

The AQUARIST AND PONDKEEPER

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Editorial

FROM a biological standpoint the preoccupation of some aquarists with the creation of "standards" for aquarium fishes is not easy to comprehend. Standards and specifications can be produced with advantage for nuts and bolts, bricks, mangles, aeroplanes and atom bombs but there are no standard animals or plants. The conflict there has been over proposed standards for goldfishes put forward by different bodies of aquarists illustrates that in thought alone men are likewise "non-standard."

Goldfishes have great propensity for developing all manner of shapes and forms, and the same is partly true for some livebearers; in order that favoured patterns selected and encouraged by breeders can be maintained unvaried and not lost, some form of blue-print for each variety is probably desirable. But let it not be lost sight of that these fishes are by no means "standard." They will not weigh the same, will not have exactly the same dimensions nor yet exactly the same proportions. Physiological differences between them will be found to be even more marked. The standard fish is an ideal, unattainable in practice. Even more remote from reality is the "standard" drawn up by the eye of an artist and no head for anatomy. Even more chaotic are the "standards" drawn up by two such artists who disagree with one another!

There is a threat, and it is hoped that it will come to no more than this, that similar blue-prints will be made for all our common tropical aquarium fish species. This would be an illogical and pointless development from the practice of having "standards" for varieties of a species. If the "standardisers" are tempted to take this step they will emulate the followers of poor Canute, bravely putting forward their ideals to withstand nature's chosen path. There is so much that can be usefully done in aquarium-keeping that it seems opportune to plead with aquarists not to be misguided by attempts to relegate the hobby to the level of a "fancy."



W. S. Pitt

The beautiful cichlid is *Cichlasoma severum*, sometimes known as the flag or pretty cichlid to American aquarists. It is described on page 77

Fish-keeping Three Thousand Years Ago

by Dr. R. HELLER

I WONDER how many fishkeepers know that in the British Museum in Bloomsbury, London, there is a painting to be seen which is probably the earliest record of our hobby. It is a painting from the wall of a tomb in Thebes in ancient Egypt. The picture dates back to about 1400 B.C. and is therefore more than 3,300 years old.

The subject is the garden of a private estate with several different kinds of trees including date palms. In the centre of the garden is a large rectangular fish pond, surrounded by papyrus bushes and other marsh plants. On the surface of the pond there are a number of lotus flowers, some of them already open, and also several lotus flower buds. Waterfowl resting on the water do not seem to be particularly interested in the fishes clearly visible in the pond.

The fish, as all the other objects in the picture, are very well painted and correctly represented down to the smallest detail. They were identified as *Tilapia nilotica*, a species that can still be found in the river Nile to-day. It is a near relative of the Egyptian mouthbreeder not infrequently seen in our tanks. (I am particularly indebted to Dr. E. Trewavas of the British Museum (Natural History), South Kensington, who kindly identified the fishes for me.)

It is quite obvious that the owner of the pond must have taken considerable pride in it. He commissioned the artist to execute a painting of it on the wall of his tomb so that it should be perpetuated into the life after death. Being of a practical turn of mind the artist did not forget to include the image of a dusky slave girl ready with fruit and liquid refreshment, clearly seen in the upper right hand corner of the picture.

The picture as a whole will look quite strange to us to-day. We must, however, remember that the Egyptian artist was



Photo:

British Museum

Ancient Egyptian painting of a garden pond with water fowl and fishes, dated about 1400 B.C.

most anxious to depict each object as accurately with as much detail as possible, due to the religious belief of his time. Each object had to be represented accurately so that it should be recreated in the life after death in exactly the same shape. That is why the pond is painted as if seen from above; the trees, fishes and water fowl, however, are drawn as if seen from the side.

The reproduction in black and white can hardly do justice to the colours of this delicately executed painting. Anybody interested in this picture, finding himself in the neighbourhood of the British Museum in Bloomsbury and having some time to spare, should not fail to see it. He will find many other objects of great interest. Next to this painting, for instance, there is another one from the same tomb, depicting a scene on the river Nile, with most beautifully and accurately executed pictures of waterfowl and fishes inhabiting the river and its banks.

These are by no means the oldest representations of fishes in ancient Egyptian art. The earliest one known so far, is supposed to date from about 5,000 B.C. It is a glazed pottery model of a fish, found in the ruins of the ancient city of Hierakopolis. Very much earlier representations of fishes are known. Pictures of fishes carved on a piece of reindeer antler date back to about 20,000 B.C., as quoted by Dr. Elkan in his letter in *The Aquarist* (February, 1950).

Since records of human activities exist, these records show quite clearly that fishes have held the interest of man since his early beginnings. Is it therefore surprising that we should still be interested in fishes to-day?

(Acknowledgement is gratefully made to the Trustees of the British Museum for kind permission to reproduce the accompanying illustration.)



(From *L'Anthropologie*, Vol. XXXI)

This carved piece of reindeer horn bearing a cave-man's drawings of fishes is a relic of about 20,000 B.C.

IN May, 20,000 tropical fishes arrived from Dutch Guiana in the Dutch liner *Cottica* and were landed at Plymouth. This consignment, destined for British aquarists' tanks, was handled by South Coast Aquatics, Southampton, who have a collector (Mr. E. A. Bowler) in South America.

Seeing the Aquarium at NAPLES

L. R. BRIGHTWELL

NAPLES aquarium has been upon the map since 1872, and though by no means the first aquarium ever, it is the first erected as part of a Marine Research Station under the permanent whole-time control of accredited scientists. The story of how it was built, together with a biographical sketch of its founder, has been told before in *The Aquarium*. Let us take a glance at the building as it is today, when the writer recently enjoyed a spell of work there.

The "Aquarium Neapolitanum" is a big three-storeyed building situated in an exquisite park of lofty palm, myrtle and olivander on the Bay, or Gulf, of Naples. The building is divided in two by a central courtyard, where a cameo and coral seller has staked his claim, and does a large business as the tourist traffic permits. At the time of our visit, August, the thermometer registered 80° F. in the shade. The cameo and coral trade of Naples is what Miss Mowcher would have described as "refreshing trading." Sizeable cameo shells (chiefly species of *Gemma*) are far too rare for trade purposes in the Mediterranean, and local coral is largely fished out. So shiploads of these commodities are imported from the Red Sea, and the merchant, a simple soul, born to be fleeced the world over, accepts these "Presents from Naples" as home products. But the local cameo factories are genuine enough, and the skilled craftsmen well worth watching.

In the spacious laboratories, all marble, granite and expensive local tiling, "tables" are leased, not by private

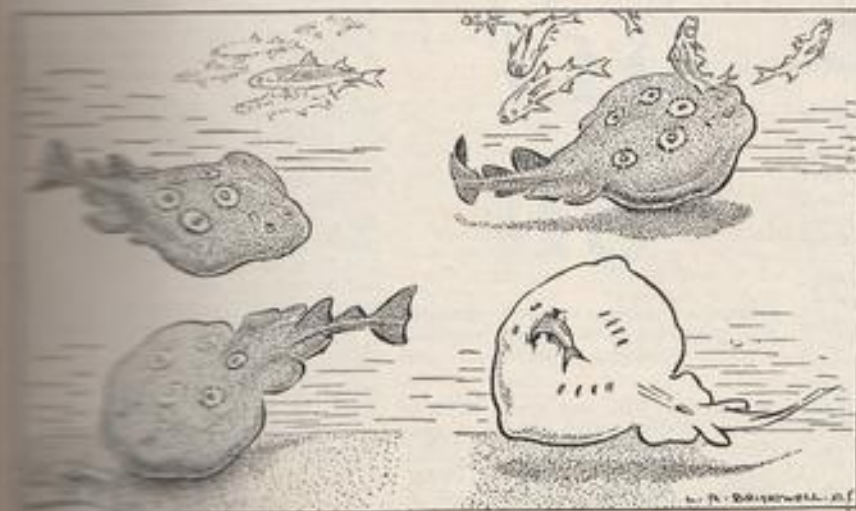


Shocking tactics of a small specimen of the electric ray are used for public amusement and for the benefit of the aquarium staff

treaty as at home, but are applied for via some accredited society, an annual rental being paid for so many tables by divers scientific bodies from all nations. In the verandahed common-room, commanding a wonderful view, delightful luncheons and dinners are served at a nominal charge. Punctuality is requested, and late-comers drop a small fine into a slot in the back of a little hollow earthenware pig. When the pig is replete, he is broken open and his contents expended on a little social "do."

On one side of the central courtyard is a museum, no worse than other aquarium museums. In plain English it is of little value to the student, and unintelligible to the layman. It is sketchy, the specimens are all bottled (and bleached) and the labelling quite charmingly inadequate.

From these gates of learning one re-crosses the blinding sunlight of the courtyard, and falls down a few steps into the deep gloom of the aquarium, lit by the multi-coloured, bewilderingly lovely windows of about two-score tanks. Each tank is provided with a tiled number, corresponding to a number in the guide book. If one is not prepared to lay



Neapolitan species of the electric ray is *Torpedo ocellata*. In these drawings its mode of attack on its favourite victim—the grey mullet—is shown. By means of the electric organs on the dorsal surface of *Torpedo* the mullet is shocked into insensibility and then swallowed.

out five shillings on this fairly well illustrated and quite informative volume, one falls back upon private stores of knowledge, or exerts one's imagination. Most visitors rely solely upon the latter.

But the tanks themselves are beyond praise, offering as they do very fair samples of the riches lying beneath the sparkling azure waves only a stone's-throw away. The Mediterranean being all but tideless, little shore-hunting can be done, but groping amongst the rocks—an easy task in tepid water—and scanning the sea-bed with glass-bottomed buckets, the efforts of local fishermen, and those of a small research vessel, ensure a steady flow of specimens. Like the terrestrial flora many recall species common at home, though larger. But the majority are altogether foreign, and viewed for the first time must thrill the most blasé sight-seer.

Fairy-like Chain

Only here perhaps can one expect to see such fairy-like objects as a chain of *Salpa*, or the extraordinary glassy mollusc known as *Pterotrachea* or allied *Carinaria* rowing themselves about back downwards, the long proboscis looking like a yacht's bowsprit. The many rainbow-hued jelly-fishes of this region are ingeniously housed in tall glass cylinders which minimise their chances of damage. In some tanks, the huge tun shell (*Dolium*) big as a man's head, ploughs its way through the gravel, and the handsome *Murex*, which provided the famous purple of Tyre, is as abundant here as the common periwinkle is rare. With luck too one can see huge beds of coral, in full bloom, or the amazing Venus's girdle, an 18-inch band of glassy, prismatic and very active living tissue, rowing itself about by myriads of ceaselessly lashing hairs.

All the fishes of the colourful markets are here, brightly spotted "bashful" crabs (*Galappa*), edible barnacles and, the year round, the national dish—octopus. Another gourmet's delight is *Scampi*. This may be the common

Mediterranean prawn—*Pennaeus*. But sometimes it is our old friend the Norway lobster, *Nephrops*. Being local in the Middle Sea, it is charged for at the shameful price commanded by the common prawn at home. Every fish shop has its racket!

