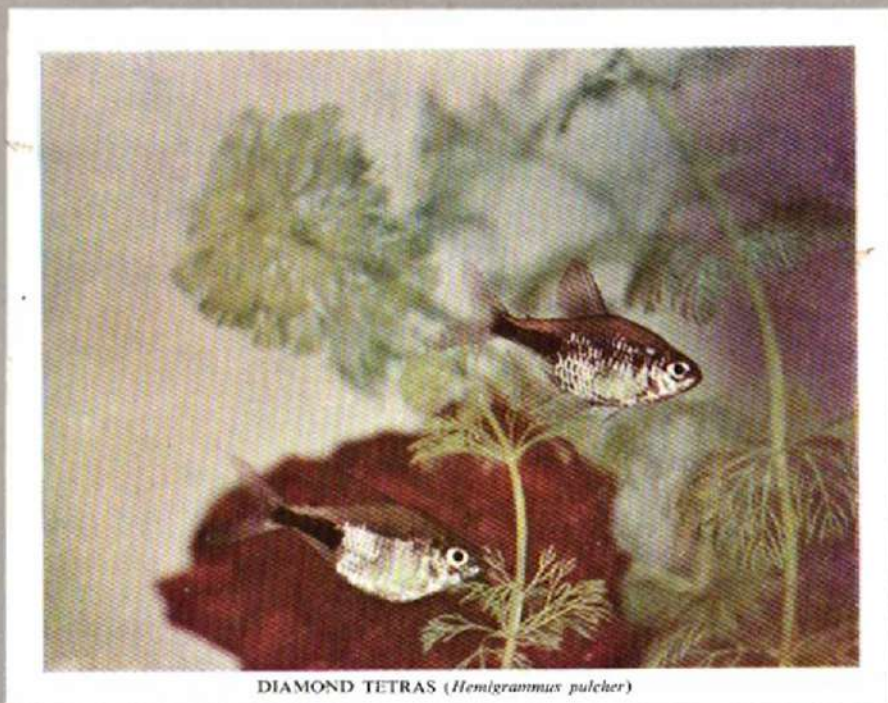


September 1958

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FISHKEEPING

and Water Life



DIAMOND TETRAS (*Hemigrammus pulcher*)

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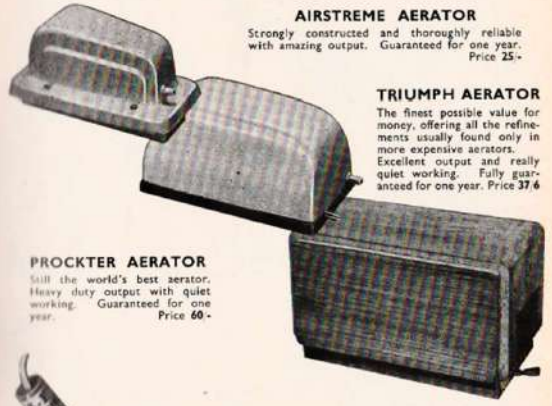
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VOL. 13 NO. 11
NEW ISSUE
SEPTEMBER 1958

FISHKEEPING

and Water Life

IN THE SWIM

Diamond Tetras · Spraying with
Insecticide · Journey to the Continent ·
Learning by Experience · Show
Ideals · Big New Plant House

● **Cover fish.** Diamond Tetras (*Hemigrammus pulcher*) are not one of the most easily spawned of the aquarium-kept Characins, but they hardly come in the really difficult-to-breed category. For decorative effect, they look best in a shoal and are entirely peaceful, growing to some 1½ in. long.

A black wedge-shaped marking adorns the rear part of the fish's body, and above this mark is a light streak. *H. pulcher* has a certain superficial resemblance to the Beacon Fish (*Hemigrammus ocellifer*), but the body shape of the Diamond Tetra is more pleasing and its black tail marking is considerably larger.

● **Indirect effect.** Some ten to twelve years ago we, and the aquatic press generally, publicised the fact that the highly effective D.D.T. sprays could prove lethal to fishes if allowed to contaminate aquarium and pond water.

That fact is now well known but sympathetic to the direct poisoning of fishes is insect depopulation of D.D.T.-treated, natural waters. The result can be that insect-eating fishes in treated districts are deprived of their main food supply.

The problem has to be faced, especially in tropical lands, where wide areas are treated with D.D.T. of a strength not sufficient to kill the native fishes but enough to destroy troublesome insects.

The unintentional secondary result can be starvation of the fish because their normal food source is cut off.

Philip S. Corbet, writing in "Nature", makes the point that, before extensive control measures with insecticides are put into force, surveys of the scheduled area should be made, otherwise many little known or undiscovered animals might be indirectly eliminated.



● **Young arrival.** One of the recent newcomers to London Zoo is the five-inch long Meller's Chameleon pictured here. It arrived by air from Africa as a gift from veterinary surgeon, Dr. W. M. Fitzwilliams, now serving in Nyasaland. The creature is just a baby at present but it could grow to 18 inches.

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● **Interchange.** A thoroughly enjoyable time during their Summer visit to Nymphae A.S. (Ghent, Belgium) is reported by Hendon A.S. The British visitors had a full itinerary prepared for them as the report on page 558 tells and at a mid-August Hendon club meeting 300 colour pictures, taken in Ghent, were shown.

As a result of contacts made during the visit it seems likely that other trips to Continental clubs will be planned for the future.

On September 20 Hendon celebrates its 500th meeting with an Assembly, when Messrs. M. Carels and C. H. Wante—both Nymphae A.S. officials—will present an aquatic film programme.

Over here for this special occasion will be a party of Nymphae club members, with Hendon fishkeepers reciprocating the hospitality they received in Belgium.

● **A sense of smell.** The more knowledgeable a fishkeeper becomes the more discriminating is his eye and he can select a good fish with comparative ease. But it is just a little disconcerting when he first realises that, with the increase in aquarium experience, his sense of smell is also used more and more.

Fishkeeping is just about the most odour-free of livestock hobbies—and to have unpleasant smells around is a sure indication of faulty aquarium practice. Yet the experienced aquarist will incline his nostrils as he surveys his tanks and quickly learns from the subtle differences of the odours he inhales.

The earthy, vaguely decaying aroma that comes with a Blue-green algae invasion is often the first sign that this particular pest will shortly develop. In fact, it is one of those smells which, once sniffed, is never forgotten.

White Worm or Dwarf White Worm cultures should have no offensive odour at all.

If there is one, then the culturing technique is faulty in some respect.

More especially, though, we can learn the vague aroma that is emitted from a healthy aquarium when its water surface is ruffled. It is a buoyant and refreshing smell and rewarding to the fishkeeper who has learned to savour it. Just as we can relish the thousand blending scents of a Summer woodland, so can the fish hobbyist delight in the fleeting, pleasant aroma that tells him all is well with his aquariums.

● **Some delay.** The announcement in our last issue that the Federation of British Aquatic Societies would shortly issue show standards and guides covering 12 more varieties and species of tropical and coldwater fishes resulted in the official responsible for distribution (Mr. Lester Coatman) receiving a number of orders.

Mr. Coatman now asks us to say that some slight delay has occurred in the production of these ideals, but those persons who have sent money will receive the new material as soon as it becomes available.

● **All for plants.** Photographs on this page show something of the development programme under way at Shirley Aquatics Ltd. (Birmingham). The large and well-arranged tropical fishhouse now has a new 60 ft. structure alongside it where tropical aquarium plants are propagated in quantity, thus increasing still further the considerable output at Shirley.

Incidentally, it was Colin D. Roe, proprietor of Shirley Aquatics, who showed the best Vitellat at the Midland A. & P.S. exhibition on August 27 to 30. Remarkably, it was a current-year (January born) specimen which had exceptional size and development.

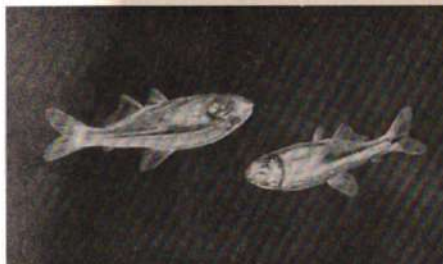


Two views of Shirley Aquatics Ltd. (Birmingham). Left: the new house for propagating aquatic plants and right: the tropical fishhouse.

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LACK OF EYES IS NO DRAWBACK



Two specimens of the Blind Cave Fish (*Anoptichthys jordani*) from Mexico.

by DIANE SCHOFIELD

Repellent to some, others find the Blind Cave Fish strangely attractive

THE Blind Cave Characin is curiously found repellent by some hobbyists and strangely attractive by others. This fish, a descendant of the *Astyanax mexicanus*, is the result of nature's modifications through the years. The *Astyanax mexicanus* was trapped in the caves of Mexico and the Blind Cave Characin is the result of this.

A complete lack of eyes does not hinder the Blind Cave Fish, or *Anoptichthys jordani*, in the least. As in many blind species there is a compensation of extra-sensory perception. Whenever food is dropped into their tank, an unseen signal is flashed to them and a frenzied activity results. There is a rapid scooting around the bottom of the tank and few morsels are missed. The Blind Cave Fish, therefore, makes an excellent scavenger.

Small Blind Cave Fish make good members of the ideal community tank, but larger specimens are inclined to fin-nip other fish when they accidentally bump into them. Occasionally, too, they are prone to nibble at plants. However, as there seems to be a shortage of pink fish, a few small Blind Caves make a nice contrast to any tank.

They are also one of the few Characins which prefer to spawn in an alkaline, hard water

rather than a soft, acid medium. This is undoubtedly due to their native habitat and the limestone found in their caves. While the Blind Cave will live happily in water that is on the soft acid side, it will refuse to propagate its species in such a tank. Through the years I have spawned many thousands of them and it has always been in water with a pH of 7.4, preferably freshly drawn to further stimulate the breeders.

I use a tank of at least 10-gallon capacity. In this tank I make a thick mat of *Myriophyllum* weighed down on the bottom to a thickness of three to four inches. At one end of the tank I place four or five stalks of this plant so that it reaches from the top to the bottom of the tank. In the middle of these stalks I place an airstone, bubbling gently. The temperature should be between 80° and 85°F.

Two Males Used

My breeders are always kept separated except at spawning time and usually there is immediate action when they are put together. A trio of a full female and two males is sufficient to produce several hundred babies. The female will usually linger around the airstone using it as a home base, with the result that the males can find her more readily.

One of the males will assume a side-by-side position with the female and they will rapidly swim up the airstream. At the top there will be a sudden flip of tails and a cascade of white

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eggs will shower down. This procedure will be repeated until the sides of the female will be observed to be flat once again. Immediately at the cessation of the spawning act, the three brood fish should be removed.

Although the Blind Cave Fish cannot see, it can sense the presence of food, and this naturally includes the eggs. The thick mat of *Myriophyllum* will act as a deterrent, but the fish are very wily and will make a meal of any eggs that they can root out. The female should once again be segregated from the males in preparation for spawning once again in two to three weeks.

Eggs Non-adhesive

The *Myriophyllum* should be gently shaken and removed, and as the eggs are non-adhesive this can be done without any difficulty. As the eggs of the Blind Cave Fish are very prone to fungus, enough methylene blue to colour the water a robin's-egg blue should be added. If the plants are left in, they will rapidly disintegrate.

In approximately 24 hours you will be able to notice small white fish bobbing up and down, much like the bubbles in a glass of champagne. Occasionally they will cling to the sides of the tank, but by and large they will continue their bobbing motion until they are free-swimming in another 48 hours. Once they assume the more usual parallel swimming position it is necessary to begin feeding them. They are of a sufficient size to commence feeding newly hatched Brine Shrimp immediately; infusoria would be a starvation diet.

They are the most prodigious eaters of any fish that I have seen. The fry will eat shrimp until they have the appearance of nothing more than a huge distended orange belly. The shrimp can be varied with various small dry foods.

