommend for a small garden pool? (6) How successful have you been with raising the fry of the dwarf gourami? Enjoy your summer holiday.

B.K.K.S. London Section News

A reminder that the next meeting of the London Section will take place at Conway Hall, Red Lion Square, London, W.C.1. at 2 p.m. on Sunday, 11 July, when future plans for the Section will be discussed in detail. Chairman Vic Devis, has come up with a novel idea for a "Koi-Keeping Competition." He is prepared to sponsor and produce young Koi at this meeting, one per member, to be grown on in any way that member sees fit—in an aquarium, an outside/inside pond, conservatory, etc.—and judged next year for growth and fitness. I only hope he turns up with enough fish!

As previously stated, a new film on Koi-spawning will be shown and Gordon Atkins of the East Midlands Section has kindly sent two films on Koi (including his own Koi spawning) which should prove of great interest to members at this time of the year.

New members will be very welcome from anywhere in the country, particularly from the Home Counties.

The B.K.K.S. National Koi Show

All Koi and pond-keepers should make a note of 19 September in their diaries as the first-ever National Koi Show is to take place in Birmingham at the home of Mr. and Mrs. Ron Hodgson, Westbourne Road, Edgbaston.

For Koi enthusiasts the Show is a must and for those pond-keepers and aquarists who have not had the opportunity of seeing high-class Koi in this country it will provide them with an ideal chance to inspect them in close-up under optimum conditions and at leisure. Entry by programme, price 50p, will be charged for those not actually showing fish.

★

AREN'T WE ALL?

By Hilary Maynard

My first is in BUTTERFLY but not in NET,
My second is in GAMBLING but not in BET.
My third is in STAINLESS and also in STEEL,
My fourth is in HANDSTAND but not in KNEEL.
My fifth is in BLOOD but not in RED,
My sixth is in DISAPPEARED but not in FLED.
My seventh is in PLENTIFUL but not in FULL,
My eighth is in BEEFSTEAK but not in BULL.
My ninth is in LECTURED and also in TOLD,
My tenth is in TEMPERATURE but not in COLD.
My eleventh is in COLOUR but not in SHADE,
My twelfth is in SWORD but not in BLADE.

Answer on page 158.

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

Can you tell me a way of insulating a three-foot aquarium against rapid heat loss in the event of a breakdown in the supply of electricity?

Stick two thicknesses of polystyrene ceiling tile to the back and ends of the tank. If you can reach the outside base, stick polystyrene tiles over all the exposed bottom area too.

I have a mixed collection of plants in my 36 in. by 15 in. by 12 in. aquarium and they are not doing at all well though I keep the 20 watt fluorescent lamp switched on for eight hours a day. Where am I going wrong?

20 watts fluorescent light is hardly enough for a three-foot tank planted with several different species of plants. You require 30 watts. Next, all fluorescent light should be kept switched on for about 10 to 14 hours a day. You would probably do better under your existing lighting system if you introduced species of Cryptocoryne. *C. affinis* is suited to a poorish light.

Can you help me? I have a 36 in. by 15 in. by 12 in. tank stocked with a ruby shark, two *Corydoras* **catfish, some angel fish, a few barbs and guppies. I have an under-gravel filter with 1½ in. coarse compost on top. Although I keep the fluorescent light on for five hours a day, I cannot keep my plants more than a week or two.**

See the query above with regard to the question of light. As for the compost, this is not deep enough. You need about 3 in. of well-washed grit over the filter plates to allow for proper rooting. You did not mention the names of your barbs. Do not overlook the fact that some plants suffer if they are nibbled at by avid eaters of greenstuff. Some barbs are markedly herbivorous.

What is the scientific name of the rocket panchax?

As far as I know, rocket panchax is just another common name for *Epiplatys annulatus*, a small cyprinodont more popularly known as the clown killie.

Has the pike cichlid (*Crenicichla saxatilis*) **been bred in captivity?**

The pike cichlid is not backward in spawning in captivity. It deposits its eggs in a depression or furrow in the compost.

I should appreciate some information on the maximum length, geographical range, suitable food and temperature requirements of *Pimelodella gracilis*.

P. gracilis attains about 7 in. and is distributed in the natural state over most of South America from Argentina northwards to Venezuela and thereabouts. It flourishes well on regular live foods and meaty scraps. A range of temperature from the upper sixties to the upper seventies (°F) suits it well.

I have just introduced an axolotl into a tank kept at comfortable room temperature. What food should I buy for this amphibian if I cannot dig enough garden worms?

There is no special food you need buy for your axolotl. Thin strips of raw red meat or fish (cod, whiting, fresh haddock and so on) moved about in front of the axolotl's snout will usually invite the creature's attention. Clamp the flesh food between the jaws of a blunt-ended tweezers.

I purchased an aquarium the other day and when I reached home I found it had three small scratches in a top corner. Do you think these scratches will cause the tank to collapse into splinters of glass when I fill it to the top with water?

Provided the scratches are not deep there is no danger of the glass cracking.

We shall be going on holiday shortly and wonder whether the fish will be all right without food? Another thing, as it will not be convenient to leave the light switched on all the time we are away, what is my best course of action with regard to the plants? The light reaching the aquarium from a window is quite bright, but I fear it will not be sufficient to keep the plants alive.

If the fish are well fed up to the time you go on holiday, they will survive your absence with no ill effect. The plants, however, are a problem. You could anchor them in another tank placed very close to a window and hope that the water will not become too cold. Alternatively, ask a friendly dealer whether he could accommodate the plants for you over your stay away from home. An arrangement could be made to cover the cost of light and heat. Finally, keep an aerator switched on all the time you are on holiday.

I have seen some large-eyed fish, with short barbels, and dark horizontal stripings, that my dealer called blue sharks. Can you please tell me the technical name of this species and whether it would be suitable for introduction into my community tank?

In all probability the fish you have seen is *Pangasius sutchi*, a catfish from south-east Asia. In its smaller sizes, this handsome and lively species minds its own business. In its larger sizes, however, it will make a meal from much smaller fishes such as young neon tetras or male guppies.

I wonder whether you could suggest the names of a few books which would give me plenty of information about the river Amazon. I am particularly interested in references to fishes such as the piranha and the candiru.

Inquire at your main lending library for the following: *Amazing Amazon* by Willard Price, and *The Amazon* by Robin Furneaux. The latter has a lengthy list of references which will enable you to go into the subject of the Amazon and its inhabitants in depth. The former has some remarkable anecdotes and reports on the behaviour of the piranha and other fishes.

I have a livebearer which I have been told is native to Mexico. In place of the typical rod-like gonopodium, the male has a mere abortive protrusion of the leading ray or rays of the fan-shaped anal fin. There is a dark horizontal line extending along the middle of the body. The colour above the line is brownish. The colour below is green to blue. There are some dark bars and a dark spot in the caudal base. The female is rather drab. She measures about 2 in. The male less. Have you any idea of the identity of this fish?

I suspect you have the species known as *Neotoca* (in some books *Skiffia*) *bilineata*.

The water in my 18 in. by 12 in. by 12 in. tank is perfectly clear yet the fish keep rising to the surface at frequent intervals. I have also noticed tiny air-bubbles, like froth, where the water meets the sides. Some water snails I introduced few weeks ago have climbed above the water level. What do you think is going wrong?

Remove the fishes and snails without delay, empty the tank, and give the compost a thorough washing in several changes of water. I suspect the aquarium is badly polluted. After setting up the tank again, see that you do not overfeed the fish, overstock the tank with fish, or leave any uneaten food to decay on the bottom. Finally, do not introduce any plants which do not remain green and growing.

How can I sex my osphronemus gourami?

You will have to wait until this monster anabantid attains a fairly large size. Then the dorsal and anal fins of the male will assume a larger and more pointed shape than those of a female.

COLDWATER QUERIES

by Arthur Boarder

Could I keep a half pound trout in a glass tank indoors? Also I would like to breed trout and can get small ones from a river nearby. Can you advise me?

As this is your first attempt at fishkeeping I do not like to disappoint you, but you are choosing the wrong type of fish for a beginner. It would be difficult to keep such a fair sized trout in a tank, and would need one about 48 × 15 × 15 inches with very cold fresh water. This would have to have constant aeration, both day and night. You might be able to keep very small ones under such conditions but as to breeding them, this is an expert task. Trout are bred by hand-spawning when the cock and hen are

hand treated to expel the eggs and milt. The fertilised eggs are then kept in running water for a long time before they hatch, and then fresh water must be supplied, and running at that. Why not try breeding one of the fancy goldfish, which is far easier and very satisfying.

I have recently lost some young Orandas and think it was caused by gill-flukes. What can I do to clear the fish?

Flukes usually attack very small fish and I do not think that large ones are often attacked. The symptoms are that the young fish go off their food, mouth at the surface, fold their fins and swim very sluggishly. Later signs are that blood streaks appear on their bodies, they lose their balance and then die. This trouble can be cured if taken in time as it takes some days for the pests to cause death. You can make sure if flukes are the cause by examining a fish with a strong magnifying glass when the pests may be seen as tiny, almost transparent leech-like creatures which can move about on a fish with a looper-caterpillar movement.

The cure is to immerse the affected fish in a solution of a quarter teaspoonful of Dettol to a gallon of water. Do not leave the fish in this for more than a dozen seconds or so. Keep the fish in a net so that it can be removed to fresh water if it turns over. A second treatment may be necessary. See that the water in which the fish is kept is in good condition and well aerated, also it may be an advantage if some warmth, up to 75°F., is supplied.

I am making a pond and wish to keep frogs and toads. A friend has given me some tadpoles. Can you tell me how to sex them later on?

You cannot sex tadpoles and it is not easy to sex frogs and toads until they are mature. This may take three years. Male and female frogs do not show much difference, except in the breeding period. Then the females become very swollen with spawn and the males are thinner. The latter grasp a female until the eggs are laid and they then fertilise them. Toads are easier to sex as the adult female is almost twice as large as the male, but breeding is as for the frogs. You cannot keep toads in a pond except when they are breeding as they leave the water once eggs are laid. Frogs also leave the water but a few may remain in or around the pond during summer and autumn. You can feed the tadpoles on fish foods and mashed garden worms.

I have a pond 6 feet by 4 feet and have seven Golden Orfe in it. What are my chances of breeding them? I have caught a couple of water beetles and think there may be some of their larva; could they harm fry?

Although it is possible to breed orfe in a garden pond, it is usual to have a larger pond than yours as orfe usually breed when they are of a fair size. Your pond is too small for seven orfe large enough to spawn. In hot weather they will suffer from lack of oxygen and you will be lucky to even keep them alive without some aeration during warm nights. The pests you mention can eat fry.

After some years of keeping tropical fishes I have decided to go over to coldwater fancy goldfish as I think they have more individuality. In your article lately you stated that it is important to start with fish from a good strain. Like others, I have found that it is difficult to get good specimens. Can you help please?

You will certainly find that it is a very interesting hobby to breed good specimens of fancy goldfish. As so many of my enquirers have stated that they cannot find the type of fish with which they would like to start a strain and cannot find good specimens, I have been able to assist. I am enclosing an address from which you should be able to get the types you need.

I wish to breed goldfish in my garden pond but have seen some Great Water Beetles in it. Will they harm the fish?

Water beetles and their larva can harm and kill small fishes but they are not likely to harm adult fish, but they have been known to take a bite out of one. Try to catch all you see and when breeding use the method recommended in my book, "Coldwater Fishkeeping," and you should have success with your venture.

On page 43 of your book, "Coldwater Fishkeeping" there is a photograph of a handsome Veiltail goldfish. I have seen a similar photograph reproduced in more than one of my books. Is this the same fish and if so is it a very good specimen of what a Veiltail goldfish should be?

Without knowing the actual colours of the fish in question I cannot say if it would win at a large show. It is not that it is a specially good specimen but that it is a very good photograph. I do not think that I shall be giving away any secret, but that photograph was taken by our Editor, Laurence Perkins, some years ago and I would not like to guess as to the number of times it has been reproduced in books and articles. It is not the easiest of tasks to get a really good picture of a moving goldfish.

My query is what kind and how many fish can I keep in my coldwater tank which is 24 × 12 × 12 inches?

The tank will safely hold 12 inches of body length of fish. This is of course as long as the fish are not given more food than they can clear up in a short space of time. As long as the water is not allowed to become polluted you should have no trouble in keeping the fish healthy. As you are a beginner I suggest that you err on the safe side and only have not more than nine inches of body length of fish. Experienced aquarists will often keep more than the recognised number of fish but the experience only comes after a few years of fishkeeping. Common goldfish or shubunkins will suit you best.

I have had my garden pond for a few years but lately I found all the fish dead on the top of the water and there was a kind of film on top of the water. What do you think was the cause of this?

Obviously the water was very polluted but what caused this is difficult to say. The fact that there was a film on the surface of the water suggests that there may have been some form of plant spraying in the vicinity. If this contained any chemical it could have been the cause. On the other hand it is possible that there was something decaying on the bottom of the pond and this polluted the water and would cause a film to form.

I have turned my garden pond over to frogs and I have a number of tadpoles. My problem is, what to do with the surplus young frogs I do not wish to keep? I would like them to survive.

Once the young frogs have fully absorbed their tails, you can take them to a country site and release them in long grass. This is best done after or during rain and in late evening. The young frogs will then survive. It is a scheme to be recommended and I hope many more pondkeepers will copy your example. The frog is such a useful creature that its existence must be ensured.

I wish to go in for keeping Koi and would like information on the type of pond necessary for their well being. Can you advise please?

Koi can grow quite large if they are treated correctly and have sufficient swimming space. It is not wise to try to keep these fish in a small pond as without plenty of room they may not thrive. My best advice to you is to get in touch with the British Koi-Keepers Society; The Secretary of the Northern Section of the Society is:—Peter Waddington, 1 Avon Drive, Bury Lancs.

I have an indoor pond complete with fountain and waterfall with two small goldfish and some tench in it. No matter what I do the water smells and if I clean it out it soon smells again. What do you advise?

You are feeding your fishes too liberally: clean the pond out and then do not feed the fishes at all for at least a week and I think that you will find that the water remains clear without any unpleasent smell You have been giving the fishes more food than they can eat and the uneaten food has fouled the water. I know that some foods are advertised as, "Not fouling or clouding of water" but I have yet to find any dried foods which will not foul the water if not eaten within a couple of days. Just one day when too much food is given can be enough to turn the water foul and then the fishes go off their food and any more given just makes matters worse. Your troubles may have been increased by the use of the waterfall and fountain. These would tend to keep the water, with the mulm circulating instead of allowing the waste products from the fishes to settle on the bottom and have a chance of being partially used up by the water plants Your fibre glass pool may not be very large and so it is probable that the water has been in turbulence too much which may not be to the liking of the type of fishes you have.

In the early summer I put half a dozen red scaled fantails in my pond and now find that they have grown from an inch to two or three inches of body length. Will they go through the winter safely in the pond? I wish to breed with them next year and would like to know if they will breed true or shall I get some single-tailed fish among the fry? Also how large do fantails grow?

Your fantails should go through the winter safely as long as the water in the pond remains in good condition. I have never lost a fantail in the winter through the cold in thirty-six years. You must not expect to get all your fry true fantails. The proportion varies from strain to strain. Also, some spawnings produce more good fish than others from the same parents. You can get single-tails, tri-tails, web-tails and even fish with good divided tails but with a single anul fin. This is the fascination of breeding fancy goldfish. It is not as easy as some aquarists who have not tried, would like you to believe. I still get oddly shaped tails on some of the fry from my well established strain but this only makes it much more satisfying when some very good specimens are produced. After all, where is the satisfaction in breeding fishes which have all their progeny as like as peas in a pod? Once you have done it the interest lags.

Fantails can grow to four inches in body length or perhaps more, but at this size they are not likely to live much longer, and it could take fourteen years or more to reach this size, according to the rate of growth, which of course depends on feeding and swimming space, also warmth in the early days of growth.

PRODUCT REVIEW

Nuova Turbino Power Filter, manufactured in West Germany, and distributed jointly in the U.K. by Fantasy Pet Products Ltd., 13 Nutley Lane, Reigate, Surrey and Hillside Aquatics, 29 Dixons Hill Road, Welham Green, Nr. Hatfield, Herts. The current price is £21·90 plus 25 per cent V.A.T.

Readers wishing to enhance my verbal description of the Nuova Turbino Power Filter might like to refer to the photograph on page xxxii of the December 1975 issue.

The body of the Turbino is made of rigid, transparent, green plastic. The base is approximately 4 in. wide by 6¼ in. long; and the container widens out to 5½ in. wide by nearly 9 in. long at the top. The height from the base to the top of the lid is about 6½ in., and the motor housing adds an extra 3¾ in. The unit emits a very faint hum while operating, and is supplied fitted with approximately 1 metre of twin core cable. The lid of the Turbino is clamped on eight plastic/metal screws and clamps which are easily tightened or loosened with fingers and thumb. There is one water (return) outlet in the lid of the unit and three inlets. Of the latter, the central one is ready for use; and for increased rates of water turnover one can add a second and third inlet by removing a small plug from each and fitting extra lengths of plastic tubing. (I found that, when used on a 30 in. tank, the unit gave excellent filtration and even temperature distribution throughout the water with only one inlet in use. However, the extra facilities are available for those who require them.)

The body of the filter is divided into two compartments by a central partition which slides down appropriate grooves. At the bottom, on either side, one fits a perforated plastic plate. One fills one compartment with coarse sand or gravel and places a perforated plate on top; the other compartment—the one under the motor—can be filled with Nuova or other filter wool. Its perforated plate is then placed in position. Dirty water enters the filter and passes down through the gravel side where the larger particles of dirt are trapped. The partly cleaned water then passes along the base of the filter, under the partition, and is drawn *up* through the filter wool. (Activated charcoal may also be included, if required). The cleaned water is then drawn through the motor and returned, via s sturdy plastic tube, to the aquarium. A spray head, with appropriate pieces of tubing and angle connectors, is fitted to the return tube; and a strainer, with fittings, is fitted to the end of the inlet tube in the aquarium. The design of the latter is excellent and I found that at no time did it ever become blocked to such an extent that it cut down the water flow. A plastic "sucker" is used to hold the strainer in position at the base of the aquarium; and a second one is used to hold the spray head in position. The latter can be situated wherever one wishes it to be. If placed just above the water surface, pointing downwards, it provides additional aeration; situated below the water surface it provides excellent water movement. Near the base of the tank it will keep dirt on the move so that it can be sucked in by the siphon strainer. I ended up with the spray head of the review sample situated about half way down the aquarium where it produced a pleasant undulating movement among the leaves of such plants as Amazon swords.

The filter is easy to set up—although I did make one error when doing so. The unit is supplied with a clear plastic strip which must be fitted to the top of the central partition to produce an effective seal when the lid is screwed into place. Unfortunately the leaflet supplied with the unit did not mention the need to fit this strip and it took me a little time to notice my error. I mentioned this point to Mr. Eric Small, of Hillside, and he said that he would consider duplicating a few lines about this minor point and adding them to filters in stock. (The filter contains an excellent instruction leaflet in German—but I am not a German scholar. The English version is rather shorter—but Mr. Small hopes that the manufacturers will extend the instructions in the English version of the leaflet when it is reprinted).

The plastic tubing supplied with the Turbino is of high quality and I had no trouble with it kinking.

I have had the filter in use for a couple of months now and I am very pleased with its operation. It is quiet and highly efficient—and I am pleased to note that a full range of spare parts is available if and when required. A spare set of bearings is supplied with the filter.

Additional details: the filter capacity is approximately ¾ gallon; the 24 watt motor operates at 2,200 revolutions per minute; and the turnover rate of water is approximately 80 gallons per hour.

Like its smaller brother, the Turbinette, which I reviewed recently, the Turbino is a delightful piece of equipment which should give years of satisfactory service. Its price probably puts it in the luxury class at the moment, due to the crippling 25 per cent V.A.T. it has to bear; but if you want a really good power

filter for a special aquarium you will appreciate the excellence of the Nuova Turbino. I hope to review the top model in the range, the Nuova Turbo, when I've had it under test for a longer time.

Aqualonic Air Diffusers, manufactured in the U.K., and distributed by Hillside Aquatics, 29 Dixons Hill Road, Welham Green, Nr. Hatfield, Herts., AL9 7EF; telephone Hatfield 62522. Patent applied for.