One huge tank containing the larger fishes is garnished by a shallow basin, on the public side of the glass. In this hides a small electric ray (*Torpedo*). A mild "shock" is always accompanied by feminine squeals and male guffaws . . . signals for the appearance of an aged attendant armed with a clean, dry towel. Another blameless little side-line of unofficial business, like that of the sun-baked cameo seller snoring beside his "local" merchandise in the courtyard.

Blue-Green Algae

MANY fishkeepers are puzzled how blue-green algae manages to get into their tanks. There are a number of answers to this question but one possibility is frequently overlooked. Most tanks have a top cover which is fitted with one or more lights, and considerable condensation forms on the inside of this cover. Some shades have a channel on the inside, formed by the aluminium having been bent over to give a neat finish. This channel is full of condensation and here the aquarist will be surprised to find a very good growth of blue-green algae.

From the cover it is an easy matter for the algae to find its way to the surface of the water, where water plants like *Salvinia* form a mat and assist the algae to gain a hold. Tall plants which reach the surface, such as *Vallisneria* or *Aponogeton*, provide the means by which the algae travels down below the surface. Aquarium covers should be cleaned regularly on the inside to prevent algae getting into the tank by this back-stair method.

Raymond Yates

FRIENDS & FOES No. 4

TUBIFEX

(From Latin *tubi*—combining form of *tubus*—tube, and Latin *fer*—bearing.)
 PHYLUM—Annelida, from Latin *annulus*—ring, and Greek *eidos*—like.
 CLASS—Oligochaeta, from Greek *oligos*—few, and Greek *chaite*—hair.

THE *Tubifex* worm is the commonest member of the family *Tubificidae*, and can be found almost anywhere on the muddy bottoms of rivers and lakes. It is a comparatively long, thin, true worm, reaching a maximum length of 1½ ins. Its body wall is almost colourless and quite transparent. Its blood is bright red, containing haemoglobin. This is important to the worm, as haemoglobin enables it to store sufficient oxygen to keep it alive while it buries its head in the mud to feed. Its food consists of the anaerobic bacteria which are always present beneath the surface of the mud breaking down organic compounds into simpler substances.

The worms construct tiny mud tubes



Above: *Tubifex* worms with bodies extended from their mud tubes. Below: magnified appearance of *Tubifex*.

in which to live, and spend all their waking hours waving the hind two-thirds of their bodies in a graceful, undulatory fashion in the water. Presumably this is to create a current of

Tubifex Worms

water to enable the creatures more easily to absorb oxygen. The slightest vibration in their vicinity will cause them to vanish completely into their tubes or burrows, to await the passing of danger. The worms sometimes colonise many square yards of river bed. I have seen them at low tide at Tower Bridge, London, stretching as far as the eye could see, in either direction, in such numbers that the edge of the water appeared distinctly red.

When collected and washed free from mud, they collect together in a tangled ball, and can be purchased like this from dealers, as live fish food. The live worms are good food, but in the balls of worms there may be many dead or dying ones, which the fish will not touch. These are likely to cause aquarium pollution. Uneaten live worms will colonise the tanks, but may spoil the appearance by passing fine mud on to the surface of the sand bottom.

C. E. C. Cole

THE AQUARIST



*A page for
the beginner
contributed
by*

A. BOARDER

I AM writing these notes at the end of May, and the weather has been so good that I expect many readers have fry growing well by now. It has been a much better season so far than we had last year and I have had a very good hatching from my fantails. The fine warm spring had given me the reason to expect an early spawning and I was rather surprised that by early May nothing had happened. I took two pairs from the pond and placed them in spawning tanks in an unheated greenhouse but after an unsuccessful week I returned them to the pond. Although the fish looked in good condition they made no attempt to spawn until the middle of May. On the 15th, I had to get up rather early to go to Nottingham and at 6.20 a.m. I found the fish spawning well. I might have guessed that something like this would happen, as on several occasions they have spawned on the day I had arranged to be away from home.

However, there was nothing much I could do about it but when I left, I was able to take a bunch of weed well covered with eggs and place it in a hatching tank. I left more spawning in the pond and gave instructions as to what was to be done. I need not have worried as the fish spawned again on the following two mornings and I found that I had very many eggs. Several years ago I wrote that the fish appeared to spawn when a warm spell was starting and on this occasion it was most remarkable. We had been having quite good weather but it had not been very settled. The morning in question was very misty and the sun had not broken through. There was, however, the feeling in the air of coming heat and a very hot spell started which went on for days. There were several days of cloudless skies and it was apparent to me that the fish knew that this spell was commencing. The temperature of the pond was 60° F. at first, but each day after a rise considerably until four days later it was 78° F.

Large Hatchings

The weather was ideal for hatching and with only the sun out I had a hatching in three days. The water had risen from about 70° to just over 80° during this time with an average of about 75°. From the eggs which were laid on the Thursday morning I had fry free swimming by the Sunday. I took several bunches of weed from the pond during the three days of spawning and the number of viable eggs varied considerably. One tank seemed to contain nothing but infertile eggs whilst another appeared to contain fertile ones. One tank had over 2,000 fry hatch out and I had to spread out many of them into larger tanks very early as otherwise many would have died. It was rather difficult to keep the temperature of the water down to a reasonable limit. The fry were fed on Infusoria and algae from the open pond and after a week they were able to take other ground Bemax and shredded worm.

Many beginners appear to be in trouble with their fry when hatch out in the pond. These are not usually seen until they are three or four weeks old and readers seem to have difficulty with feeding them. Where there are plenty

of water plants in the pond the fry can not only escape the attentions of the parent fish but are able to find a certain amount of food among the plants. When feeding the fry try to keep the food at the shallow end, if you have provided one, so that the larger fishes do not swim there to eat the food or attack the young. If you can insert a screen across a portion of the pond to keep the larger fish away from the fry it is a good idea and by this means many more fish are likely to be reared. The food for the fry must be very small and a variety is of great value. If you put Bemax through a mincing machine three times it can then be sifted through some silk stocking stretched over a bottomless tin. Dried shrimp can be treated in a similar manner; they need not be mixed but a little of each can be offered at intervals. In a fair-sized pond the fry are not as likely to need the constant feeding which would be necessary in a tank. It is a fact that very few show specimens from double tailed types are likely to be reared in an open pond with other fish. The better the tails the slower can the fish swim and so the best are the ones that will be caught and eaten, whilst the single tailed fish will escape.

Summer Complaints

Once the fish have spawned well it is essential that they are fed well on a mixed diet and food other than earthworms can now be given. I often give an old brown bread crust for the fish to nibble at, and I am sure that this makes quite a good food with the addition of a few chopped earthworms every other day. The amount of food required will depend on the number of fish and also the size and type of pond. If the pond is large and not over-stocked it is possible that you will hardly have to feed the fish at all. What ever you do, be sure not to over-feed. If you do not see the fish surface to eat give no more that day. In the warmer weather the water can become polluted much more quickly than when it is cold.

I have often warned readers to be careful not to mix types of goldfish in the pond. I know that it is very nice to be able to say that you have in your pond common goldfish, comets, shubunkins and fantails, but remember that they are all types of goldfish and can inter-breed. The shocking shapes seen to-day among the pond specimens are due mainly to promiscuous pairings in a mixed team of fishes in a pond. It is much better to stick to one type only, and if you must go in for many kinds then make more ponds and keep each to itself. I have said before that it takes many years of careful breeding and sorting to produce a good strain, but this can be ruined in one season as far as the resultant young are concerned. Some decent-looking fish may be bred from these mixed pairings but these fry will never again produce anything good.

During the summer months you are not as a rule troubled with many complaints among the adult fish. You may, however, find some attacked by fish lice. These small parasites are known as argulids and are able to inflict a fair amount of damage to a fish. If the fish attacked is one

which you may require for show purposes it is possible that a raw wound may be caused which will disfigure it and lose it several points. These argulids can swim freely in the water and look like tiny plaice. A full grown one is about three-sixteenths of an inch across. These pests attach themselves to a fish and suck from it. Often the first one sees is a red spot on a fish and on closer examination the louse can be seen. It is not easy to remove, but if the fish is put into a solution of Dettol, a half tea-spoonful to the gallon, and left for about eight minutes, the louse will leave the fish and eventually die. I used this method a few years ago, and since ridding the fish in the pond I have seen no more argulids.

Be careful when introducing new fish into the pond as this is when the pests gain entrance as a rule. In my own case a friend (?), gave me a large tench which was in very bad condition. I did not see any argulids on it, but later on found that this tench had introduced them into my pond and it took me some time before I could get rid of them. Many people still refer to the tench as the "doctor fish," but this is a fallacy. The tench mentioned did me much more harm than good!

I promised last month to give some advice on the exhibition of fishes and although I mean these notes to be for the beginner mainly, there are many beginners who have joined an aquarist club and may need some advice on the showing of fish, if only for club shows. It is not generally realised that it is possible to train a fish to disport itself well in a show tank and so show its good points to advantage. If you intend showing a fish be sure that you have a tank similar to a show tank and run the fish in it for an hour or so now and again. Before you do show your fish study the schedule carefully and see that the fish is entered in the right class. Get the Federation Booklet of Show Standards and compare your fish with the appropriate illustration. Whatever you do, at a club show please do not leave your fish at home and then go round telling everyone that you have better fish than the winner there. This gag is played out; take your fish to the show and then you can compare it with the others and so can other people. It may be much better than you thought. As a rule I would advise you to exhibit your fish at a club show before you take it to an open one. It may save you much disappointment and save the judge time as well.

I should like to see more clubs have a class for each type of fancy goldfish at various shows. This would enable

newcomers to get a good idea of these types and would enable the owners of the fish to compare them with others of the same type. It is of little use for an aquarist to enter his fantail in a class which contains shubunkins and other fancy types as well. Even if only two or three fish are shown in a class it is much better than a large class with all types competing against each other.

When taking your fish to a show it is often a good plan to take some water with you to put in the show tank. Do not take your fish from the tin and drop it into the show tank. Test the water in the show tank and see that it is not much colder than that in the carrying can. Do not fill the exhibition tank with water straight from a tap and put the fish in immediately. All water in these tanks should be stood for at least four hours before fish are placed into them. Fair sized fishes may be caught from the can by hand and placed in the tank. I never used a net when I used to show, when transferring the fish to the tank. Damage to scales can be caused all too easily.

I feel that I must give some advice to those who have an aquarium in the house. During hot weather a sudden thunderstorm can upset the balance of a tank very quickly and if it is overcrowded fish may die. Test the temperature of the water and if it is in the region of 80° F. remove some water and add some cooler water; you need have no fear that this will distress the fish, on the contrary it may save their lives. Be careful with the feeding as uneaten food pollutes the water more quickly in hot weather. Many types of live foods are procurable at this time of the year and may be used for a change of diet. When collecting any kind of live foods from ponds, place the catch in a bucket so that you can remove any unwanted pests.

Many pests are introduced into tanks unwittingly and they can cause a lot of damage to young fish. One of the most dangerous, and certainly the ugliest, pest is the larva of the short-bodied dragonfly. This pest is often introduced into a tank or pond on a bunch of water weeds. The dragonflies can be seen laying their eggs by a quick dipping movement, usually on some weeds floating at the surface of the pond. The eggs are contained in a blob of jelly of indeterminate shape and the eggs are small brown, almost round, objects.