Remove Them Rapidly

With such appetites they naturally grow very rapidly. Before long they can eat sifted Daphnia, chopped worms and the larger dry foods. There always seems to be a handful of babies that grow faster and much larger than their brothers. These should be rapidly removed and placed in tanks by themselves as they can be observed gobbling up the smaller fish whenever they happen to bump into them. Oddly enough, the fry seem to have the appearance of eyes; the rudimentary eyes do not grow over until they are several weeks old.

Unfortunately the Blind Cave Fish is very susceptible to chill and will invariably become infected with White Spot as a result. Once these little organisms become imbedded in their skin, it is very difficult to effect a cure. Fungus and death often follow unless a strong salt bath and a temperature of 90°F proves effective.

PICK OF THE PETS

No. 6. SMOOTH NEWT

by ALFRED LEUTSCHER, B.Sc.

THERE is something particularly attractive about the movements of a Newt as it rises to the pond surface with graceful undulations of its tail, gulps in a fresh lungful of air, then sinks slowly to the bottom. This is the moment when the experienced Newt catcher plunges in his net, catching this little water sprite unawares, so adding another prize to his collection.

How many Newts, I wonder, have been caught each year by eager youngsters and the not-so-young? Just for the fun of it I sometimes catch and release Newts by using the traditional method of worm and cotton. No hook is required; the Newt grabs the worm, hangs on, and is easily lifted out of the water.

Closely Allied Species

Everybody must know what Newts look like, yet few people seem to be aware of the great interest they can give by merely placing an aquarium at their disposal. Here is a delightful little water animal which can be shared alike by aquarist and herpetologist. The three British species are closely related, and belong to the Genus *Triturus*. In these Newts a crest is developed by the male and used in courtship during the breeding season. In a general way their habits are similar.

The largest, called the Great Crested or Warty Newt (*Triturus cristatus*), is somewhat patchy in distribution and may take a bit of finding. The tiny Palmated Newt (*T. helveticus*) is also somewhat local, but usually turns up, I find, on acid soils and in mountainous country. The medium-sized Common or Smooth Newt is to be found in most areas and will often appear in a garden pond soon after it is built. This is because Newts do a lot of walking about, especially at night, during the late summer and autumn. Hibernation, too, is mostly done on land. Newts were probably in the area before the pond was built, and with approaching spring make for the nearest water. This is essential, since the eggs hatch into tadpoles with gills.

If a pond dries up or is filled in, Newts will depart, and for this reason a pond-lover is doing them a real service if he is willing to tolerate their presence at the expense of a few fish fry. A garden pond is indeed a sort of nature reserve for these little water visitors.

In addition to our own Newts, there are two other near relatives occasionally imported from the Continent. One is the Alpine Newt (*T. alpestris*) and the other the very handsome, greenish Marble Newt (*T. marmoratus*). In all five species an interesting courtship takes place. A male will approach a female, then go into an elaborate dance in which the body is arched and raised on to the toes. The tail curves to one side and commences to quiver in peculiar fashion. It has been seriously suggested that this movement sets up a water current, so that perfumes from the body glands of the male are gently wafted towards his lady-love!

The important contribution of the male, however, is a tiny, whitish object laid on the bottom, called a spermatophore. This is a mass of wiggling sperm cells held onto a sticky base. The female finds this, presses it to her cloaca with the hind feet, so that the sperm ascend into her oviduct to fertilize the internal egg cells. Later, at her leisure, she climbs among water plants to lay single eggs here and there on the leaves.

Leaf Folded Over

She carefully holds a leaf in her feet, lays a jelly-covered egg on it, then folds over the leaf for protection. A single female can lay as many as 300 eggs in one season. All the above can be watched at close quarters in the aquarium by setting it up as a coldwater fish tank. Two things, however, should be borne in mind. First, use suitable plants with leaves on which eggs can be laid. The popular *Egeria* (old name *Elodea densa*) is excellent. There is also the Water Starwort and Willow Moss (*Potamogeton*).

Secondly, make sure that the water is not straight from the tap but is well matured, and the older the better. Fresh tap water, especially hard water, affects newly caught Newts, and in a few days the colours fade and the crests of the males diminish in size. When laid, the eggs should be removed by snipping off the leaves and transferring them to a nursery.

A large but shallow bowl containing about three inches of well-matured water would do, and the more microscopic life it contains the better. The babies will thrive on this. Later, as they grow in size, food like Daphnia and other small water animals can be given.

Young Newts with developed lungs should leave the water in about 2½-3 months' time. Give them a small island on which to crawl. Also, keep the dish covered with glass or they will surely climb out, even by crawling up

vertical glass. This also applies to the adults, and an escaping Newt quickly dies from exposure in the dry indoor atmosphere.

A useful land platform for the aquarium is a piece of slate supported on an upturned flower-pot so that it lies almost flush. On this place some growing moss and cover it with a piece of curved bark to form a shelter. This method adds little weight to the aquarium, and is economical on space.

When quite at home out of water once more, the Newt colony can be transferred to the kind of vivarium described for Salamanders in an earlier article. This also applies to the young.



Photograph by Wm. J. Howes, F.Z.S., of a male Common or Smooth Newt (*Triturus vulgaris*).

but they should be kept apart to avoid cannibalism. Babies will take White Worm, but very small Earthworms and tiny pieces of meat. Adults will consume almost any animal food of suitable size.

Encourage Hibernation

A final warning. Newts kept active throughout the winter usually show no inclination to breed the following spring. To get them into breeding condition it appears necessary for them to have a period of rest at a low temperature—in other words, a hibernation. For this the vivarium should be stored in a shed or kept in an unheated room during the winter months, taking care to avoid frost.

From My Experience . . .

by R. W. ANDREWS

ONE of the occasional problems in my fishkeeping that I sometimes run up against, concerns that of transferring to a different tank fishes which have been raised from an early age to maturity without previous disturbance of this nature. The fishes' tank may be almost identical in arrangement to the original, even to a partial transfer of the water, yet some types of fishes, after making the change-over, will start to lose condition or even display some variation in behaviour.

Characins and Minnows

The social or shoal fishes, such as various species of Characins and Minnows, do not appear to be affected by the circumstances in question. It is rather more confined to fishes of any individualistic character, which may possess the instinct to pair up by natural affinity, as for instance the Cichlids. The Angel Fish often provides a classic example of this transfer problem, but in this fish's case, the cause of the trouble may easily be traced to the well-known temperamental nature of the species.

However, the particular case I have in mind concerns just one very fine specimen, *Epilzebrichthys kalloperus*. This fish was housed on its own for several months, its tank being situated in my living-room where both myself and visitors had ample opportunity to admire the fully co-operative front glass display of this not too common fish.

Hasty Retreat

This happy state lasted until the day that, needs be, I had to transfer the *E. kalloperus* to a nearby identical tank in my small fish-room. The fish immediately went into the background plants and even after many weeks had elapsed, it still retained the abnormal shy behaviour of taking cover every time I approached its tank. Apart from the fact that I am not as often in my fish-room as the living-room, I cannot offer any reasonable explanation of the fish's change of behaviour.

It was by sheer chance that I discovered a way to induce the *E. kalloperus* to the front glass again. It so happened that when necessary I used a small, oblong box to prop up the light

shade, and one day I chanced to lay this box down on a shelf which ran along the tank front. The box laying on its side covered only about one and a half inches of the glass above iron rim, yet somehow this small masked area suggested security to the *E. kalloperus* and thereafter on my approach the fish just settled down in a position opposite the box and calmly returned my gaze as I looked down the angle between the box and glass.

Like all creatures, our tropical fishes eventually die, either of old age or other causes—sometimes they even disappear without trace! But the strangest loss of a fish that I ever experienced concerned a Sailfin Mollie. My neighbour and aquarist friend acquired two large-sized and gravid female *M. latipinna*. One of the fish was passed on to me and was given a large, well-planted tank to itself. This female gave birth to three successive broods of young at approximately five week intervals and the last brood were still—at three weeks old—in the same tank as the female, which incidentally had every appearance of producing yet another family, when the tragedy occurred.

Effects of Thunderstorm

Early one afternoon I fed these fish and the female's behaviour was completely normal. Then about an hour later a short, violent thunderstorm suddenly broke. I did not have time to notice the fish during the storm, but immediately afterwards found the female dead, yet none of the youngsters was affected. Next day my friend called and remarked that his counterpart Mollie had suddenly died during the previous day's storm!

It is said that side-light can be detrimental to some fishes. In my experience a species which does not seem to be affected is the *Corydoras paleatus*. A small experiment was carried out with four adult *paleatus*, whose favourite resting place was on top of a flat stone cave, where the fish invariably lay in a row with all their heads pointing towards the front side glass—the only illumination other than top light. For a period of four weeks this side-light was blocked out. The result was that neither during the given time nor after removal of the side cover, did any change in the positional behaviour of the fishes take place.



Betta picta, one of the Genera which includes the well-known Fighting Fish.

Mouth-breeding Bettas Have Recently Arrived

by P. MILLET

DURING the past few weeks some further imports of marine tropicals have been made, both in the Midlands and the South of England. These imports include some more of the colourful Clown Fish (*Anphiprion*), a most popular marine species, two or three Danawal Fish including *Dascyllus aruanus*, a fish barred with black and white vertical stripes, and *D. trimaculatus*, from the Red Sea, an intense black fish with three brilliant white spots. The name is somewhat confusing. Although the fish has three spots, only two are visible at one time; it has one white spot above and between the eyes, and one on each side below the dorsal fin.

It is said that these fishes can be acclimatised to fresh, or almost fresh water, but it is an experiment I should not try to undertake myself with such costly specimens. They mix well with fishes of their own size, but tend to be aggressive towards smaller ones. An unnamed *Chromis* species from Java, which has also arrived, seems to be a lively fish with pleasant, but rather subdued colouring.

The strangest fishes in the present import are

some small Moray Eels, probably of the Genus *Muraena*. These strikingly marked creatures are related to the large voracious Morays which sometimes reach a length of ten feet. These small eels, however, appear to be perfect aquarium inmates; they have good manners and glide around in a fascinating way. They should be provided with a small, dark cave in which to hide, otherwise they may bury themselves in the gravel and become invisible except for the snout.

Named by Boulenger

A freshwater tropical which I have not seen before has arrived in the Midlands. This is a small Cichlid, *Pelmatochromis annectens*. It has been known to science for nearly fifty years, and, like *P. krillensis*, was first named by G. A. Boulenger in 1913. It comes from Nigeria where it reaches a length of some four inches. It is of a rich brown colour and has four dark vertical bars on its sides. Dark spots may be present on the back.

The imported specimens appear to be half

There are three chief Generic names used for the bamboos; they are *Arundinaria*, *Phyllostachys* and *Bambusa*. Plants of the first group produce long straight stems with a plentiful supply of side branches, while the second section has somewhat flattened stems.

There are very few *Bambusa* species and they are often included with the *Arundinarias*. Generally speaking, the straight bamboos are not so hardy as the other types, but among the most useful species which have for long been known as *Bambusa* and are suitable for smaller gardens or where space is restricted there are the following.

B. panula, (*A. panula*) from Japan, is a dwarf plant growing only between one and two feet high. Its stems have a purplish tinge and produce narrow, bright green leaves from two to five inches in length. It is a neat growing subject and ideal for the centre of a bed or for the edge of a strip of woodland, while it is especially pleasing seen near a small pool or pond.

Slender, Striped Leaves

Rather taller growing, is *B. fortunei* (*A. fortunei*), with stems and long, slender leaves usually striped with white; sometimes in fact, there appears to be more white than green.

This foliage generally persists until toward the end of the year but fresh leaves are produced early in the Spring. Although it is of a tufted habit, and therefore needs plenty of space, it can easily be kept to its allotted area by cutting the extra tufts out.