Earlier in the year I tested and reviewed the 6 in. and 12 in. long models of the Aqualonic Aquarium Air Diffuser (see review in the March, 1976 issue). In my review I mentioned the fact that I was strongly tempted to take apart one of the two test samples to see how well the lead weight inside was protected from the water in the aquarium in which it would be used. My comment brought me another 6 in. sample, specifically for this purpose, together with test sample of the latest additions to the range—the 18 in. model and the 24 in. model. The 18 in. diffuser retails at £1·30, the 24 in. at £1·75—plus 8 per cent VAT for both models.

Both of the longer models were identical in construction to the shorter models, reviewed earlier, and both performed equally well, producing the same aesthetic effect, plus good aeration and circulation. Obviously the longer models require stronger pumps, i.e. more air, to operate them efficiently; however, the strength of pump required was perfectly acceptable for the sizes of the longer diffusers—which are, incidentally, the longest I have ever used. Both gave an even spread of bubbles along their upper surfaces and both remained on the aquarium gravel when operating. They should certainly be of interest to the aquarist who has a large aquarium and who wants top level aeration.

Despite feeling rather like a vandal while I did so, I took to pieces the 6 in. Aqualonic Air Diffuser to see how it was constructed. The outer casing, covering three sides of the diffuser medium, is of sturdy brown plastic. Set on the base of the covering is a strip of lead, of an appropriate weight, sealed inside a sheath of waterproof, flexible, yellow plastic. This yellow plastic "bag" seems to have been heat sealed along its edges and it is certainly waterproof. I would say that the lead would certainly be completely isolated from the water for the life of the diffuser—which I would estimate as being very long as none of the parts in contact with the water should react with it. The part that diffuses the air into small bubbles is a green coloured, firm, synthetic foam-like substance, sealed at the ends, and fixed into place by a colourless sealant. A black plastic knob, for attaching the air line, is firmly cemented into one end of the diffuser by a grey synthetic cement.

The simplicity and efficiency of the Aqualonic Air Diffuser indicates that a lot of thought must have gone into its planning. Having examined the inside of the unit, as well as the outside, I still consider it to be a good, new product. Its design suggests that diffusers of even greater lengths could be manufactured—if the need exists.

B. WHITESIDE, B.A., A.C.P.

Velda Products

A new range of items from Holland, introduced into this country during 1975.

Velda Aqua-Soil. A pack of hard clay pellets for use as a plant-feeding medium on the aquarium floor. The pellets are small, about 1/16 in.-1/8 in. in size, and can either be covered with gravel or added to an existing bed. The makers state that Aqua-Soil is "composed almost entirely of a special clay adjusted to the correct level of trace elements" and claim that it does not compact, nor impede water circulation.

In theory, especially in a new aquarium, plants should benefit from the inclusion of such a base feeding medium in the otherwise practically sterile stone gravel usually employed. In practice this did seem to be the case. A new aquarium was set up with a static gravel bed (i.e. no biological filter) and one full pack of Aqua-Soil was spread over the whole base area, beneath a layer of aquarium gravel. A mixed collection of rooted plants was installed, and in my opinion got off to a really good start. Normally, I never wash previously-used gravel (unless from an aquarium which has suffered disease) because of this plant feeding problem in newly set up aquaria, but in this instance the gravel was completely new and the Aqua-Soil gave results as good, if not better, than does the other method. The aquarium in question is still in excellent condition and supports some really nice plants.

Price (at time of writing)—£1·08 plus V.A.T.

Only one pack size is available and my sample was not marketed with either the weight or the volume of the contents.

Velda Filter Cartridges. These are cylindrical poly-sponge covered structures which are principally designed to fit inside Eheim power filters. They are somewhat flexible and will fit some other filter-boxes of similar internal volume. The cartridge contains activated carbon between synthetic wool layers assembled inside the outer sponge covering which acts as a preliminary filter to stop the ingress of solids and debris. It will have a combined mechanical-chemical function and its useful life in this mode of operation will be determined by the time taken for the carbon to become fully loaded. It will still continue as a mechanical filter after this, of course, unless it becomes clogged.

The advantage of such a construction is that it is

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OUR READERS WRITE

Trace Elements in Seawater

Some years ago I gained a certain amount of experience with both synthetic seawater and the natural product, and have kept both invertebrates and fishes in both these substances with varying success. I have spawned and hatched, but not reared, the *Butterfish Centronotus gunnellus* in synthetic water made to Lyman and Fleming's formula. There are no trace elements as such in this, but as I used domestic cooking salt and commercial Epsom salt, no doubt these were not chemically pure.

P. H. Gosse, in "The Aquarium", 1854, claimed that he had kept invertebrates in a very simple mixture of five salts. I have tried his formula and the Beadlet Anenome was the only creature to survive. This animal has been recorded as being able to live in beer!

I have known Mr. C. D. Roe for more years than I care to remember, but this personal relationship has no bearing on my preference for synthetics. I have seen marine plants growing in his tanks at Shirley the like of which I have never seen growing in natural seawater. The Sea Lettuce *Ulva* will exist for a few weeks in a cold water tank, but does not thrive. Sea Grass *Zostera*, a true flowering plant, will grow, with mud, but nobody wants mud in a tank.

What is a practical alternative to synthetic seawater? I used to purchase seawater from the Marine Biological Association at Plymouth. To do so I had to buy two ten-gallon carboys, which had previously only contained distilled water, send them to Plymouth, and pay the carriage back to the Midlands. The water was then 5p a gallon, but with the carriage appreciably more. I tremble to think what the present day cost would be. Collect one's own? With pollution as it is this would, indeed, be a doubtful project. The poisonous insecticide DDT has been found in the tissues of Penguins in Antarctica, presumably through fish eaten by them, which in turn had consumed plankton already affected by DDT. The London Zoo Aquarium uses filtered seawater originally collected in the Bay of Biscay, and the old Brighton Aquarium used seawater pumped from well off-shore, and it was allowed to stand until all sediment had settled. Much microscopic life was introduced with this water, often with desirable results, but sometimes otherwise.

"Tropic Marin" is, I hope, a standard product, and each sample up to the standard of the others. This is not so with natural seawater. It might sound expensive to Doctor Mervyn Hudson, but the alternatives are probably equally expensive and could, in some cases, prove fatal to many delicate tropical species.

Whilst on the subject of seawater, your other correspondent, Mr. G. B. Hawksby, might be interested to know that the dried salts in the sea contain approximately three parts per thousand of Sodium fluoride, and that fresh water fishes have been kept successfully in places such as Watford where the public water supply has had Sodium fluoride added to it for very many years.

Yours faithfully,
JOHN S. VINDEN,
Cliers Cottage
15 Velindre,
Three Cocks,
Brecon, Powys LD3 0SY

Doncaster Aquarist Society

As show secretary for the above society, I have compiled the following statistics, and I find them very interesting. Perhaps readers, society members, and other secretaries would like to compare these figures.

1975 open show statistics

In 1975 Doncaster Show members had 2,154 entries; at 10p per entry, £215·40p; attended 35 open shows; covered a mileage per member of approximately 1,750 miles; won 13 annual trophies; transported approximately 538 gallons of water; over 4 tons in show jars, gravel and water.

Gained highest points at 30 shows; highest at any one show, 59; lowest at any one show, 6; total points for year, 1,156; member with most points, Mr. W. Blundell (224). Of the points gained in this area, 220 were for firsts, 112 were for seconds and 205 were for thirds.

Highest entries at any one show, 108; lowest entries at any one show, 12; highest attendance, 18; lowest attendance, 2; there were many section winners; up to year end, Best in Show awards held, 7.

These statistics on open shows alone could perhaps form a topic for conversation and interest amongst aquarists.

Yours faithfully,
K. LANCASHIRE,
20 Symes Gardens,
Cantley,
Doncaster DN4 6JZ

A Fair Disposal of Funds

At a recent meeting of the now defunct Association of Manchester & District Aquarist Societies, it was decided to donate the balance of the funds remaining to the British Heart Foundation & Cancer Research

Fund with the sincere thought that disposal of the funds in such a manner could only be of ultimate benefit to the whole of the community in general.

The Competition Trophies held by the Association have been returned to their respective donors.

F. Mulla, Chairman.

Ill-Conceived Presumptions?

I am incredulous that your magazine should devote so much space to the ill-conceived presumptions of G. B. Hawksby of Acomb, Yorks. (Our Readers Write, April, 1976) on Fluoridation.

His letter is so crammed with mis-information that I hardly know where to begin. May I start by setting your readers' minds (and G. B. Hawksby's) at rest, and in the most convincing manner I can think of—that of citing some practical evidence:

In North America (U.S.A. plus Canada), 100 million people receive water through their mains supply fluoridated at 1 p.p.m. I shall not presume that this number includes many thousands of fish-keepers, but simply state that in 25 years of such fluoridation, I am convinced that your magazine and aquarists in this country would have got wind of even the smallest problems associated with such a procedure.

I shall not dwell on your correspondent's opinions on Oral Health, as no doubt he would not claim to be an expert; however, I would have expected him to know that marine fish already survive naturally in fluoride concentrations at and above those proposed in water fluoridation, since sea water contains levels in the region of 1 to 1·5 p.p.m. fluoride.

Contrary to G. B. Hawksby's assumption, fluoride can be removed from water, and should he require to do so I shall be pleased to inform him of a simple and economic method.

He is correct in supposing sodium fluoride to be a poison, but so are a number of essential nutrients at concentrations higher than the *optimum*. I can but state that the supplementing of water supplies with fluoride to 1 p.p.m. is the most thoroughly investigated public health procedure ever proposed, recommended by the World Health Organisation, and already accepted by a considerable proportion of the world's population.

I sincerely hope that Aquarist Societies "in every corner of the country" will devote their time to co-ordinating useful information for their members rather than rallying to hysterical "calls to battle" based on such ill-informed suppositions as those expressed by G. B. Hawksby. Attempts to utilise such emotive distortions of the truth in order to support an argument are objectionable and should be exposed.

Yours faithfully,
R. F. Wilson, M.PHIL., F.I.M.I.S.,
Senior Scientist in Dental Research
at Guy's Hospital, London.

P.S.—I have eight aquaria at present, and although I have been fishkeeping for a number of years I would not count myself an expert aquarist.

PRODUCT REVIEW

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more convenient in use than separate layers of filter materials installed loose in the filter box, and the usual procedure of having to pre-soak and wash the carbon is avoided. It would be possible to cut open the cartridge to renew the carbon if required, when it became inefficient.

Prices (at time of writing):—
Eheim 388 size—£1·38 plus V.A.T.
Eheim 386 size—£1·86 plus V.A.T.

Velda Test Kits. Four kits are available; pH, nitrite, total hardness and carbonate hardness. Each contains full instructions for use, a graduated sampling phial and a bottle of the required testing chemical. The two hardness tests both use a colour titration procedure, whereby the number of drops of the test chemical necessary to produce a stated colour change represents a proportionate hardness value, and the pH and nitrite tests are evaluated by means of colour chart comparisons following the addition to the sample of specified amounts of the test chemical. The pH range is from 5·0 to 8·5, in ten steps of discernible colours, while the nitrite shows values from zero to 4 milligrams per litre in four steps from colourless to deep pink.

Both the nitrite and the pH kits have been used regularly in my fish-house as part of the general routine and are very satisfactory. The two hardness kits were tried out and gave sensible results. The nitrite test kit especially seemed very reliable and was very simple in use, there being only one chemical addition to make rather than the two liquids which many other kits employ.

Prices (at time of writing):—
pH Quick Test—£1·20.
NO_3 Quick Test—£1·20.
KH Quick Test—£1·08.
GH Quick Test—£1·08.
Above exclude V.A.T.

Velda products are distributed by Wingate and Golding Ltd., Barton Stacey, Winchester, Hampshire SO21 3QL. Telephone Sutton Scotney 792 and 793.

A. Jenno.

VIEWPOINT

by A. Jenno

WITHIN the Birmingham area we are currently experiencing symptoms in the aquatic trade which may well be a reflection of the overall economic situation presently affecting the whole country. With its high population density the locality naturally encourages the establishment of more shops than might other similarly-sized areas, and it may appear that aquarists here are spoilt for choice with all these sources of supply. In the city centre itself there are now four shops handling fishes where not so long ago there were only two. Similar increases have taken place in the outer residential areas and recently this crowding culminated in an advertising campaign whereby neons, for instance, were sold at 20 for the £1 and other varieties at 10 and 8 for the same amount. The shopkeepers concerned have made this possible by bypassing the established wholesale sources and importing directly. Marine specimens and all-glass aquaria are other examples where prices have been cut to the bone.

For aquarists wishing to buy the particular items offered at these low prices and in such quantities this is something of a bonanza perhaps, but the effect of such cut-price dealing on the trade generally has not really been favourable because other dealers have felt obliged to compete, and have thus kept their prices down or have allowed discounts to the point where standards in some of the shops have gone through the floor. Further, the general atmosphere of "wheeling and dealing" has encouraged some very inexperienced people to set up in the trade, presumably under the impression that the price variations and financial juggling evident indicates easily obtained profits.

Birmingham is therefore becoming crowded with small, ill-kept, poorly-stocked shops which often cannot offer a decent comprehensive service at all, and some of which are unable to give reliable advice or assistance even to beginners. Some shops are choked up with gardening and pet requisites, so that the impression is gained that the sale of fishes is just another item on the proprietor's lists of available offers and not the highly-specialised trade which it actually is.

The snag, of course, with fish-dealing is that anyone can do it. There are no limiting requirements and no associated standards of treatment or expertise required. A person with no previous knowledge or experience can simply set up anywhere and pretend to be as good at the trade as anyone else. The hobby aquarist of some years' standing will soon sort out the good from the bad, and by judicious purchasing can even take advantage of the cut-price dealing inherent in these situations, but there is no hope at all for the beginner who is caught in such a trap and inevitably this state of affairs results in many prospective aquarists being lost to the hobby when they eventually give it up after losses and discontent caused primarily by bad advice and profiteering.

My own experience of many years' friendship with reliable members of the trade indicates that there are ways whereby inexperienced aquarists can gain some idea of a shopkeeper's intentions. First and foremost, every experienced dealer I have ever talked to has fervently maintained that it is impossible over the long term to make worthwhile profits from the sale of fishes alone if these are properly quartered, fed and generally looked after correctly whilst on the premises awaiting sale, and are sold at the usually expected prices. The old idea of fishes being separately quarantined in retail establishments before sale has already generally gone by the board long ago because of the facilities, overheads and cash investment involved, so fishes are nowadays brought in by dependable retailers from reliable wholesaler/importers and are expected to be of saleable quality as received. Illnesses deriving from transport and handling are of course treated, such as White Spot and similar occurences, and a reliable dealer will not sell any affected specimens until this has been done, but otherwise no *routine* quarantine is nowadays generally applied.

Heating costs, inevitable losses, feeding and labour involvements, and the cash tied up in numerous display aquaria and their ancillary equipment, totals up to the point where a good business man would not consider the common tropical and coldwater fishes alone as the basis of a viable commercial enterprise. Experienced dealers therefore tend to keep a good selection of these fishes available, but to rely for their upkeep and the establishment's steady profits on the sale of equipment, foods, and all the related paraphenalia of the hobby.

My opinion is that a good experienced dealer will have available a large range of aquaria, equipment, books, etc., whose sales allow him to keep fishes properly and with consideration, and thus without being primarily concerned with gaining every last

advantage from fish sales to the point where maintenance and living conditions are skimped. My advice to beginners and anyone in doubt then is to use the larger, cleaner, well-stocked dealers who concern themselves with aquatics as their main source of income and to avoid the transients with hole-in-the-wall enterprises even though their prices may at a particular time be cheaper. Practically the whole of the supply side of our hobby is dependant upon the efforts of the dealers and unless we support the established, reliable and interested members of this body in these difficult times they will simply fade away and leave the field open to others far less capable.

* * *

As is common knowledge, the recommended specific gravity range for marine aquaria is from 1·020 to 1·025 as measured by a properly temperature-compensated hydrometer. This range covers salinity conditions in which practically all of the commonly-kept saltwater fishes and invertebrates will flourish, and the difference between one end of this scale and the other is only a very small measuring distance on most hydrometers. There is, however, a good argument for maintaining the specific gravity as low as possible within the above range and it would seem that it is time for someone to produce a more sensitive hydrometer (or other measuring system) so that this can be done more easily.

Due to the process known as Osmosis, whereby fishes can maintain their internal salt requirements against the degree of salinity of their surrounding aquatic environment, marine inhabitants are constantly endeavouring to lose salts from their bodies to the water. In other words, the salt content in the body of a marine fish is required to be less than that of its surroundings, and must be kept so. Thus any unnecessarily high salt concentration will force the body to work much harder just to maintain this balance. It is therefore generally better to keep marine aquarium water at an S.G. of 1·020 than of 1·025. In particular, much energy is lost by the fish in ridding itself of excess salts and the aquarist should help to relieve this constant strain as much as possible.

This phenomenon is also linked, therefore, to the feeding requirements of marine fishes which thus need to be fed more often than do freshwater fishes, and will easily suffer if not properly catered for. The best indication of a starved fish is obviously a reduced abdominal area, which condition is usually curable by the obvious means, but when things have gone too far loss of flesh from the side dorsal areas takes place as the fish absorbs its own body fat in lieu of ingested food and then acquires a very pinched look, both top and bottom. This advanced condition is then not always so easily curable because by this time a lack of interest in food (anorexia) may have set in with the result that the fish may never eat again and may just fade away. Vitamin additions seem to help in this respect and will sometimes induce a badly under-nourished fish to feed again.

It is therefore important that marine aquarists understand that their fishes should be given food as often as possible, certainly at least three times daily, but without of course fouling of their environment. I have a Vagabond Butterfly (*Chaetodon vagabundus*) which lives on its own in a ten-gallon aquarium and this fish eats anything sensible at every possible opportunity. No freshwater fish I have kept has ever been so completely concerned with food, the Vagabond never having refused anything given. My anemones show similar signs, although on different time-scale. For some time I fed them only infrequently, sometimes only weekly, and they remained small and were most often closed up. After considerable experimentation I now feed them all daily with broken A.A. Silverfish, which is put onto their tentacles, and now they are almost always open and fully pumped up. This individual feeding takes a little time and patience but is well worth bothering with. Other filter-feeding invertebrates and various small scavengers clear up the inevitable small particles deposited around the aquarium by such feeding.

A further interesting point concerns the pH value of marine aquarium water. In a similar fashion to that given for the specific gravity above, a range of pH values from 7·9 to 8·4 is usually advocated. Again, it is better to keep to the lower end of this scale also because the toxic ammonia content is influenced by the alkalinity of the water. Ammonia products are toxic when in the form of what is known scientifically as "un-ionised" ammonia and it has been shown by serious research that the concentration of this kind of ammonia in water can be as much as two-thirds less at pH 7·9 than at pH 8·4. Again, less strain is put upon the aquarium inhabitants, with consequent benefits and, of course, the environment's cleansing facilities and especially any biological filtration will not be called upon to deal with so heavy a load. The situation is something of a knife-edge, however, in that we do not want the water to become any more acid than pH 7·9 for other reasons, so when it is kept at this value it must be monitored regularly.

* * *

I would like to recommend some further specialised reading matter. Both are amateur productions of superb quality and good value for their modest cost.

Firstly, the information booklet No. 1 from the Catfish Association of Great Britain. This is the first of a proposed series and should prove a real boon to serious catfish enthusiasts. Nineteen species are included, each with a thorough description, a really good black-and-white drawing, and with geographical and size data. Especial consideration is given to

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THE GIANT TOAD

by Andrew Allen

Bufo marinus is not the largest toad in the world; that distinction probably falls to *B. blombergi*, a spectacular batrachian from remote Columbia, or to the Rococo toad *B. paracnemis* from Brazil and Bolivia, both of which frequently exceed lengths of ten inches. But the Giant (so-called Marine) toad runs them close in the dimension stakes, with a maximum recorded length of nine and three-eighth inches. That is quite enough, particularly in an animal as rotund as the toad. The homely British toad rarely surpasses four inches, though I measured one member of its Southern sub-species *B. b. spinosus* that was eight inches long.

Even if not the *most* giant of toads, *B. marinus* is certainly the most abundant and accessible of the giant toad species. It is distributed across northern South America, through Central America, and into the southern United States. A series of introductions have extended this range to Hawii, Puerto Rico, Haiti and the Solomon islands, indeed to most lands where sugar is grown, for the Giant toad is an important agent of biological control in the war against beetle pests—one toad consumes a hundred beetles a week over a lifetime that often exceeds twenty years. The species is imported regularly into Britain, and sells at a moderate price. With their abundance in the wild and precocious fecundity, these are ideal amphibians for the herpetologist who wants to be certain that his activities cause no harm to natural populations.