In my next article I shall deal with the subject of leaving fish whilst you go on holiday and give further notes on selecting show and breeding fish from the season's hatchings.

Twenty-Five Years Ago

FEW tropical fish fanciers realise how much they owe to modern methods of transport. Less than two years ago, if one imported fishes from the Continent, it meant that the chances of getting them all alive and well were extremely small, owing to the troublesome journey. In winter this usually entailed a three-mile trip on a barrow to the docks through biting winds, a wait on the boat until starting time and, if from Hamburg, probably a long hold-up at Cuxhaven, followed by a rough sea trip of at least 48 hours duration—even if the boat was fortunate enough to catch the tide in the Thames. If the tide were missed the consignee wasted hours waiting for the absent vessel, went home disgusted—losing both time and patience—to return again 12 hours later in the hope of meeting the boat. Meanwhile the fishes, packed together in insulated cans, had exhausted all the oxygen in the travelling can and were dying off rapidly.

Fortunately, all this is changed, to everyone's benefit. What happens now is as follows: An order is sent to a

Continental dealer instructing him to put certain cans of fishes on an aeroplane due to leave his town at a certain time and arrive in London two hours later. The dealer runs the fishes in his light car to the local aerodrome, arriving a few minutes before the plane is leaving; the plane arrives, reaching Croydon punctual to a minute, and then the consignee is waiting in his car to "run" the fishes to his home.

Clearance is effected in a few minutes and the fishes reach their new quarters so expeditiously that they can be suffered little or no inconvenience and are, therefore, in perfect condition. A short time ago, for example, some fishes were taken out of tanks at Rotterdam at 4.30 p.m., put on a plane at 5.15 p.m., arrived in London at 7.30 p.m. and were in tanks at my home at Watford by 8.30 p.m.—the transference from their old Continental quarters to their ones at an English inland town occupying but four hours. This means, of course, both healthier and cheaper fishes—cheaper because the losses are practically nil, and no allowance for heavy mortality has to be made when fixing the selling price. (A report by Mr. Arthur Derham takes place in "The Aquarist," July, 1927.)

The Silver Tetra (*Ctenobrycon spilurus*)



W. S. Pitt

The most favourite in the tropical aquarium world is the silver tetra, once known as the knife tetra (*Ctenobrycon spilurus*). This characin is still obtainable but is less popular these days, perhaps because it is among the larger of neotropicals and requires spacious living conditions.

In colour, too, is not a bold feature of the fish. It is rather like a silver mirror in which subtle hues of blue and green are seen playing over the fine scales as it turns in the water. The flattened body of the silver tetra is somewhat pear-shaped and bears two black spots—one at the base of the dorsal and one just behind the gill covers. The fishes are usually between two and three inches in length when fully grown.

The fish have a slightly yellow colour and provide the same means for distinguishing the sexes. In the female the anal fin is suffused with red when she is in breeding condition; the same fin in the male is said to carry tiny teeth which will cause the fish to cling for a time to the head of a live net when it is caught. The mature female silver tetra is usually larger than the male and is also deeper bodied.

An Active Species

Despite its size this species is suitable for a community tank, but it is an active fish and should therefore not be mixed with fishes which like to lead a sedate life; such fishes are apt to be chased around by the silver tetra although not actually harmed. *C. spilurus* has no special dietary preferences and takes both dry and living foods. It is native of the tropics which does not mind somewhat lower tank temperatures, 65°-70° F., suiting it well enough.

Spawning is not difficult if the fishes are mature and ready to spawn. The breeding aquarium should be at least 30 ins. in length, with water about 10 ins. in depth, and planted with such clumps of *Myriophyllum* or *Ambulia*. If the male and female are separated in the aquarium by a cross partition of glass, at a temperature of 75°-80° F., the aquarist will be able to watch for signs of the breeding urge. Enhanced

coloration, plumpness of the female and excited swimming around the partition are typical signs.

The partition is removed late at night whilst the aquarium is dark, and spawning is likely to take place after the top lights are switched on again in the morning. Eggs (200 or more) are laid during the close chase of the female by the male and adhere to the plants. Spawning may last some time, and when it is over the parents are moved from the tank.

Silver tetra eggs take about two days to hatch. The fry require Infusoria when they are free-swimming; they grow rapidly and should be able to take selected live foods at the age of a month—small mosquito larvae and blood worms, chopped *Tubifex* and small water fleas. The young are hardy but, as they are so numerous, if all their number is to be raised they need to be divided between several aquaria to avoid overcrowding.

J. Francis

New Use for "Ants' Eggs"

TROPICAL enthusiasts probably never consider that the ant pupae sold for goldfish as "ants' eggs" can have any interest for them. It is true that there is little, if any, food value, but they are invaluable for entertaining visitors.

Many fish appear to enjoy playing a cat and mouse game with the pupae, which are seized at the surface and carried below. Every few seconds the fish release the "eggs," which immediately float up to the surface only to be seized on the way up by the same fish. It is obviously a game which both fish and visitor enjoy, and I have never known it fail. The larger characins are undoubtedly the best entertainers in this direction, but even fish as small as glowlights will do their utmost to entertain.

Raymond Yates

News and Reviews

GERMANY

A NEW cichlid from Africa, *Pelmatochromis taeniatus*, is described in the April issue of the *Aquarien & Terrarienzeitschrift*. This is a particularly colourful fish, easily out-shining the most beautiful cichlid known so far—the small *Apistogramma ramirezi*. A colour plate accompanies the article and shows *Pelmatochromis* in his gorgeous colours.

The main characteristics are the large red spots at the sides and a broad metallic yellow border on the dorsal fin. The author did not manage to get his pair to spawn until he put a flower pot into the tank upright, half-filled with coarse sand and covered with an earthenware saucer. A round hole was made in the upper part of the flower pot, the whole thing resembling a nesting box for birds. This was at once successful and several successful broods of about 100 fish each could be raised. When the young fish emerged from the pot they were already big enough to take *Daphnia* and small *Tubifex*. The young fish did best if reared together with their parents. *Pelmatochromis* is certainly a fish that would appeal greatly to cichlid enthusiasts in this country.

The following fishes were imported into Germany from the Far East: harlequins of particularly beautiful colours (other *Rasbora* species included *R. maculata*, *R. dorsocellata*, *R. elegans*, *R. pauciperforata*, *R. taeniata* and *R. waterfloris*). The following loaches were imported: *Acanthophtalmus semicinctus* (first described by Fraser-Brunner), *Botia hymenophysa*, *B. macracantha* and *Epalzeorhynchus callopterus* together with the "black shark" *Labeo chrysophthalmus*. The catfishes were represented by *Kryptopterus bicirrhus*. In larger quantities arrived the labyrinth fishes: *Helostoma temminckii* (the kissing gourami), *Sphaerichthys ophromenoides*, *Trichogaster pectoralis*, *Belontia signata* and *Ctenops vittatus*. The imported bumble bee fishes (*Brachygybius xanthozona*) proved to be very popular. *Monodactylus argenteus*, *Scatophagus argus*, *Toxotes jaculator* (the archer fish), *Tetraodon fluviatilis* (the puffer fish) and some of the magnificent coral fishes were all imported in 1951 and March, 1952.

An article on *Aphyosemion arnoldi* describes in great detail the arrangements for breeding this *Aphyosemion* species that deposits its eggs on the bottom of the tank. As spawning medium *Fountainis* or "sea moss" is suggested. The eggs are taken out as soon as deposited and transferred into small hatching tanks, which are covered with dark paper. It takes about five to six weeks, in winter up to three months, until the eggs are hatched. During the incubation period it is advised to add to the water some bactericidal substance such as trypanflavin, etc. It has, however, been observed that as soon as the young fish are about to leave the eggs it helps to destroy the "eggshell" by means of bacteria. For this reason some dry food should be sprinkled on the water to encourage bacterial growth at this stage.

Two short articles deal with the mosquito fish, *Heterandria formosa*, imported from the south-western states of the U.S.A. in 1912. A plea is made for this most attractive dwarf to be kept more frequently by aquarists. "The reviewer would like to support this most strongly!"

Some most interesting experiments on the influence of artificial light and filtration on the oxygen content of aquaria are described and show that the oxygen content in a planted tank is closely related to the amount of light, natural or artificial. Filtration does not seem to increase the oxygen available in the tank. Mulm has been found to destroy a considerable amount of oxygen. Further experiments on the efficiency of aerator diffusers have shown that

aeration gets increasingly efficient the smaller the air bubbles are. However, to get the air through a diffuser substance that gives particularly fine air bubbles, the air pressure has to be considerably increased. For practical purposes pumice stone is probably the best diffuser substance.

For the vivarium keeper there are articles on the variation of reptiles and amphibia and on the destruction of mites and ticks. A new chemical "Netrosyl" is supposed to be most efficient in the eradication of mites and ticks, but painting with a mixture of castor oil and surgical spirit also appears to be effective. For poisonous snakes "gassing" with paradichlorbenzol is suggested.

A Swedish aquarist claims in a letter to have eradicated, permanently, blue-green algae in his 24 gallon tank by adding 2 grammes of tannic acid. No permanent damage to plants and successful breeding of *Apistogramma taeniatus* are reported. Further observations seem to be indicated before this treatment can be generally recommended.

R. HELLER

Wagtail Standards

THE following are the provisional standards for the wagtail variety of swordtail (*Xiphophorus helleri* hybrid) considered last month by the Federation of British Aquatic Societies. The general outline of this variety follows the standard for the already recognised types.

Minimum body length (excluding caudal fin) 2 inches. A body length of at least 3 inches is desired in mature specimens.

Colour: Three colour varieties are so far recognised, i.e., yellow, red and green. The body colour in each case is a self colour except for black round the lip and nose extending upward towards the front edge of dorsal.

All fins to be an intense matt black; the black to terminate where the fins join the body. Any other colour in the caudal or other fins to be considered a fault.

Male: Body and head. The greatest depth to be one-fourth of the length. Top of head flat, rising in a gentle convex curve to the dorsal fin, then in a concave curve to the caudal fin. Pupil of the eye above level of the corner of the mouth.

Dorsal fin. The length of the base to exceed the depth of the body. The posterior rays to be as long or longer than the front rays. Upper margin of the fin to be straight, a little longer than the base.

Caudal fin. greatest width when spread to be equal to depth of the body. Particular notice will be paid to outline. "Sword" to be quite straight and equal to length of the body.

Pelvic fins. To be immediately under first rays of the dorsal fin and to be narrow and pointed.

Female: Similar to the male, but body fuller and deeper before the pelvic fins. Pelvic fins shorter and broader. No trace of a "sword." Anal fin well developed, fan-like and with no gonopodial characters.

