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**THE AQUARIUM**

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**ALL POSTAL ENQUIRIES TO GOLDHAWK ROAD ADDRESS**
Indoor Gardens

What does the aquarist do with an old leaking aquarium or a fish bowl that is no longer used? What about making an indoor garden (usually called a bottle garden) from them?

To make an indoor garden we set up what is virtually a dry aquarium, that is, one which includes growing plants but excludes water and fishes. The bottom of the container is covered with several inches of a well draining compost. A suitable one would be John Innes potting compost no. 1, with the addition of a few handfuls of aquarium gravel and a cupful of charcoal to keep the compost from turning sour. Slightly dampen the mixture and spread it evenly on the base of the container.

For very small containers dwarf slow growing plants are best, but for larger ones the choice of plants is wider. Small ferns which are suitable can often be found growing between the stones on old walls. A couple of dwarf bray Little plants could be included in a larger container, but slow growers such as Peperomia and Pilea will do for either size. Young plants of Chlorophytum, the spider plant, have attractive yellow and green foliage, as have some of the indoor ivy plants which could be included. Zebra, with its attractive silver, purple and green leaves, is also suitable, as are some of the tradescantias.

Water the plants once they are planted and cover the container with a close-fitting lid. An all-over cover glass will do for an aquarium and a sheet of polythene can be made tight-fitting over a fish bowl, with a rubber band. The container is placed in a light position and needs no attention until the plants grow too large and become overcrowded, when they can be pruned.

The container is self supporting. Water which evaporates condenses on the glass sides and returns to the soil. Plants, during photosynthesis, change carbon dioxide to starch and sugars and give out oxygen, and at night they produce only carbon dioxide. Light, heat, food, water and air are thus present and although some of the air and plant foods will be used up to produce new plant tissues, there is still plenty to maintain the set-up.

Such an indoor garden can exist for many months without any attention whatsoever. Ordinary bottles or sweet jars can also be used for bottle gardens, a pair of aquatic planting sticks being used to plant plants through a narrow-necked bottle. Soil is poured through a funnel made from an old newspaper, into the bottle. The soil may be covered with a layer of aquarium gravel for decoration, and a few small rocks would enhance the garden.

B. Whiteside

November, 1965
Rivulus urophthalmus

Before spawning the male of Rivulus urophthalmus approaches the female closely with a shaking motion, staying close to her even with the slightest change in her position. Similar behavior is noticed in many Epiplatys species. As the male approaches the female, he presses her towards the future spawning site, in this case the bushy strands of Myriophyllum growing on the surface.

by A. van den Nieuwenhuizen

Photographs by the author.

It is curious that the Rivulus group apparently must be reckoned as more or less an "underdeveloped area" in aquarium circles. This may be a strange analogy but, in general, few aquarists have heard of these fishes, let alone seen them. Whenever one speaks of Rivulus cylindrical there is some nodding of heads in recognition, but as soon as Rivulus aylus, Rivulus santosus or Rivulus urophthalmus is brought into the spotlight, puzzled looks appear instead, for it is not known what to make of these names! Perhaps things are different in England from here in the Netherlands, for the fish originates from the Guianas farther on down to Brazil, with Sao Paulo as its approximate southern border. This indicates, of course, that the fish is also to be found in the Amazon basin and the tributaries of the Orinoco.

The fishes from these regions appear, naturally enough, more often in America than in Europe, and, in spite of the fact that the first importation of Rivulus urophthalmus was from Maranhao (north Brazil) to Germany, the fish is seldom seen here. Even in the tanks of Air Fish in Amsterdam (a famous Dutch importers noted for bringing many fishes from these regions to Europe), alas, only occasionally is this beautiful fish found.

In Nature, Rivulus urophthalmus mainly inhabits flowing waters—not very surprising in the light of its elongated body shape. As a consequence of its enormous range, it is likewise no additional surprise to learn that this species occurs in different colour varieties. One encounters, for example, basically greenish varieties, those predominantly brownish, an almost all-blue type and very well known is the orange-red variety (a derivative of the yellow-gold form which is incorrectly offered under the name Rivulus lateratus). On the body of the male we find a number of longitudinal rows of reddish-brown to pure red stippling. The pectoral fins are virtually transparent but do tend towards yellowish at their base with a bluish base in the middle and a reddish tint at their tips. The small ventral fins are yellow-orange; the dorsal fin is variable in coloration.

THE AQUARIST
One egg is laid on fine-leaved plants and others between the stems of Vallisneria and the leaves of Cryptocoryne, on the bottom in the peat, against wood, in the corners of the breeding tank, in gaps in the aquarium cement and between stones; in short, no place is overlooked!