Across their natural range, the Giant toads exhibit a most impressive ecological tolerance, exploiting an impressive array of different habitats. To the traveller in north Brazil, Venezuela, Guyana or the Carribean, this is the ubiquitous toad of the neotropics, at home in forest, marsh or savannah, from the arid plains to the lakes, from sea level to the high plateaux, even into mildly saline waters that are barred to most amphibians. The advent of man has boosted populations, a statement that the herpetologist can make but rarely, a statement certainly untrue for most European species. Giant toads attain their highest densities on cultivated land, and abound in the South American villages, living in the houses, the gutters, the outbuildings. Often they are feared, but

tolerated because their consumption of pest insects is so prodigious.

The only limiting factor known to control their distribution is temperature. Cold weather sets limits in the southern United States and on the higher mountains of South America, but other abiotic checks upon the species, save for high salinity and extreme dehydration, have not been demonstrated.

Few predators care to tackle this toad, for its swollen parotid glands exude a milky poison that inflames mucus membranes, paralyses muscles and causes the heart to slow, or to stop beating. As in most bufonid poisons, the active chemicals are related to digitalin and, used judiciously, could have wide applications in heart therapy. The deaths of inquisitive dogs are reported sufficiently often to become commonplace, but the tales of paralysis, sickness and contortion grow no prettier with the repetition. Certain native predators have evolved subtle techniques to cope with this bundle of poison; mongoose and mustelids rip away the skin with their claws, while large crows disembowel the toads with strokes of the beak, and leave only the skin. Legends that this toad can actively squirt poison have never, to my knowledge, been justified, though it does employ powerful muscles to squeeze the secretion through the large pores on its skin.

In addition to anti-predator devices, catholic diet, and broad ecological tolerance, a key reason for the success of the species is its fecundity. Each female lays up to 40,000 eggs (our Common toad lays between 2,000 and 6,000), and may spawn more than once in a year if conditions permit. Breeding is usually governed by time and duration of the rainy season, and may be explosive if breeding waters are ephemeral.

The call of the male is a low frequency trill, of around 600 Hz. Call frequency in batrachians appears to be simply correlated with body size: the tiny American bufonid, *B. quercus*, sings at 5,200 Hz. Within the species *B. viridis*, the largest individuals from Israel sing at 1,100 Hz, while the smallest toads in Austria sing at 1,500 Hz. Here the differing frequency is a by-product of size, which is related to water loss and adaptation to different climates.

It is not only from the viewpoint of conservation that *B. marinus* makes an ideal toad for the vivarium. In virtually every respect it is an easy species, and only in very incompetent hands will it fail to live twenty years and spawn regularly.

Firstly, it is not demanding in terms of space. A pair will live successfully and comfortably in a two-foot aquarium, or any larger size. This may prove unsatisfactory for those who would watch their toads in movement, and is certainly too small for the purposes of breeding. But it illustrates the principle that giant toads may be housed in an average vivarium, their requirements for exercise not matching their volume. I would contrast this situation with the care of another anuran giant, the Bull-frog *Rana catesbaeina*, discussed in another article. The giant leaps of the frog, its tendency to panic and its foghorn voice all render it unsuitable for the indoor vivarium. But the Giant toad is stolid and sensible, less noisy, and less inclined to waste energy in senseless acrobatics.

In terms of vivarium layout—almost anything goes! Ignore potted experts with potted recipes; when a species has a narrow ecological tolerance it is essential to get conditions just right, but this is mere pedantry with an animal as tolerant as the Giant toad. People have housed these toads in semi-aquatic conditions, without ill-effect, though this is probably not the optimum method, and imposes the need to regularly filter or change the water. Equally they thrive in a fairly dry vivarium, with just a small water bowl, though a refreshing shower at three day intervals will be much appreciated. Half flowerpots or other shelters should be provided. They will thrive also in a thick glutinous mud. Peat should be avoided as a substrate.

Finesse in design is quite superfluous. Giant toads are anti-aesthetes, and tend to park their substantial weight just where it so pleases them, and it often pleases them to sit on delicate ferns or lovely marginals. A simple design is preferable, also, for hygiene, as Giant toads foul up their quarters at a greater rate than smaller, more abstemious kin.

The most stringent requirements concern temperature. These are not hardy animals, and ordinary British temperatures fall well below their optimum. A mean temperature of 80°F is preferable, raised perhaps to 85° by day, and 70-75° at night.

Feeding Giant toads is purest simplicity. They will take anything that moves, but is not so small as to earn their contempt. Mice, chicks and lizards are consumed with ease. But as they prosper equally on locusts, bluebottles, mealworms, maggots and earthworms, it is perhaps better to feed the latter set where there is a lower possibility of 'cruelty."' Still, I am not here to moralize. Although these toads will survive for a fair time on a monotonous diet, their long term health requires that the menu be varied to ensure a balanced spectrum of nutrients and vitamins, and particularly to avoid calcium deficiency. If the diet *is* for some reason monotonous, it should be supplemented with an appropriate vitamin preparation. The other essential is quantity: their appetite is colossal, and batrachian bliss demands a never-ending input of food, a demand that places you in the unenviable position of legendary Sisyphus.

As a curiosity, the Giant toad is one of only two batrachians that will, in my experience, catch and eat such stationary foods as pet meat and stew. Most other frogs and toads take only moving prey. Unfortunately, only a small proportion of these toads

acquire the habit, and it scarcely offers an alternative to the capture or breeding of live foods.

It will have become sufficiently obvious that the Giant toad is not the ideal community animal, eating anything smaller than itself, and contaminating the common water supply with its potent secretions. I do know of instances where they have successfully been housed with other species, including terrapins and large lizards, but cannot summon the courage to predict "ideal" combinations. However, they are interesting animals on their own, and a good choice for the herpetologist who seeks to study something exotic, yet, for reasons of time or inclination, does not want to be faced with the subtle problems posed by many tropical species.

VIEWPOINT

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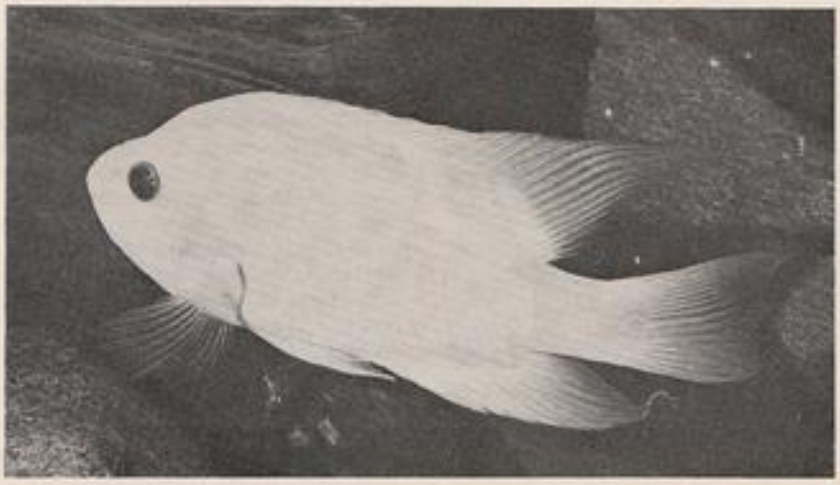
differences netween similar species and in fact a long-standing query of mine regarding distinction between *Calichthys calichthys* and *Hoplosternum thoracatum* was immediately settled. Price is 59p from Miss Fran Rogers of 255 Lewisham Way, London SE4.

Secondly, the British Koi-Keepers' Association has revamped its newsletter into a fully-fledged journal which is extremely well-produced and full of interesting articles on Koi and related topics. Internal politics are kept to a minimum and the whole thing is very informative. Aquisition is by membership, information on this being available from Miss Valerie Frost of 76 Edward St., Southborough, Nr. Tunbridge Wells, Kent.

* * *

Finally this month I would like to thank Mrs. D. Tyrer of Cellar Aquatics, Milnthorpe, Cumbria, and Mr. A. Adams of Comberton, Cambridge, who very kindly sent me old reading material in response to my recent appeal in these pages.



THE RED DEVIL

Written and Illustrated by Jorgen Hansen and Pamela Stewart

We obtained our two devil cichlids, *Cichlasoma citrinellum*, together with four Oscar, *Astronotus ocellatus*; as they were all of approximately the same size, we placed them together in a 200-litre chipboard tank. In the course of relatively few hours we realized that these two species should absolutely not be placed together. The larger of the red devils lived up to its name in its behaviour towards the others, so we moved the four Oscars to another tank, leaving the devils to themselves in the original tank.

We were, and still are, unsure as to whether we had a pair or not, but one thing was clear from the start—the larger (about 30 cm. or 12 ins.) could not stand the sight of the smaller (about 20 cm. or 8 ins.). To

protect the latter's life, without moving it away to another tank, it was necessary to build up the tank interior such that caves were provided in which it could hide, but which the other was too large to penetrate. In order to create further hide-outs two large tree roots were set down, which moreover helped to give the illusion of the whole set-up being part of a river bank.

Both fish were competely orange, except for the large dark eyes. The fish came originally from Denmark's Aquarium in Charlottenlund, which got some gouramies in exchange.

We had scarcely placed the fish in the tank before the larger (a male ?) began to dig, thereby slinging the gravel against the front glass. Although the fish could not stand the presence in the tank of other fish of similar size, he did not seem to mind small specimens of *C. meeki* or *C. spilurum*, which were later introduced to this tank.

In both upper and lower jaws sit a single row of conical brownish teeth, clearly visible to the naked eye. A *C. severum* pair, which for a time shared the tank with the devil cichlids, each bore marks on their sides from the latters' teeth.

A flock of guppies were placed in the tank to provide living food of a reasonable size, but these were not touched by the devil cichlids. Now a year later there are still guppies to be found in the tank; these keep to the surface, while the cichlids mostly keep to the bottom.

The fish were very shy, and it thus took several months before they became so trustful that they did not seek shelter at the slightest disturbance. When visitors entered the room, the tank appeared empty, and almost all took on a disbelieving expression when it was explained which fish were in the tank. Some refused point blank to believe that such large fish could hide so completely. In the course of a quarter of an hour one could then be sure of a startled exclamation, when one of the devil cichlids, with its light orange colour appearing almost luminous, was suddenly to be seen in the middle of the tank.

Distribution

When these cichlids came on the U.S. and European market in the middle of the 60s, they cost the pretty sum of £270 apiece, and professional collectors for good reasons kept their collecting places secret; this helped to maintain high prices for years. Only when the red devils were bred in the aquarium, did the price fall so much that young specimens are now sold for the same as e.g., *C. meeki* and *C. severum*. Collecting areas are now stated as Costa Rica and Central America, but more exact information is still lacking.

The fish grow to a size of about 37 cm. (15 ins.) and when older get a characteristic fat hump on the top of the head. Separation of species is still uncertain for the nearly related *Cichlasoma* species, which are all called red devil cichlids. At least four different species are known, namely *Cichlasoma citrinellum*, *C. dovii*, *C. erythraeum*, and *C. labiatum*. According to species, the colours can vary tremendously from bright red to almost white. Some species have large thick lips, while others have thin lips.

The water has a pH of 7 and DH of 14° i.e., neutral and hard. The temperature is between 24 and 26°C (75-78°F).

Feeding

In the course of the past year our specimens have eaten fish balls, dried food, beef heart, *Daphnia* and mosquito larvae. On the other hand as previously mentioned they do not eat live fish, neither did they at first accept large insects and spiders while earthworms peculiarly enough scarcely interest them.

Breeding and reproduction

C. citrinellum is a free-spawning monogamous cichlid, which lays eggs on a stone. Both eggs and later fry are guarded carefully by both parents. In Denmarks Aquarium in Charlottenlund an experiment giving surprising results was conducted with *Cichlasoma citrinellum*. Half of a brood of fry was taken from the parents, and these fry grew up alone in a tank of the same size as that containing the rest of the fry and the parents. The separated fry were fed with fine food, while the young together with the parents were not specially fed, and the parents were given only large chunks of food, which they swallowed whole. The young in the parental tank nonetheless grew at double the rate of those in the separate tank, and pits on the side of the body were visible on both adults. This could indicate that *C. citrinellum*, as the only known *Cichlasoma* species until now, nourishes its young in the same manner as discus fish, namely by secreting a protein-containing substance, which the fry consume.

The young *C. citrinellum* first take on the parental colouring when almost mature; until then they are of a plain grey brown colouring. During the period in which the fish changes colouring, the body is patched with black.

It can be very difficult to obtain a breeding pair as the fish are so quarrelsome with each other. Evil rumours have it that the following procedure generally occurs when one endeavours to breed this species. One buys 10 young fish and feeds them up. When a year has passed there is only one fish left, and it is too large to be placed together with the next 10 young fish one then buys, so one sells the large fish. A year later the same procedure occurs. However this kind of talk is often caused by ignorance so do not let it influence your decision with regard to purchase of *Cichlasoma citrinellum*.

From a Naturalist's Notebook

by Eric Hardy

THERE IS almost invariably, and inevitably, a utilitarian and a commercial inspiration behind the world-wide research in aquaculture. Nonetheless, the amateur benefits with useful knowledge, though he may not always afford such an expensive set-up in his fish-house.

Over a century and a quarter ago, pioneer aquarists were keeping seaweeds alive in jars and tanks, though not always with equal success—the Aquarians of the United Kingdom they called themselves in the 1850s. Their *Laminaria* seldom flourished long as an aerating furnishing for their tanks, though they had more success with sea-lettuce, *Ulva latissima*, etc. London Zoo ornamented its pioneer sea-tanks with the dulse, *Rhodymenia palmata* and about 50 species had been "domesticated" by amateurs who did not mind making the occasional renewal. Liverpool University began breeding several in tanks shortly after the last German war and current pilot work in "farming" or tank-culture of seaweeds from Japan to the U.S. is the inevitable outcome. The University of South Florida has made a payable proposition of cultivating less than one hectare of the local red seaweed *Eucheuma isiforme*, for carrageen, a colloid used for thickening, stabilizing and gelling foods, pharmaceuticals, cosmetics, paints and textiles.

Because most large, natural seaweed-beds are being exploited, at a world price of $350 a ton cleaned, any increase of future supplies will probably come from mariculture, which is less subject to natural fluctuations and storm-damage. South Florida University uses fibreglass-coated plywood tanks of 3 square metres surface, circulating water by compressed air. In this, 20 kg. of seaweed, circulated for 30 days, increases to about 36 kg., or 7·2 kg. dry weight. 10 such crops can be obtained in a year. *Eucheuma* seaweed is likewise cultured in the Philippines for export to the U.S. There, family-operated "farms" produce over 30 tons dry weight per hectare a year.

The Philippine "farms" merely tie small branches or thalli to monofilament nets suspended horizontally just below low tide in sheltered lagoons. Here 50 grams grow quickly to 5 kg. in three months. Japan's tank-culture holds *Porphyra* and *Undaria* food species during the period of spore release. The spores attach to nets, or thin ropes, which are then hung in the sea under rafts. However, most amateurs wish to grow them in marine aquaria stocked with fish, and growth rate varies with water temperature. There are some 750 species of British marine algae.

Our native reptiles seem so limited compared, say, with Israel's where 7 of the 34 snakes are venomous. Their habits are seldom so well studied as the parental care of the Nile crocodile, for instance. Hence the need to conserve the sand-lizard's haunts, from Hesketh golf-course near Southport to Dorset's Isle or Purbeck which it shares with the smooth snake around the Encombe Estate of Hartland Moor and Arne peninsula. No detailed field study has been made of natural predation upon our reptiles and amphibians. We know that otters and herons eat many frogs, and wild mink in our northwestern rivers do likewise. It is not always appreciated how much frogs dominate the diet of the summer marsh-harrier, which also occasionally takes snakes and lizards. The rarer Montagu's harrier also takes occasional frogs and snakes, as does the slow-flying kite, the honey-buzzard and the quite different common buzzard (which also takes toads). Also preying on them is the continental red-footed falcon, one of our rarer visitors. Frogs are chiefly taken at spawning time, skinned and fed in strips to the young birds. In former times when the marsh-harrier was much commoner, its presence may have had some limiting effect on frog populations.

When reviewing the 1974 scientific book on The Changing Flora and Fauna of Britain, I mentioned its surprising lack of records since 1960 for grass-snakes in various counties, including Cheshire. A Winsford, mid-Cheshire, correspondent, W. A. Lloyd of Burland Grove, who confirmed their existence then, wrote to me this May that they are still very common there.

Another under-recorded snake, the adder, again basked in May's sunshine in the Leet Valley of North Wales, on the Flintshire/Denbighshire border where the 1974 book had an almost complete lack of recent records, contrary to one's experience. With the exception of Anglesey, Arran, Mull, Skye, Islay and Jura, our offshore islands lack adders; but there isn't a mainland county which hasn't had this serpent recorded at some time or other, though its distribution is surprisingly patchy. The difficulty often is seeing reported specimens, which are often mistaken grass-snakes or even escaped pets.

Anglers' pride in twice breaking the record catch-weight of Ullswater's schelly this year would not have concerned us much, for length and sex are a better guide than competitive "spitting on the scales for an extra dram"—only that relatively little is known of

this freshwater herring, a coregonid or whitefish left land-locked here by the Ice Ages. A 2 lb. specimen met its fate taking a worm angled at Pooley Bridge in May, three weeks after a specimen of 1 lb. 9 oz. was caught there. As the related gwyniad of Lake Bala (Llyn Tegid) has already exceeded this with a 2¼ lb. specimen in the British Museum, and Loch Lomond's similar powan had previously reached 2 lb., the Ullswater "record" seemed a little overdue. All these specimens would be over a foot long.

The British Record (rod caught) Fish Committee's 1976 list, sent to me by the National Anglers' Council, lists a schelly of 1 lb. 7 oz. 8 dr. from Ullswater. While their high standards of acceptance are admired, naturalists also keep statistics. A quick glance found at least a dozen heavier specimens among the various species listed, mostly seafish, but including barbel over 16 lb. from the Hampshire Avon, etc., a 5½ oz. bleak from the Trent, a 10 lb. 8 oz. chub from the Crane, 1 1 lb. 8¾ oz. dace from the Derwent, a 16¼ lb. eel from Berwick's Whiteadder, a 4½ oz. Thames gudgeon, a 7½ lb. orfe from Woburn Lake, a perch of 5 lb. 15 oz. 6 dr. from the Suffolk Stour, a 4 lb. 8½ oz. Severn roach, and a "rainbow" trout of 18 lb. 4 oz. from Avington Lake near Winchester.

Of more concern is the population-explosion of introduced barbel in the Severn and its effect upon native fish stocks. Two Liverpool anglers caught over 8 cwt. (900 lb.) of barbel from the Severn around Shrewsbury, Atcham and Ironbridge last summer. Many have grown between 6 and 8 lb. and will continue to become bigger fish, reducing the food supply for other fish. This happened in just over a decade since their introduction. Barbel are not native to west-running (Irish Sea—Bristol Channel) rivers, but evolved in the Rhine—North Sea rivers, into which our eastern rivers run. They have also been introduced into the Wye and the Dee. Bearded as the barley, they feed on freshwater shrimps and water snails on the bottom, but sometimes rise to floating insects as well as bottom-feeding nymphs of caddis and "olives." They sometimes produce a strange sucking or exhaling, grunting noise at dusk at the surface. Though a biological survey of Severn barbel suggested that the huge introduced fish could co-exist with salmon, the survey was biased towards salmon-angling interests rather than the natural coarse fish population. They are easily kept in tanks, where they may attain 20 to 30 lb. weight and over 3 ft. length if overfed.

Food is one of the major factors in fish weights. Recently spending a week of field studies at Loch Awe, I found several skeletons of its enormously large pike, as in Irish loughs, compared with river fish. Just as commercial fishes offshore become net-shy where waters are heavily trawled, so overfished freshwater species become hook-shy. The larger they grow, the less they feed on anglers' bait, and many great lochs are famed with huge fish nobody can catch. By a political manoeuvring of pike records, several Irish monsters from 50 to over 90 lb. in Loughs Derg, Corrib and Conn have been removed from the "British" list to make way for a mere 43 pounder from Walthamstow's Lockwood reservoir to hold the "record." Yet Irish bird-records are accepted on the British list, and Irish faunistic records, including its fish, are considered biological part of the British Isles.