	Points			Male	Female
Body	20	20
Dorsal fin	10	10
Caudal fin	20	5
Pelvic fin	5	5
Anal fin	—	5
Colour	20	20
Size	10	—
Condition	5	10
Department	10	5
Matching	—	20

THE AQUARIST

IN THE Water Garden—by Dr. W. E. SHEWELL-COOPER

FOR years now I have been an iris fan—I am not ashamed to say so. Like so many other things in life, my hobby for this flower started by (a) my having a shady garden in Kent which the irises loved and (b) because of an enthusiastic neighbour who raised new varieties and won considerable prizes at the R.H.S. shows in London. In my innocent youth I thought you could only have blue flowered irises, but not a bit of it. To-day we have bronzes, yellows, near reds, purples, whites and so on and so forth. Do not believe the man who says you can stick them anywhere, anyhow. Those who treat them casually and carelessly are naturally disappointed with the results. The first thing you must discover is that the iris demands full sun—if you have a sunny terrace with a pool, the iris will grow well in the beds surrounding it. Secondly the drainage must be perfect. I think that is the reason why the plants loved my chalky subsoil, which made the top soil to appear as though dug all through the summer.

Planting Time Now

The ideal time for planting is early July, but see to it that the ground in which they are to grow is firm. You see, the rhizomes must not be buried, they must be able to be baked by the sun and so you cannot plant deeply. If the soil is too soft it will. Choose a position which has been well manured for a previous crop but do not dig in farmyard manure just before planting the rhizomes or you will (a) not be able to make the soil firm enough and (b) you will find that the plants will produce enormous leaves but poor, sparse flowers. Should your land be definitely acid remember to add lime—hydrated lime will do, used at the rate of five to seven ounces to the square yard.

Always think it is a good plan to visit nurseries or friends' gardens before actually placing an order for plants. Colours are difficult to describe and what fascinates one does not please another. Do not imagine that the nurseryman is going to send you huge plants—he won't. You will be provided with what is called a single fan with its own rhizome and perhaps a piece of the old rhizome attached as well. If the plants arrive with the leaves limp they must be stood in a bucket of water completely immersed for 24 hours before being planted. Remove any brown leaves and if you have to cut back any of the foliage paint the cut edge with a weak solution of potassium permanganate.

Plant in Groups

Water the bed well where the planting is to be done, if the weather is droughty, and if after planting there is no rain for a week—water well again. Plant at least one foot apart or, if you are lucky enough to be given bigger specimens consisting of three good fans, give them 15 inches water-way. The idea is not to have to disturb the bed for at least three years. Plant so that you have three or four rhizomes in one group and then there will be splashes of colour which will save the border from looking "bitty." Some have taken the trouble to arrange the rhizomes so that they all point exactly south, the argument being that they will then get the maximum sunshine which they need in order to be properly "baked." If you bury a rhizome where the plants won't flower—try and see! Do not forget to water after you plant or else you are bound to forget the names of the new varieties. I always make a plan as well as when I am doubly sure.

The great joy of an iris garden is that there is very little weeding afterwards. You must keep down weeds, of course,



Photo:

S. C. Porter

Irises grown in shallow water at the corner of a pool make a decorative feature for the garden

by hoeing, and a certain amount of hand weeding has to be done, but there is no staking or stopping as there is for instance, with chrysanthemums. Every October it will help to feed the beds with a good fish manure containing a 5 per cent. potash content. This can be applied at the rate of three to four ounces to the square yard and be lightly hoed in. I always cut back the leaves every year to within eight or nine inches of soil level. I find this helps to keep down the spot disease and makes for vigour the following season. Old leaves on the outside of the fans can be removed altogether by being snapped off right at their base.

Some Varieties

Some people arrange the planting of the irises so that the colours graduate the one into the other—lighter blues into the deeper blues and so on to the violet blues and so on. Then you could start a sequence of pinks and so on to greenish yellows, soft yellows, brownish yellows and then bright yellows. I leave the actual planning out to each garden owner. The alternative is the mixed border where the idea is to contrast the rosy beds with the blues—the whites with the mauves and in fact to have a rainbow effect. After all, iris is a Greek word for rainbow, isn't it?

Space does not permit of dealing with the hundreds of varieties that are available but it may be sufficient for some to mention but a few with the idea of showing the infinite variety of colour that is available to-day. Take for instance, Victor Hugo a raspberry red; Radiant a chestnut red; Nina Levett a lavender; Bulwark a brown; Eros a cyclamen pink; St. Mary a pale blue; Favori a magenta; Marco Polo a crimson lake, and so on—there are many others which I have not room to mention but I just hope that I have whetted your appetite for irises.

AQUARIST AT HOME:

Mr. S. Talbot

(BRADFORD)

Interviewed and photographed by JAS. STOTT

THE Bradford and District is now a well-known northern aquarists' society and I recently spent a pleasant evening with its secretary, Mr. Stanley Talbot of Great Horton, Bradford. He has quite an attractive little fish house in the garden of his home, but more about this later, because in view of the fact that he is a society secretary I was particularly interested, first of all, in what his ideas were concerning the running of such an organisation from the secretarial point of view.

After four years' experience of such an office Mr. Talbot considers that the two most important factors for holding the interest of members are the regular presentation at society meetings of really good lecturers and the annual show run on sound, competitive lines. He is particularly impressed with the recently issued list of judges and lecturers by the Federation of Northern Aquarium Societies and feels that given the fullest support by all concerned this move by the Federation will meet with success. It should be greatly appreciated by the affiliated societies, especially the secretaries thereof, who will find the list extremely helpful.

Tiger Barb Breeding

My arrival at the establishment of Mr. Talbot coincided with the preparations for breeding with a pair of really nice tiger barbs, a species which is a speciality of this aquarist. The procedure adopted is as follows. Conditioning is carried out for several days in a large, well planted tank and the feeding consists of *Daphnia* and chopped earthworm. The actual breeding tank has the base covered with fine sand to a depth of around two inches and is heavily planted at one end with bunches of plants having finely cut leaves; the water surface is liberally covered with floating water fern.

To a quantity of old matured water is added an equal



A view of the fish-house interior seen from the door



Mr. S. Talbot pictured with his garden fish-house at Bradford, Yorkshire

amount of fresh tap water which has been allowed two days to settle and free the chlorine content before using. A total depth of seven inches of water is provided. The pair of fish is placed into this breeding tank in the late evening with the temperature around 75° F., and Mr. Talbot informed me that he usually obtains a spawning the following day, after which, of course, the pair is removed.

Apart from the importance attached to the tiger barbs as a speciality, there is quite a variety of species represented in Mr. Talbot's fish house: red swords, red platys, dwarf and thick-lipped gouramies, nigger and cummingsi barbs, black widows, various tetras, glassfish, glowlights and black fighters. I was interested in the latter and Mr. Talbot has had several spawnings of these. He usually mates a black male with a red female and generally obtains about 20 per cent. black fry.

There are also some attractive dwarf gouramies in this establishment, most of which, at the time of my visit, were owner-bred. Mr. Talbot is a great believer in green water as a first food for rearing dwarf gourami fry. They are usually kept on this for one week and then put on to brine shrimp; from this, depending on rate of growth, they are gradually taken on to normal feeding which, in the Talbot aquarium, consists of half dry and half live food each day. I noticed one tank contained some scarftail guppies and I was informed that these are the sole property of Mrs. Talbot who, it appears, is just as keen as her husband on the gentle and noble art of fish keeping.

With a length of 12 feet and 8 feet width the fish house is a convenient and useful size. It is 7 feet high to the ridge falling to a wall height of 5 feet 6 inches; the sides consist of bricks up to 3 feet 6 inches and the remainder is glass-panelled. The roof is shallow pitched and glass-panelled. Tank heating is by electrical immersion heaters controlled by immersion type thermostats and the house contains 16 tanks ranging in size from 18 ins. by 10 ins. up to 48 ins. by 15 ins.

Post-Mortem Examination of Fishes:

W. Harold Cotton, F.Z.S., 39, Brook Lane,
King's Heath, Birmingham, 14.

Specimens should be sent direct to Mr. Cotton, with full particulars of circumstances, and a fee of 2/6.

It is important that the following method of packing fish be adopted:—Wrap fish, very wet, and loosely in grease proof paper and then in wet cloth. Re-wrap in greaseproof or wax paper and pack around with cotton wool in tin box. Despatch as soon as possible after death, with brief history of aquarium or pond conditions.

Brazilian Cichlid Beauty for the Aquarium

by
JACK HEMS

CICHLASOMA severum has been domesticated for longer than most of us can remember. Records show that it was well known in Germany before World War I. By the 1920s it had reached aquarist circles in England and America. It is one of the larger cichlids, and attains a length of between six and seven inches, not counting the tail fin. But maximum size is seldom reached unless the fish is given the freedom of a spacious aquarium and is kept well nourished with rich, meaty food such as earthworms, natural crustaceans, minced raw steak and the like.

The species is native to most of the rivers of Brazil, and neighbouring republics to the north and west. Although it is indigenous to a notoriously warm region of the world, it seems quite at home in sub-tropical conditions, and during the winter months keeps healthy and feeds well at a temperature of about 68° F.

Coloration and Sex Distinction

The general body colour is greenish-olive with several shadowy bars running down the side which, in the male, is adorned with rows of rusty red or darker-hued dots. The male may also be distinguished from the female by the slumped up to his dorsal fin. The membranous rear portions of the red and blue spotted and streaked dorsal and anal fins are linked together by a blob-ended black bar which extends vertically across the body and creates a sharp-bell effect. The markings on the body are very transient, and sudden shock or change of environment will either subside or considerably enhance the existing pattern and coloration. Young fish are always more darkly patterned than adults, which tend as they grow older to lose all their side markings with the exception of the distinctive bar across the posterior region of the body.

The head is as domed as the head of the popular fire-mouth cichlid (*C. meeki*), but the eyes are larger than those of the red and grey beauty from Yucatan, and the pale gold spots are shot with fiery red. The lips are protuberant and give the mouth an aggressive aspect. But though the fish has every appearance of a fighter, it seldom interferes with its companions unless they are much smaller than itself, in which case it just swallows them whole!

C. severum is one of those cichlids which has an intense dislike of plant life. Young specimens will do little or no damage to the underwater vegetation, but as they mature



Photo 1

L. C. Mandeville

Parent fishes guarding eggs laid on the side of a flower pot. Male *C. severum* is the fish on the right

they develop the irritating habit of biting through the stalks of choice feature plants, and stripping the plumed stems of milfoil and the like of their feathery foliage. In other words, *C. severum* likes an austere environment of deep sand and subdued toned rockwork rather than anything suggestive of a submerged hothouse.

Although *C. severum* is not a prolific fish, its breeding habits are typically cichlidian. The male assumes richer hues and displays before the female. She usually reacts to these advances by becoming plumper and more vividly coloured. They often press their lips together in strong kisses which may last for seconds on end. After a few hours or days of such courtship, both fish start to clean up a rock on which to deposit their spawn. Sometimes the male breaks away from this task to excavate a depression in the sand. He is an accomplished miner, a real Stakhanovist among fishes and, like any good worker, he is not ashamed of his labour. In fact, if he sees you watching him through the glass he may fill his mouth with sand and spit it out at you as though to signify his contempt for a bourgeois idler. But to return to the actual breeding procedure.

As soon as the surface of the rock is clean, the couple move closely over it and leave behind them row after row of strongly adhesive eggs. Spawning may be over in a matter of half an hour, or it may continue for most of a sunny afternoon. A large female may lay more than 500 eggs. The eggs hatch out in about four days (in a temperature of 80° F.) and, during the process of hatching, are moved by the parent fish to various depressions scooped out in the sand. The parent fish guard the depressions day and night, and should another fish be introduced into the aquarium it would be literally torn to pieces in the proverbial no-time.