Bambusa metata is perhaps the commonest of all hardy bamboos, although it should be correctly referred to as *Arundinaria japonica*. It is especially suitable for growing in town gardens and has broad glossy leaves, eight inches or more in length, which emerge from the brownish sheaths; these sheaths continue to remain on the stems, in fact, they often seem to envelop them, thus producing the familiar bamboo appearance.

Arundinaria nitida is of dainty appearance, its smallish leaves growing on stems six to eight feet high. It does best in partial shade and is of special value because of its compact growth. Where a warm situation can be provided, *A. anceps* does very well and grows 10 feet or more high. Excepting that it is taller growing, it is similar to *A. nitida*.

A. striatula, from China and Japan, is very hardy and most at home where its roots can run about at will. Its broad, vivid green leaves are sometimes striped with white. Occasionally it flowers and, whilst this can lead to the plant perishing, this is not invariably the case.

The Cane Reed of the United States is *A. macrospora*. It is perfectly hardy and makes dense growth, but unfortunately it seems difficult to establish in Britain.

No *Arundinarias* will flourish in deep shade, although they will do well in dappled light, such as can be found in thin woodland or in places where other tall-growing subjects are to be found at the pool or stream side.

When the *Arundinarias* have been left in position for a number of years, they are usually rather difficult to divide. The thick mat of roots which the plants make becomes very hard and it is often necessary to use a strong implement such as a pickaxe to cut the roots into suitable pieces for propagating.

The fact that the best time to divide bamboos is in the Spring, does mean that the roots recover quickly from the wounds they receive when such divisions have to be made.

Generally speaking, *Phyllostachys* are of less spreading habit than the *Arundinarias*, and are ideal plants for smaller gardens. *P. aurea* has slender yellow stems, its narrow green leaves being grey on the undersides. These leaves, which are produced on stems growing up to 10 feet or more in height, seem to move in the slightest breeze.

P. flexuosa has graceful stems eight feet or more in height, and the leaves turn from bright green to brownish black as the season advances.

One of the finest species of all is the hardy *P. henonis*, which grows anything from six to 12 feet high. The young, somewhat arched stems, are bright green, and change to yellow with age. This is a graceful, valuable plant for Winter effects for, in December, the vivid, glossy-green, luxuriant foliage is often the most showy thing growing by the pool or stream.

Striking Green Canes

P. borayana is also most ornamental, its green canes, changing with age to yellow, marked with purple, thus producing a striking contrast to the sombre tones of many other waterside plants.

For the more favourable place, *P. mitis*, growing 15 to 20 feet high, will also produce some lovely effects when seen in a formal water garden. A couple of plants, placed so they face each other, will often develop so that they form a pleasing "archway" with their graceful foliage.

P. nigra is sometimes known as the Black Bamboo. It will grow from eight to 14 feet according to soil and position. The stems, which are green at first, turn almost black as they become older. The glossy leaves vary from two to five inches in length, and have glaucous-grey undersides.

Another, very different, species is *P. ruscifolia*, usually not more than two feet high. This is an ideal plant for growing near a small pool, and it never spreads beyond its allotted space.

Tropical Reflections

THEY ARE SIMPLE PROBLEMS—

but they present difficulties to novices

by DR. F. N. GHADIALY

RECENTLY I have been helping two beginners to set up their first tank. One of them had kept some Fancy Goldfish many years ago and is an authority on plants, particularly cacti. The other is a bright youngster with a very limited pocket book. The questions they asked and are asking form the basis of this article. Most of my past articles have been mainly directed to the experienced aquarist, but this month I would like to write about the simple problems which may seem silly to us but which are so real and urgent to the novice.

The first point which a man starting fish-keeping has to decide upon is whether he would like to keep coldwater or tropical fishes. Both these branches of the hobby have their own fascination and followers, but it must be remembered that, contrary to what the layman imagines, keeping a tank of coldwater fish is far more difficult than maintaining a tropical tank.

Grass Feeders

Coldwater fishes on the whole are considerably larger than tropicals. They eat more and they stir up the water more. Nothing goes green quicker than the water in a Goldfish tank. To set up and maintain a picturesque crystal-clear tank with these creatures demands much aquatic knowledge. The tropical tank appears difficult to set up and the idea of keeping a tank of constant temperature seems even more difficult.

Once upon a time this worry was justified

but today your temperature control problems are over as soon as you buy a good thermostat and heater. Connecting them up takes only a few minutes and your trader will show you how it is done.

The next problem we have to decide upon is the size of the tank. Many beginners imagine that it is best to start off with "something small", and although this might be true in other spheres, it is not quite true as far as fish-keeping is concerned. A 15- to 20-gallon tank is far easier to maintain than a 5-gallon tank. The greater the quantity of water the more difficult it is to foul it.

Small World of Water

A Goldfish globe contains so little water for the size of fish it maintains that it is well-nigh impossible to keep the water clean. A small tank is only slightly better and is a source of constant work and aggravation to its owner. The smaller the tank the more expert the aquarist required to maintain it.

By long experience aquarists have found that the ideal beginner's tank is one which measures between 2 to 3 feet in length and is about 12 to 15 inches wide and high. The most popular size is 24 x 12 x 12 in. and for a few extra shillings you can buy one 24 x 12 x 15 in. (high). This, in my opinion, is a much more suitable tank and one better suited for growing plants. I consider this to be the ideal first tank for a beginner.

It should be made of angle-iron, preferably galvanized and painted; such a tank lasts for



Blue Gouramis, which make excellent inmates for a tropical aquarium containing the larger fishes.

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Harlequin Fish—ideal small tropicals for a mixed tank.

years without rusting. For those who can afford it and desire to try a larger one, a tank 3 ft. x 15 in. x 15 in. would be suitable, but this, I feel, is about the maximum permissible size for a beginner. Though it is true that larger tanks are easier to maintain than smaller ones because of the large quantity of water they hold, there are other complicating factors to consider.

Their terrific weight, special planting and laying-out problems, the need for larger fishes to make an attractive display and the difficulty and work involved if the water and gravel are fouled makes very large tanks unsuitable for beginners. There is, as I have pointed out, an optimum size; avoid anything much bigger or much smaller. The setting up of the tank is an easy matter and is described adequately in numerous excellent books. It is, of course, hopeless to start fishkeeping without having first read at least one or two books on the subject.

Community Aquaria

The next question that arises is the type and number of fishes. Most people start off with a mixed collection—what is usually referred to as a community tank. If the community tank is to be a happy, peaceful one, then fishes of approximately the same size and temperament should be introduced in the tank. Huge Three-spot Gouramis and Siamese Fighters do not mix well with tiny Neon Tetras.

When I started fishkeeping a friend of mine pointed out that there were two sorts of community tanks and I could have my pick. The rough house and well-ordered establishment. If you want the former (and there is no reason why you should not, for it is as interesting as the other), then get together large Gouramis, Swordtails, Australian Rainbows, Fighters, Rosy Barbs, Angels and similar fishes, but do not expect tiny Neons to survive very long in

such an environment. On the other hand, a very beautiful, peaceful tank can be set up with Neons, Glowlights, Harlequins and similar fishes.

Points for Guidance

There are two guiding principles to follow: (1) see that all the inmates of the tanks are approximately the same size; failing that, at least be certain that no fish is so small that it will form a morsel of livefood for one of the bigger ones, (2) for the best results, it is necessary to keep only fishes of similar temperaments together. The graceful, slow-moving Characins are not going to be happy in a tank full of large Swordtails or Barbs dashing about wildly.

It is often recommended that the beginner should start off with a few cheap livebearers such as Guppies, Platies and Swordtails and learn to keep them before he buys more expensive fishes. There is, of course, much truth in this statement but it must be pointed out that the so-called cheap livebearers are actually less hardy and hence more difficult to keep than Glowlights and Neons. If you can afford to gamble and are prepared to take the risk, then there is no reason why you should not start off with the more expensive varieties.

Learning the Basic Principles

Having set up the first tank one must call a halt to all purchases for at least two or three months and learn the art of feeding and general management. It appears deceptively simple, and all novices think that it can be gleaned quickly from a book or from an aquarist friend. This is definitely not so; only experience, usually of the bitter kind, soon shows that we have much to learn.

The next most important step which many novices fail to take and which causes so much grief and loss is the failure to provide a quarantine tank. There is no such thing as a one-tank aquarist. Before a man deserves this title he must, in my opinion, have at least two tanks: a community tank and a quarantine tank. Having got together a healthy collection of fishes, it is imperative to see to it that no disease is introduced from outside.

Quarantining New Fish

This can only be achieved by quarantining all new piscine purchases in a separate tank. Details of diseases and methods of quarantine may be obtained from text-books on fish-keeping. Until a quarantine tank has been set up, no new fishes should be bought. Failure to observe this rule is the most common cause of beginners giving up fishkeeping. You cannot go on obtaining fishes indefinitely and placing them straight into your community tank without coming to grief sooner or later.

EGYPTIAN MOUTHBREEDERS

"Safe" members of a community tank, despite their aggressive looks

by "OSTREA"

IT IS now nearly eight years since my dealer rang me up to say he had some Egyptian Mouthbreeders, and needless to say I was interested. But I could not think of any animals deserving this appellation, let alone such highly developed ones as *Haplochromis multicolor*, sometimes known as *H. strigilgera*, or as *Paratilapia multicolor*. To give it its full designation, see the description of the Leeri Gouramis in the May issue of FISHKEEPING as far as the Order—Perciformi, and then, substitute—Sub-order, *Percoidae*; Family *Cichlidae*; Genus, *Haplochromis*; and species, *Multicolor* (Schöller).

Of course, "Mouthbreeder", I discovered, is a misnomer; "mouth-hatcher", or "mouth-incubator" would be far more accurate, if less euphonic. These fish are indigenous to Egypt where they haunt the lower reaches of the

The overall colour is greenish-brown, with irregular dark marbling along the lateral line areas, the sides being shot with quite bright colours—red, orange, and blue. The dorsal fin is yellowish, and in the male, there is a sub-marginal dark green or brown band and one of striking pale blue.

When this fin is carried fully played, as it usually is, the little fellow looks quite handsome. The male's anal fin is tipped with red, and a further point of differentiation between the sexes is that the ventral part of the female's body is yellowish—much paler than that of the male.

My experience with these fish—I have had eight of them, and even observed spawning, in a 36 x 12 x 15 in. community tank—is that they are quite harmless with species of their own size, and can fend for themselves very



Pair of popular Egyptian Mouthbreeders (*Haplochromis multicolor*).

River Nile and its delta. They are rather dumpy, bullet-shaped little fish, rarely exceeding 2 1/2 inches in length, and give an impression, quite justified, of impudent aggressiveness.

The female is somewhat larger than the male, and the bones of her head, and lower jaw in particular, are more heavily developed. In both sexes, the head is relatively large and pug-nosed-looking.

well against much larger fish. If adequately fed they are not aggressive, but a male will bravely drive off any fish that attempts to get at the eggs whilst the female is picking them up.

I have never observed them attempting to uproot plants, and think that they look best in a tank thickly planted with Dwarf Sagittaria and Vallisneria. They are very active fish, not at all shy, and do well at a temperature of

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Front view of the alternative arrangement described by Mr. Baldwin. Photographs, R. Skipper.

advantage of any front light which shines through. The rockwork is of well figured Westmorland stone, and it is laid in the tank to form deep troughs of gravel for the background plants, the gravel being at least three inches deep at the back. This gravel is of ordinary aquarium type.

An Alternative Arrangement

In this second design I have included some medium-sized pieces of grey Devon rock, which I collected whilst on holiday in North Devon and it is matched with grey gravel, well sifted and washed, from the same area. Six plant species are used. In the left and right background are four large Amazon



Close-up of the alternative aquarium layout showing the sump in front.