OUT AND ABOUT

Silver Jubilee

Founded by John Yates in 1951, the *Pet Store Trader* was the first magazine in this country to be devoted entirely to the pet trade industry. This month, the publication celebrates its 25th anniversary and *The Aquarist and Pondkeeper* would like to offer its congratulations and best wishes for a fine achievement over the past quarter century.

Aquatic Department for Allder of Croydon

A third branch of Harveys Fins and Wings will be open to the public from Monday, 26 July. The new department will be situated in one of Europe's largest stores, Allders of Croydon, who have recently enlarged their premises. Stocks of tropical, marine and coldwater fish will be on display together with pond equipment and aquatic accessories. Also, small animals and birds. On Saturday, 31 July, Dr. D. M. Ford of the Animal Studies Centre at Melton Mowbray will be on hand to answer any problems which may be worrying pet lovers.

READERS' SERVICE

As an extension of the above feature it is intended to offer expert advice on aquarium plants and your queries in this field are invited. Please address them to: **Readers' Service (Plants), The Aquarist and Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN. IMPORTANT**—All enquiries must be accompanied by a stamped addressed envelope.

Answer to puzzle on page 142

FISHBREEDERS

BREEDING THE KAISER

by Douglas and Valli Bookless

THE POPULARITY and affection with which a species of fish is held can generally be measured by its pseudonym, or the fact that it possesses one. Quite a few of us would look blank at references to *Botia macracantha*, yet have no trouble in identifying our old friend, the Clown Loach. This applies to the beautiful *Aulonocara nyassae*. Unknown in the main to aquarists in U.K. until comparatively recently, it has for some years been a prized member of aquarists' collections in Scandinavia and Germany. It is there described as the Kaiserbuntbarsch, or Kaiser as a diminutive. Kaiserbuntbarsch is evolved from the German habit of running several short words together in order to make one long one. "Kaiser" means ruler of Kings, "bunt" means brightly coloured, and "barsch" means a Perch or similar spiney fish. Thus although the term "Kaiserbuntbarsch" seems to us a very long unwieldly word it is, in fact, a highly descriptive word which substitutes for a sentence. However, it is not a scientific word and has been diminutised to Kaiser as a general name for this attractive fish.

The *Aulonocara* is very aptly named the Kaiser, for he is a true aristocrat and regal in every sense of the word. In the community tank he immediately draws the eye by his astounding colouration, his flowing finnage and his ever graceful movements. Non aggressive, he ignores other species however small. Care must be taken, however, that he is not put with aggressive fish. Not that the Kaiser is incapable of looking after himself, but he is very vulnerable on account of his beautiful and colourful finnage to fin nippers and the like.

The Kaiser lives in Lake Malawi and like most of the Malawi cichlids is a mouthbrooder. His home is in the clear water surrounding the many rock outcrops which occur in the lake, and he swims a little deeper than most of the Malawi cichlids. In his own surroundings he reaches a size of about 18 cms. Tank specimens reach about 12 cms. He has a high back and narrow flanks. His head is pointed towards the jaws which are neither under or overshot. In fact his silhouette is not disimilar to an arrowhead. His eye is quite large, having a dark centre surrounded by a golden rim. His colouration defies description due to its subtle uniqeness. The head and parts of the body have scales of alternate colouration. For every dark blue scale, there is a light blue scale of fluorescent quality which give an overall effect of deep shimmering violet blue. Underlying this colouration is an orange-red glow which intensifies to the area behind and below the gills and extends back to the caudal peduncal. Over this colouration are seven faint, dark blue, vertical bands. The dorsal fin is tipped along its length with a border ranging from pure white to pale blue. The remainder of the dorsal fin merges into the body colour. Beautiful and long pelvic fins are also tipped exactly as the dorsal fin. The remainder of the dorsal fins is orange red, flecked with gold. All these colours can intensify according to the mood of the Kaiser; especially the overall orange red colouration which is subject to a wide variety of change. We hasten to add that this description is based upon our own observations, and not culled from scientific journals. We have seen much poorer coloured specimens in dealers' tanks, but this could well be due to the environment not being to the liking of the fish. There is no doubt that they respond to their habitat, and if their surroundings are to their liking, they will reward their owners with the most beautiful display.

The female is quite unlike the male in colouration, although of the same shape and with a similar eye. Her overall colour is grey/brown to beige/brown overlaid with 8 to 10 darker brown stripes. However, her basic brown colour is not dull and flat, but exhibits a subtle metallic sheen. Although the male Kaiser dominates with his colouration, the female has a charm of her own, not the least of which is her attractive personality.

In the aquarium the Kaiser is to our mind at his best under natural conditions of light. He then exhibits his full subtle fluorescent uniform as he proceeds with dignity around his kingdom. Under artificial light his colouration is enhanced to such a degree that most of the other inhabitants pale into insignificance. Kaiser will eat all conventional foods. He is a very dainty eater, however, and the danger is that he will go short of food if sharing a tank with bustling greedy fish.

He likes to eat little and often. A clue to his habitat is shown by his habit of daintily picking

his way across the bottom of the tank, taking a small mouthful of gravel in his mouth which he will carefully and gravely suck, and then replace in exactly the same place from which he took it. The Kaiser is not to critical of water conditions provided that the water is alkaline. What is essential to the Kaiser is clean, well aereated water and it will not thrive or survive in a mucky tank containing unclear water.

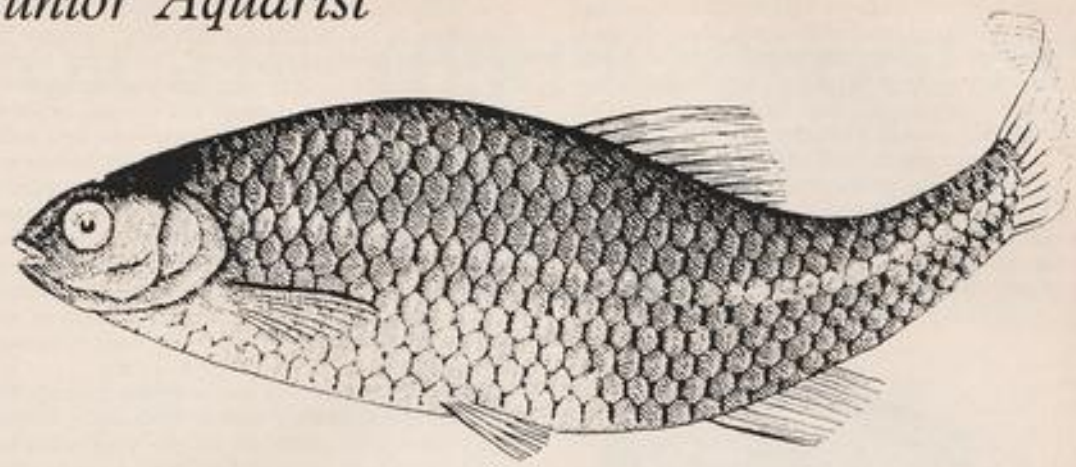
Unlike a number of cichlids, the Kaiser is very choosey about his consort. The position becomes a little complicated when it is noted that the consort is also rather choosey and will not accept any old Kaiser. Once selection has been made, the pair will swim together most of the time and readily breed when tank conditions are to their liking. Our first spawning of these delightful fish was a period of great worry as at the time there were no records to hand of a similar event, and they certainly had never been spawned in the U.K. Luckily the fish knew what they were doing. We do not worry now, and only last week when we were being visited by some aquarist friends, they were thrilled to be able to observe our original pair performing their nuptials in our living room community tank culminating in the female taking the eggs into her mouth. The build up to these nuptials was over a number of days when it was noted that the female was assuming a very rounded under belly, and the Kaiser was becoming more attentive and colourful. On the afternoon of spawning, he was indeed a wonderful sight with his dress uniform glowing and his fins stretched to maximum limits. He became more and more active as he fussed around his female and keeping the other occupants of the tank out of the way. By the time the moment of spawning came, the Kaiser had herded the remainder of the community tank to the two ends, rather like a sheepdog separating two flocks of sheep. No mean feat when it is realised that the herd contained a pair of *Cyphotilapia frontosa* each nearly 9 inches long.

The female eventually spawned on the flat top of a cave in the centre of the tank. She released between five and six eggs at a time which she immediately picked up with her mouth. On one occasion, two eggs rolled off to the gravel below. The female did not leave them, but went down and picked them up. During this activity, the Kaiser was busy swimming from one end of the tank to the other as he kept the rest of the inhabitants penned up. He obviously released his milt as he passed the female, for all the eggs were fertile and she probably absorbed the milt in her mouth after she had taken up each batch of eggs. After the spawning, the Kaiser gradually lost his extreme high intensity of colour and slowed down to his normal dignified gait. The remainder of the community tank, looking rather bewildered at all the fuss, cautiously continued their normal perambulations. The female retired to a quiet cave in order to aerate her eggs in peace.

We generally leave the female in the community tank until we are sure that all the eggs are fertilised, then remove her to a small 3 foot tank in the fish house which she will carefully examine to ensure that there are no elements of danger. She will then retire to a cave and, quietly and with great serenity, pass the days until the time comes for her to release the fry. This is generally a period of between 21 and 26 days. Unlike the majority of mouth brooders the fry are all released together, although sometimes the odd little fellow will emerge a day or so before the rest. In this event she will try to get him back, but has the dilemma that if she opens her mouth to take him in, the others will have the opportunity to get out. She always gives up this chase and the little fellow thoroughly enjoys his freedom. When the fry are eventually released, they make no effort to return to their mother's mouth and she makes no attempt to take them back. However, she is very watchful over their welfare as swims through them with the greatest of caution so as not to damage them. She seems to spend her time in watching them and making sure that no danger threatens them. The fry, on the other hand, are quite independent. They are all coloured like their mother and it will be many weeks before they attain their full sexual characteristics and colouration if male. After the fry have been released, we put in food for the mother.

Initially she will chew this for a time and then spit it at the fry in a fine cloud. Only when satisfied that the fry have food will she eat herself. We generally leave the female with her fry for a week or so in order to build up her reserves. During this period she will watch over the fry and ensure that they are getting food. However, the fry from the moment they emerge will readily take fine flake and brine shrimp and the like. When the female has had her period of rest, we put her back with her male who is always glad to see her and the recognition is marked by various colour changes and patterns as they swim together. This habit of selection is quite endearing and totally unlike the majority of the cichlid family which will breed with any fish from the opposite sex providing that they are willing and able.

The Kaiser and his lady are ideal fish for the community tank provided that the water is kept sparkling-clean and alkaline. The Kaiser does not do well in the company of large and robust fish such as the Mbunas. He likes to have room to allow his graceful promenade and a comfortable cave to rest in. Unaggressive, he will live happily with much smaller fish. Small wonder that he has become a firm favourite with our aquarist friends across the North Sea.



SHE FARMS OUT HER EGGS

Written & Illustrated by Bill Simms

THERE IS AN entertaining freshwater fish that never grows to more than about 3½ in. long, which might appeal to the serious aquarist. It is the Bitterling, *Rhodeus amarus*, which lives in ponds, lakes, and the slowest of streams where there is a lot of vegetable matter, for its diet is mainly vegetarian.

Normally the bitterling is grey-green on the back, shading to a silvery tint down the sides to the belly, but at spawning time the male has rainbow-like colours on its sides, while the fins are tinged with reddish-yellow. The female remains fairly dull, but develops a yellowish tinge, and also her ovipositor becomes extended. A temperature of between 65 and 70 degs. F. is a help to breeding, for it is like the way a pond warms up in the summer.

The important detail, however, is that the spawning condition is only achieved in the presence of large freshwater mussels. Without the sight of these molluscs the ovipositor fails to develop, and the male does not take on the brilliant hues that make it so attractive when spawning. It is remarkable how quickly after being introduced into a tank containing some large mussels that the bitterling becomes conditioned.

This is because the breeding cycle of the bitterling entails the presence of large freshwater mussels, inside which a few eggs are inserted, to lie there until the young fry emerge about 4 to 5 weeks later. The only type of freshwater mussel I have seen used is the Swan Mussel, *Anodonta cygnea*, which can reach a length of 8 in. The best kind to use, however, are those about 4 to 6 in. long—massive creatures when compared with sea-shore mussels. They usually live in colonies in ponds, and slow moving streams throughout Britain.

There is another large mussel found in parts of Wales and northern England that could be mistaken for the swan mussel, and this is the Pearl Mussel, *Unio margaritifer*, which reaches a length of nearly 5 in., and which used to be harvested for pearls before the Japanese developed their method of farming cultured pearls. One in a hundred shells may contain a pearl, and about one in each hundred pearls may be of a reasonable size, so there is no great future in British freshwater pearling.

To distinguish between these two is fairly easy: pearl mussels are found in fast-running streams, and swan mussels in lakes and slow water. The pearl mussel outer shell is rust-brown to black, while that of

Above, Swan Mussel

Below, Pearl Mussel

the swan mussel is brownish-green. Both of them at times have a corroded part of the shell—as shown in the pearl mussel drawing.

Because the female bitterling requires a few mussels in which to place her eggs it is best to use a sizeable tank—say 30 in. or so—to provide enough ground space. I use a coarse gravel, about 4 in. deep on the bottom, and crowd as many plants as possible into the back and the corners, keeping these within bounds by a low wall of rocks. In the front three-quarters of the tank I place half a dozen carefully collected swan mussels.

At no time during the collecting are these mussels lifted out of the water for more than a moment or two, and I make sure, also, that the tank is filled with water from the same part of the lake as the mussels. This must be partly changed regularly to ensure that the mussels' food—microscopic life in the water—is always available. It is pretty certain that the sort of water favoured by the mussels will suit the bitterling.

For a couple of weeks the mussels must be watched to see that they remain alive, and are functioning well. Each one will pull itself partly into the gravel with the aid of its long yellow-orange foot, and the brown fringed mantle in the opening will be uppermost. If this is watched the movements of the fringe will show the entry and exit of water. Large mussels such as these can filter all the water in a 36 in. tank in a very short time; but if one dies it must be removed to prevent pollution—which can be severe.

Having made sure you can keep the mussels alive it is time to introduce a pair of bitterling. As mentioned previously, these are mainly vegetarian, so a suitable diet must be provided. There are plenty of fish foods available at pet shops, but I also use tins of chopped spinach (baby food) as well as some white worms, and occasionally newly-hatched brine shrimps.

The male will choose a mussel and lead his mate to it. She will inspect it nose down at first, with her extended egg-laying tube pointing down, and then she slides down and across the mussel's opening, at the same time inserting the tube, and laying a few eggs. The male immediately swims over the opening, and releases a small cloud of milt containing sperms and these are sucked into the mussels to fertilise the eggs.

Only a few eggs are laid at one time, and then the breeding pair move to another mussel to repeat the process there. The female may lay fifty or more eggs, and because swan mussels usually live in colonies they may all be harbouring bitterling eggs. The traffic is by no means one way, however, for the mussel also discharges its larvae into the water, and they cling to the fish to be carried away. They have crab-like feet to grip with, and soon burrow below the skin to develop into tiny mussels, which then fall free to the bottom.

The baby fish are about 3/8th in. long when they emerge from the mussel, and, having already absorbed the yolk sac, they need food. Infusorians, as prepared for goldfish fry, are suitable, and I find Liquifry very useful because any that is not eaten encourages more infusorians to develop in the tank. In this respect the dense green growth in the back of the tank is a great help, for in its cover clouds of infusorians gather, and the baby fish can penetrate this to obtain food.

From then on the development of the bitterling babies should go ahead well. Change part of the water regularly, use aeration all the time to keep the water moving a little, and make sure that there is plenty of beneficial microscopic life in the water—and enjoy the sight of a most unusual breeding process.

FOR THE HERPETOLOGIST'S BOOKSHELF

by Andrew Allen

AFTER THE displeasure of reviewing a very poor vivarium book (*Reptiles and Amphibians in Your Home*, by Breen, T.F.H.), let me now discuss the most charming of them all. I refer, of course, to *Living With Reptiles* by Kathleen Pickard-Smith, Nelson.

This is a highly personal account of one woman's individual experiences with reptiles. The writing is fluid and crisp, the account makes truly compulsive reading. Follow the author through the starting joys and pangs, meet her animal friends, Ig, Drag, the famous Green lizards, a host of species familiar and exotic, villains and charmers, a panorama of characters to enthral and captivate. Enjoy descriptions of animal private lives, loves, and relationships, as sensitive as any penned by the literary naturalists. And through the lizards and toads meet, in the background, a very nice person.

These words could give a somewhat misleading impression, suggesting a gushing flood of sentiment such as might be penned by Miss Hazel Fortescue of 'Love Nest' Worthing about her manicured poodle 'Dearie'. This *is* an individual book about animals, written with obvious affection and sympathy. It *is not* soft or sentimental: my comments, in that case, would be less friendly. The reptiles are left as reptiles, not transmuted into smiling little miniature people. And Miss Pickard-Smith is candid about her failures and disappointments. Lizards sometimes do eat one another. Favourite animals do remorselessly die after months of personal attention and doctoring; after they die you often discover how easily they . . . could . . . have been saved. The book portrays anguish as well as joy, the resilience needed if appreciation of animals is to be personal as well as scientific. It is a book of greater intensity than could be conceived by any fancier or hobbyist.

And one learns from it—even if, as in my case, the philosophy towards animals is very different. Though in no sense a manual, the pages are crammed with information. I learnt more vivarium lore from Miss Pickard-Smith than from the sum of all vivarium manuals yet published. There are fascinating hints, much data on care of different species, the recounting of pitfalls tumbled into, advice on what to do—how to improvise—when things don't run by the text book. Coping with problems is a subject the good books do not deign to consider; perhaps if you follow their advice no problems ever crop up? Breen's book claims that it 'contributes a great deal to the education and welfare of the coming generation'. Miss Pickard-Smith makes no such claim, and we like her the better for this. Hers is not a proud book, though it would be justification for pride. One senses in its unpretentiousness a desire to communicate pleasure rather than to get the name in print.

There are a selection of black and white photos depicting vivaria and their occupants. Technically these are not classics in the superb modern genre, but they do enhance the individualistic impact. Most libraries will be able to get you a copy, but this is worth a cherished place on the bookshelf. It must remain the only herpetological example of its kind; the impact can occur once only, and similar attempts, even if technically more proficient, would just be boring imitations.

In a similar tradition of sound vivarium keeping is the little booklet *Hardy Reptiles and Amphibians*, by L. G. Payne in the 'Water Life' series, 32 pps. This is a compact storehouse of useful information for the inexperienced herpetologist. Design of vivaria is fully discussed, with practical construction details, including excellent accounts of the outdoor reptiliary and a home-made lizard house. There are sections on community groupings, foods, and descriptions of hardy European species (plus a few intruders like the axolotl) and their requirements. The readable text is supplemented by rather dull and dated black and white photos. In its solid merit it contrasts sharply with the glossy but slick T.F.H. brochures discussed earlier. Unfortunately it is now out of print.

Next time I discuss two vivarium manuals suitable for practical day-to-day use.

CABOMBACAE

by B. Fry

THIS FAMILY of aquatic plants contains two genera: *Brasenia* and *Cabomba*. *Brasenia* is represented by only one species which, according to Professor H. C. D. de Wit, eminent Dutch botanist, "occurs all over the world, except in Europe." (What a pity its geographical range could not have been better defined.) If we can rely on the quality of the inks used to reproduce the full colour drawing of *B. schreberi* executed by Mirko Vosatka for Jiri Stodola's *Encyclopedia of Water Plants*, then it is indeed remarkably handsome in flower and foliage.

For all that, this plant is not exactly suited to the ordinary home aquarium. The reason is not far to seek. For one thing, it requires a sludgy bottom under very soft water, rich in the dissolved acids of peaty humus. For another thing, its stems bearing floating leaves are quite naked and therefore add nothing in the way of beauty to an aquarium viewed from below water level. Yet few small water plants can be prettier when looked at from above. The leaves are rounded in shape and coloured in different shades of green edged with crimson, or purple. The flowers are modest in size. They are purplish too.

The genus *Cabomba*, however, is well-suited to aquarium decoration and culture. Four or so species and varietal forms are known to the serious aquarist. Some seven or more species have been described for science.

C. caroliniana var. *paucipartita* is the plant popularly known as fanwort (less commonly as Washington grass). It is the plant most usually grown for the trade. It differs from the true *C. caroliniana* of south-eatern North America in the number of segments which make up the fan-shaped leaves. Thus whereas the leaves of *C. caroliniana* var. *paucipartita* have only some 20 to 60 segments, the leaves of *C. caroliniana* have more than half as many more. *C. caroliniana* var. *pulcherrima* is suffused all over with pink to rich wine red. It is found in Florida and in all probability southwards to Cuba. The plant called *C. caroliniana* var. *roseafolia* = *roseifolia* is the same plant under an invalid name.