By the time the fry have absorbed their yolk sacs, they are big enough to gorge themselves with all the baby water

(Continued at foot of next page)

AQUARIST'S Notebook— by JOHN GUNN

WHILST looking around the stocks of my local aquarists' supplier recently I heard a fellow shopper enquire about some beacon fishes. Yes, he was told, there are some beacons, and the tank containing them was indicated to him. But there was no sale. The fishes were too small; they lacked colour. These were the complaints the shopkeeper received.

I looked at the beacons displayed. They were youngsters, nice specimens and reasonable in price. What, I wondered, was the would-be beacon buyer really after? Here was excellent material offered to him. Small? Poor colour? Of course they were!—the fishes were young, immature and obviously recently brought into the dealer's aquarium. Few fishes show their best colours in the dealer's display conditions and I would have guaranteed that after a week in their new home these beacons would have looked just as they should look—given proper conditions of course. With a month's good feeding they could have been in full breeding condition.

It can only be supposed that had the dealer offered some adult beacons (with perhaps only six months of life left for them) they would have been snapped up at once. I have a feeling that this attitude is common with novices. Although it is important to distinguish between runt fishes and good fishes offered for sale I believe that young fishes are always the best buy, particularly if you plan to breed. Sexing is difficult with them, but a group can be purchased (often for the price of one adult fish!) which will surely contain a pair, and most important, sometimes a "fish-selected pair"—always the best for breeding.

One reservation is made about buying only young fishes. With young angels I find heavy mortality. It almost seems as if there is a size or age below which transfer to a new tank or tanks is a disturbance these fishes have difficulty in tolerating.

Much as I like to see clean and algae-free aquaria for show use (in the breeding room conditions can be and usually are quite different) I must admit that aquarium algae can sometimes be an attraction in itself. This admission is wrong from me after seeing a tank in the foyer of a London suburban cinema.

The rocks and part of the sand in this tank were covered with thin sheets of dark green algae, not the filamentous type and not the ugly blue-green, and it looked quite becoming. Sheer neglect you say? Well, I thought so at first but examination showed that the glass was clear of any growth and so were the plants. The algae was being encouraged only where it was wanted, and knowing the

Brazilian Cichlid Beauty

(Continued from preceding page)

flea you can sort out for them. Besides *Daphnia*, they can be fed with small white worms, mosquito larvae and cooked liver rubbed between the fingers to the consistency of paste. It is advisable to do this in another vessel filled with water so that the dissolved blood and fine particles can be emptied away before feeding the residue to the fish.

Separating the fry from the parent fish is best done at the breeder's discretion, for *C. severum* do not take kindly to having their offspring suddenly whisked away from them. One of the finest sights in the aquarium is to watch the parent fish parading their babies up and down the front of the glass and in and out of gaps in the rocks. Even when the babies are big enough to look after themselves, the

parent fish still consider it their duty to lead them about the tank.

C. severum takes from 18 months to two years to reach a good size. It is, however, capable of raising a family when it is about nine months old. Young fish often make bad parents, and now and again they will eat their eggs or neglect them for no apparent reason at all. But after a few trial spawnings on the rocks they usually settle down to a more orderly life.

Given good treatment, *C. severum* will become tame enough to take worms from its owner's fingers, and live for a number of years. Some specimens have lived for 10 years or more. Like so many of our tropical aquarium fishes, the species has had a change of scientific nomenclature during the last few decades. Until the early 1930s, it was usually referred to under its now obsolete name of *Heros spurius*.

Incidentally the plants in this display tank were all in good condition, so that this chance growth of algae was particularly fortuitous, since many of these spreading algae release materials which kill or retard the growth of higher plants.

An acquaintance of mine was very worried recently because he had switched on the lights above his tank after a short absence from home and found that the water was teeming with tiny white-worm-like creatures which also covered the glass. He had been keeping his tank for over a year and when he asked me to have a look at it I told him I was surprised that he had not seen these organisms before.

In my tanks I often find them—though not in such large numbers. Leave a little too much dried food on the bottom of a tank however and in 24 hours or so they will multiply enormously and cannot be missed. They are *Spirostomum*, large protozoans which feed on bacteria. This explains why I was able to tell my friend that just before his trip away from home he had added an extra large amount of food to his tank to prepare his fish for his absence.

The fishes had been unable to eat more than usual although the abundance was supplied, so the excess food had decayed on the bottom. This produced bacteria in plenty—just the conditions for *Spirostomum*, which then filled his tank. Once the tank bottom was cleaned by siphoning, the tiny "worms" disappeared as suddenly as they appeared. But they are nearly always present in an aquarium in small numbers and do no harm at all. Young fry eat them but they are beyond the notice of larger fishes.

It is often maintained that the use of a filter worked from an aerator is the best way of employing the instrument in producing circulation and aeration of water in an aquarium.

I have lately seen an adjunct to the filter which I think adds greatly to its "oxygenating" (I now use this term to mean adding oxygen to the water and also to include the removal of carbon dioxide) properties. This addition was a piece of fluted glass placed in a sloping position beneath the water return spout of the filter. As each drop fell on the glass it formed a thin stream which traversed its length before finally being returned to the tank. Gases in water are quickly equilibrated with those in the air under these conditions, so that water is enriched with oxygen if depleted formerly and soon loses any great carbon dioxide content it may have.

READERS' QUERIES ON COLDWATER FISHKEEPING

Reluctant Veiltail Spawners

I have some veiltails which bred three years ago, and I raised seven perfect nymphs. Since then, try as I will, I have been unable to get the fish to spawn. Can you tell me why this is?

There are several possible reasons why the veils have not bred again. They may now be rather old. Many types of heavy goldfish age quickly, although I have bred from females which were 14 years old. As you are breeding them in South Africa, it may be that the water is too hot. I have found repeatedly that whereas the fish will spawn well in the lower 60's, once the temperature rises above 70°F, there is less tendency to do so. Less oxygen is contained in the warmer water and I find that fish like a low-oxygen content to encourage a spawning. Occasionally I have found that fishes have been too fat to breed. This condition is often detrimental to successful breeding, and not only in fish. Incorrect feeding can also affect the spawning qualities of fish and a good diet of live food is usually enough to start the fish off. Again if the water is over-charged with foul gases it will often prevent the female fish from developing sufficient energy to chase and spawn. Some deep-bodied fish can get an internal complaint which interferes with the digestion, and anything which tends to upset the normal healthy conditions of fish will tend to prevent them from breeding. You might try separation of the sexes for a time and on being introduced to each other again they may spawn.

In the way, you speak of perfect nymphs. These are not single-tailed fish from your veils and as such they are cross-backs. They may breed one or two decent fish but their offspring are less likely to do so.

answered by A. BOARDER

Can you tell me why my fish died? It was ailing for three weeks, spent its time at the surface with back curved and flat belly. When dead it showed blood inside one gill plate.

It is almost impossible for me to say from what disease the fish died without examination of the fish. From your description it appears to have been a wasting one which may have been caused by an internal complaint such as consumption or an attack by a parasite. The blood inside the gill plate inclines me to the belief that the fish had been attacked by gill flukes. These live on the fish, sapping its strength. The attack is not very rapid in its effect on the health of the fish and those affected may live three or four weeks. When the gills are badly infected by the flukes, death will soon occur. You say you have been feeding with blood-worms, flat-worms, *Daphnia* and *Cyclops*. Some of these may have introduced the pests into your tank. If any other fish in the tank show similar signs, give them a formal bath as recommended by me in previous articles.

Many queries from readers of "The Aquarist" are answered by post each month, all aspects of fish-keeping being covered. Not all queries and answers can be published, and a stamped self-addressed envelope should be sent so that a direct reply can be given.

I have a cold water tank of shubunkins, with top lighting and away from direct daylight. I notice quite a growth of algae on the plants and should like to get rid of this. Are there insects I can introduce which will prevent the trouble?

There is more than one form of algae. The free floating type will not as a rule develop in a tank which does not get plenty of light. In my greenhouse I keep a tank for watering. If this is left uncovered for a short time it soon gets as green as grass. If I keep the tank covered so that the light cannot reach the water it always remains quite clear. The algae on your plants is another type. This is more like blanket weed and does not seem to require as much light. I find that all algae are encouraged in their growth when there is a surplus of carbon dioxide in the water. This can be formed by the decomposition of uneaten food and also by the waste products of the fishes. Thus over-crowding the aquarium with fishes can cause algae to form on the plants, especially if accompanied by over-feeding.

I know of no insects which can be placed in the water to eat algae. Few insects live in the water, although the larvae of many do so. Some snails may help you, but do not use freshwater whelks. The ramshorn types (*Planorbis*) are the best as they appear to eat mainly decaying vegetation and are not as likely to eat your growing plants as are the former ones. As you propose to set up a tropical tank and fear a repetition of the complaint, I advise that you have some mollies in the tank; they are fond of some types of algae and will help to keep the growth down.

I have a fair sized pond and the water has been clear for some years. It has now become green and this is not algae. There are plenty of plants and fish? What is the reason?

Most ponds become green in the late spring or early summer. I do not know why you suggest that it is not algae. My guess is that it is the free floating algae which is encouraged by sunlight. It is usually kept in check in the pond by the presence of water plants, but as most of these die down during the winter the algae gets a strong hold before the plants have a chance of growing up and starving it out. There are certain conditions in a pond which encourage the growth of algae. The same can be said of tanks. I have a row of four large tanks in the same situation. All are of the same construction and all are treated alike as far as I can say, yet one of them is very green all the time whilst the others are quite clear. If I put plenty of green water into the clear ones they soon become clear again in a few days.

There may be some decaying vegetation or uneaten food in your pond which is causing the algae to form. If you could prevent the sunlight from reaching the pond for a few days the water would clear. If you empty the pond and refill the greenness may appear again, and as a rule the condition rights itself in a short time. One sure way to clear the water would be to remove the fishes, then put some *Daphnia* (water-fleas) into the pond. These live on algae and would soon clear the pond. The fish could then be reintroduced, when they in turn would eat the fleas. By this time the water plants may have established themselves sufficiently to prevent the further growth of the algae.

I have a brood of moors now eight days old. How do I sort my fry and when? Some are straight and some are bent at right-angles. What is the shape of a good class moor? Some of my eggs were attacked by little white worms: is this normal?

It was not normal for the eggs to be attacked by the tiny "worms." My guess is that they were the larvae of a tiny midge. They can often be seen among the water plants in large numbers. I have seen them attacking eggs in my own hatching tanks and they are rather difficult to deal with. A wash in a solution of Dettol and water may cause many to drop from the weed if it does not actually kill them, but the wash may damage some of the eggs. I usually find that in a spawning I have so many eggs that the few eaten by pests are not missed. A quick hatching, say in not more than four days, does mean that the pests have less time to eat the eggs.