The fish are *Hypheosorocyon serpa* but, when it was hoped to take the photograph the Serpa refused to show themselves to advantage, so a netful of young yellow Wagtail Platies were added, which made half the Serpa confident enough to be photographed by Roy Skipper.

Sword plants, in the centre background a clump of red-brown *Cryptocoryne nevilli*, behind a low wedge of rock, directly contrasting with the small group of bright green *Acorus*, planted along the front of the rock.

To the left of the centre is a thick group of *Cryptocoryne beckettii*. On the right of the centre are a dozen stems of *Maculatum* (Continued on page 555)

THEY PROVIDE FRY WITH REGULAR FOOD SUPPLIES

by T. PAIN and J. A. WILLSON



Specimen of *Pila orbata* with operculum removed.

A NUMBER of Apple Snail species, largest of freshwater snails, have been successfully reared in tropical aquaria. They have a world-wide distribution within the tropics, being found in Siam, French Indo China, the Philippines, the Celebes, the Malay Peninsula, Malay Archipelago, in the four Greater Sunda Islands, in the Lesser Sunda Islands only in Bali, Lombok and Sumbawa, India, Burma, Ceylon, Madagascar, tropical Africa, Central and South America, and from Florida and the West Indies to the Argentine.

Two Distinct Genera

The family *Ampullariidae*, to which these snails belong, is divided into two genera—*Pila* found in the old world tropics and *Pomacea* in America and the West Indies. They may be distinguished one from the other by reference to the operculum, by means of which the snail can close the aperture of its shell.

In *Pila* this appendage will be found to consist of a hard calcareous plate, which in most species fits tightly into a groove in the mouth of the shell. In *Pomacea*, however, it is thin and horny and fits well up into the interior



Pila wagneri from the Tana River, Kenya. Light in the lines above the aperture shows the lines above the aperture of the shell.

of the aperture when the animal withdraws into its shell.

These snails can attain, under natural conditions, proportions which are truly gigantic, *Pomacea maculata* (Perry) from the River Amazon being up to 6½ inches in length. The animal has long, thin tentacles, the eyes are at the base of the tentacles on small peduncles. The mantle cavity (that part of the animal which extrudes from the shell) is divided by a vertical longitudinal ridge into a branchial (right) and a pulmonary (left) part, so that it can breathe in the air as well as in water.

At the left side of the body the mantle edge is folded into a breathing tube or siphon. By means of this funnel the pulmonary part of the respiratory organ can communicate with the atmosphere, even when the animal is immersed in water.

During dry spells the animals burrow in the sand, close their shells with the operculum and activate until conditions are favourable for them to come out again. The sexes are separate and breeding takes place at the onset of the rainy season. Male and female meet at the water's edge just above or below the surface. They are oviparous and the eggs are laid on floating plants, reed stems or branches just above the water level.

Some species dig a hollow in the ground in which to deposit eggs. As the eggs are very sticky when first laid, they adhere to each other forming a globular or semi-globular mass. Soon after they are laid the exterior skin of each egg hardens to form a calcareous shell. Each egg mass can contain several score of eggs, and in large species several hundred.

The animals are herbivorous, but occasionally take decaying animal remains as food. The common Indian "Apple Snails" (*Pila orbata*) sometimes make long excursions over land in quest of more abundant food. At such times they crawl very slowly on dry ground and leave a definite track due to the

sticky secretion of the sole of the foot. During these vagrancies on land the animals breathe by means of their lung chamber.

Although a number of species of *Ampullariidae* have been kept in tropical aquaria in Germany and reported upon in scientific journals published in that country, only one, *Pomacea canaliculata australis*, appears to have been successfully bred and reared in Britain. A thriving colony has been kept for some time in the Insect House at the London Zoo, under the name of *Pila flauca*!

There are, however, several instances on record of these snails having survived journeys of many weeks when packed dry, in view of which the introduction into this country alive of other members of this species should not prove either expensive or difficult. A specimen of *Pila wagneri*, collected in Nigeria, arrived safely five weeks later packed in cotton wool. It was resuscitated in water and kept alive until it died a natural death.

Source of Infusoria

Because of their voracious appetite *Ampullariidae* do not make ideal aquarium inmates, one snail would completely wreck a furnished tank in a few hours. Kept alone, however, in a tank, and an old glass accumulator is admirable, they are a reliable source of infusoria for the fish breeder. These snails can be kept at room temperature, although, of course, they cannot stand extreme cold. They can be fed on lettuce or young dandelion leaves, and will also take cabbage, although when fed on the latter diet they rapidly pollute the water.

When infusoria are needed the tank containing the snail is brought up to the temperature of the "fry" tank, and the rise in temperature will increase the snail's activity and appetite, the result being a regular and substantial supply of food for the fish fry. On no account should a snail be placed in the tank containing the



Pomacea canaliculata australis from the Rio Parana, Argentina, showing the operculum drawn well up into the aperture. Photographs, J. A. Willson.

fish eggs or fry as it might devour them. One *Ampullariidae* will be found ample to supply the infusoria needs of the average aquarist.

***** Fish Philately *****

***** Fish Philately *****



Barred Surgeon

FISH of the family *Acanthuridae* are variously known as Tangs, Surgeon fishes, Doctor fishes and Lancefishes. They abound in all warm seas, particularly in tidal pools, the centre of distribution being the East Indies.

Most Tangs are dull brown in colour, but some are brightly ornamented. The principal genus, *Acanthurus*, is characterised by sharp, knife-like spines which point forward and can be dropped into a sheath on each side of the tail. It is these spines which are the origin of the various popular names: they are a potent weapon of defence against anything, fish or man, that seizes them by the tail. These fish can only be handled alive at the risk of severe cuts from the lashing tail.

This 3-escudo stamp, another in the series issued in 1951 by the Portuguese East African colony of Mozambique, shows the Barred Surgeon Fish, *Acanthurus triostegus* (the generic name is misspelled *Acantharus*), against a background of turquoise blue.

A. triostegus is a ten-inch member of the family from the coastal waters of Japan, Polynesia and the Indian Ocean. *A. lineatus*, a showily-coloured species of the coral reefs, is said to be poisonous. Its yellow body is decorated with blue stripes.

JOHN WAKEFIELD

***** Fish Philately *****

BREEDING TROPICAL EGLLAYERS

Corydoras Catfishes in Great Demand

More aquarists should breed these interesting scavengers

says D. B. McINERNEY

EVERYONE has favourites, and the aquarist who keeps tropical fishes is no exception. One prefers a species because it is beautifully coloured; another is taken by a streamlined shape; some find that a tame, peaceful fish becomes a restful pet; others have a fascination for an outstandingly bold, savage fish. Fast swimming shoal fishes have their adherents, as do some other species strictly the opposite, which stay almost stationary in midwater.

The *Corydoras* do not fit into any of these categories, yet they are one of the most popular groups kept. Why? The answer is utility, for they are undoubtedly first-class scavengers. They must rank among the world's best sellers, in each community tank. There are never enough to go round, and consequently they keep up their price. Even today the *Corydoras* are so rarely bred in captivity that 99 per cent of the stocks are imported, not only into England but all over the world. So heavy was the drain on these fishes that the authorities in Guyana and Venezuela, where they come from, have had to restrict exports to preserve them from becoming extinct.

Easy to Breed

It would be most profitable to anyone having the time, to study and learn all about these fishes, so as to be able to breed them regularly and in quantity, and the fact that it has been accomplished occasionally proves that such a thing is possible. Many of the *Corydoras* are easy to breed, and it is surprising that comparatively few people concentrate on them.

Though not beautifully coloured the *Corydoras* have many points in their favour. There are innumerable species to try, most of which are attractively marked. They are not

the least aggressive, even with tiny fishes; on the contrary they are somewhat shy and timid, but once settled down happily, they become amusing and carefree, and can be very long-lived. I had one that just capped 17 years. They are seldom attacked by larger fishes, for they are protected by an armour of bony plates instead of scales, making them well-nigh invulnerable. The front spines of the dorsal and pectoral fins are extremely hard and sharp, and when stiffly erected can be formidable in defence.

I well remember diving my hand down to



C. julii, one of the most attractive *Corydoras*.

catch a *Corydoras* in one corner of a tank, only to run his sharp dorsal spine under the nail of my finger; it penetrated like a needle and ached and throbbled for so long afterwards that I am convinced that it was not only sharp, but poisonous, and I now take great care not to let it happen again.

Corydoras have another advantage: they seem almost immune from *Ichthyophthirius* (White Spot) as well as "Velvet", no doubt because their armour-plating is too impenetrable. However if they are in a tank which becomes infected with White Spot, beware of raising the temperature too high as a cure, as *Corydoras* do not like heat and may be the

first to succumb to this treatment. If the temperature must be raised remove the *Corydoras* first and put several into a large jar or basin, and then look down on them from above. Males, it will be seen, are more torpedo-shaped, being widest just behind the gills, after which they taper to a point at the tail. Full females have a perceptible bulge of the pectoral fins, and are then more diamond-shaped.

Difference between Sexes

To breed *Corydoras* I find that they should be at least two years old. Sexing is difficult until the fish are adult, then the males usually have higher, more pointed, dorsal fins. Perhaps the safest method is to put several into a large jar or basin, and then look down on them from above. Males, it will be seen, are more torpedo-shaped, being widest just behind the gills, after which they taper to a point at the tail. Full females have a perceptible bulge of the pectoral fins, and are then more diamond-shaped.

Condition your pair before attempting to breed them, and to do this divide a medium-sized tank in half with a sheet of glass wedged by channel rubber. Separate the male from the female one on each side, so that they can see each other but not come into contact. Feed them for a week on chopped fresh garden worm. At the end of the week set up a 24" x 12" x 12" breeding tank, cover the bottom with an inch layer of well-washed fine, in-grade sand, and fill up the tank with fresh tap-water in hard water districts. Others must aim at water with a pH of 7.0 to 7.6 and a hardness between 180 and 200 p.p.m.

Even Temperature Needed

Adjust the thermostat to operate around 69 deg.F., but do not let the temperature rise above 72 deg.F. Now plant the tank with a dozen nice clean healthy *Cryptocorynes*, either *baeueriana*, or *coriata*, and next morning (preferably Saturday or Sunday) so that you can be present) introduce the breeders. In half an hour go back and have another look. In all probability the male will be following the female closely wherever she goes. When about to spawn he will swim over and around her head, quivering all his fins excitedly.

Soon spawning will start. The male now hovers just above the female's head, and presently she will raise the forepart of her body so that her mouth touches his vent. As he ejects his sperms she takes them in her mouth, and swims off around the tank scrutinizing the glass walls or the leaves of the *Cryptocoryne*. During this round of inspection she clasps her ventral fins together beneath her body, so that they form a conical-shaped pocket, and in one instant this will be empty, and in the next, you can see it contains four or five eggs. Then spitting

out the sperms on the selected site the female turns upside down and, opening her ventral fins, presses her body up underneath a leaf, or sometimes against the side of the aquarium, so that the very adhesive, largish eggs stick immediately, and then she swims away. Now the male starts fluttering around her once again, and the whole procedure is repeated every three or four minutes, and with a good pair may continue for eight hours on end.

Once the parents lose interest in each other and start grubbing in separate places in search of food, you may as well remove them from the tank. There may be as many as 500 eggs in all. The parents will not eat these, but since they do not tend them in any way, their presence is no benefit, and we need to disinfect the water very slightly to kill off possible enemies.

Destroying Infusoria and Bacteria

To do this add several drops of 5 per cent aqueous solution of methylene blue, until the water in the tank is a light royal blue in colour. This kills off *Infusoria* and bacteria which may puncture the eggs, allow water to enter them, and cause fungating. Even though you take this precaution a day or two later practically every egg you can see may have turned opaque white, and be starting to grow a furry fungus on its exterior.