Native to the north-eastern half of South America to the Amazon is *C. aquatica*. This species bears leaves with about 150 segments of intense green. *C. australis* is, as its epithet suggests, from the south. In this case southern Brazil through Paraguay to Argentina. The finely divided leaves are more brownish coloured than green or red.

The species of *Cabomba* produce floating as well as submerged foliage. The floating foliage may bear a resemblance to shields (in outline), as in *C. caroliniana*, or rounded pads as in *C. aquatica*. The floating foliage of *C. australis* is narrowly ovate. There are flowers too. Those of *C. caroliniana* and *C. australis* are white, the latter with yellow in the centre. *C. caroliniana* var. *pulcherrima* has purple flowers. The flowers of *C. aquatica* are a charming sulphur yellow.

Cabombas, like *B. schreberi*, require a soft and acid water and a good but not overstrong light. For too strong a light especially of long daily duration promotes the development and spread of filamentous or cotton-woolly-like algae among the delicately divided foliage. They are not faddy about a rooting medium and will usually grow away well in grit or sharp sand enriched by the waste products of fish. Potted up in a mixture of peat and clay and given adequate light, species of *Cabomba* invariably give of their best.

Species from South America northwards as far as the southernmost half of the U.S.A. call for a heated aquarium. The red foliaged plants soon go soggy and pale if given insufficient heat (equally they will go the same way if given insufficient light). On the other hand, the ordinary green cabombas such as *C. caroliniana* and *C. caroliniana* var. *paucipartita* will flourish well at normal room temperature. Thus they are admirably suited to a tank housing goldfish or non-boisterous amphibians such as Spanish ribbed newts or the ubiquitous axolotl.

News from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarist societies for inclusion on this page should reach the Editor by 5th of the month preceding the month of publication.

AT the May meeting of the **Bristol A.S.** Mr. L. Emery from Bath spoke to members on the fundamentals of coldwater fish keeping and he emphasised that the foundations of success lay in cleanliness of aquaria, fish and plants. There were numerous questions from this well attended meeting. Mr. S. Lloyd reported briefly on the A.G.S. meeting at Coventry and the plans for the Nationwide Cup for Bristol Shubunkins which is open for competition for Societies affiliated to the A.G.S. which will be held in Bristol on 18th September.

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THE **Blaenau Gwent Fish Club** were hosts to the C.N.A.A. in April. Attendance was not up to expectations but an enjoyable evening was had by those present. Future ventures planned are the presentation of a tank and fish to the Tillery Court Centre for the Disabled and holding a Fund Raising Stall at the Fete of the Local Geriatric Hospital in aid of the furnishing of a new ward.

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WINNERS at the Annual Open Show of the **Lincoln and District A.S.** were as follow: Guppies: 1, J. Hall (S. Humberside); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. Blades (Bassett Law); 4, Mr. and Mrs. P. Gorewood (Retford). Swordtails: 1, Mr. and Mrs. Roberts (Doncaster); 2 and 3, Mr. and Mrs. Tyson (S. Humberside); 4, K. Prendergast (Boston). Mollies: 1, P. Smith (Scunthorpe); 2 and 3, Mr. and Mrs. Lake (S. Humberside); 4, G. Allen (S. Humberside). Platies: 1, G. A. Upall (Boston); 2, A. Clayton (Immingham); 3, K. Goolding (Immingham); 4, Mr. and Mrs. Hopkinson (Darfield). Small Barbs: 1 and 4, Mr. and Mrs. Emerson (Castleford); 2 and 3, W. E. Neville (Grantham). Large Barbs: 1 and 2, W. E. Neville (Grantham); 3, Mr. and Mrs. Roberts (Doncaster); 4, Mr. and Mrs. Copley (Doncaster). Small Characins: 1, Mr. and Mrs. Binns (Scunthorpe Museum); 2 and 4, Mr. and Mrs. Richardson (Scarborough); 3, Mr. and Mrs. Roberts (Doncaster). Large Characins: 1 and 2, Mr. and Mrs. Daines (Doncaster); 3, G. Hoyland (Don Valley); H. Thorpe (Doncaster). Rasboras: 1, Mr. and Mrs. Tyson (S. Humberside); 2 and 4, S. White (Retford); 3, G. Allen (S. Humberside). Minnows and Danios: 1, 3 and 4, S. White (Retford); 2, J. Husbands (Boston). Sharks and Foxes: 1, Mrs. K. McBride (Aireborough); 2, M. Woods (Thorne); 3, Mr. Hunt (Thorne); 4, Mr. Fisher (Grimsby and Cleethorpes). Botias and Loaches: 1, T. Sanderson (Thorne); 2, Mr. and Mrs. Binns (Scunthorpe Museum); 3, Mr. and Mrs. Daines (Doncaster); 4, Master J. Emerson (Castleford). Dwarf Cichlids: 1 and 2, Mr. and Mrs. Morrissey (Immingham); 3, Mr. and Mrs. D. Fisher (Boston); 4, A. Clayton (Immingham). Large Cichlids: 1, Mr. and Mrs. Berry (Scunthorpe); 2, M. D. Brainbridge (Jones and Shipman); 3, K. Richardson (Queen of the Midlands); 4, Mr. and Mrs. Barriman (Scunthorpe District). Angels: 1, G. Hoyland (Don Valley); 2, Mr. and Mrs. Sellars (Lincoln); 3, Mr. and Mrs. Kirk (S. Humberside); 4, Mr. and Mrs. P. Mangles (Retford). Corydoras inc. Brochis: 1, Mr. and Mrs. Feasey (Doncaster); 2 and 3, D. Caldon (Scunthorpe Museum); 4, Mr. and Mrs. Hopkinson (Darfield). A.O.V. Catfish: 1, H. Thorpe (Doncaster); 2, Mr. and Mrs. Emerson (Castleford); 3, Mr. and Mrs. Lake (S. Humberside); 4, Mr. and Mrs. Copley (Doncaster). Fighters: 1, A. Clayton (Immingham); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. P. Mangles (Retford); 4, Mr. and Mrs. Fisher (Boston). Small Anabantids: 1, A. Clayton (Immingham); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. Emerson (Castleford); 4, H. Thorpe (Doncaster). Large Anabantids: Mr. and Mrs. Feasey (Doncaster); 2, Mr. and Mrs. Roberts (Doncaster); 3, Mr. and Mrs. Berry (Scunthorpe); 4, Mr. and Mrs. Mason (Scunthorpe Museum). Killifish: 1, Master A. Young (Hull); 2, D. Greenwood (Immingham); 3, Mr. and Mrs. G. Tyson (S. Humberside); 4, G. Hoyland (Don Valley). Pairs of Egglayers: 1, Mr. and Mrs. Chester (Retford); 2, A. Clayton (Immingham); 3, S. White (Retford); 4, Mr. and Mrs. Lake (S. Humberside). Pairs (Livebearers): 1, Mr. and Mrs. Feasey (Doncaster); 2, A. Ondow (Loughborough); 3, Mr. and Mrs. Hopkinson (Darfield); 4 Mr. and Mrs. Copley (Doncaster). Junior Egglayers: 1, S. White (Retford); 2 and 4, J. Emerson (Castleford); 3, S. Neville (Grantham). Junior Livebearers: 1, A. Feasey (Doncaster); 2, T. Tidswell (Grimsby and Cleethorpes); 3, A. Young (Hull); 4, S. McBridge (Aireborough). Breeders (Egglayers 1-10): 1, B. Jackson (Doncaster); 2, Mr. and Mrs. C. Sellars (Lincoln); 3, Mr. Haedcastle (Aireborough); 4, K. Richardson (Queen of the Midlands). Breeders (Egglayers 11-20): 1, S. White (Retford); 2, B. Jackson (Doncaster); 3, Mr. Greenwood (Immingham). Breeders (Livebearers 1-10): 1, Mr. and Mrs. Chester (Retford); 2, Mr. and Mrs. Copley (Doncaster); 3, Mr. and Mrs. Richardson (Scarborough); 4, Mr. and Mrs. Thorpe (Doncaster). Breeders (Livebearers 11-20): 1 and 2, B. Jackson (Doncaster); 3, Mr. and Mrs. Richardson (Scarborough); 4, Mr. and Mrs. Hopkinson (Darfield). Novice Class: 1, Mr. Pickering (Lincoln); 2, Mrs. M. Tidswell (Grimsby and Cleethorpes); 3, G. A. Upall (Boston); 4, M. Borrill (Boston). A.V. Marine: 1, G. D. Simpson (Queen of the Midlands); 2, Mr. and Mrs. K. Berry (Scunthorpe District). A.O.V. Tropical: 1, Mr. and Mrs. Richardson (Scarborough); 2, J. Wood (Aireborough); 3, Mr. and Mrs. K. Berry (Scunthorpe District); 4, Mr. Caldon (Scunthorpe District). Ladies Class: 1, Mrs. Emerson (Castleford); 2, Mrs. Hopkinson (Darfield); 3, Mrs. Copley (Doncaster); 4, Mrs. Berry (Scunthorpe and District). Goldfish and Comets: 1, Mr. and Mrs. Steels (Retford). Shubunkins and Fancy Goldfish: 1, Mr. and Mrs. Hopkinson (Darfield); 2, Mr. Brown 3, Mr. Lancashire (Doncaster). A.O.V. Coldwater: 1, Mr. and Mrs. Blades (Basset Law); 2, A. Clayton (Immingham); 3, Mr. Taylor (Lincoln); 4, K. Goolding (Immingham). Best in Show: H. Thorpe (Doncaster).

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IN May **The East London Aquarists and Pondkeepers Association** enjoyed a very interesting evening with Adrian Blake from Basingstoke A.S. giving a very good slide show on fish in general. Anyone interested in the Society are welcome to come along. The meetings are held on the first and third Friday in the month beginning at 8 p.m. at Ripple Road School, Ripple Road, Barking Essex. On 2nd October the society will be holding their annual open breeders show. Entry forms can be obtained from J. London, 41 Maybank Avenue, Hornchurch, Essex.

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RESULTS of the **Middleton and District A.S.** open show were: Platies: 1 and 3, Miss A. and Miss L. Petty (Castleford); 2, Mr. and Mrs. Moore (Sheaf Valley). Mollies: 1, T. Redfern (Heywood) Section Winner; 2, Mr. and Mrs. Petty (Castleford); 3, J. Tinsley (Sandgrounders). Swordtails: 1, Mr. and Mrs. Moore (Sheaf Valley), 2, Miss M. Burton (Accrington); 3, T. Redfern (Heywood). Guppies: 1, E. Birchwood (Oldham); 2, Mr. and Mrs. Burton (Accrington); 3, Mr. and Mrs. Lowes. A.O.V. Livebearer: 1, E. M. Stillwell (Sandgrounders); 2, Mr. and Mrs. Crowley (Middleton); 3, T. and J. Selby (Wythenshawe). Egglaying Tooth Carps: 1, Mr. and Mrs. J. Taylor (Merseyside) Section Winner; 2, K. Kryger (Wrexham); 3, A. Vassiere (Merseyside). Small Characins: 1, Miss S. Goddard (Macclesfield) Section Winner and Best in Show; 2 and 3, R. J. Stephens (Blackburn). Large Characins: 1, Mr. and Mrs. Houghton (Southport); 2, A. Saunders (Middleton); 3, M. Hay (Oldham). Small Barbs: 1, A. Patterson (Osram); 2, T. Hope (Hartlepool); 3, Mr. and Mrs. Houghton (Southport). Large Barbs: 1, A. Vassiere (Merseyside) Section Winner; 2, A. Chadwick (Oldham); 3, Mr. and Mrs. Bond (Southport). Sharks and Foxes: 1, Mr. and Mrs. Houghton (Southport) Section Winner; 2, A. Dawson (Heywood); 3, M. Hay (Oldham). Corydoras: 1, Mr. and Mrs. Petty (Castleford); 2, Miss M. Burton (Accrington); 3, T. Hope (Hartlepool). A.O.V. Catfish: 1, A. McDonald (Oldham); 2, Mr. and Mrs. Houghton (Southport); 3, S. White. A.V. Loach: 1 and 3, Mr. and Mrs. Muckle (Southport) Section Winner; 2, S. Wolstenholme (Heywood). Rasboras: 1, Miss A. Gregory (East Lancs) Section Winner; 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs. Houghton. Danios: 1, Mr. and Mrs. Newton (Blackburn); 2, M. Hay (Oldham); 3, A. Bolan (Wythenshawe). Minnows: 1 and 3, Mr. and Mrs. Newton (Blackburn); 2, I. Hopkins (Merseyside). Dwarf Cichlids: 1, T. Hampton (Merseyside); 2, A. Chadwick (Oldham); 3, A. Bolan (Wythenshawe). Large Cichlids: 1, Mr. and Mrs. J. Taylor (Merseyside); 2, Mr. and Mrs. G. Bond (Southport); 3, Mr. and Mrs. Ellis (Osram). Angels: 1, K. Kryger (Wrexham); 2 and 3, Mr. and Mrs. Muckle (Southport). Rift Valley Cichlids: 1, D. Mason (Bridgewater) Section Winner; 2, S. Wolstenholme (Heywood); 3, B. Wilson (Merseyside). Fighters: 1, T. Davies (Heywood); 2 and 3, B. Faux (Merseyside). A.O.V. Anabantids: 1, F. Mulla (Merseyside); Section Winner; 2, Mr. and Mrs. Goddard (Macclesfield); 3, E. M. Stillwell (Sandgrounders). A.O.V. Tropical: 1, A. Saunders (Middleton) Section Winner; 2, R. Lamb (Southport); 3, A. Oldham (Wythenshawe). Breeders (Egglayers 1-10): 1, Mrs. Wilson (Merseyside); 2, A. Vassiere (Merseyside); 3, Mr. and Mrs. Davies (Dunlop). Breeders (Egglayers 11-20): 1, A. Vassiere (Merseyside) Section Winner; 2, P. Squirell (Wythenshawe); 3, K. Kryger (Wrexham). Breeders (Livebearers): 1 and 2, Poulton Bros. (Southport); 3, Mr. and Mrs. Davies (Dunlop). Pairs (Egglayers): 1, R. J. Stephens (Blackburn) Section Winner; 2, Miss A. Gregory (East Lancs); 3, Mr. and Mrs. Muckle (Southport). Pairs (Livebearers): 1, T. J. Selby (Wythenshawe); 2, C. Whitsy (Accrington); 3, T. Hampton (Merseyside). Common Goldfish: 1 and 3, Mr. and Mrs. Wolstenholme (Blackburn) Section Winner; 2, Mr. and Mrs. Houghton (Southport). Shubunkins: 1, 2 and 3, Mr. and Mrs. Wolstenholme (Blackburn). Veiltails: 1, Mr. and Mrs. Wolstenholme (Blackburn). Orandas: 1, C.

Whitsey (Accrington); 2, Mr. and Mrs. Wolstenholme (Blackburn); 3, A. P. Squirrell (Wythenshawe). Moors: 1, R. Dingley (Heywood); 2, B. Dawson (Heywood). Fantails: 1, Mr. and Mrs. Wolstenholme (Blackburn) Section Winner; 2 and 3, Mr. and Mrs. Burgoyne (Bridgewater). A.O.V. (European and Asian): 1 and 3, K. and M. Wood (York); 2, R. Dingle (Heywood). A.O.V. (N. American): 1 and 3, Mr. and Mrs. Wolstenholme (Blackburn) Section Winner; 2, A. Whittaker (Macclesfield). Mini Jars: 1 and 2, R. Lamb (Southport); 3, K. Smith (Middleton). Ladies Trophy: 1, Mrs. Muckle (Southport) Section Winner; 2, Mrs. G. Bond (Southport); 3, Mrs. J. Selby (Wythenshawe). Juniors Trophy: 1, I. Hopkins (Merseyside) Section Winner; 2, Miss A. and Miss L. Petty (Castleford); 3, J. McGlinn (Bridgewater). A.V. Marines: 1, Mr. and Mrs. Davies (Dunlop) Section Winner; 2, J. Midgley (Wythenshawe); 3, L. Dean (Middleton). Independent Exhibitors Class: 1, F. Bailey; 2 and 3, N. Stevenson.

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IT has indeed been a busy period for the **Ichiban Ranchu** newly-formed specialist society which held its official inaugural meeting in April at the chairman's residence in Stondon Massey. The first bi-monthly journal has been published and despatched to members as far away as the U.S.A.

Privately imported breeding stock has arrived from Japan and Hawaii for purchase amongst members, and regular supplies of a wide variety of live foods are being received. The first trophies have been donated and the society are now discussing plans for the first ever Ranchu (lionhead Goldfish) Specialist Society Show to be held in England. A warm welcome is extended to all Ranchu enthusiasts and those interested are invited to contact the Secretary Mrs. E. Davidson, 14 Garnetts, Takeley, Nr. Bishops Stortford, Herts. Telephone: Bishops Stortford 870395 for further information.

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THERE was a well attended meeting of the **Dorchester and District A.S.** which commenced with a slide show and commentary on the Home Aquaria Competition for the Chairman's Cup. Mr. B. Cornick (Chairman) judged the competition and also gave the slide show. The cup was retained by last years winner N. Derrick. Results: Senior: 1, N. Derrick; 2, R. Taylor; 3, R. Voss and P. Norman; 4, W. Voss and C. Ackerman. Junior: 1, R. Thompson; 2, G. Moorcroft; 3, R. Voss jnr. and C. Hunt; 4, M. and S. Ackerman.

The results of the table show were: Male and Female Guppies: Senior: 1 and 4, G. Fitzgerald; 2, Mrs. Young; 3, R. Voss. Junior: 1 and 2, G. Moorcroft. Cichlid: Senior: 1, Mr. and Mrs. Young; 2, N. Derrick; 3 and 4, Mrs. Angel. Junior: 1, C. Hunt; 2, A. Weller.

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IN May the annual general meeting of the **Rhondda A.S.** was held and as usual it was lively and informative. The retiring committee members, last year's chairman R. Smith and Show Secretary A. Smith were thanked for their services and special vote of thanks was given to R. Smith, B. Ashcroft and D. Richards for their co-operation in coming to the rescue of the Club half way through the year. Committee changes for the forthcoming year are as follow: Chairman: G. Legge; Secretary: B. Ashcroft; Minute Secretary: A. Click; Treasurer: R. Richards; Show Secretary: W. Evans; Asst. Show Secretary: A. Smith; Trophy Secretary: M. Parsons.

The award for Most Number of Points to a Rhondda member at the Open Shows was given to A. and M. Smith. They also received the Trophy awarded for securing the Most Number of points for the year 1975/1976. The Best Fish Awards, were awarded as follow. Livebearer: B. Ashcroft. Egglayer: A. and M. Smith.

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THE **Mid-Sussex A.S.** played hosts to Brighton and Southern A.S. for the second leg of the 'Over the Downs'. During the evening Mr. N. Short offered for sale the set of club tanks and stands which have been used at M.S.A.S. Exhibitions for the past few years. The tanks are of size 18in. × 10in. × 10in. If any member is interested please contact H. Heath 3854. There was also an announcement of the possibility of a trip to King British Aquatic Supplies at Bradford in the future and a very interesting lecture was given by R. O'Connell on 'Fin Life of Africa'.

The table show was judged by J. Stillwell and the results were as follow: Barbs: 1 and 2, B. Sayers (Brighton); 3 and 4, C. West (M.S.). Characins: 1 and 4, T. Ramshaw (Brighton); 2, Mr. and Mrs. Rooney (Brighton); 3, E. and T. Tester (M.S.). Cichlids: 1, Mr. and Mrs. Houghton (Brighton); 2, E. and T. Tester (M.S.); 3, B. Hooper (Brighton); 4, D. Mann (Brighton). Labyrinths: 1, T. Ramshaw (Brighton); 2, M. Sparshott (M.S.); 3, B. Sayers (Brighton); 4, P. Berry (M.S.). Catfish: 1, Mr. and Mrs. Rooney (Brighton); 2, B. Slade (M.S.); 3, Mr. and Mrs. Houghton (Brighton); 4, D. Soper (M.S.). Livebearers: 1, Mr. and Mrs. Rooney (Brighton); 2, T. Ramshaw (Brighton); 3, T. Smith (Brighton); 4, A. Holmes (M.S.). Brighton and Southern A.S. won both legs and therefore retain the trophy. Further information may be obtained from the Secretary, B. Slade, Sundown, Bolney Road, Ansty. (H. Heath 53747).