The sorting of the fry can be carried out as early as a fortnight after hatching. Whether the moors are fantails or veiltails does not matter yet, but both have divided tails. Tails of fantails are divided to three-quarters of the length, but the veiltails are completely divided. Place a few at a time in a white bowl and the divisions in the tails will show up easily. You should obtain an illustration of a good moor, and you may find that the booklet of Standards of the Federation of British Aquarists' Societies will be of help to you. The veiltail types will be the most valuable as I think that many fantail moors seen to-day are just fish from a spawning of veiltail moors which have not developed the correct tail. All moors should develop protruding eyes, but these may not show up for some time so do not be disappointed if they are not apparent at an early age.

Some of my adult veils breathe out of one gill only: what is the cause?

This is abnormal and is due to some damage, perhaps suffered when the fish were young. I cannot say for certain but I should think that the fish were attacked by a form of gill fluke as youngsters and they have never recovered from the damage. They may be able to get sufficient oxygen from the one gill; some people are using only one lung and are able to live. I doubt very much whether there is anything you can do about it now. It may not interfere with their breeding and it is very unlikely that any fry will be affected.

At my school, where I am a teacher, I am starting an aquarium society. I wish to obtain some good quality fish of the following types:—calico veiltails, veiltail moors, calico orandas, and lionheads. Where can I get some good specimens?

I am unable to tell you where you can obtain fish of the types and quality you require. Good quality fish of these types are so rare that you may have to pay over £5 each for them, that is if you can find them. However, there are a few breeders who may have some fish to spare from their stock which, even if not of show quality, can breed show specimens, as they have been bred right. If the quality is in the strain it will always come out, and throw-out fish from a winning strain can throw fry as good as and sometimes better than the best in the strain. Why aim so high at the start? Gain some experience with some good shubunkins and fantails first and then have a go with the more rare and often difficult types.

I have bred some shubunkins in my pond and now wish to try my hand with some better quality fish. I have toured all over London and cannot find any shubunkins to my satisfaction. Can you tell me where I can get some good ones?

Yours is the usual cry and although I sympathise with you to a certain extent I must endeavour to explain to you and the many others who ask me the same question, that it is almost impossible for you to purchase perfect specimens

of these fancy goldfish. You must realise that even from the best winning strain in the country only a very small percentage of fry turn out as good as their parents. I can say without fear of contradiction that for every perfect fish bred from any strain, 99 poorer specimens will be produced. It is quite impossible to breed these fancy types true, and the sooner aquarists realise this the easier will it be, not only for them but for the harassed breeder.

If you do not credit this, go to the next large open show and look at the breeders' class. This will consist of entries of six fish bred by the exhibitor perhaps during the past year. Unless I am very much mistaken you will be hard put to find a perfect team of any of the fancy goldfish. Some of these exhibitors breed thousands of youngsters each year yet they are hard put to find just one perfect team of six fish. I know how difficult it is as I have had the same job on several occasions and, when judging at many shows, rarely find a team with which I cannot find some faults. If people will only realise that breeders are not likely to part with their best specimens and that it is possible to breed good fish from any coming from a good strain, there would be far fewer disappointments among intending purchasers.

I am anticipating setting up an aquarists' shop in this town. Must I have a licence and can I buy from dealers at trade rates, etc.?

I think that you will be able to buy at trade rates if you intend to re-sell to the public. It is usually sufficient to order on a bill head from your shop. You may require a licence but I advise you to obtain the necessary Act and study it to see if your case comes under its jurisdiction. As from 1st April, 1952, The Pet Animals Act, 1951 (14 and 15 Geo. 6th, Cap. 35), came into force. This makes it imperative for all pet shop keepers to obtain a licence from the local authority at a cost not exceeding 10s. The Act can be obtained from Her Majesty's Stationery Office.

Two of my catfish have white spot disease. How can I cure it without heating up the water?

I have not had any practical experience with white spot, but I understand that the usual treatment is to add two grains of quinine hydrochloride to each gallon of water in the tank. There is no need to heat the water. Some pet shops sell a cure and if you use any proprietary article be sure that you comply with the given directions.

I bought a young moor recently and now one of its eyes has grown out much larger than the other. Is there any cause for this?

Moors should have protruding or "telescopic" eyes, but they are not born with them well developed. The eyes grow out at a later date, sometimes when the fish are over a year old or more. One eye will sometimes protrude further than the other and this may be only temporary.

I have had a tropical tank and now wish to start a coldwater one. Can I get some exotic coldwater fish which do not get more than 2½ inches long and can I use any of the following water plants in the cold tank?—*Vallisneria*, *Cabomba*, *Indian fern*.

I know of very few exotic coldwater fish suitable and obtainable in this country. Most would grow too large for you. The small American mud trout (*Umbra pygmaea*), might be the most suitable but I do not know if they are available. I did see one in a show a couple of seasons ago whilst judging. Bitterling carp may be suitable for you. I have found that the best water plant for the cold tank is *Vallisneria spiralis*, *V. torta*. This thrives well but I do not think that the others you mention will grow very well. With the aid of overhead lighting you may keep some in the summer but in the winter they will die or turn brown. You can use *Myriophyllum*, or any of the clodeas. Willow moss is also quite good.



BOOK R E V I E W

Animal Ways

King Solomon's Ring by Konrad Z. Lorenz, 202 pages. Line illustrations in the text. Methuen & Co., Ltd., 36, Essex Street, London, W.C.1. 15s. net.

OCCASIONALLY, but very seldom, a book is seen which it is thought safe to recommend without hesitation and without fear of disappointing. *King Solomon's Ring* is such a book. There can be no one with an interest in animals, zoologist, naturalist, bird-fancier or what you will, who will not thank the book's introducer with genuine fervour when its pages are turned. There can be few who, professing no particular interest in animals, will be able to leave it unfinished.

King Solomon's Ring (it has a sub-title *New Light on Animal Ways*) is a record of Dr. Lorenz's observations of animal behaviour—in fishes, jackdaws, ravens, parrots, dogs, shrews and many others. But they are observations with a difference. Wherever possible they are made on animals given relative freedom; cages do not intrude, and a fascinating picture of the author's Austrian house with its host of animal visitors and guests coming and going is conveyed to the reader. Just another book that humanises animals? Not a bit of it! The author writes: "Believe me, I am not mistakenly assigning human properties to animals: on the contrary, I am showing you what an enormous animal inheritance remains in man to this day."

There are three chapters devoted to the aquarium, water insects and fishes, and any experienced aquarist will seem to recognise and have to admit that he has seen and yet missed in his own tanks much of what Dr. Lorenz so admirably describes and construes. Observation of natural events requires as much enthusiastic application as any craftsman's trade; mere looking is what most of us do. Here is a quotation from the book concerning the remarkable behaviour of a jewel fish witnessed in a breeding aquarium at dusk, when the tiny fry were being gathered up by their parents to spend the night in a hollow in the sand:

"As I approached the container, I saw that most of the young were already in the nesting hollow over which the mother was hovering. She refused to come for the food when I threw pieces of earthworm into the tank. The father however, who, in great excitement, was dashing backwards and forwards searching for trunants, allowed himself to be diverted from his duty by a nice hind-end of earthworm . . . He swam up and seized the worm, but, owing to its size, was unable to swallow it. As he was in the act of chewing this mouthful, he saw a baby fish swimming by itself across the tank; he started as though stung, raced after the baby and took it into his already filled mouth. It was a thrilling moment. The fish had in its mouth two different things of which one must go into the stomach and the other into the nest. What would he do? I must confess that, at that moment, I would not have given two pence for the life of that tiny jewel fish. But wonderful what really happened! The fish stood stock still with full cheeks, but did not chew. If ever I have seen a fish think, it was in that moment! What a truly remarkable thing that a fish can find itself in a genuine conflicting situation and, in this case, behave exactly as a human being would: that is to say, it stops, blocked in all directions, and can go neither forward nor backward. For many seconds the father jewel fish stood riveted and one could almost see how his feelings were working. Then he solved the conflict in a way for which one was bound to feel admiration: he spat out the whole contents of his mouth, the worm fell to



Pond in the Picture—10

Sussex is the county offering this peaceful garden summer scene. Although the pond could scarcely be of a more simple pattern it adds considerably to the charm of the lawn and has even more to contribute when the lilies come to full flower

Photo:

H. & V. Joel



News from the London Zoo Aquarium

THE latest zoo aquarium news borders on the dramatic. As regards new arrivals, the chief of note are some powder-puff or plumose anemones (*Metridium*) from off Newhaven, and a consignment of *Scatophagus argus*, the well-known estuarine fish of the East, a foul feeder, but gorgeous in its livery of metallic green and vivid blue-black spots. *Metridium* is the most lovely of all our native anemones, though not too easy to keep in filtered water since it is a plankton feeder. It covers a wide range of colours, and a large specimen fully expanded can overflow a quart pot. Hundreds may be brought to the surface at a single haul of the trawl. It ranges from extreme low water to 30 fathoms or more.

The high-spot to date, however, is the appeal of Brighton to London for long-needed advice regarding the reclamation of what was once the finest sea water aquarium on this side of the Atlantic. Whereas former post-war managements have resented all offers of help as "outside interference," the new manager, Mr. C. H. Bennet, has invited "Tim" Vinall, who literally made London's aquarium what it is to-day, to give Brighton the once-over, and pronounce counsel's opinion. No better counsel could be solicited.



Metridium, the plumose anemone, most lovely of all British coastal anemones

A first step towards the new era is the installation of sea-lions, animals whose show value is only eclipsed by the elephant and the chimpanzee. It is worth recording that the first sea-lions ever born in this country emanated from Brighton. Before long we may confidently expect to see the aquarium of the Queen of Watering Places once more amongst those under-water zoos that may fairly be described as "on the map."

L. R. Brightwell

Book Review

(Continued from page 81)

the bottom, and the little jewel fish . . . did the same. Then the father turned resolutely to the worm and ate it up, without haste but all the time with one eye on the child which "obediently" lay on the bottom beneath him. When he had finished, he inhaled the baby and carried it home to its mother."

Tribute must be paid to the painstaking translator of the German text and to the author's marginal and end-piece sketches which enliven the pages. This attractively produced book merits a place on any bookshelf.

Tropical Fish-keeping

Tropical Fish in the Home by Douglas Gohm. 144 pages, 34 colour drawings; four half-tone plates; line illustrations. C. Arthur Pearson Ltd., Tower House, Southampton Street, London, W.C.2. 30s. net.

THE publishers of *Tropical Fish in the Home* give the reader no indication of the author's experience in the aquarium world, so that his qualification for writing the book can be judged only from the text. It is not incumbent upon publishers so to delineate their authors of course, but they are in this instance announcing that their book has been "written and planned to become the standard British work for the aquarist," and one is curious to know how and why.

Unfortunately the intent has not been fulfilled. The book has no unique features to commend it and the number of fish and plant species included, for example, is far too small, and they are dealt with too perfunctorily, for a standard work. Although errors of fact are not numerous the reader's confidence in the author as an authority is shaken by technical inaccuracies here and there. He makes the mistake of referring to scientific names as "Latin names," uses the word *habitant* where *habitat* is meant and gives "organism" a plural meaning. Plants are said to benefit chiefly from infra red rays whereas it is known that these are of little importance. The statement that because "the

length of the rays are somewhat short, it will be seen that it is an advantage to get the lamps as near to the water as is practicable" can only be described as a howler. It is annoying and misleading to see pH written as P.H. and to have it described as an abbreviation for "Percentage of Hydrogen!" If we are to dabble in technical matters then accuracy should be insisted upon.