Do not despair. Ignore these and wait five or six days. Then examine the sand very carefully and you will probably see a tiny fry move a short distance. Continue to look and you may see another, then another, then several, and probably you will have 100 to 150 fry in the tank, all healthy and searching for food.

Give them some *Infusoria*, two good jars worth daily, and in three or four days add a pinch of the finest dried food obtainable. A day or two more and you can start feeding Mikros-worms, increasing the quantity for a fortnight.

By now the fry will be as large as new-born Platies, and from the on will grow rapidly on dried food and chopped Grindal worms. In two months they will be nearly 1 in. long, and you will be mighty proud of them.

Salient Points

To recap.: the main points are: Two-year-old breeders, conditioning very important, a thoroughly clean tank, and clean, fresh, slightly alkaline, moderately hard water—the old theories of thick muck over the bottom of the tank are out—malm probably contains bacteria, and any egg which takes four or five days to hatch is open to attack for this comparatively long period, giving ample time for bacteria to do their worst, so reduce the risk with methylene blue.

SPAWNING MEDIA FOR GOLDFISH BREEDING

By R. J. AFFLECK, M.Sc.



Brantlehead Goldfish, a variety without a dorsal fin.

MANY different kinds of spawning media are available for Goldfish breeding. Dried willow roots, raffia, live aquatic plants, particularly *Elodon* and *Myriophyllum*. The author's favourite is blanket weed which has been well washed. The "weed" should be pulled into small pieces about 1 in. long and thrown into the tank to form a carpet on the bottom of the tank.

After a bright day the "weeds" may float to the top but if a spawning is likely to occur on the following day the bubbles of gas trapped among the threads should be shaken out and the "weed" pushed down to the bottom.

Numerous aquarists find that their fish do not become ripe early in the year and they have to wait until May for the first spawning. These late spawnings may be due to a number of causes, the most important of which are: unusual weather during the preceding year, low temperatures during the previous autumn and for the two months before spawning, and lack of sufficient light.

It should be remembered that even if no livefood is put into an outdoor pond it will occur naturally and supplement the diet of

Pearl Scale Goldfish. Photographs on this page by courtesy of Tachibana Tropicals.



artificial food. The quality of the eggs produced depends on the diet of the female, and fish kept indoors and fed exclusively on artificial foods produce poor-quality eggs.

When the selected pair are in breeding condition they should be transferred to the breeding tank and given worms and wheat-germ food. An experienced aquarist can judge by the vigour of the driving if spawning is likely to occur on the following day but the weather usually has the final say. Spawning usually begins early in the morning of a bright day but occasionally very ripe fish will spawn on a dull day when their activities are not very vigorous.

Half-hourly Removal

As eggs are laid pieces of blanket weed containing eggs may be cut off under water with scissors, floated into a bowl and removed. As spawning proceeds, the eggs should be removed in this way about every half-hour. If, however, it is not possible to remove the eggs as they are laid, a fair percentage of them wrapped up in the blanket weed should escape from the mouths of the spawning fish. After spawning, the parent fish should be removed and separated.

When spawning has been completed the blanket weed with the eggs should be distributed amongst four tanks and the temperature of the water raised gradually to 70-72°F. The eggs will begin to hatch after about three days and the alevins should be free-swimming with their swim bladders inflated by the fifth day.

Should the fish show no signs of spawning leave them together for a week but renew about a quarter of the water in the tank every night. Some aquarists advocate separating the fish if they do not spawn immediately, but there does not appear to be any evidence to support this view. If the first pair will not spawn, proceed with a second pair.



Breeding Tiger Barbs

I have a stock of Tiger Barbs and wish to try breeding from them. A tank 24 in. x 12 in. x 12 in. in which there is only fine gravel and I propose to place several masses of nylon wool, supported on floats, in it.—(J.D. Liverpool, 9)

You should have no difficulty in breeding Tiger Barbs (*Barbus tetrizonus*). We would suggest you choose fish that are about the same size and age, then bring them to breeding condition. You could try spawning with a large male and a young female, provided the female is in full spawning condition.

When the fish are ready you will notice the female is much fuller in the body. Temperature required is between 70 and 80 deg.F. The eggs are adhesive, so your nylon wool, provided there is plenty, would be suitable.

The adults must be removed as soon as the spawning has finished. Eggs should hatch at the above temperature in about 38-40 hours. We would suggest that fresh tap water be used for spawning; this helps to avoid any harmful bacteria that might attack the eggs before they have a chance to hatch.

Culturing Infusoria

I should like to try breeding tropical egg-layers and should appreciate it if you could indicate the best ways of culturing *Infusoria* and what quantities to feed to the fry.—(W.T., London, S.W.3.)

There are many methods of artificially culturing *Infusoria* but here are two of the best: (a) Crush up some lettuce leaves in the hand and then place them in a bowl of fresh tap water. If left in moderate light for about 72 hours *Infusoria*, mainly *Planorina*, will form. This culture should last for about 7-10 days.

(b) An *Infusoria* culture can also be made by boiling hay and then straining off the water into jars. If this water is placed in a container, mixed with pond water until it shows an amber colour and then placed in a light position, *Infusoria* will be produced in reasonable quantities within about 72-96 hours. Again, the culture should last 7-10 days.

The amount to feed will depend upon the number and type of fry, but as a rough guide a 2-lb. jam jar of heavily-charged *Infusoria* culture will be necessary for about 150-200 fry over a period of approximately six to eight hours. Obviously, as the fry grow larger, they will need proportionately more *Infusoria*.

Care should be taken not to overfeed and, to

obviate this, frequent tests should be taken of the water in the breeding tank so that you can be certain the *Infusoria* are not going the upper hand.

Growth of Algae

I have two 24" x 12" x 12" tanks, both illuminated for 12 hours each day with two 40-watt bulbs. In one aquarium the growth of *Green algae* is quite normal but, in the other, *Blue-green algae* is forming rapidly. The plants in this tank appear to have stopped growing and, in a few cases, are dying off.—(S.H.H., Bingley, Yorks.)

Unfortunately you have not stated the position of the tanks, whether they are on a stand together or in different places in the same room. It seems certain that the *Blue-green* algae is being encouraged by too much light.

We would suggest you use two 25-watt bulbs for a period of eight hours, or the two 40-watt bulbs for not more than six hours. Once established, *Blue-green* is extremely difficult to eradicate. Normally it is best to completely strip the tank, sterilise it, and restart with new compost, plants, etc.

There is one type of Catfish, *Plecostomus pleurocatus*, which will clear a tank of *Blue-green* algae in quite a short time and, having done this, will live happily as a community fish.

To save stripping the tank completely you could try removing as much as possible of the algae from the plants, etc., with a small, fine net, and siphoning the residue off the bottom. If this is done regularly and the lighting reduced, it may cure the trouble.

Accumulator as Vivarium

Could European Tree-frogs be kept in an accumulator jar measuring 14 in. x 11 in. x 10 in.? What would be a suitable plant for such a vivarium and its overhead artificial lighting desirable?—(M.W., Birmingham, 20.)

A suitable plant to keep in your converted accumulator tank would be a potted ivy or geranium. Another good house plant is *Philodendron* which may be bought in most flower shops. The kind of plant to aim at is one which tolerates indoor conditions and has fairly broad leaves for the Tree-frogs to sit on.

Cover the tank with a tight-fitting frame of fine mesh wire or perforated zinc. Overhead lighting is not essential, provided that the tank is placed in fairly good light. Avoid direct sunlight as this may lead to overheating.

It is a good thing to spray the leaves from time to time with fresh water. For food, almost any kind of live insect, especially those that can fly, can be provided.

Water Analysis

SAMPLES should be sent (NOT delivered by hand) in a clean pint bottle, well packed, to "Fishkeeping" Analyst, 12 Feathered Lane, Addington, Surrey, together with a fee of 5s. per sample. Name and address of the sender and details of prevailing conditions should accompany each sample sent. Post-mortem examination of fishes cannot be undertaken under this service and enquiries must be sent to our Analyst with samples of water.

Playing with Sea-horses

Sea—In 1957 the underwater swimming was much better than in the previous year. The water was mostly clear, even in our bay, which is open to the sea and the prevailing winds.

I also had the chance to go to the beautiful coral gardens I wrote you about two years ago. It is such a long journey there but worth the time and trouble because the beauty of corals is hard to describe. The fishes are wonderful everywhere. I discovered that we had quite a lot of sea-horses within easy swimming distance of my house. I always imagined they lived among water plants of which we have none in our bay.

The sea-horses seem to have no speed and are easy to catch. We were swimming in the main cove not far from here, so-called because when Hong Kong was not so over-populated the turtles used to lay eggs there. The man I was swimming with caught a sea-horse and kept it drifting before him. It was a male, with a large soft pouch ballooning in its middle, probably full of its young.

I played with the sea-horse for some time, and it hooked its tail over my finger, until it thought itself arrested, so-called because when Hong Kong was not so over-populated the turtles used to lay eggs there. The man I was swimming with caught a sea-horse and kept it drifting before him. It was a male, with a large soft pouch ballooning in its middle, probably full of its young.

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Starting with Marine Species Sea—I have read with interest the various comments in *Fishkeeping* on Marine Aquaria. Following a talk by Mr. H. J. Vesper on the subject to our local club I decided to try my hand. A recent holiday at Selsey Bill enabled me to obtain a few specimens, i.e., one marine Sickleback, two adult and two young Pipefish, one hand flat and three other fish of a species that I was unable to identify. All except the young Pipefish have been kept in an old glass battery jar in about 85 in. of water with an aerator working 14 hours per day.

Decorative Aquariums in the Home

(Continued from page 548)

Hydractinia and, to finish off the extreme left and right front corners, two thick plantings of *Bacopa* (*Hydractinia*), which will probably grow a lot taller but will frame the "picture" of the tank and not hinder the view.

The set-up enables me to slope the gravel from right to left and to go step it down from the back of the tank to the front.

The three rocks in the immediate foreground form the sides of a well or sump which is very convenient. I use a feeding ring direct above this and, as there is only a very thin layer of sand in the sump, the malm and uncaten food can be removed with a siphon tube.

If necessary, the thin layer of sand can be pushed to one side with a glass scraper exposing the bottom glass, enabling me to remove all debris without blocking the tube with sand which can be most irritating. A close-up of



We like to have your views but please keep letters to a reasonable length. The Editor does not necessarily agree with the opinions expressed.

It is now some three weeks since I returned from holiday and while I have lost the three unnamed fish (one was about 4) in. long through my inability to find the right food for them, and one Pipefish, the remainder appear quite happy. Just over a week ago one of the Pipefish dropped six young, but although I managed to keep two of them alive for a week they have all succumbed.

At present I am feeding the Pipefish on Brine Shrimp and the Sickleback and Sand Eel on chopped earthworms which they relish. The Sand Eel in particular almost goes berserk when a piece of worm is dropped in the tank, swimming all over the place in search of it.

I look forward to reading more articles on Marine Aquaria and would be particularly grateful if you could recommend any publications dealing with the identification of British Shore Marine Fish.

ROBERT LISTER,

(Thank you for your interesting letter. We hope that the list of books sent will help you in your first attempt to set up a marine aquarium.—Ed.)

this sump arrangement is shown on page 548. The fish are Salmon Discus, the slightly bigger ones are the parents; the others are their offspring, which I bred.

Incidentally, in these designs I have called the various *Cryptocorynes* by names they are generally known by in this country and have not attempted to bring them in line with the latest nomenclature for this genus.



N=C. nebulosa, X=B. "Bacopa", M=M. rotundifolia, A=Acorus, B=C. beckettii, O=Amazon Swords.