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THE Open Show of the **Blakeborough A.S.** in May received poor support except from the Lancashire area. The total number of entries was 229 compared with 505 last year.

Open Show winners were as follow: Guppies: 1 and 3, Mr. and Mrs. Mason (Scunthorpe Museum); 2, Mr. and Mrs. Chester (Retford). Swords: 1, Mr. Royle-Evatt (Aireborough); 2 and 3, Miss Stansill-Ramsey (Castleford). Platies: 1, A. L. Petty (Castleford); 2, D. M. Laycock (Sheaf Valley); 3, Mr. and Mrs. Moore (Sheaf Valley). Mollies: 1 and 2, Mr. and Mrs K. Petty (Castleford); 2, T. Redfern (Heywood). A.O.V. Livebearers: 1, M. Walker (Swillington); 2, Mr. and Mrs. Hopkinson (Darfield); 3, Mr. and Mrs. Houghton (Southport). Small Characins: 1 and 3, Mr. and Mrs. Binns (Scunthorpe); 2, Mr. and Mrs. Hopkinson (Darfield). Large Characins: 1, Mr. and Mrs. Houghton (Southport); 2, J. Whiteley (Aireborough); 3, Mrs. Gilpin (Huddersfield). Small Barbs: 1, Master S. White (Retford); 2, Master S. Parkin (Keighley); 3, Mr. and Mrs. Houghton (Southport). Large Barbs: 1, Mr. and Mrs. Riley (Castleford); 2, Mr. and Mrs. Hopkinson (Darfield). Small Cichlids: 1, Mr. and Mrs. Binns (Scunthorpe); 2, S. Green (Castleford); 3, Mr. and Mrs. Caldon (Scunthorpe). Large Cichlids: 1, Mrs. J. Riddley (Heywood); 2, Mr. and Mrs. Hopkinson (Darfield); 3, Mr. and Mrs. Houghton (Southport). Angels: 1, J. Whiteley (Aireborough); 2, Mr. and Mrs. Caldon (Scunthorpe); 3, D. Harlow (Independent). Small Anabantids: 1 and 3, Mr. and Mrs. Chester (Retford); 2, Mr. and Mrs. Riley (Castleford). A.O.V. Anabantids: 1, Mr. and Mrs. Houghton (Southport); 2, A. D. Fisher (Bradford); 3, Mr. and Mrs. Brown (Castleford). Fighters: 1 and 3, T. Davies (Heywood); 2, Mr. and Mrs. Chester (Retford). Danios: 1 and 3, Master S. White (Retford); 2, Mr. and Mrs. J. Riley (Castleford). Minnows: 1 and 3, Mr. and Mrs. Houghton (Southport); 2, R. Lamb (Southport). Rasboras: 1, R. Lamb (Southport); 2, Mr. and Mrs. Houghton (Southport); 3, Mr. and Mrs. Chester (Retford). Sharks: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Caldon (Scunthorpe). Foxes: 1, A. Hardcastle (Aireborough). Killies: 1, Master S. White (Retford). Corydoras: 1, Mr. and Mrs. Caldon (Scunthorpe); 2, Mr. and Mrs. Moore (Sheaf Valley); 3, Mr. and Mrs. Petty (Castleford). A.O.V. Catfish: 1, Mr. and Mrs. Houghton (Southport); 2, R. Lamb (Southport); 3, A. Hardcastle (Aireborough). Loach and Botia: 1, 2 and 3, Mr. and Mrs. Binns (Scunthorpe). Pairs (Livebearers): 1, Miss Stansill-Ramsey (Castleford); 2, R. Lamb (Southport); 3, T. E. Davies (Heywood). Pairs (Egglayers): 1, Mr. and Mrs. Chester (Retford); 2, Master S. White (Retford); 3, P. Smith (Aireborough). Breeders (Livebearers 1-10): 1, M. Walker (Swillington); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. Moore (Sheaf Valley). Breeders (Livebearers 11-20): 1, J. Abbott (Aireborough); 2, Mr. and Mrs. Hopkinson (Darfield). Breeders (Egglayers 1-10): 1, P. Smith (Aireborough); 2, Miss C. Wood (Aireborough). Breeders (Egglayers 11-20): 1, Master S. White (Retford); 2, M. Walker (Swillington); 3, Master I. Parkin (Keighley). Common Goldfish: 1 and 3, Mr. Wolstenholme (Blackburn); 2, J. Wood (Aireborough). Fancy Goldfish: 1, J. Wood (Aireborough); 2, Mr. Wolstenholme (Blackburn); 3, Mr. and Mrs. Hopkinson (Darfield). A.O.V. Coldwater: 1, Mr. Wolstenholme (Blackburn); 2, P. Walsh (Blackburn). A.O.V. Tropical: 1, Mr. and Mrs. D. Caldon (Scunthorpe); 2, S. Green (Castleford); 3, R. Lamb (Southport). Mini-Jar: 1 and 2, Mr. and Mrs. Chester (Retford); 3, R. Lamb (Southport).

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IN May the **Stroud and District A.S.** were hosts to Cheltenham A.S., Cotswold A.S., Gloucester A.S., Evesham A.S. For the annual six-a-side competition. Each club brought three egglayers and three livebearers and these were judged by Severnside Aquarist Association Judges. The winners were Cheltenham and the other placings were: 2, Cotswold; 3, Gloucester; 4, Stroud and 5, Evesham. Winners for Best Fish were Livebearers: M. Bishop and Egglayers: Master Rolls. The speaker for the evening was Mr. De-Thubeew who gave a most interesting talk on aquarium plants.

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AT the **South Park Aquatic (Study) Society** annual Invitation Show held in the eighteen classes of coldwater fish, all with major trophies were well supported with good quality fish and judged to G.S.G.B. standards. There were 125 entries. Many members of the G.S.G.B. attended, including members from the Essex area.

Whilst the fish were being judged, Mr. Vernon Hunt gave a talk and slide show on "North American Fish" which was very interesting and aroused great interest in these fishes. This is one of the few all-coldwater shows in the country, a show at which coldwater fish enthusiasts get together to exchange views and ideas in a common interest.

The G.S.G.B. shield was awarded to Daphne Morris for a Bramble head; she was congratulated by Mr. J. Bundell, Chairman, G.S.G.B.

The awards were as follow: Veiltail: 1, G. Cook; 2, A. Marshall; 3, T. Longstaff; 4, B. Cook. Bristol Type Shubunkin: 1 and 2, Miss Morris; ?, D. Seymour; 4, J. Kingland. Globe-Eye: 1, W. G. Cook; 2, A. Marshall. Bramblehead: 1, Miss D. Morris; 2, R. Smith; 3, D. Seymour; 4, T. Longstaff. Bubble-Eye: 1, 3 and 4, D. Seymour; 2, H. Berger. Celestial: 1, H. Berger. Pompom: 1 and 2, Miss R. Berger. Pearlscale: 1 and 2, T. Longstaff. Common Goldfish: 1 and 2, D. McKay; 3, Miss D. Morris; 4, S. Herring. London Shubunkin: 1 and 2, W. Leach; 3, E. Binstead; 4, Mrs. Dudley. Oranda: 1, J. Kingsland; 2 and 4, S. Herman; 3, P. Biawacki. Broadtail Moor: 1 and 2, J. Kingsland; 3 and 4, A. Marshall. Fantail: 1, A. Marshall; 2, D. Seymour; 3, G. Herring; 4, H. Berger. Comet: 1 and 2, D. McKay; 3, Miss D. Morris. Goldfish Breeders: 1 and 2, J. Linale; 3, S. Freeman; 4, G. King. Native and Foreign: 1, 2 and 3, V. Hunt; 4, Mrs. Dudley. Centrarchidae: 1 and 3, T. Longstaff; 2, E. Binstead; 4, C. Herring. Koi: 1, J. Kingsland; 2, E. Binstead; 3 and 4, D. Herman.

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RESULTS of the **Bristol A.S.** Tropical Fish Show held in May, were as follow: Fighting Fish: 1, F. I. Timmins; 2, P. Hemmings; 3, J. Egan; 4, J. Cole. Labyrinth: 1 and 2, Mrs. E. Jones; 3, R. Tooze; 4, F. I. Timmins. Barbus Species: 1 and 3, F. I. Timmins; 2, M. D.

Thomas; 4, G. Dixon. Characin H and H: 1 and 2, F. I. Timmins; 3, P. and Y. Watts; 4, M. D. Thomas. A.O.V. Characin: 1, G. Dixon; 2 and 4, F. I. Timmins; 3, R. Dodson. Cichlids (Small): 1, F. I. Timmins; 2 and 4, J. Egan; 3, R. K. Thomas. Cichlids (Large): 1, R. Dore; 2, F. J. Timmins; 3, J. Egan; 4, P. Fitchett. Angel Fish: 1, F. I. Timmins; 2, T. Edwards; 3, R. Tooze; 4, P. and Y. Watts. Dancos, Rasboras, White Cloud M/M: 1 and 2, F. I. Timmins; 3 and 4, M. Frechney. Catfish Corydoras: 1, J. Egan; 2 and 3, W. James; 4, R. K. Thomas. Catfish A.O.V.: 1, R. Dore; 2 and 4, E. Morgan; 3, F. I. Timmins. A.O.V. Egglayers: 1 and 2, F. I. Timmins; 3, C. and M. Morgan; 4, R. Dodson. Guppies (Male): 1 and 2, M. Jenkins. Guppies (Female): 1 and 3, M. Jenkins; 2 and 4, Mrs. J. Hawkins. Swordtails: 1, C. and M. Morgan; 2 and 3, T. Edwards; 4, A. Fouracre. A.O.V. Livebearers: 1 and 4, G. Dixon; 2 and 3, R. Dodson. Breeders Livebearers: 1, R. Dodson; 2, F. I. Timmins; 3, W. Holland. Breeders Egglayers: 1, R. Dore; 2, R. Tooze; 3, W. Holland.

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IN April at the annual general meeting of the **Hastings and St. Leonards A.S.** the following officers were elected: Chairman: C. Waddell; Vice-Chairman: B. Frear; Hon. Secretary: P. Martin; Asst. Secretary: Mrs. J. Pannell; Hon. Treasurer: Mrs. C. Pollard; Show Secretary: C. Pannell; Publicity Officer: Mrs. S. Tyner; Committee Members: D. Hunt, H. Eastman and K. Bevan. Prizewinners were: Member of Year: Mrs. C. Pollard; Most Points in Table Shows: Mrs. A. Adams; Most Points Junior: C. Christon; Home Aquaria: C. Waddell; Home Aquaria (Junior): C. Christon; Best Plants: C. Pannell; Home Aquaria: C. Pannell; Corydoras: C. Pannell; Mini-Aquaria: Mrs. Adams; A.O.V. Cup: C. Pannell; Pond Cup: C. Read.

The society enjoyed a talk at the second April meeting which was given by J. Bellingham on "Barbs".

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AT the May meeting of the **South Park Aquatic (Study) Society** a novel evening was held. Several members had collected specimens of aquatic life from local waters and members were asked to identify as many of these as possible, after which a discussion took place to establish which specimens were friend or foe.

The table show was Singlestailed Goodfish, judged by Mr. Biernacki, G.S.G.B. judge. D. Herman was awarded first and second places and Mrs. Dudley third and fourth. Several members reported large spawnings of fancy goldfish. Visitors and new members are welcome at the meetings which are held every third Tuesday at Wimbledon Community Centre. The Secretary is Mrs. Dudley, Tel: 504 5662.

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THE result of the **Three Rivers Championship**: 1, G. Liddle (Bimbi); 2, B. Risbridger (South Shields); 3, S. Hay (Hartlepool); 4, F. K. Askew (South Shields). All exhibitors received certificates of achievement plus the top four who received hand beaten plaques.

The T.T.A.A. council would like to thank all the societies and members who attended the championship with special thanks to the judge. A. Denkin of Worksop. A presentation was also made on behalf of the club in the area to G. Liddle for his work done for the aquarists over the years.

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RESULTS of the Annual Open Show of the **Stanley and Consett A.S.** held in April were as follow: Best in Show: J. Irwin (Stanley) with an Apistogramma Birelli. Corydoras: 1, N. Lynch (Stanley); 2, Mr. Risbridger (South Shields); 3, Mr. and Mrs. Saunders (Stockton). Large Cichlids: 1, M. Moreland (Half Moon); 2, S. Hay (Hartlepool); 3, Mr. Quantrill (Priory). Rasboras Danio and Minnow: 1 and 3, N. Lynch (Stanley); 2, J. W. Pells (Priory). A.O.V. Cats: 1, Mr. Risbridger (South Shields); 2, H. Garthwaite (Hartlepool); 3, M. Carr (South Shields). Small Cichlids: 1, J. Irwin (Stanley); 2, J. Middlemast (Stanley); 3, T. Wilson (M.P.A.S.). A.O.V. 1, Mr. and Mrs. Welford (Cleveland); 2, D. Turnbull (Bimbi); 3, E. Bell (Stanley). Mollies: 1, S. Hay (Hartlepool); 2, M. Willett (Half Moon); 3, Mr. Thompson (Wallsend). E.L.T.C.: 1 and 3, A. Howgate (Stanley); 2, L. and M. Ruffell (South Shields). Swords: 1, A. Malthouse (Wallsend); 2, R. T. Walton (Hartlepool); 3, T. Hope (Hartlepool). Fighter: 1, F. Myers (Ind.); 2, Mr. and Mrs. Moore (Sheaf Valley); 3, R. T. Walton. Platies: 1, Mr. O'Connor (M.P.A.S.); 2, D. Turnbull (Bimbi); 3, R. T. Walton (Hartlepool). Breeders Class (Egglayers 11-20): 1, E. Prytherch (Ashington); 2, A. Howgate (Stanley); 3, Mr. and Mrs. Low (Cleveland). Breeders Class (Egglayers 1-10): 1, J. Middlemast (Stanley); 2, Mr. Stather (Ind.). Small Characins: 1, L. Collins (Stockton); 2, Mr. Risbridger (South Shields); 3, N. Lynch (Stanley). Small Barbs: 1, Mr. Risbridger (South Shields); 2, Mr. and Mrs. Moore (Sheaf Valley); 3, T. Hope (Hartlepool). Breeders Pairs (Livebearers): 1, E. Bell (Stanley); 2, Mr. and Mrs. Smith (Killingworth); 3, P. Wright (South Shields). Breeders Pairs (Egglayers): 1, Mr. and Mrs. Lamb (Redcar); 2, T. Wilson (M.P.A.S.); 3, Mr. and Mrs. Low (Cleveland). Breeders Class (Livebearers): 1, E. Bell (Stanley); 2, D. Smith (Killingworth); 3, Mr. O'Connor (M.P.A.S.). A.V. Guppy: 1, D. Knibbs (Stockton); 2, M. Johnson (Stanley); 3, R. T. Walton (Hartlepool). Furnished Jar: 1, E. Snaith (Northumbria); 2, M. Lister (Stanley); 3, Mrs. J. Surtees (Stanley). Rift Valley Cichlids: 1, Mr. and Mrs. Enwright (South Shields); 2, H. Garthwaite (Hartlepool); 3, R. Atherton (Hartlepool). Large Barbs: 1, Mr. Southall (South Shields); 2, L. Collins (Stockton); 3, E. Hall (Stanley). Angels: 1, Mr. Southall (South Shields); 2, S. Hay (Hartlepool); 3, J. Irwin (Stanley). Large Characins: 1, F. Myers (Ind.); 2, J. K. Alder (Hartlepool); 3, Mr. Southall (South Shields). Labyrinths: 1, M. Sneddon (Hartlepool); 2, H. Lake (Stanley); 3, N. Lynch (Stanley). Sharks: 1, Mr. and Mrs. Wright (South Shields); 2, Mr. and Mrs. Lamb (Redcar); 3, Mr. McClurg (Stockton). Loach: 1, Mr. and Mrs. Welford (Cleveland); 2, D. Turnbull (Bimbi); 3, Mr. Todd (Priory). A.V. Coldwater: 1 and 3, Mr. Strain (Stanley); 2, M. Long (Cleveland). Junior Class: 1, M. and A. McCartney (Billingham); 2, C. Hay (Hartlepool); 3, D. Lynch (Stanley). A.V. Female: 1, F. Myers (Ind.); 2, Mr. and Mrs. Moore (Sheaf Valley); 3, E. Bell (Stanley). There were 461 entries.

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IN April the **Coventry Pool and Aquarium Society** were entertained by Roy Hunter and Arthur Danks of the Midland Koi Association to an excellent slide talk on keeping Koi carp. Results of the evening's table show were as follow: Catfish: 1, D. Lynch; 2, R. Cleaver; 3, D. Denny; 4, N. Sims. Egglayer (Pairs): 1, F. Hirst; 2, R. Cleaver; 3, N. Sims; 4, A. Simmons. A.V. Livebearer: 1, 2, 3 and 4, R. Cleaver. A.V. Rasbora: 1, 2 and 3, R. Cleaver, 4, F. Hirst.

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THE annual show results of the **Port Talbot A.S.** were as follow: Class Ad: 1 and 2, M. Fouracre (P.T.A.S.). Class B: 1, C. A. Short (Npt); 2, R. J. Canning (Nbry.); 3, G. Best (L. Mjr.); 4, J. Edwards (L. Mjr.). Class Ba: 1, R. J. Canning (Nbry.); 2, J. Edwards (L. Mjr.); 3, M. Thomas (Rhon.); 4, P. and Y. Watts (Rhon.). Class C: 1, 3 and 4, M. Dore (Rdg.); 2, G. Best (L. Mjr). Class Ca: 1, C. Turner (Cdf.); 2, H. Chick (L. Mjr.); 3, S. Nicholas (P.T.); 4, R. J. Canning (Nby.). Class D: 1, Mr. and Mrs. R. Dore (Npt.); 2, W. J. Locke (P.T.); 3, J. Egan (P.T.); 4, R. J. Canning (Nby.). Class Da: 1, Mr. and Mrs. T. Edwards (P.T.); 2 and 3, P. Thomas (S'sea.); 4, R. J. Canning (Nby.). Class Db: C. Turner (Cdf.); 2, P. Thomas (S'sea.); 3, J. Edwards (L.Mjr.); 4, J. Egan (P.T.). Class E: 1, C. J. and J. Davies (P.T.); 2, R. Perkins (P.T.); 3, E. Morgan (Myr.); 4, A. S. Gibbon (Rdg.). Class Ea: 1, Mr. and Mrs. C. Guthrie (Bry.); 2, 3 and 4, C. and J. Richards (Sdy.). Class F: 1, G. Legge (Rhon.); 2, C. and J. Richards (Sdy.); 3, C. and M. Morgan (Myr.); 4, J. Dunn (P.T.). Class G: 1, J. Edwards (L. Mjr.); 2, C. and J. Richards (Sdy.); 3, Mrs. M. Guy (Cdf.); 4, C. Turner (Cdf.). Class H: 1, B. Ashcroft (Rhon.); 2, R. J. Canning (Nby.); 3, M. S. Parsons (Rhon.); 4, C. J. and J. Davies (P.T.). Class J: 1, G. Best (L.Mjr.); 2 and 3, C. Turner (Cdf.); 4, M. S. Parsons (Rhon.). Class K: 1, C. and J. Richards (Sdy.); 2, P. Thomas (S'sea); 3, I. H. Dibble (N'sea.); 4, R. Clark (Rdg.). Class L: 1, H. Chick (L. Mjr.); 2, P. Thomas (S'sea); 3, C. Turner (Cdf.); 4, P. R. Stonehewer (Myr.). Class M: 1, H. Chick (L.Mjr.); 2, C. Turner (Cdf.); 3, J. Morris (P.T.); 4, P. Merritt (Rdg.). Class N: 1, G. Legge (Rhon.); 2, C. Turner (Cdf.); 3, P. R. Fitchett (N'sea.); 4, C. Morrison (P.T.). Class O: 1, C. and J. Richards (Sdy.); 2, E. Morgan (Myr.); 3, I. H. Dibble (N'sea); 4, D. Westacott (P.T.). Class P: 1 and 3, C. and J. Richards (Sdy.); 2, E. Hurley (Cdf.); 4, Mr. and Mrs. B. Fouracre (P.T.). Class Q: 1, R. J. Canning (Nby.); 2, G. Best (L.Mjr.); 3, C. and M. Morgan (Myr.); 4, R. Perkins (P.T.). Class R: 1, M. C. Guthrie (Bry.); 2 and 4, R. Perkins (P.T.); 3, G. Best (L.Mjr.). Class S: 1, 2 and 4, B. Ashcroft (Rhon.); 3, G. Best (L.Mjr.). Class T: 1 and 2, C. Morrison (P.T.); 3, Mrs. M. Guy (Cdf.); 4, A. and M. Smith (Rhon.). Class U: 1, 2, 3 and 4, C. Rupert (P.T.). Class V: 1, 3 and 4, F. W. Orme (Mid/F/KPRS ASN.); 2, C. Rupert (P.T.). Class W: 1, 2, 3 and 4, C. Rupert (P.T.). Class XBM: 1, G. Best (L. Mjr.); 2, W. E. Holland (N'sea.); 3, Mr. and Mrs. R. Dore (Npt.); 4, M. Thomas (Rhon.). Class XOT: 1, C. Turner (Cdf.); 2, Mr. and Mrs. Morgan (Myr.); 3, Mrs. M. Guy (Cdf.); 4, C. Morrison (P.T.). Best Fish in Show: H. Chick (Llanrwit Major) Red Fin Shark.