On the credit side of the book the author's colour drawings are on the whole well done and the line illustrations are clear. His style of writing is pleasing and the beginner seeking an introductory work to the hobby will meet other books far less helpful than this one.

Reptiles and Fishes

Keeping Reptiles and Fishes by Maxwell Knight. Country Books No. 8. 207 pages, 20 half-tone photographs; line illustrations. Nicholson and Watson, 26, Manchester Square, London, W.1. 6s. net.

TWO parts make up this book. The first and major one (13 chapters) deals with reptiles and amphibia; the second treats of coldwater aquaria and garden ponds (seven chapters). It is for the first part that the book will be chiefly valued since, as the author points out, very little has been written about the practical aspects of herpetology for the enthusiast.

Useful, sound and practical advice on catching, transporting, housing, feeding and caring for suitable specimens—snakes, lizards, tortoises and terrapins, frogs, toads, newts and salamanders—of many kinds, is given, and Major Maxwell Knight draws his information from his own great store of practical experience. In the aquatic section, aquarium setting up, garden pond construction, water plants and coldwater fishes and their breeding and maintenance are the chief topics.

The photographs are very good and well reproduced on separate plates, and the line illustrations in the text are also clear. A short list of useful reference books and a full subject index are included in this reasonably priced work.

OUR READERS

Write

Long-lived Selimang

HAVING just read the article on *Epalzeorhynchus kallopterus* or "the selimang" (*The Aquarist*, February), I write to say that the German aquarists Arnold and Ahl reported having one of these fishes in 1935 and again in 1938. At one time in 1937 I procured six of them from Singapore through a Chinese on one of our boats.

All of them showed the same markings and could not be sexed. I parted with three of them soon after having them, and two of the others died within a few years, but the other one died only last year, when it was about six inches in length. My Chinese supplier had called the fish a "sucker fish" or "miniature shark," which I considered a very good name for it. During its 15 years in my aquarium it was always "the shark," but it was the best scavenger I have ever had and was quite harmless. Friends still come to see me asking, "How is the shark?" and the long aquarium life of this fish may be a record.

P. JENSEN (Secretary),
Aquarium Society of New South Wales,
Haberfield, N.S.W., Australia.

Marathon Spawning

YESTERDAY I witnessed a marathon in spawning achievements. A pair of veiltail goldfishes which had previously spawned in April were placed together in an aquarium one Saturday night and started a lazy "chase" at 7 a.m. the next morning the drive was seen to be in full swing, eggs being scattered in showers among the plants.

After attending to other tanks I went out for the day with the family. On my return at 6 p.m. I was amazed to find the pair still spawning strongly, and I separated them at once for the tank was smothered with eggs. This spawning had lasted 11 hours, and I have never known it to last so long before. It would be interesting to hear of other marathoning spawning acts.

FRANK W. ORME,
Birmingham, 23.

Correspondent Wanted

MAY I request to be put in touch with a reader of *The Aquarist* who is interested in breeding tropical fish? I am a regular reader in Burma, and I would like a correspondent to help me with my hobby. I have 12 varieties of fishes including angels, fantails and *Rasbora* species. From the advertisement lists in your paper I note that the price of fishes is more favourable in England than out here. In Rangoon a pair of angels costs the equivalent of 30 shillings. We are further handicapped by lack of equipment and information.

W. SAMUEL,
c/o Trading Co. (late Hegt & Co.),
36, Barr Street, Rangoon.

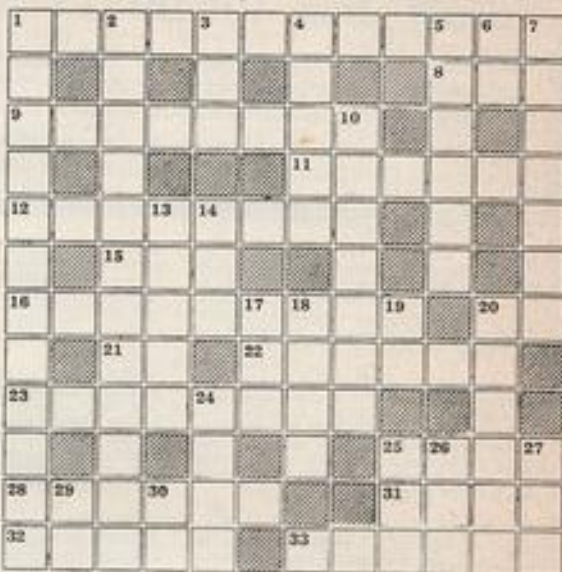
Motorist's Live Food

DURING the summer months I peg a square of surgical gauze immediately in front of the radiator of my car, and each evening I have a good assortment of freshly dried flies for the aquarium. It is surprising the number that can be collected this way; one day when I had leisure I counted over 300 flies. Someday I may improve the method by having a frame made with attachments for same on the front of the radiator.

DR. VALENTINE G. CROWLEY,
Darlington.

The AQUARIST Crossword

Compiled by J. LAUGHLAND



CLUES ACROSS

- Aquarist's flexible labour saver (6, 6)
- Neither of the golden orfes
- Genus of bog plants (8) (3)
- Pearl, zebra, or giant (6)
- How most beginners cloud water (4-4)
- Home of seals (3)
- Remove traces, but not of sea horses (9)
- An addition to the tail of carps (1, 1)
- Rel. denom. (1, 1)
- Certainly not a bullhead (2, 4)
- Newt genus (8)
- One kind of tank bed (4)
- The fish hawk (6)
- Another kind of hawk (4)
- Snouts in the vocabulary of anglers and aquarists (5)
- A young salmon first returned from sea (6)

CLUES DOWN

- Act of producing fresh organisms (12)
- Artemia salina* (5, 7)
- What French aquarists put in their tanks (3)
- Deal (5)
- Nationality of gouramies and pythons (6)
- Refusal of 32 (2)
- Broad grouping of Vol., Sag., and *Eleocharis acicularis* (7)
- Lovers of cruelty (7)
- To return an impulse in the opposite direction (5)
- Distant (3)
- And not of North Sea fishes (3)
- Excite does not quite rejoice (4)
- A union of sardines (1, 1)
- Plants (6)
- Purs to a purpose (4)
- Snowshoe of fish skin (3)
- Suffer from tail rot, perhaps (3)
- Welsh salmon river (3)
- Sic of sole (2)
- Form of ray (2)

PICK YOUR ANSWER

- Malapterurus electricus* (the electric catfish) has: (a) two barbels, (b) four barbels, (c) six barbels, (d) eight barbels.
- Callichthys callichthys* (the common armoured catfish) attains a length of about: (a) 5 ins., (b) 7 ins., (c) 9 ins., (d) 11 ins.
- The cardinal fish is the popular name given by German aquarists to: (a) *Apistogramma ramirezi*, (b) *Hyphessobrycon flammula*, (c) *Rasbora heteromorpha*, (d) *Tanichthys albanus*.
- The trivial name, *macrophthalmus*, as in *Aplocheilichthys macrophthalmus*, implies that the fish has: (a) Large eyes, (b) Large fins, (c) Small fins, (d) Small eyes.
- The best temperature for *Salvinia* is: (a) 64°, (b) 68°, (c) 72°, (d) 76°.
- Marrubium* (water clover) was named after: (a) A French doctor, (b) An Italian botanist, (c) A Portuguese explorer, (d) A Spanish queen.

Solutions on page 85.

G. F. H.

News

from AQUARISTS' SOCIETIES

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

A copy of *The Aquarist's Directory of Aquarium Societies* will be sent free to any reader on receipt of a stamped, self-addressed envelope.

A JUNIOR section of the Aqua-Art Club, Southport, has now been formed and has 40 members whose ages range from nine to 15 years. All interests of the hobby have their adherents in the section, including herpetology. A visit to Blackpool Tower Aquarium was recently made by members of the senior group.

THE Aquarium Club (Polham) gave a successful exhibition of tropical and cold-water fishes at an L.C.C. institute. Ten furnished aquaria were displayed with numerous small tanks showing individual fishes, breeding pairs with offspring and showing breeding traps in use. A table show of characin fishes has also been staged at a recent meeting of the club.

BLACKPOOL Corporation has provided a 50 guinea trophy to be competed for at the Blackpool and Fylde Aquatic Society's annual show in August. At meetings held in May ladies were opposed by the gentlemen in a "Twenty Questions" competition, the fair sex winning, and a lecture on Siamese fighting fishes was given by Mr. T. Tomlinson.

PRESIDENT'S cup for the best fish in the Bolton Aquarist, Pond and Marine Society's show was won by Mr. D. Baldry. Bolton were victorious in a "quiz" competition held with Burnley A.S. but the latter was successful in a return table show, in which their exhibits gained the greater number of points.

SOME reasons for the loss of about 150 goldfishes in the Grealey Memorial Park, Burton-on-Trent, pond were given by Mr. A. Simnett at a meeting of the Burton-upon-Trent and District Aquarists' Society. The speaker said that the Park authorities had not fed the fishes at all, and the only food they had received was bread from visiting children. When the pond was emptied large quantities of bricks and old cans were found in it. Although the speaker had tried to save the remaining fishes they were in poor condition and all died of fungus.

MONTHLY meetings are now held by the Carlisle and District Aquarists' Society at which sales of surplus stocks and equipment are regular features. Film shows and table shows have been held at recent meetings.

AT a combined meeting of the East London Aquarists' and Pondkeepers' Association and Essex clubs, Mr. G. Bartmann, a well-known German aquarist visiting this country spoke on diseases of tropical fishes and their causes and cures. Very many questions were asked and ably answered. The Association's annual exhibition was held last month. It was

A tropical aquarium was presented to the Holme Valley Memorial Hospital by Holme Valley Aquarists' Society this year. In this picture are seen Mr. G. H. Charlesworth, Mr. W. Hoyle, Miss D. Russell (matron) and Mr. J. Rollitt (secretary of Holme Valley A.S.)

opened by the Mayor of Barking, who also presented the awards at the close of the show. A display of marine aquaria proved of great interest to visitors. Enterprise Aquatic Society took first in the open club furnished aquaria class and Tottenham and District Aquarists' Society achieved the same in the corresponding coldwater class.

STEADY increase in membership during the year was reported by the chairman of the Forest Gate Aquarist Society at the annual general meeting. Cups and plaques were awarded to winners and runners-up for the highest numbers of points gained in the 23 table shows held during the year.

MEMBERS of the Glasgow Northern Aquarium Society were successful in being awarded the Waverley Trophy for the best exhibit in the club tropical furnished aquarium section of the Edinburgh and East of Scotland Aquarium Show. A second and a third prize were also gained in other sections.

FULL details of the activities of the various sections of the Federation of Guppy Breeders Societies were given in the Federation's latest issue of its *Bulletin*. Also included was an article on genetics of the guppy and an account of the spartan guppy.

RECENT activities of the Hornchurch and District Aquarist Society have included setting up an exhibition tank and inquiry stand at a local horticultural show, a table show for guppies, and a discussion meeting with Mr. A. Saunders advising members on breeding barbs. Meetings are held every other Wednesday (next, 2nd July), 8 p.m., at Hornchurch British Legion H.Q., Forces House, High Street, Hornchurch.