Midlands Miscellany by W. L. Manderville

It is pleasant news that the Tamworth & Leichfield A.S. has renewed its activities. In the past their displays at Leichfield Museum and Art Gallery, maintained for a fortnight with free admission, were favourably commented upon by many visitors. Leichfield is so well situated and maintain such a display was no mean task for Messrs. E. R. Wood, J. Saunders and H. Thompson who shared the main burden of the show duties. Wolverhampton, Walsall and Birmingham are adjacent to Tamworth & Leichfield A.S. and a few car parties from these societies to their assemblies would be very encouraging.

From Mr. L. C. Hathaway, of Nuneaton, comes news that his society's participation in the Nuneaton Horticultural Show. In addition to exhibits of fishes and pond life, decorative water in the form of a pool, cascade and fountain was featured.

To find the labour and material for such a display is never easy: to do so and to stage it on a Bank Holiday Monday is doubly difficult. It is hoped that the interest shown by the large crowds attending the event will be some reward to Mr. Beasley, show secretary of Nuneaton A.S., and his enthusiastic colleagues.

Piscatorial Psychology

In one of his lighter moments, Capt. L. C. Betts declared that he could detect the coldwater fanciers in an assembly, because their calm placidity contrasted with the nervous excitement of the tropical enthusiasts. He attributed this to the effect on the owners of their varying fishes. "Maybe" tropical bias would substitute "intelligent alertness" for "nervous excitement" and certainly some of the "calm placidity" is absent when a change in the outline of a Shubunkin's caudal fin suggests, but the fact remains that differences as wide as the temperature tolerances of their tanks exist between the two fancies, and show-time discussions appear to

reduce these differences merely to pronouns. Whether it be Bristol, Burnley or Birmingham, the coldwater fancier weighs in with—"What we do is..." whereas the tropical fancier is apt to use "What they ought to do..." But the most effective use of pronouns comes from Mr. "Dack" Smith, the show organiser of M.A.P.S., with his diplomatic—"I wonder if you would do this for me?" On such small things success or failure hangs.

One of the keenest members of the Walsall society is Mr. "Bill" Pickering, manager of the Bloxwich Baths, and a record Channel swimmer. He intends to participate in this year's Channel Race, and Walsall hopes are expressed in verse.

Forget for a time your study of fishes. And no matter how the venture ends, Remember you carry the hopes and good wishes Of all your Walsall Society friends. May inland and smooth waters assist you in making the swiftest of swims to the opposite shore. But fastest of all, the time you're taking to come back again to us safely once more. The characteristic thoroughness with which the Midlands show committees approach their task was reflected in the choice of judges for this year's event, experience being the keynote.

The fancy Goldfish enthusiasts were interested in the decisions of Mr. W. Deere of Luton, and Mr. C. J. Saunders of Westcliff-on-Sea, both very well known and respected by British Goldfish breeders. Tropical fanciers were content with the decisions of Mr. Bruce Inman and Mr. M. Oldham, both of Nottingham.

The keen competition indicated by a satisfactory entry gave these gentlemen a task of some magnitude, and the one or two remarks that many other opinions were expressed on this, as on every other similar occasion, it should be remembered that it was their opinion that was asked for, and their opinion that counted.—W. L. Manderville, 327 Queenlet Road, Gt. Barr, Birmingham.

News from the North-West by "Aquaticus"

FISHKEEPING in North Wales is probably as popular as elsewhere, but owing to the sparse population in most districts away from the coastal towns, any societies that are formed find themselves rather isolated and with quite few difficulties that their counterparts in the Merioneth region. Hence the despatch of a Merioneth reader who, deciding to embark on Australia, found at the last minute that he was unable to dispose of his fish collection and write to me the other month over the difficulty in contacting anyone near enough. All credit then to the few societies that exist in North Wales, although there does not seem to be the co-operation between them that might be of mutual advantage. North and South Wales are separated by too many mountains to have sufficient access to make a Welsh Federation

of Aquarium Societies a success, and there are not enough in North Wales alone for a regional group.

Great credit is due to Mr. H. Warsop of Colwyn Bay, who keeps the local Aquarist Society up to scratch in his town. This society is now in its third year, having started in 1956, and it has grown from the original lucky 13 to a round 20, of which three are juniors. During the Summer the society is holding its regular meetings to Rhos-on-Sea's "Cayley Arms", returning to town in October to meet at the Edelweiss Hotel in Lawson Road, until the following July. Naturally it started largely as a fishkeeping society; but now some of the members are becoming keen on fish breeding, and starting with some of the egg-laying species. They also have raffias for books and surplus fish as a means of

expressing funds. At present they are busy building an exhibition stand for use in various parts of the town. But the town on the whole does not appear to have been as encouraging as it could have been. When Mr. Clayton, the chairman, gave a talk to the holders of this thrilling article report the result was only one member. But similar discouragements face most societies: you have to circulate half the town to gain one or two permanent members! In many mountains and hills run down close to the North Wales coast, most of the water is fast-running streams so that aquarists find *Daphnia*-breeding a little difficult. At Colwyn Bay the chief haunt is the kiddies' boating lake in the local park. Most of the members are much too busy professionally during the Summer holiday season to have time for society excursions, so a September trip to Chester Zoo is planned. Apart from Chester, their nearest society is Llandudno, just one stone's throw away; but unfortunately that society has never been able to take up any of the invitations for joint activities. The most successful items at the fortnightly meetings have been quizzes, twenty-questions and "one minute please". Intending members should contact Mr. Warsop at 8 Aberclyde Road, Colwyn Bay.

The other month mentioned aquarium plants like *Egeria* and *Folliastrum* growing wild in south-west Lancashire. The Rev. C. E. Shaw, an expert botanist in that district, found *Egeria* and *Folliastrum spirale* flowering in the Hollingwood Canal, near Oldham, in May. Only male *Egeria* flowers have been found in Britain; it used to be called *Elodea* there. *Folliastrum* is also naturalised in parts of south-west Yorkshire, as well as near Worcester and in the Berkeley Canal between Purton and Shepherd's Patch in Gloucestershire. Readers frequently ask me where they can find water-plants for their garden fish-pond. Such a request must be to the Water-soldier (*Stratiotes*) whose creeping roots spread easily and produce jets of drooping leaves, and a variety of other plants like white three-petalled flowers. In Cheshire this grows abundantly in twin ponds near a footpath close to Mr. Cooke's farm at the bottom of Heron Road, Meols—the eighth field-gate opening although the gate is absent on the right after Acres Lane, going from the station

towards Three Lane Ends, beyond the anglers' ponds. It also grows at Radnor Mere (Alderley Edge) and is easily transplanted; but unless kept within bounds it quickly chokes a shallow pond. There are several good collecting ponds in the vicinity of Meols. Another source of water plants like Frogbit, *Spartanum*, *Potamogeton*, etc. is the "Figure of Eight" pond, reached by a footpath through the market garden, turning sharp left over the concrete footbridge at the bottom of Farnall's Green (off Heron Road), which curves round a hedge to a fish-gate.

So popular in appeal were the stands of fish tanks put on at Liverpool Show by both the Merseyside Aquarist Society and the Liverpool branch of the Federation of Guppy Breeders, that it is hoped to stage, if possible, a much bigger fish section, even an open northern or federation competition, next year. Ideas are still being sounded by the show authorities, but many feel that the time is ripe for something like the aquarium societies of the north, or at least the north-west, to hold one of their annual gatherings here. I have discussed the idea with the show secretary, who is very favourably disposed. I also pointed out that the only criticism in the past had been the show's habit of charging the exhibiting societies an electricity bill for heating and lighting their tanks. This is the only big show year August has the lack of a good section of water-plants, other than one trade stand by a leading firm.

Approval of the establishment of the Bitterling as a wild British fish in Lancashire, mentioned in these notes the other year, it is interesting that it is now recorded from a pond at Hadley Green, Hertfordshire, in A. C. Wheeler's recent list of "Fishes of the London Area", published by the London Natural History Society. Such Mr. New's Paradise Fish in his Macclesfield garden pond in these notes last month made me seek a little information on the variety of non-native fish that aquarists managed to keep in the open in garden ponds in north-western towns. I heard of Guppies being kept out of doors for the Summer season, and Shubunkins, of course, doing quite well.—"Aquaticus", 47 Woodsoor Road, Liverpool, 15.

Scottish Commentary by K. A. M. Robertson

August is usually a quiet month for aquarium societies in Scotland and very few meetings are held. However, this is the time for the various societies to indulge in one or two social events like Edinburgh Zoo Aquarium is booked up with parties from Scotland and the North of England on practically every week-end of the Summer months.

One band of aquarists who are not having such a relaxing time at present are the members of the Scottish Aquarium Society who volunteered to repair tanks and electrical fittings for the next social show in November. Headed by one of the council members of the society, Robert

Gardiner, they have now been working since early in the year in an endeavour to have all equipment shipshape for this annual event.

Over the years the society's stock of tanks grew at an alarming rate. The maximum was reached when at the Silver Jubilee Show in 1952 no fewer than 450 entries were staged! Every year the problem of maintenance crops up and it is found that after the show breakage and leakage are excessive. A suitable planning medium is still sought which will stand up to the rigours to which these tanks are exposed when used for show purposes only.

Last month mention was made of the new

Federation of Scottish Aquarium Societies' first meeting in September. One feature, proving of immense popularity in the Federation is an "At Home" register which has been drawn up by secretaries of small societies and members of members who are prepared to receive into their homes visitors to discuss fishkeeping and, of course, show their own stock. Doubtless many tips will be swapped in this personal contact between fellow aquarists as many of them have their own tanks, bringing the everyday problems of fishkeeping. The September meeting of the Federation will commence with election of office bearers and decide on future general policy. Many aquarists will be disappointed to hear

that Mr. D. O. Carr has now given up his reptiles. Mr. Carr has been most successful in his highlights at most of the shows in Scotland. His collection varied from Pythones and Boas to various small snakes and amphibians. Over the years he has brought reptiles into his collection from many areas of the world and could always be relied upon to assist exhibitors, whether they were held in the far North or the South of the country. This most popular collection will therefore be greatly missed. The consolation is that the space originally taken up by these reptiles will now be used to increase the tropical fish collection which is already quite considerable.—K. A. M. Robertson, 32 Edrell Drive, Newton Mearns, Renfrewshire.

South-West Viewpoint by H. C. B. Thomas

MR. JACK MASON, of Weston-super-Mare, provided plenty of food for thought when he spoke on "The Egglayers" at a well-attended meeting of Bristol Tropical Fish Club on July 17. During the course of his talk, Mr. Mason took his audience through his methods of breeding various fishes from the so-called carry cures such as Zebras and White Cloud Mountain Minnows, then on to several species of Characins to the Cichlids.

While at the meeting I renewed contact with many aquarists whom I normally meet only at shows. In the chair was Mr. Mike Wallace, deputising for Mr. Dick Somers, who was on holiday, while Mr. W. Dillmore was busy judging a table show of molluscs.

Mr. S. J. Davis had set up a very attractive coldwater furnished aquarium to illustrate his talk to the Bristol Aquarist Society on July 14. Although the component parts were of the simplest, the plants had been obtained from local sources and the fish were young Corners and Goldfish. Mr. Davis achieves a most pleasing ensemble in a very short time. While this was

going on I judged a table show of tropical fish, the second of three table shows, to find the winner of the members' points cup.

Mr. L. L. Linton accompanied Mr. Victor Jones to Bath on July 24 where he judged the members' table show of tropical egg-layers. After judging was completed the three of us were invited to form an impromptu brains trust which resulted in a most enlightening evening, for the "Brains" anyway. During a recent visit to the aquarium at the Clifton Zoo I was much impressed by the condition of the fish, particularly some Rosacoras and Glowlights, but do not think it is a purely tropical set up because as well as a marine tank there is a good coldwater display including Bubble-eyes, Shubunkins, Moors and Lionheads.—H. C. B. Thomas, 2 Grove Park, Bristol 6.