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OPEN Show results of the **Medway A.S.** were as follow: Class B: 1, 2 and 4, J. Bellingham (Tonbridge); 3, C. Elliott (Medway). Class Ba: 1, C. Elliott (Medway); 2, E. and T. Tester (Mid Sussex); 3, T. Woolley (Catfish Ass.); 4, G. Owen (B.K.A.). Class C: 1, T. J. Ramshaw (Brighton); 2, C. D. Finniss (Strood); 3, Mr. and Mrs. M. Rooney (Brighton); 4, C. Saunders (Tonbridge). Class Ca: 1 and 2, Mrs. D. Vicary (Deal); 3, E. and T. Tester (Mid Sussex); 4, R. Parker (North Kent). Class Cb: 1, P. Cottle (North Kent); 2, T. Woolley (Catfish Ass.); 3, C. Goddard (Sudbury); 4, Mrs. A. Greenhalf (Bexley Heath). Class D: 1, M. Collins (Mid Kent); 2, May Nethersell (Riverside); 3 and 4, C. Hogben (Strood). Class Da: 1, C. Finniss (Strood); 2, E. and T. Tester (Mid Sussex); 3, D. Hagon (Mid Kent); 4, A. Best (Strood). Class Db: 1, Mrs. B. Scates (Erith); 2, T. King (North Kent); 3, K. Grubb (Medway); 4, Mrs. A. Greenhalf (Bexley Heath). Class Dc: 1, Mr. and Mrs. Houghton (Mid Sussex); 2 and 3, G. Woodhams (Tonbridge); 4, A. Noronha (Orpington). Class E: 1, K. Pruden (Croydon); 2, A. Woodcock (Medway); 3, L. G. Allen (Sittingbourne); 4, K. Grubb (Medway). Class Ia: 1, C. and J. Richard (Sudbury); 2, T. Woolley (Catfish Ass.); 3, A. Bradnum (Tonbridge); 4, T. King (North Kent). Class F: 1 and 4, B. Scates (Erith); 2, T. Woolley (Catfish Ass.); 3, G. Sandford (Redhill). Class G: 1, T. Woolley (Catfish Ass.); 2, Mr. and Mrs. M. Rooney (Brighton); 3, A. E. Sharp (Sittingbourne); 4, K. Martin (Thurrock). Class H: 1 and 3, P. Cottle (North Kent); 2, K. Nichols (Mid Kent); 4, Mrs. A. Holmes (Crawley). Class J: 1 and 2, T. Ramshaw (Brighton); 3 and 4, C. Illiott (Medway). Class K: 1 and 3, C. and J. Richards (Sudbury); 2, Mrs. D. Vicary (Deal); 4, G. Carpenter (Medway). Class L: 1, A. Gardner (Redhill); 2, K. Nichols (Mid Kent); 3, E. and T. Tester (Mid Sussex); 4, C. Goddard (Sudbury). Class M: 1, G. Nichols (Mid Kent); 2, May Nethersell (Riverside); 3, T. and J. Ramshaw (Brighton); 4, C. and J. Richard (Sudbury).

Class Ma: 1, M. Rooney (Brighton); 2, G. Nichols (Mid Kent); 3 and 4, T. J. Ramshaw (Brighton). Class Nb: 1, L. Arnold (Medway); 2, M. Sandford (Redhill); 3, L. Pryden (Croydon); 4, A. Bradnam (Tonbridge). Class No: 1 and 2, A. E. Noronha (Orpington); 3, D. Cheswright (Southend); 4, Mrs. D. J. Vicary (Deal). Class O: 1 and 3, C. Martin (Thurrock); 2, A. E. Noronha (Orpington); 4, C. and J. Richards (Sudbury). Class P: 1, E. and T. Tester (Mid Sussex); 2 and 3, A. Noronha (Orpington); 4, T. Woolley (Catfish Ass.). Class Q: 1, Master J. Holmes (Crawley); 2, C. D. Finniss (Strood); 3 and 4, A. Noronha (Orpington). Class R: 1, T. Woolley (Catfish Ass.); 2, C. Finniss (Catfish Ass.); 3, A. Noronha (Orpington); 4, G. Owen (BKA). Class S: 1, Mrs. P. Edwards (Thanet); 2, E. and T. Tester (Mid Sussex); 3, C. and D. Finniss (Strood); 4, J. Smith (Brighton). Class T: 1 and 3, A. Noronha (Orpington); 2, D. Cheswright (Southend); 4, Mrs. D. Cruickshank (Ealing). Class U: 1, R. Woolley (Catfish Ass.); 2, Mr. and Mrs. Pannell (Hastings); 3, Mr. and Mrs. B. Fry (Bexley Heath). Class V: 1, Mr. and Mrs. B. Fry (Bexley Heath); 2, 3 and 4, L. Selwood (Diss). Class W: 1, Mr. and Mrs B. Fry (Bexley Heath); 2, R. Parker (North Kent); 3, K. Martin (Thurrock); 4, B. Scates (Erith). Class XBM: 1, R. and I. Shiner (BKA); 2, A. Noronha (Orpington); 3, B. Scates (Erith); 4, Mr. and Mrs. A. Sharp (Sittingbourne). Class XOT: 1, C. W. Goddard (Sudbury); 2, K. Dryden (Croydon); 3, A. Noronha (Orpington); 4, D. Cheswright (Southend). Class Za: 1, T. Woolley (Catfish Ass.); 2, C. P. Floyd (Sittingbourne); 3, W. Woodward (Bexley Heath); 4, D. Cheswright (Southend). Class ZBC: 1, G. Cottle (North Kent); 2, W. Woodward (Bexley Heath); 3, A. Woodcock (Medway); 4, R. Shirley (Haslemere). Best in Show: G. Nichols, Pantodon Buchholzi. Highest Award Winning Points: A. Noronha.

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OFFICERS elected at the annual general meeting of the **Isle of Wight A.S.** are as follow: Chairman: B. McHugh; Vice-Chairman and Publicity: Mrs. E. C. Ford; Treasurer: S. Stevens; Secretary: R. Munt; Asst. Secretary: J. Sole; Show Secretary: F. Whitehouse; Asst. Show Secretary: B. Hall; Entertainments Officer: Mrs. A. McHugh; Committee Members: Mrs. M. Cheverton and D. Ford; Judge: G. M. J. Ford; Asst. Judge: R. Townsend. All correspondence to be sent to the Secretary R. Munt, 21 Fraser Close, Cowes, Isle of Wight. Tel: Cowes 5258.

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THE **Merthyr A.S.** would like to thank the Rhondda A.S. for being the host to the replay of the second round tie of the C.N.A.A. Knockout between Merthy A.S. and Llantwit Major A.S. in April. As in the first tie there was a very large entry of fish for the A.O.V. Egglayer and A.O.V. Livebearers table show which accompanied the inter-club knockout, and the judges had a hard task to complete the judging in time. During the judging, Mr. R. Wigg gave a very detailed talk on the Showing of Fish, Running an Open Show and Judging Techniques. The result of the inter-club K.O. was a win for Llantwit Major A.S.

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COMMITTEE members elected at the annual general meeting of the **Suffolk Aquarist and Pondkeepers Association** held in May were as follow: Chairman: F. Auffret; Secretary: K. Cocker; Treasurer: M. Thurlow; Show Secretary: C. Bysouth; P.R.O.: K. Cook; Newsletter Editor: P. J. Brown. The meeting was combined with a social evening and this proved a great success.

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A very informative slide show on the community aquarium was given at the May meeting of the **Hyde A.S.** This covered all aspects of this subject including general information about plants, the use of rocks and wood in the tank and several species of fish. After the first showing of the slides they were repeated while the resident judge, Mr. R. Johnson, pointed out the finer aspects of individual fish and gave tips on showing them.

The usual table show which was a very good one, was also held at the end of the evening. The Society meet on alternate Wednesdays in the upstairs room of The Bankfield Hotel, Mottram Road, Hyde at 8 p.m. Anyone wanting further information should contact the Public Relations Officer, Mrs. S. Haycocks, at 061-366 0777 who will be pleased to hear from anyone interested in joining the society.

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BECAUSE the speaker was unable to attend the May meeting of **The Goldfish Society of Great Britain,** the Chairman, J. Bundell asked for three members to form a panel to answer questions from the members. The panel, J. Linale, G. King and J. Bundell answered many questions from the members covering subjects from Genetics to the feeding of fish and the questions and comments proved very interesting. After the break, D. Seymour told of his experiences this Spring breeding the Jikin. The Jikin is a new variety of Goldfish to these shores and Mr. Seymour is the first person in England to have bred them. This fish is popular in Japan where good specimens command high prices. It is also popular in the States where because of the shape of the tail fins, it is called a Peacock.

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AT the meeting held in May of the **Witney and District A.S.,** members approved of the programme for this year which will include slide shows, guest speakers, lectures and table shows. The next meeting will be held on the second Friday in July at 8 p.m. at the Eagle Vaults, Witney and the items for the evening will include a lecture on keeping and breeding Malawi Cichlids by Dave Tovey. All fish keepers and prospective new members will be very welcome. Refreshment facilities are available and juniors are welcome in the private meeting room.

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HISTORY was made for the Society at the April meeting of the **Great Yarmouth and District A.S.** when the inauguration took place of the first President, Mr. Campbell Lindsey of the Imperial Hotel, Gt. Yarmouth.

In May the societies annual dinner dance was held at the Imperial Hotel. During the evening the President presented a tankard to Mr. Weekley and a rose bowl to Mrs. Jenny Drewry in appreciation for their services to the society. Also at the May meeting the guest was Dr. David Ford of "Aquarian" fame who gave a slide show and a very informative and entertaining talk on his international travels.

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AT the last meeting of the **Hastings and St. Leonards A.S.** members were once again delighted by an F.B.A.S. slide/tape show, this time the subject shown was the intriguing process of producing a new fish food.

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MEMBERS of the **Taunton and District A.S.** heard an excellent slide/tape show on anabantids at the May meeting. The quality of the show was very good in presentation and was highly informative in showing some of the common varieties of this popular type of fish and some of the rarer types. Table show results were: Characins H. and H.: 1 and 2, C. Vellacott; 3, M. Tratt; 4, D. Curry. Characins A.O.V.: 1 and 3, D. Curry; 2, C. Vellacott. Labyrinth: 1, V. Welsh; 2, A. Marlbrough; 3, C. Vellacott; 4, L. Pincombe. Fighters: 1, C. Vellacott.

The society meets on the third Tuesday of the month at the Railway Club Hall, Taunton and invite anyone interested in aquatic pets to come along to any of the meetings to see if they would like to join and share their knowledge and experience with other members.

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THE **New Forest A.S.** held their annual general meeting in May with an almost full attendance of members. In his report, the Secretary asked everyone to try to bring in new members, the Treasurer's account showed an increased balance from the past year, and the Show Secretary urged members to enter more of their fish in the Society's monthly table shows. Officers elected for the coming year were: Chairman: B. Higginson; Secretary: R. Travers, 6 Auckland Avenue, Brockenhurst, Hants SO4 7RS; Treasurer: T. Barnes; Show Secretary: G. Edwards; Librarian: M. Aust. A vote of thanks was given to Mr. A. Paulley for his services as Chairman for the past two years.

The society meets at the Community Centre, New Street, Lymington, Hants., on the third Monday every month (except August) at 7.45 p.m.

Winner Tropical Points Trophy: M. Aust. Coldwater Points Trophy: 1, L. Menhennett; 2, R. Travers. Championship (Tropical): M. Aust. Championship (Coldwater): 1, L. Menhennett; 2, 3 and 4, R. Travers.

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TABLE Show results of the May meeting of the **Llantwit Major A.S.** were as follow: Class L.: 1, 2, 3 and 4, Mr. and Mrs. M. C. Guthrie. Class A.O.V.: 1, 2 and 4, Mr. and Mrs. M. C. Guthrie; 3, G. Lewis. Whilst the judging was in progress members were entertained with an any questions evening which proved to be extremely interesting considering the number of questions asked on various aspects of fishkeeping.

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WE understand from the **Newcastle Guppy and Livebearer Society** that details regarding the German livebearer Association Open Show this year are now available and are as follow: The show will be held from 9-10 October, and all breeders and fanciers of livebearers are entitled to compete. The show is for Breeding Pairs Only. All species of Xiphophorus, Mollienisia and A.O.S. livebearers will be admitted but not guppies. Foreign competitors pay no entry fee and all foreign entries are auctioned after the show. Further details and application forms are available from: Herr Manfred Lachmann, 21, Hamburg 90, Heimfelder Str., Ia, Germany. Entries are accepted until 25 September and the fish are to arrive not later than 7 October. The Newcastle G. and L.S. would like to take this opportunity to invite livebearer enthusiasts in this country to support this venture.

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IN May Mr. J. Hall of Aireborough A.S. gave a splendid lecture at **Hull A.S.** Club. Mr. Hall is a very well known authority on coldwater fish especially fancy goldfish varieties, and also a Senior Class A judge. His lecture was a comprehensive one dealing with selection, feeding, growing on, maintenance, breeding and pond formations. The ovation at the end was testimony to his superb lecture.

Results of Statesman league match held at York Eboracum A.S.: Bridlington A.S., 66pts.; York Eboracum A.S. 62 pts.; Hull A.S. 37 pts.; Goole A.S. 34 pts. Best in Show Chequer Barb (York Eboracum). Judging was done by York A.S. Results of Statesman league match held at Hull A.S. Hull A.S. 77 pts.; Bridlington A.S. 54 pts.; York A.S. 32 pts.; Goole A.S. 27 pts. Best in Show: Female Guppy, Master A. Young (Hull A.S.). Judging was done by York Eboracum A.S.

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RESULTS of the **Northallerton and District A.S.** table show held in May were as follow: Livebearers (under 3in.): 1 and 2, G. Peel; 3, L. Hockney. Livebearers (over 3 in.): 1, G. Peel; 2, S. Gething; 3, D. Gething. Barbs (under 3 in.): 1, B. Hood; 2 and 3, G. Peel. Barbs (over 3 in.): 1, G. Peel; 2, L. Hockney; 3, B. Summerscales. Loaches and T Cats (under 3 in.): 1, L. Hockney; 2, G. Peel; 3, D. Gething. Loaches and T Cats (over 3 in.): 1, L. Hockney; 2, D. Gething; 3, L. Burnett. A.O.V. (under 3 in.): 1, G. Peel; 2, S. Gething; 3, D. Gething. A.O.V. (over 3 in.): 1, L. Burnett; 2, G. Peel; 3, R. Stokes. Pairs (under 3 in.): 1, S. Gething; 2, J. Pygott; 3, G. Peel. Pairs (over 3 in.): 1, J. Trevor; 2 and 3, L. Burnett. Cichlids (under 4 in.): 1, G. Peel; 2 and 3, L. Hockney. Cichlids (over 4 in.): 1, J. Trevor; 2, G. Peel; 3, B. Summerscales. W.C.M.M., Danio and Rasbora (under 3 in.): 1, L. Hockney; 2, A. Birkett; 3, G. Peel. W.M.C.C., Danio and Rasbora (over 3 in.): 1 and 2, G. Peel; 3, D. Gething. Labyrinths: (under 3 in.): 1 and 3, D. Gething; 2, L. Hockney. Labyrinths (over 3 in.): 1 and 3, G. Peel; 2, S. Gething. Coldwater: 1, R. Stokes; 2, D. Gething; 3, S. Gething. Characins: 1 and 2, L. Hockney; 3, G. Peel.

New members are welcome and are invited to contact B. Hood, 3 Castle Hills, Northallerton or to attend at The Kings Arms, Northallerton every other Tuesday at 8.00 p.m.

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AT the May meeting of the **Brighton and Southern A.S.** there was a table show for Cichlids, Dwarf Cichlids and Catfish, but the main event of the evening was a discussion and the arrangements for the 1976 Open Show and Exhibition and the society is looking forward to seeing fellow aquarists at the Open Show and Exhibition at St. Barnabas Hall, Sackville Road, Hove, on Sunday 25 July.

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AT the last meeting of the **Village Bar A.S.**, the secretary announced that the society's application to join the Federation of Northern Aquarium Societies had been approved. The society which meets at the Village Bar, Edgbaston, Birmingham is the first West Midlands society to join.

The meeting was told that a special show for British Nativefish would take place in December open to allcomers. It is hoped this show will revive a sagging interest in these type of fish. The new committee is Chairman: B. Morby, Secretary: G. Corum; Stock Controlling Officer: P. Rogers; Social Organiser: J. Gilligan.