FOUR members of the Luton and District Aquarists' and Pondkeepers' Society formed a brains trust panel at the May meeting to answer questions from fellow members concerning the breeding habits of several tropical fish species. Arrangements have been made by the society to install a tropical aquarium in the tuberculosis ward of St. Mary's Hospital.

MR. T. BURDEN gave a practical demonstration of planting a tropical aquarium to the Midland Aquarium and Pool Society, the tank being one set up for show purposes. At the next meeting, Mr. C. Creed visited the society from London to speak on breeding tropical egg-layers.

TO lend fish nets and containers is fully, said Mrs. W. Meadows, when she was speaking about the ways in which diseases are spread, in talk to the National Aquarists' Society. The quarantining of all new fish, regardless of origin, was also advocated. Last month the society staged its annual exhibition in London and their fine show received excellent publicity and was visited by Mr. Winston Churchill, among other distinguished visitors.

PLYMOUTH and District Aquarists' and Pondkeepers' Society have presented a stocked tropical aquarium to Freedom House Hospital, Plymouth. The society has also developed a magazine containing articles and contributions from members.

THE first show of Rochdale and District Aquarist Society this year was highly successful and attracted entries from societies and individual aquarists over a wide area. Over 5,000 visitors attended in one-and-a-half days and the show received several press mentions and was the subject of a talk on the B.B.C. northern programme. First in the section furnished tropical aquaria section was Accrington A.S., and Mrs. J. Dodsworth took first in her coldwater furnished aquarium.

ALUMINIUM and its use in making aquaria covers was the topic of discussion at a meeting of the Scottish Aquarium Society, reported in the society's *Herald*. A reply from the British Aluminium Co., Ltd., concerning the possibility of condensed water from aluminium covers being toxic to tropical fishes was quoted in which it was said that it was considered unlikely that this could occur, and it was stated that most supply waters naturally contain small quantities of aluminium in solution as a result of their passage through alumina-bearing clay and other minerals.



THE AQUARIUM

... Mr. R. King spoke to the Willesden and District Aquarists' Club at a recent meeting, to deal with the culture of various types of catfish, gave details for preparing and maintaining the food, described the propagation of various worms, white worms, brine shrimp, and how best to keep and cleanse *Tubifex* worms. The speaker also gave his own recipes for catfish food. At the table show an angel fish belonging to Mr. J. King was judged best specimen, and a shubunkin of Mr. H. Wingrove was judged best goldfish.

Notes "Bulletin"

... The new issue of the Monthly Bulletin of the Accrington and District Aquarists' Society contained a report of the lecture given to members by a visiting German aquarist, Mr. J. Barmann. As this aquarist was one of the few to breed the recalcitrant neon fish his remarks on the subject are especially noted. He recommended using a sterilised all-glass aquarium, 20 in. by 20 in. by 20 in. (or 24 in. by 24 in. by 20 in.) filled to a depth of 4 in. with distilled water. This is topped up with a solution made by pouring hot water over dried oak or alder bark, stored for 24 hours and it is clear. The aquarium water should have a pH of 6.5, and if it is clear after 24 hours a pinch of salt is added. *Fennelius* is placed in the aquarium after rinsing in a solution containing one teaspoonful of alum to 11 pints of water. It should not be used to catch the *Fennelius*, which should be over nine months old before they show their signs of reproduction, but they should be transferred to a separate 4-gallon to the breeding tank, in a separate aquarium. If they spawn the following morning remove them from the aquarium and clean the tank to exclude all light for 24 hours. The fry should be seen but no food is given for them for four days. Infusoria should not be used as food—only newly hatched *Fennelius*. Sterilisation cleanliness is essential for the new breeding, and Mr. Barmann said this was the best time for these fishes.

Aquarist on Holiday

... For those aquarists who may be holidaying at or close by the following towns this summer, have kindly been sent the addresses listed:—

Accrington
Accrington and Cheltenham Aquarists' Society meetings—first and third Thursdays of each month, 7.30 p.m., at the Spa Medical Baths (opp. Bath Road, Cheltenham).

Walthamstow
Mr. D. L. Carr, secretary to the Platy Pleasure Association, 44, Waltham Drive, Waltham St. James (Tel.: Pav 8433).

Falmouth
Greenwich and District Aquarists' Society meetings—first Tuesday of each month, 7.30 p.m., at the Grammar School, Woodlane, Falmouth (contact Mr. N. J. F. Storey, Roslyn Hotel, Roslyn Park Road, Falmouth (Falmouth Tel.: Mr. A. J. Layton, Ingestre, Agar Road, Falmouth).

Willesden
Willesden and District Aquarists' Club meetings—first and fourth Wednesdays of each month at the Court Restaurant, 22, High Street, Walsenden, N.W.10 (secretary, Mr. J. W. Gair).

Portsmouth and Southsea
Portsmouth Aquarists' Club meetings—first Wednesday and third Tuesday of each month, 8 p.m., at the Sherman Parade School Hall. Information will be supplied by the secretary, Mr. J. Urquhart, 35, Wandleton Park Road, Southsea, Hants.

Wrexham
Wrexham and District Aquarists' Society

British Aquarists' Festival, 1952

This event will be staged at Belle Vue, Manchester, by the Federation of Northern Aquarium Societies in collaboration with *The Aquarist* in October this year.

Show entries are invited from all aquarists and schedules and entry forms are now available from George W. Coeke, Esq., Spring Grove, Field Hill, Batley, Yorks.

The unique collection of trophies, first put up for competition last year, will again form the main prize attraction.

meetings—first Tuesday each month, 7 p.m., at Swansea Central Library (or 'phone secretary, Mr. W. Hal Jones, Swansea 4296—day; Swansea 57332—evenings).

Torquay

Torquay and District Aquatic and Pondkeepers' Society meetings at the Belgravia Club, St. Marychurch Road, Torquay, on the following dates: 26th May; 13th, 23rd June; 11th, 28th July; 8th, 25th August; 12th, 22nd September; 10th, 27th October. Information will be supplied by the secretary, Mrs. H. R. Brooking, 25, Belgrave Road, Torquay.

Advance notices of events of particular interest to aquarists taking place in holiday towns are welcomed for publication by the Editor, and aquarists and societies in seaside and country towns willing to meet visiting aquarists are also requested to write.

Secretary Changes

CHANGES of secretaries and addresses have been reported from the following societies: **Accrington and District Aquarist Society** (Mr. J. Dickson, 63a, Devonshire Street, Accrington, Lancs. 'Phone: 2041); **Bolton and District Aquarist, Pond and Marine Society** (Miss P. Woodall, The Nurseries, Hulton Lane, Deane, Bolton, Lancs.); **British Herpetological Society** (Mr. J. L. Menzies, c/o Zoological Society of London, Regent's Park, London, N.W.8); **Colindale Aquarist Society** (Mr. S. Dickinson, 214, Colindale Lane, Hendon, London, N.W.4 ('Phone: Col 4892); **Forest Gate Aquarist Society** (Mr. P. Roberts, 12, Scholars Road, Chingford, London, E.4); **Gloucester and Cheltenham Aquarists' Society** (Mrs. I. Birt, 195, Old Bath Road, Cheltenham, Glos.); **Lambeth Aquarist Society** (Mr. W. J. Offord, 31, Kenbury Street, Camberwell, London, S.E.5); **Richmond and Twickenham Aquarium Society** (Mr. D. J. Taylor, 371, Richmond Road, East Twickenham, Middlesex); **Southern Amateur Aquarists** (Mr. H. T. Richardson, 1, Arundel Terrace, Brighton, Sussex); **West Wilts Aquarist Society** (Mr. K. G. Rigby, 11, Haden Road, Trowbridge, Wiltshire).

New Societies

Haslingden Aquarium Society: Secretary: W. Taylor, 11, Salisbury Street, Haslingden, Lancs. Meetings: First Thursday each month. **Shrewsbury** area aquarists interested in joining a new society there are invited to write to Mr. P. G. F. Brain, Park House, Wem, Shropshire. **West Kent Aquarists' and Pondkeepers' Association**: Secretary: D. J. Adams, 568, Grove Hill Road, Tunbridge Wells, Kent. Meetings: Third Monday each month, 8 p.m., at the Imperial Hotel, Southborough, Kent. **Wrexham** area aquarists interested in joining a new society there are invited to write to Mr. T. H. Evans, 17, Moreton Avenue, Johnston, Nr. Wrexham, North Wales.

Aquarist's Calendar

19th July: **Greenwich and District Aquarists' Society** Show at Charlton House, Charlton Village, London, S.E.3.

19th July: **New Cross Aquarists' Society** Show held in conjunction with the South-Eastern Section of the Guppy Breeders' Society at Childeric Road School, Childeric Road, Deptford, London, S.E.8. Open noon to 9 p.m.

2nd-4th August: **Southall Aquarist Society**. Display of tropical aquaria at the Grammar School, Southall, Middlesex.

4th-9th August: **Hendon Aquatic Society** Fourth Annual Open Show and Exhibition in the Hendon Borough Show, Hendon Park, Hendon Central, London, N.W.4.

4th-11th August: **Blackpool and Fylde Aquatic Society** Open Show. Details from Mr. G. Robinson, 17, Victoria Road, Poulton-le-Fylde, Blackpool.

7th-9th August: **Portsmouth Aquarists' Club** Annual Open Show at Wessex Drill Hall, Portsmouth.

12th-16th August: **Bournemouth Aquarists' Club** Exhibition and Open Show. Details from Mr. R. Matley, Breezeland, Dean Swift Crescent, Parkstone, Dorset.

23rd August: **Dorking Aquarists' and Pondkeepers' Club** Show in conjunction with Dorking Gardeners' Club at Dorking Halls, Open 2 p.m.

25th-30th August: **Romford Aquarists' Society** Open Show. Details from Mr. R. Alley, 13, Hayburn Way, Romford, Essex.

Entries Invited

Accrington and District Aquarist Society Annual Show includes open classes. Details may be obtained from Mr. J. Pettifer, 44, Fountain Street, Accrington, Lancs. Date: 4th-6th September.

Bethnal Green Aquatic Society. Third Annual Show, includes classes for furnished aquaria and fighting fish, open to all London societies. Entry forms from F. W. Hillard, Bldg. 4, Evering Road, London, N.16. Date: 6th September (entries close 22nd August).

Portsmouth Aquarists' Club First Annual Open Show. Schedules obtainable from Mr. H. E. Iverson, 24, Bertie Road, Southsea, Hants. Date: 7th-9th August.

Romford Aquarists' Society Open Show. Schedule and entry forms from R. Alley, Bldg. 13, Hayburn Way, Romford, Essex. Date: 28th-29th August.

Walthamstow and District Aquarist Society Annual Show, includes classes for club furnished aquaria with trophies as awards. Entry enquiries to Mr. K. D. Selman, 38, Brunswick Street, Walthamstow, London, E.17. Date: 20th September.

Crossword Solution

R	U	B	B	E	R	T	U	B	I	N	G
E	R	A	R	R	N	O	R				
P	R	I	M	U	L	A	S	D	A		
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1 (c). 2 (b). 3 (d). 4 (a). 5 (b). 6 (b).

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