Societies and individuals in the areas covered by our correspondents are invited to contact them with news highlights.

Visit to Belgium

ON AUG. 20 a party of 18 members of Hendon Aquatic Society, led by their chairman, Mr. Richardson, together with Mr. and Mrs. Cassman of the Harmond Aquatic Society, made their way to Dover to cross the Channel to Ostend and then by train to Ghent, the City of Flowers.

The party was met at the station by the Committee of the Nymphae Society, led by Mons. Card and Mons. Wauters and went immediately to a nearby hotel for an official reception. During the reception, the outline of a very full week's programme was disclosed and finally a specially chartered train took the party off on their trip. On Saturday evening the party had an opportunity of seeing Ghent by flashlight and on Sunday the sight-seeing was continued with Mr. Card acting as guide. The tour included the Van Dyckes, the Cathedral of St. Bavo's, and St. Basil's Cathedral, which includes the Van Dyckes altar piece. Monday's programme demanded an early start and the party made their way by coach to Brussels to visit the Universal Exhibition.

Tuesday was a day of brilliant sunshine and a happy day was spent on the beaches of Blankenberge. Again, the party went by coach to Ostend and Zeebrugge and returned, stopping at Brugge. Wednesday the party motored to Roeselare, where they were conducted round the famous Rodenbach Brewery by Mr. Van der Beken, another of the club's very good Belgian friends. On this

occasion, the members of the Nymphae Society joined the party and, while tasting some of the beers after the collected tour, the members were all presented with a souvenir china beer mug.

On Thursday, the party went over the border to Holland. The final stop was at Rotterdam where, during the afternoon, the party was able to crowd in a two-hour trip round this great European harbour.

Friday started with a reception at the Toren Hall, where the Belgiums were given by representatives from Holland and Luxembourg. It should be explained that the celebrations were because the Nymphae Society is now 25 years old. After the Burgomaster's speech a telegram was received from the Mayor of Hendon and was read with much pleasure to all present. The party joined their hosts for cocktails. An excellent meal was enjoyed, followed by speeches of greetings and an exchange of gifts.

The Nymphae Society presented to Hendon a trophy consisting of two Aquatic Fish beautifully worked in bronce. The Hendon Aquatic Society, in turn, gave a novel 'stone' which made a most interesting trophy of Guildhall. This, together with a book all about London, was well received. The party went on well into the night and it is hoped that many of the new friends made will be able to visit the Hendon Aquatic Society on Sep. 20, when they, I believe their 900th meeting with a fun convention.

from



Continental Journals

by H. O. MUNRO

IN AN issue of DATZ published a short time ago there is a description of the coldwater fish, *Ranunculus sibiricus*, first described over 90 years ago, but only recently imported alive from the mountain regions of Southern Siberia. This new fish is as much at home on land as in the water, where it spends most of the day. It reaches its adult stage which length, however, is not achieved for many years. In its natural habitat

Publicity for Walthamstow Show

ON August 14th Walthamstow A.S. held its fish and invertebrate show. Well over 400 exhibits were displayed, coming from all over London and the Home Counties. R.B.C. Television News film unit, was present on the morning the show opened. This resulted in several minutes' working all night in order to get photographs ready in time. The efforts proved quite worth while as the news broadcast coverage on TV, was on sound radio.

The aquarium this year was a large pond and rock work by small trees. The setup was fully illuminated by top-lights and footlights. The pond incorporated anemones and had in a water-point tank, the fish furnished Aquarist Club, Hampton Aquarist Club, Brentford and London. A large number of fish were largely carried out with *Daphnia* dianaba, which immediately showed off the Zebraes and Harlequinets, as well as Bicolor Green A.S., with a grey rock and pebbles straight arrangement, the fish being Black Pondkeepers Association. Fish in the individual Cold-

water temperature never exceeds 50 deg.F. but, in vivaria, it will eventually tolerate up to 58 deg. It requires a cage with water and land provided, which is taken on land, consists of small insects, spiders, worms, etc., and it readily eats great quantities. The new's coloration is olive on top with small dark spots, and whitish underneath. The tail is laterally compressed. There are five toes on the hind feet and three on the front feet.

Its development is most interesting; the female deposits approximately 50 eggs in two bags which are attached by one end to a rock or stone. Fertilisation is external.

The larvae are approximately 1/2 in. long when hatched. Metamorphosis does not take place until the third year when the larvae have reached a length of up to 3 1/2 in.

The creatures are not adult until they are five or six years old but they continue to grow for several more years and should reach a considerable age. Provided they can be given the required low temperature—not too difficult a task with our British Summers—they should make very satisfactory and interesting pets.

In the individual Tropical Furnished Aquaria Class Walthamstow's A. R. Chandler took first for the third year in succession. Best Tropical, awarded a Freshwater and Water Lure Diploma, was D. J. Robinson's Texas Cichlid, now a TV personality. In an excellent Breeders' Enthusiasts Class of 23 entries, J. Wyles beautifully managed Neos Tetras took first place. First in the Breeders' Liebepaters was J. Neffman's well-developed Red-eyed Red Swoards.

It was declared in the usual Breeders' Class stipulation that the fish should have been bred during the 12 months prior to the show. Under the new F.B.A.S. ruling that the fish should be not more than 18 months old, not less than 6, entries in this excellent class would have been reduced from 34 to 12.

Best coldwater fish, awarded a FISHKEEPING and WATER Lure Diploma, was a Black Moor, owned by F. Aitens. The Coldwater Breeders' Class was not very well supported, probably due to the early date of the show. Premier position in the Interclub Coldwater Furnished Aquaria was taken by East London Aquarists and Pondkeepers Association. Fish in the individual Cold-



A small section of the Walthamstow A.S. 1958 exhibition. To the left is an ornamental pond and, to the right, club members.

Club Notes & News

All contributors are invited to send reports of their activities for publication. Items should arrive no later than September 15 for the October issue. Fishkeepers who would like to know the name of their nearest society should write to the Editor.



Workers at Watlington making the final arrangements before their August show was opened to the public.

water furnished class was A. H. Pringle's carefully planned tank containing Golden Orfe. Members of the British Herpetological Society demonstrated some of their snakes and other reptiles. Visitors benefited from freely and much interest was created.

First prize-winners in the 26 classes were: Hummelstedt (Amphibian); A. R. Chandler (Goldfish); T. B. H. (Tetra); S. N. Cornock (A.O.S. Anabantid); G. Hodges (Cichlid); T. V. Hill (A.O.S. Carp); D. J. Robinson (Guppy); J. Wylie (Breeder); R. S. Barnes (Fish); J. E. Cobden (Platy); R. S. Barnes (Fish); M. A. Ryan (Hobby); C. E. Berkeley (Chameleon); E. Coulman (A.O.S. Tropical); J. Northam (Breeder's Livebearer); East London A.S.P.A. (Tetra); W. H. Smith (A.S.P.A. H. Pringle (Goldfish); R. S. Barnes (A.S.P.A. Goodbody (Carm. Goldfish); F. A. H. (A.S.P.A. (Brit. Shis.); F. T. Berry (Goldfish); and F. T. Berry (Goldfish).

Shirley Aquatics Ltd.
We regret that due to a printing error an incorrect price was given for *Cryptocaryum citrae* as advertised by the above firm in our August issue. The correct prices should have been 7s and 16s.

Looking into Pollution
OVER 12 speakers will take part in a symposium to be held by the Institute of Biology on September 22-26. The discussion will center round the effects of pollution on living material. They will deal with the effects of pollution on the organisms living in rivers and estuaries, the results of air pollution on affecting plants, animals and man and the new problems arising from the pollution of water, land and air by radioactive substances.

Chameleons Do Battle
LOOKING through the *British Journal of Herpetology* - No. 6, Vol. 2, it is obvious that much of the interesting happens among reptiles and amphibians which passes

unnoticed to all other than those who keep them under close observation. The notes put together in the series described by Norman Lin, while among other contributions Robert Bantam tells how Chameleons (C. Jackson) look their bodies in battle. The observations tend to disprove the opinion of present-day authorities that the horns are not used for fighting, are merely adornments. This journal is published by the British Herpetological Society and is edited by A. A. Bellairs.

Coming-of-Age at Nottingham
NEXT month, Nottingham Aquarist Society celebrates its twenty-first birthday anniversary. The main event will be a dinner and entertainment on October 31. Tickets for this gala evening cost 17s. The programme for September includes meetings on the 9th (Tropical section) including a table show for Dwarf Cichlids and 10th (General Meeting).
During the month the award of the Smith Appreciation Cup will be made for meritorious service to the society. It has been held by different members each year since 1950, the accolade being for 1957 being A. E. Adcock. Who will get most nominations for 1958?
The resignation of Mr. A. L. Kirchin as secretary was received with very great regret a few weeks ago. A founder member and formerly assistant secretary, he has rendered the society invaluable service. Mrs. C. Bilyard, assistant secretary, has undertaken this office until 1959 when nomination for a permanent successor will be made at the March A.G.M.

Keeping in Touch
THE several sections forming the Federation of Guppy Breeders' Societies run their own affairs but give useful support to each other's shows and special activities. Particulars of what is going on in the Guppy world are passed on by means of a regular Newsletter. From the August issue we glean the news that Mr. G. Tansley, Treasurer, and Mr. W. G. Champion, Secretary, have won a gold-jewelled pot, following his success at Dagenham Show. The Federation's annual show takes place on September 27-28.

Progress in Yorkshire Association
VARIOUS ideas for helping local societies with speakers and judges are being worked out by the Association of Yorkshire Societies. This body, in its modest size, contains a good deal of useful information.
I twelve societies in the county are now affiliated to the Association and replies are awaited from a further five. Full details can be obtained from the secretary, Mr. R. Winterburn, 15 Woodhall Place, Thornbury, Bradford 3.

Producing Albino Guppies
ACCORDING to G. W. Macrae in the August-September issue of *The Guppy*, breeding Albino Guppies is "an easy job". To be successful, an aquarist should monitor the fact they are double recessive and recognize their inherent tendency to be delicate. Armed with the knowledge and the methods accidentally discovered by G. W. Macrae, it would seem relatively easy to breed Albino specimens to order!
This, the second issue of the magazine, published by the Federation of Guppy Breeders' Societies, contains much of interest to all who favour *Lebistes reticulatus*; its editor, and the contributors are to be commended on an interesting publication.

Goldfish Society Convention
THIS year the Goldfish Society of Great Britain holds its annual convention at the Meridian Hotel, London, on Oct. 11-12. A programme of speakers, reports and arrangements which, if it is hoped, will appeal to all Goldfish keepers will be given on current trends in the Goldfish industry. Local societies will shortly be receiving invitations and further details may be obtained from the Convention Secretaries, Mr. W. E. Wilson, 57 Constance Gardens, Edgware, Middx.

Nine fish groups were formed at a recent meeting of Devon A.S. to investigate and report on "Preparing fish for shows" and "Breeding Angelfishes". A further group for morone was also formed. Winner in the Scott Trophy table show was E. Seymour. Two new members were enrolled. A display of furnished aquaria was staged on the local horticultural show early this month. Details of the tour to Edinburgh to attend the second meeting of the Federation of Scottish Aquarist Societies will be given later.

Eighteenth annual show of Accrington A.S. took place on Sept. 6-7 at the Town Hall. A brief report of this show will be given in a later issue.

From the 6th to the 9th of this month the Bristol Tropical Fish Club arranged an exhibit of six furnished aquaria in conjunction with the City's horticultural show.

In spite of persistent rain members of Leeds A.S. busquely covered their visit to Dudley Zoo last month, the visitor, Mr. Hallett, took the party behind the scenes in the Aquarium and answered many questions. Plans for the Leeds show are being made and it is hoped to give on a few special exhibits, including a pond.