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THERE were 665 entries for the **Bridlington and District A.S.** Annual Open Show in May. Aquarist Gold Pin, Y.A.A.S. Diploma and the Parade Trophy for the Best Fish in Show, went to Mr. and Mrs. A. Binns of the Scunthorpe Museum Society, with a Eques Pencil Fish. Another Y.A.A.S. Diploma was awarded for the Best Exhibit, which was won by B. Jackson of Doncaster. The Edward Fisons Shield for the exhibitor with the most points went to A. Clayton of Immingham and the Bridlington and District A.S. Shield for the society with the most points was won by Doncaster A.S. Results: Guppies: 1, D. and M. Laycock (Sheaf Valley); 2, Mrs. D. Cavill (Doncaster); 3, J. Hall (S. Humberside). Platies: 1, Mr. Barker (York); 2 and 3, Mr. and Mrs. J. Riley (Castleford). Mollies: 1, N. Blenkin (Bridlington); 2, Mr. and Mrs. Dunn (York); 3, D. and W. Jordan (S. Humberside). Swordtails: 1, Mr. Reeve (York); 2, N. Blenkin (Bridlington); 3, Mr. and Mrs. Roberts (Doncaster). A.O.V. Livebeaeer: 1, M. Walker (Swillington); 2, K. Lancashire (Doncaster); 3, Mrs. K. McBride (Aireborough). Characins (up to 10 cm.): 1, Mr. and Mrs. A. Binns (Scunthorpe M); 2, Mr. and Mrs. Richardson (Scarborough); 3, D. Hill (S. Humberside). Characins (over 10 cm.): 1, Mr. and Mrs. Daines (Doncaster); 2, H. Thorpe (Doncaster); 3, J. A. Whiteley (Aireborough). Barbs (up to 10 cm.): 1, Mr. Collingwood (Hull); 2, Mr. and Mrs. Emmerson (Castleford); 3, J. A. Whiteley (Aireborough). Barbs (over 10 cm.): 1, M. Jordan (Bridlington); 2, A. Hardcastle (Aireborough); 3, Mr. and Mrs. McKenzie (Doncaster). Cichlids (up to 10 cm.): 1, Mr. and Mrs. K. Welsh (York); 2, Mr. and Mrs. Blades (Bassetlaw); 3, Mr. Hayes (Castleford). Cichlids (over 10 cm.): 1, R. Francis (Heywood); 2, I. Taylor (Bridlington); 3, J. A. Whiteley (Aireborough). Angels: 1, A. Dawson (Heywood); 2, J. A. Whiteley (Aireborough); 3, Mr. and Mrs. Davenport (S. Humberside). Rift Valley Cichlids: 1, I. Taylor (Bridlington); 2, Mr. Collingwood (Hull); 3, A. Frisby (Hull). Fighters: 1, A. Clayton (Immingham); 2, N. Blenkin (Bridlington); 3, Master M. Lake (S. Humberside). Anabantids (up to 10 cm.): 1, Mr. and Mrs. J. Riley (Castleford); 2, A. Clayton (Immingham); 3, Mr. and Mrs. Tyson (S. Humberside). Anabantids (over 10 cm.): 1, Mr. and Mrs. Feasey (Doncaster); 2, S. Green (Castleford); 3, G. Flinton (Scarborough). Egglaying Toothcarps: 1 and 2, A. Young (Hull); 3, Mr. and Mrs. Tyson (S. Humberside). Corydoras and Brochis: 1, Mr. and Mrs. Petty (Castleford); 2, Mr. and Mrs. Cadlow (Scunthorpe M.); 3, Mr. and Mrs. Emmerson (Castleford). Loaches and Botias: 1, Mrs. Toyne (Sheaf Valley); 2, T. Sanderson (Thorne); 3, Master J. Emmerson (Castleford). A.O.V. Catfish: 1, H. Thorpe (Doncaster); 2, Mr. and Mrs. Lake (S. Humberside); 3, Mr. and Mrs. Copley (Doncaster). Sharks and Foxes: 1, B. Dawson (Heywood); 2, Mrs. K. McBride (Aireborough); 3, Mr. and Mrs. Copley (Doncaster). Rasboras: 1, Mr. and Mrs. Copley (Doncaster); 2, Mr. and Mrs. Lake (S. Humberside); 3, Pete and Sylvia (Bridlington). Danios and Minnows: 1, A. Clayton (Immingham); 2, Mr. and Mrs. Lake (S. Humberside); 3, Mr. and Mrs. Roberts (Doncaster). Pairs (Livebearers): 1, Mr. and Mrs. Feasey (Doncaster); 2, P. Northrop (Hull); 3, J. Cavill (Doncaster). Pairs (Egglayers): 1, Mr. and Mrs. Morrisey (Immingham); 2, Mr. and Mrs. Lake (S. Humberside); 3, Mrs. Toyne (Sheaf Valley). Breeders (Livebearers 1-10): 1, M. Walker (Swillington); 2, Mr. and Mrs. Richardson (Scarborough); 3, K. Lancashire (Doncaster). Breeders (Livebearers 11-20): 1 and 3, B. Jackson (Doncaster); 2, Mr. and Mrs. Richardson (Scarborough). Breeders (Egglayers 1-10): 1, B. Jackson (Doncaster); 2, A. Young (Hull); 3, Mr. Wood (Aireborough). Breeders (Egglayers 11-20): 1, B. Jackson (Doncaster); 2, Mr. and Mrs. Bradshaw (Sheaf Valley); 3, A. Young. A.V. Female Livebearer: 1, Mr. and Mrs. Blades (Bassetlaw); 2, Mr. and Mrs. Moore (Sheaf Valley); 3, R. Clayton (Immingham). A.V. Female Egglayer: 1, A. Clayton (Immingham); 2, A. Young (Hull); 3, P. Northrop (Hull). A.O.V. Tropical: 1, Mr. and Mrs. Emmerson (Castleford); 2, Pete and Sylvia (Bridlington); 3, Mr. Wood (Aireborough). A.V. Juniors: 1 and 2, Master J. Emmerson (Castleford); 3, D. Hill (S. Humberside). Furnished Mini Jars: 1, Pete and Sylvia (Bridlington); 2, Mrs. Toyne (Sheaf Valley); 3, Mr. and Mrs. Agar (Aireborough). Common Goldfish: 1, L. Waller (Rotherham); 2, Mr. and Mrs. Wolstenholme (Blackburn); 3, R. N. Dingley (Heywood). Fancy Coldwater: 1, Mr. and Mrs. Wolstenholme (Blackburn); 2, R. N. Dingley (Heywood); 3, A. Dawson (Heywood). Shubunkins: 1, K. and M. Woods (York); 2, Mr. and Mrs. Wolstenholme (Blackburn); 3, Mr. and Mrs. Petty (Castleford). A.O.V. Coldwater: 1, D. and W. Jordan; 2, K. and M. Woods (York); 3, Mr. and Mrs. Wolstenholme (Blackburn).

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THE **Grimsby and Cleethorpes A.S.** has been invited to attend a local Hobbies for All Exhibition to be held at the Cleethorpes Memorial Hall on 24, 25 and 26 September.

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On Sunday, 11th April, a meeting was held of the **British Koi Keepers Society** to form a London Section of the B.K.K.S. After the officers had been elected, there was a raffle and a lecture with slides on the January 1976 All Japan Koi Show which was held in Tokyo.

In view of the probable size of the London Section and the necessity to hire a hall or room at Conway Hall four times a year, it was decided that a subscription of £3 per annum would be realistic, adding £1 for any other member in a family. Any B.K.K.S. member wishing to join the London Section should send the subscription to James H. Packham of 5 Camden Terrace, London NW1 9BP. Several lectures, films, outings and meetings at other members' homes are being planned and the next meeting will take place at Conway Hall on Sunday, 11th July, when, among other items, a new film on Koi spawning will be shown.

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OBITUARY

THE **Mid Sussex A.S.** regret the sudden death on Saturday 15th May, of one of its most active members, Mr. Peter Berry, who during five years of membership served as a Steward and Committee member, assisting with the showing of fish as well as being one of the society's active fish enthusiasts. Peter will always be remembered by the Society and sympathy goes to his wife and children.

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NEW SOCIETIES

THE **Leicestershire Marine Aquarist Discussion Group** has been recently formed and meet on the first Monday in the month at the Reservoir Public House, Cropston, Leicester at 7.30 p.m. New members are welcome to the informal meetings. The Secretary is G. Smith, 479 Loughborough Road, Bristall, Leicester LE4 4BJ.

THE **North London Group** of the British Killifish Association has now been formed and meetings are held in the Committee Room of the Royal British Legion, 85 Verulam Road, St. Albans on the third Wednesday of each month, commencing at 8 p.m. For further details please contact Chairman: J. P. Sadler, 119 Abbots Road, Abbots Langley, Herts., or Secretary: I. F. N. Sainthouse, 22 Horton Road, Slapton, Leighton Buzzard, Beds.

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SHOW SECRETARY CHANGES

Grimsby and Cleethorpes A.S. L. Curtis, 4 Swayby Drive, Cleethorpes, South Humberside.

Buxton and District A.S. P. Mayfield, 3 Newstead Terrace, Buxton.

Blackburn Aquarist Waterlife Society: P. Walsh, 54 Grimshaw Street, Gt. Harwood, nr. Blackburn. Tel: Gt. H. 884864.

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SECRETARY CHANGES

Retford and District A.S. Mrs. M. White, 19 Strawberry Road, Retford, Notts.

Blaenau Gwent Fish Club J. W. Taylor, 55 Aracl View, Abertillery, Gwent. Tel: Abertillery (049-532) 2919.

Buxton and District A.S. J. Wells, 9 Bryon Street, Buxton, Derbyshire.

Blackburn Aquarist Waterlife Society: Mrs. S. A. Newton, 117 Richmond Terrace, Darwen.

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VENUE CHANGE

The new headquarters of the **Rhondda A.S.** is at Western Welsh Social Club and Institute, Porth on the first and third Monday every month at 7.30 p.m.

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SHOW DATE CHANGES

Originally reserved for the 7th November, the **Blackburn Aquarist Waterlife Society** Show will now be held on the 12th September at King Georges Hall, Northgate, Blackburn.

The Committee of **Jones and Shipman A.P.S.** have decided to rearrange their first Open Show from 26th September to 10th October due to the clashing of shows. It is hoped that this change of date will now enable maximum support for all Societies concerned.

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AQUARIST CALENDAR

3rd July: Cardiff A.S. Open Show, St. Margaret's Church Hall, Roath, Cardiff. Details from B. Mills, 3 Rutland Street, Grangetown, Cardiff. Tel: 388046.

4th July: Billingham A.S. Annual Open Show in the Community Centre, Billingham.

4th July: Grantham & District A.S. Annual Open Show at Aveling-Baforda Social Hall, Gonerby Road, Gonerby Hill Foot, Grantham. Show schedules available mid-May onwards, S.A.E. from Show Secretary, W. E. Neville, 32 Sharpe Road, Grantham, Lincs. NG31 9BW.

4th July: Lytham A.S. Annual Open Show, will be held at Lytham Baths, Dicconson Terrace, Lytham, Lancashire. This is a larger new venue. Show Schedules from: Show Secretary, Mr. P. Ham, 1 Wyndene Grove, Freckleton, Preston, Lancs. Telephone Freckleton 633182.

4th July: Chard & District A.S. will be holding its Second Open Show at Furnham Scham School, Chard. Details from Mr. B. Riste, 126 Henson Park, Chard.

4th July: South East London A.S. Open Show at the Community Centre, 141 West Greenwich House, London S.E. Details and entries—T. Asquith, 49 Central Avenue, Welling, Kent.

10th July: Basingstoke A.S. will stage an Open Show for Cichlids at the Carnival Hall, Basingstoke. Schedules from C. Wells, 271, Overdown Rd., Tilehurst, Reading or via: Tel.: Bas. 67039 (M. Strange).

11th July: Leamington and District A.S. Open Show at Campion High School, Sydenham Drive, Leamington. Show Secretary, Mrs. P. M. Stoodley, 4 St. Johns Terrace, Leamington Spa, Warks. CU31 3BJ.

17th July: Goldfish Society of Great Britain, General Meeting, 2 p.m., Conway Hall, Red Lion Square, London, W.C.1.

18th July Sandgrounders Annual Show at Meols Cop School, Meols Cop Road, Southport. Further details when available from Hon. Show Secretary, B. Baldwin, 10 Olive Grove, Southport.

18th July: Scarborough & District A.S. Open Show, Eastfield Community Centre, Eastfield, Scarborough. Schedules: J. F. Richardson, 5 Keld Garth, Pickering, N. Yorks YO18 8DG.

25th July: Brighton & Southern A.S. Open Show and Exhibition at St. Barnabas Hall, Sackville Road, Hove, Sussex. Show Secretary, R. Sayers, 11, Seaview Estate, Southwick BW4 4AS. Phone Brighton 593851.

25th July: Runcorn A.S. Open Show. Details from D. R. Walker, 6 Kent Grove, Runcorn Cheshire.

25th July: South Humberside A.S. First Open Show, Memorial Hall, Cleethorpes. Schedules available from G. Wilson, 100 Guildford Street, Grimsby.

25th July: Aireborough & District A.S. Annual Open Show, at Menston Civic Centre, Main St. Menston Nr. Leeds, West Yorks. For further details contact Stuart Hall (Show Secretary) 34 Salisbury Street, Calverley, Pudsey. Phone: Pudsey 74609.

31st July: Plymouth A.S. Open Show at Trinity United Reform Church Hall, Tor Lane, Hartley, Plymouth. Benching until 12 noon. Schedules, J. Webber, 2 Rashleigh Avenue, St. Stephens, Saltash, Cornwall.

1st August: Tonbridge & District A.S. Fifth Open Show. Schedules from Secretary, J. Feast, 19 Eardley Road, Sevenoaks, Kent TN13 1XX.

7th August: Newport A.S. Open Show at St. John's Hall, Victoria Avenue, Maindee, Newport, Gwent. Details from Show Secretary J. Iliffe, 1 Hawarden Road, Newport, Gwent. Tel: 74506.

7-8th August: Tottenham & District A.S. will be holding its annual open show at the Harringay open show. As is usual it will be for Coldwater fish with a special tropical exhibition.

8th August: Grimsby & Cleethorpes A.S. are holding their Fifth Open Show at the Memorial Hall, Cleethorpes. Show schedules are available from the Show Secretary, L. Curtis, 4 Swayby Drive, Cleethorpes, South Humberside.

15th August: Huddersfield T.F.S. annual Open Show, the venue being the same as last. year at The Deighton Civic Youth Centre, Deighton Road, Deighton, Huddersfield. Benching from 12 noon. Judging commences 2.30 p.m. Further details and show schedules from B. Garrett, 23 Ryefields, Scholes, Holmfirth, Nr. Huddersfield.

15th August: Oldham & District A.S. Annual Open Show, Werneth Park, Oldham. Schedules obtainable from A. Chadwick, 341, Broadway, Chadderton, Oldham. 061-652 0809.

15th August: Stroud A.S. Open Show at the Subscription Rooms, Stroud. Show Secretary, J. Cole, 13 The Hill, Randwick, Stroud, Gloucestershire. Tel.: Stroud 4504.

15th August: B.K.A. Severnside Killifish Show: incorporated in the Stroud Open Show and open to everyone at the Subscription Rooms, Stroud. Show schedules from the Show Secretary J. Cole, 13 The Hill, Randwick, Stroud, Gloucestershire. Tel: Stroud 4504.

21st August: Hounslow & District A.S. Open Show will be held at the Hounslow Youth Centre, Cecil Road, Hounslow, Middlesex. All enquiries to Show Secretary, H. Pratt, 23 Woodlawn Drive, Feltham. Tel: 01-894 0923.

21-22nd August: Yorkshire Aquarists Festival.

22nd August: Long Eaton A.S. Open Show at Gregory's Rose Garden Centre. Further details and schedules (s.a.e. please) from Show Secretary D. Anthony, 50 Dean Street, Derby DE3 3PT.

28th August: The third Welsh National open show to be held at the Sophia Gardens Pavilion, Cardiff. Further details available from: C. Turner, 146 Arran Street, Roath, Cardiff. Tel.: Cardiff 498982. M. Guthrie, 4 Nurston Close, Rhoose, Glamorgan. Tel.: Rhoose 710649.

29th August: Castleford A.S. Open Show at The Civic Centre, Castleford. For further information and schedules please contact P. Hayes, Show Secretary, at Winton, 20 Park Ave., Castleford WF10 4ST. Telephone Castleford 2782.

29th August: Macclesfield A.S. are hoping to hold their First Open Show at Macclesfield. Details from Show Secretary, J. Sutherland, 4 Lincoln Walk, Prestbury, Macclesfield or Hon. Secretary, M. J. McDermott, 7 Oakland Ave., Huchington, Crewe. Tel: Crewe 585230.

29th-30th August: Gt. Yarmouth & District A.S. Tropical and Coldwater Fish "Exhibition 76" to be held at the Hopton Village Hall (on A12 between Gt. Yarmouth & Lowestoft).

4th September: Yate & District A.S. 10th Open Show at the Y.M.C.A. (Whitfield School Rooms) Park Road, Kingswood, Bristol, Avon (Nr. Clock Tower). Schedules after 1st August from C. Stickland, 20 Burgage Close, Chipping Sodbury, Nr. Bristol.

5th September: Wellington & District A.S. Open Show at the Weavers Sports Centre, Weavers Road, Wellingborough. Further details and show schedules will soon be available from the Show Secretary A. J. Crew, 67 Swinburne Road, Wellingborough.

5th September: Bethnal Green Aquatic Society Open Show, at the Bethnal Green Institute, 229, Bethnal Green Road, E.2. Schedules and further details available from the show secretary, R. Dale, 14, Rutland Road, Wanstead, London E11 2DY, tel: 01-989 9015.

5th September: The Killingworth Aquarist Association is to hold their second annual open show at Communicare, Killingworth. Schedules from W. Kidd, 75 Hartlands, Bedlington, Northumberland.

11th September: Kingston & District A.S. Open Show. Benching times will be arranged when F.B.A.S. Conference times are known.

12th September: Blackburn Aquarist Waterlife Society, King Georges Hall, Northgate, Blackburn. Secretary, Mrs. S. A. Newton, 117 Richmond Terrace, Darwen, Lancs. BB3 0HG.

12th September: Barnsley T.F.S. Annual Open Show at Mapplewell Staincross Village Hall, Darton, nr. Barnsley. Schedules from A. Waddington, Show Secretary, 112 Racecommon Road, Barnsley, Yorks S70 6AP.

12th September: Buxton and District A.S. Open Show at the Pavilion Gardens, Buxton. Details from J. Wells, 9 Byron St., Buxton, Derbyshire.

12th September: Cleveland A.S. Open Show to be held in the Church Hall, Whitby Road, Guisborough, Cleveland.

12th September: Harlow A.S. open show.

12th September: Sunday—Midland Aquarist League, six class open show, Bulkington Parish Hall, Bulkington, Nr. Nuneaton. Details C. Chamberlain, 2 Stanley Court, Sydenham Drive, Leamington Spa. Tel: 28957.

18th September: Bristol A.S. Coldwater Open Show. Schedules from Show Secretary, E. N. Bowden, 12, Stoneleigh Walk, Bristol, 4. 775355. Postal entries close 31st August. Venue Bishopston Parish Hall.

19th September: Bassetlaw Fishkeepers A.S. First Open Show. Schedules from K. Clarke, 4, Big Lane, Clarborough, Retford, Notts.

19th September: Priory A.S. Tynemouth. Open-Show. Schedules later from W. J. Walton, 25, Rutherford St., High Howdon, Wallsend, Tyne & Wear NE28 0AW.

19th September: Wythenshawe and District A.S. Open Show at The Forum Hall, Civic Centre, Wythenshawe, Manchester. Tropical, Marine and Coldwater Sections. Show secretary, S. Barratt, 14 Piperhill Avenue, Northenden, Manchester M22 4DZ.

19th September: West Cumberland Aquarists' Club Open Show, The Civic Hall, Whitehaven, Cumbria.

19th September: Severnside Aquarist Association first Open Show at Stroud Subscription Rooms (not to be confused with Stroud and District A.S. Show to be held on 15th August). Details can be obtained from Denise Cole, Hon. Sec., Avignon, The Hill, Randwick, Stroud, Glos.

25th September: Goldfish Society of Great Britain. Annual Open Show Sutton Adult School, Sutton, Surrey.

26th September: Northampton & District A.S. Open Show at the Sports Hall, Lings Forum, Weston Favell Centre, Wellingborough Road. Schedules being prepared.

26th September: Chesterfield and District A.S. Annual Open Show. Venue, Clay Cross Social Centre, Chesterfield Road, Clay Cross, nr. Chesterfield, Derbyshire. Exit 29 off M1. Follow signs four miles to show. The venue is on the A61. Further details from Show Secretary, C. Lee, 21 Farnsworth St., Hasland, Chesterfield, Derbys.

2nd October: East London Aquarists and Pondkeepers Association annual show breeders, to be held at Ripple Road School, Barking. Entry forms can be obtained from Mr. J. London, 41 Maybank Avenue, Hoenchurch, Essex.

2nd October: Goldfish Society of Great Britain, Open Show, to be held at Wimbledon Community, St. Georges Road, S.W.19. Schedules from G. E. Herring, 94 Penwith Road, S.W.18.

3rd October: Newbury & District A.S. Fourth Annual Open Show at the "Plaza," Market Place, Newbury. Schedules and full details from, Mrs. S. Cannings, Show Secretary, 6 South End, Thatcham. Tel: Thatcham 64254.

3rd October: Ealing & District A.S. Open Show. Details to follow.

3rd October: Eboracum Aquarists Open Show at Nunthorpe Grammar School, Scarcroft Road, York.

10th October: A. A. Jones and Shipman A.P.S. First Open Show will be held at their Works Canteen, Watergate Lane, Leicester (¼ mile from M1 Junction 21). Benching 11.00 a.m.-1.30 p.m. Schedules now available from Mr. M. Braimbridge, 123 Martin Street, Leicester. Tel: Leicester 667319.

10th October: Hartlepool A.S. Open Show at Lonacar Hall, Seaton Carew, Hartlepool. Further details from Mrs. A. Lion, 1, Loyalty Court, Hartlepool, Cleveland.

10th October: Immingham A.S. first annual show.

17th October: Sunday—Midlands Aquarist League, six class open show, Bulkington Parish Hall, Bulkington, Nr. Nuneaton. Details C. Chamberlain, 2 Stanley Court, Sydenham Drive, Leamington Spa. Tel: 28957.

23-24th October: British Aquarists' Festival Silver Jubilee, Belle Vue, Manchester. Further details shortly.

31st October: Doncaster & District A.S. Open Show. Benching 12 noon to 2 p.m. (Note change of venue) The Carcroft Miners Welfare Hall, Carcroft.

7th November: Halifax A.S. Open Show at The Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Details from D. Shields, Cobblestones, Gainsat, Kings Cross, Halifax. Phone Halifax 60116.

14th November: Bradford & District A.S. Open Show will be held at Textile Hall, Westgate, Bradford.

20th November: Goldfish Society of Great Britain. General Meeting, 2 p.m., Conway Hall, Red Lion Square, London, W.C.1.

27th November: Fur, Feather and Aquaria Show, King's Hall, 39 Lower Clapton Road, London E.5. Schedules from Sybil Hedges, Koi Korner, 150 Ashburton Ave., Seven Kings, Ilford, Essex IG3 9EL. Tel: 01-590 3239.