Meetings of Pigeon A.S. are resumed on Sept. 9. 10.30 p.m. in the Zoo Restaurant. A full programme has been arranged. Enquiries should be sent to Mr. H. M. Blain, care of Pigeon Zoo, Devon.

New chairman of the Welsh National A.S. is Mr. L. Jones, while the new secretary is Mr. M. E. Lewis, 1 Wyvern Road, Cathays, Cardiff.

Five speakers attended the Aug. 11 meeting of Bristol A.S. Mr. R. Summers dealt with home-made fish for aquarium fishes, while Mr. Bill Dutton, a long-standing member, spoke about the balanced nutrition and methods of improving strains of *S. J. Blain*. Winners in the plant table show were S. J. Blain, S. Lloyd and G. Stone.

An amusing item headed "Crime Club" is contributed by Mr. Allen to the Summer 1958 Newsletter of the British Breeders' Circle. This is the first in a series of articles in which members will describe how they started in the hobby. The Newsletter, which contains several other useful items, is available, price 9d. from 11, Ebor, 71 Finsbury Road, London, E.C.4.

Annual show of Dublin Society of Aquarists took place on Sept. 6. We hope to make mention of this event in a subsequent issue.
An auction and a table show were features of the Aug. 11 meeting of Huddersfield A.S. & P.S. Winner in both sections of the show was G. Parsons. The society staged a display of furnished aquaria at the local horticultural show in Valentine's Park over the Bank Holiday. Attendance was good and it is hoped that the membership of the society will increase as a result. The meeting scheduled for Sept. 18 will be devoted to a quiz versus the Roorford A.S.

Five Blue, "Under the Red Sea" and "Voices of the Tropics" were shown at the Aug. 13 meeting of Llantrissill H.A.S. The second annual dinner will be held on

Friday, Oct. 10. There will be no meeting in the youth club that month.

The August-September Bulletin of Guildford A.C. has been sent out. This month's activities include an "At Home" arranged by the president and his wife, on Sept. 10 there is an inter-club table show with the North Hants club. Several members visited Mr. Rundle's fish-house at the end of July and showed great interest in his large collection.

A recent meeting of the Carisbrooke Club, Portsmouth, took the form of a visit to the home of Mr. Summers to see his garden, ponds and fish-house. Members saw Lambhead, Tintinell, Orio, Shubunkin and Redfry developing well. At this month's meeting each member will take along the best fish he or she has bred and a discussion on their merits will take place.

In addition to the home club, two other societies, Peterborough and Northampton, took part in a table show at the last meeting of Corby A.S. This event was part of the East Midlands A.S. table show competition. The position now is that Northampton and Peterborough have one match each to play while Bedford has two. Mr. H. Thompson has won the cup confided to Corby members with 551 points, second being Mr. J. Keweenaw with 572, and Mr. A. R. Poley third with 78.

Recent speakers at Hounslow A.S. meetings have included Mr. J. E. Edwards and Mr. Katrisky. The fact that meetings are now being held in more pleasant surroundings has resulted in an increase in membership.

***** Easy Reference *****	
September	6-14 SOUTHEND, LEIGH A.S.
	11 YEPH.A.S.
	11-13 BATH A.S.
	13 BLACKPOOL AND FYLDE A.S.
	13-14 WILLESDEN A.C.
	16-20 LEEDS A.S.
	20 E. LONDON & A.D. P.A. (HILFORD)
27-28	E.G.B.S. ANNUAL SHOW (BASINGSTOKE)
October	31-Nov. 1 BRISTOL A.S.
November	8-9 BRITISH AQUARISTS' FESTIVAL (MANCHESTER)
	12-15 SCOTCH A.S. (GLASGOW)
	29 REFINAL GREEN A.S. (BLACKNEYS)
***** to Show Dates *****	

A visit to McLean's Aquarium is being arranged and a film will be going to the Heron society's film show this month.
Last meeting of Stratham A.S. took the form of a table show with the Kingston society at Kingston. Mr. and Mrs. W. Hall's Cardinal Tetra secured first prize, contributing to Stratham's total of 640 points as against Kingston's 433. Meetings will be resumed this month to discuss arrangements for the following year's other clubs.

Bethnal Green A.S. will be holding a show on Nov. 29 as part of the Borough of Hackney's display at the King's Hall, Lower Clapton Road, E.5. Show secretary of the aquaria section is W. W. Westgate, 15 Juniper Road, Oak Street, E.2. Entries close on Nov. 1. There are 22 classes in the schedule.

Bristol Coldwater Breeders' Group met on Aug. 1 when a number of 11-week-old Orandas were shown, the majority of which showed excellent colour. Members reported good progress with Shubunkins, Red-tailed Veilfish and Orandas and it was stated that the scheme of pooling and loaning specimens was well worked very well.

Winners of FISHERMEN Diplomas at recent shows include: Dr. J. Scott Clark whose tank of Laser Gouramis was adjudged best-furnished tank at the Aug. 4 Aquarist Society's Show; W. H. Smith, winner of the award for best fish in show at the Runcy Aquarists Society's annual event, with a *Cichlasoma mayeri*; and the Misses Jillian and Joy Mansley whose Goldfish headed their class at the same event.

Yeovil A.S. Outing
ANNUAL outing of the Yeovil A.S. took the form of a visit to the aquariums and gardens of Mr. B. Randle at Bagshot. After lunch the party proceeded to the Highland Water Gardens at Rickmansworth. Members are grateful both to Mr. Randle and the owners of the Water Gardens for this opportunity of seeing their collections.

The fourth annual table show in July was the most successful ever held, there being just under 100 entries. Winner of the Tropical section (104 points) was Mr. R. Stone. The Stainer shield for best fish in the tropical section went to Mr. N. Stainer with Green-laced Guppies. Mr. G. Aston won the Reger shield for the best coldwater fish.
Future activities will include an exhibition at the Yeovil agricultural show on Sept. 11. Both tropical and cold-water sections are being catered for and it is hoped to arouse considerable interest among visitors.

1958 British Aquarists' Festival
PROMOTED by the Federation of Northern Aquarist Societies, the festival takes place in July at this year on Nov. 8-9. Venue is the new exhibition hall, at Belle Vue, Manchester. The society staged a society show, incorporating individual competition by members of societies taking part. Further details will be issued later. Meanwhile, schedules (available for monthly) may be had from Mr. Gen. W. Cooks, Spring Grove, Field Hill, Batley, Yorks.

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Barbs, Cherry	Glass Catfish	Peach Chaperi
Barbs, Checker	Glass Fish	Pearl Danio
Barbs, Nigger	Glass Tetra	Pearl Gourami
Barbs, Nigger	Golden Light Tetra	Palmetostrichoma Kribbianus
Barbs, Rosy	Guppy	Penguin
Barbs, Schubert	Green Rivalus	Parakeet-Black Mollie
Beacon Fish	Green Swordtail	Perry Variatus
Belgian Plat Tetra	Harlequin Catfish	Platinum Tetra
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Black Pleco	Harlequin Silver	Plecostomus Plecostomus
Black Veilfish	Hop Goldfish	Pulcher (Hem)
Black Swordtail	Hyph Costello	Pteralia Riddle
Black Widow	Jewel Fish	Red Nose Tetra
Black-lined Tetra	Kerytho Cichlid	Red Platies
Black-banded Sunfish	Laser Gourami	Red Swordtail
Bloodfin	Lemon Tetra	Red Tailed Black Shark
Bristletail	Leopard Catfish	Red Tail and Red Swordtail
Bristle-nose	Lemon Wagtail Platies	Roseus
Bristle-nose	Lyrta Tails (Blue)	Scorpaena
Bristle-nose	Lyre Tails	Stanes Fighting Fish
Bristle-nose	Malayan Angel Fish	Silver Tip
Bristle-nose	Malayan Goldfish	Spotted Danio
Bristle-nose	Mollies	Thick-Lipped Gourami
Bristle-nose	Mollies Sailfin	White-tailed Mountain Minnow
Bristle-nose	Mollies Shourfin	X-Ray Fish
Bristle-nose	Moan Platies	Zebras
Bristle-nose	Moan Platies	Yellowtail
Bristle-nose	Mouth Breeding Fish	Mozu Danio
Bristle-nose	Neon Gourami	Vallaris
Bristle-nose	Neon Platies	Yellies (1)
Bristle-nose	Neon Tetra	(COLDWATER)
Bristle-nose	Neon Tetra	
Bristle-nose	Neon Tetra	
Bristle-nose	Neon Tetra	
Bristle-nose	Neon Tetra	
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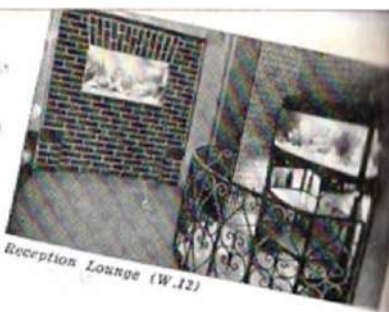
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- Combined dry/worm Feeder with Tray and Sucker .. 2/6
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- Rubber Tubing—ft. 4d.
- Plastic Tubing—ft. 6d.
- "T" Piece .. 1/-
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- Aqua Scissors .. 5/-
- Aqua Tonge .. 3/6

PLANTS

- Vallisneria spir* .. 6d.
- Vallisneria spir* .. 8d.
- Elodea densa* .. 6d.
- Hygrophila* .. 6d.
- Hornwort* .. 6d.
- Bacopa* .. 6d.
- Sagittaria natans* .. 6d.
- Sagittaria micro* .. 6d.
- Ambulia* .. 8d.
- Ludwigia* .. 8d.
- Duckweed* .. 6d.
- Bladderwort* .. 6d.
- Indian Fern (Broad Hair Grass)* .. 4d.
- Amazon Chain Sword Water Clover* .. 6d.
- Crypto Beckettii* .. 1/-
- .. *Willisii* 2/-
- .. *Cordata* 2/-
- .. *Haerdtiana* .. 2/-
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- Water Wistaria* 1/6
- Giant Hygrophila* 1/6

34 PLANTS VALUE 22 6 FOR ONLY 10/- POST PAID

- 6 *Vallisneria* 3 *Ludwigia*
- 6 *Sagittaria* 1 *Water Wistaria*
- 6 *Hygrophila* 2 *Cryptocorynes*
- 6 *Elodea Densa* 4 *Bacopa*

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Guaranteed Strong Healthy Plants

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24in. long x 20in. high

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- each
- New Constat External QK. with Neon .. 21/-
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LIVE FOODS

- Brine Shrimp Eggs .. 2/6 and 4/6
- Cultures of White Worm .. 2/6
- Micro Worm .. 2/6
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- Inches
- 12 x 6 x 6 12/- — 6/6
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- 24 x 12 x 12 50/- 21/- 8/6
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- 36 x 12 x 15 80/- 37/6 —
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- Carriage extra
- Any shape or size made to specification. Installations a speciality.

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- 9d. each
- Clamps .. 1/-
- Carbon .. 1/-
- Glass Wool .. 1/2
- Nylon Wool .. 1/6
- Colorfern .. 1/6
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- Queensborough White Spot Cure .. 2/-
- Vivo Salts .. 1/6
- Sea Salt .. 1/6
- Clarox (Not by post) 2/6
- Liquitox .. 1/9
- Diseasolve .. 2/6
- Brosiam Fertilizing Tablets .. 1/6

BOOKS

- Encyclopedia of Tropical Fishes .. 63/6
- Guide to Tropical Fishkeeping .. 36/6 (J.H.P. Brymer)
- Handbook of Tropical Aquarium Fishes .. 15/6
- Diseases of Fishes .. 15/6
- Exotic Aquarium Fishes (W.T. Innes) .. 67/6
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