Towards the conclusion of spawning, the female retreats to a point of safety. In the breeding tank it is a good idea to supply Riccia, which floats upon the surface, for these fish do not seek out their eggs to eat them. The female will not only eagerly spawn in this medium, but will, upon occasion, utilise it as a resting place.
These young are deformed by use of too high a temperature in the hatching container.

mostly greenish right at its base and yellow in the upper portion of the fin. Reddish dots cover the base of the dorsal, turning into fine, vertical stripes at the rear, uppermost portion. The anal fin likewise has three zones: at its base, a narrow bluish border, then a narrow greenish zone which grades into yellow, bordered in orange. The tail fin is more or less colourless but the fin rays themselves are tinted faintly in red.

Rivulus Spot

This colour description is of fish in my own possession. The dorsal portion of the male's body is olive brown, the flanks are partly a glistening green, tending to blue near the belly. In brief, the males are quite beautiful. The females are much less colourful. They are basically olive brown. There are also a number of scarcely visible longitudinal rows of red dots, but their colour is so weak as to escape notice and thus appear to be absent. The back is more or less mottled, this characteristic being clearly shown in some of the accompanying photographs. A spot appears at the root of the tail before the base of the caudal fin—the black "rivulus spot" preceded by a golden spot.

In spite of the fact that I have given but a partial colour description of this fish, one should gain the impression that we have a really beautiful fish. My own personal opinion is that most of the Rivulus are similarly quite pretty. Among these beauties are Rivulus agilius and Rivulus aequilus as you will find out if you have the opportunity to purchase them. And with such purchase comes the question of what sort of aquaria conditions should be offered to keep them at their best. Clearly all indications are of a surface fish, and such fish do best in large tanks. Deviations from the conventional shapes, however, are entirely without merit. On the contrary, I have for a long time kept such fishes in a 28 in. by 20 in. by 12 in. tank. This tank depth is only 12 in. so that the surface area is quite large. The aquarium was filled with soft, slightly acid water. On the bottom lay a peat mulm of very finely shredded peat. The planting consisted only of Myriophyllum and Cryptocoryne nitida. The Myriophyllum grew long strands upon the water surface, between rafts of drifting Riccia. This tank contained my Rivulus collection, and in it they all felt quite at home. A constant, briskly running filter not only kept the water crystal clear but imparted some movement as well.

With this tank, I had to do nothing more than net out the young periodically. I never raised the temperature but kept it between 72° and 77°F (22-25°C). For feeding, mostly midge larvae were supplied, later fruit flies and other water insects, and for the young fish Daphnia.

I will not pretend that soft water is entirely necessary for the care of this fish. On the contrary, it is easily accommodated to hard water, thus simplifying the raising of them to maturity. However, if the intention is to raise the greatest possible number of young, then the simplest method is to utilize a tank of about 13 in. by 8 in. by 8 in. It can be done with smaller tanks but I am no advocate of this because I favour giving my fishes plenty of room.

Breeding Tank

I always use tanks of 16 in. by 10 in. by 10 in. These breeding tanks are, for all killifishes, filled only to a depth of 3 to 4 inches. Before breeding, the sexes are separated. One must take care with Rivulus urichi to see that the females are not allowed to become too heavy with eggs, otherwise, they will drop them in a "pseudo-spawning" without the presence of the male. As soon as the females are full enough, they are placed in the breeding tank in a ratio of two females to each male. The fish may be fed while in the breeding tank but, naturally, this must be watched carefully since decaying food can quickly foil the water.

If the fish are in good condition, and fully grown, the first day's harvest of eggs may total 20 or 25 per female, two females, of course, producing about 50 eggs. This number decreases rapidly until, shortly, one is content with a daily harvest of 20 eggs. It will no doubt be observed that a portion of the eggs will turn bad. Therefore, a few drops of a acidifying solution are added to the dishes in which the eggs are stored to prevent bad eggs from affecting good eggs next to them. The shallow egg-storage containers should be kept in a darkened location, the best storage temperature being about 73°F (23°C). At this temperature the young hatch out in about 12 to 15 days. Frequently, the newly hatched young cannot discard their egg membrane from around their heads. In such an event, we carefully eviscerate the fry up through a pipette of suitable diameter, and in passing through the opening of the pipette the 'half' or membrane will drop off and the fry may be transferred to a rearing tank. Higher temperatures during egg development may be fatal. At temperatures between 81° and 82°F (27-28°C), embryonic development may be retarded. Frequently, such embryos die before development is completed. Those that do survive are often deformed.

Rest Period

The breeding period can extend over a long period of time. When using two females to one male, 1 or 2 days' rest may be given per week. The lengthening or shortening of this rest period is learnt through experience, the speed of recovery of the female being the only guiding factor. Rearing of the fry is easily accomplished and they take brine shrimps from the start. It is best to place the newly hatched young in a shallow container. After about a week, one can begin to raise the level of the water with fresh water. This greatly stimulates growth.

With the yellow-gold variety of Rivulus urichi, we often get the impression that the first generation of young is almost all red coloured. This is a consequence of its basic colouration being overlaid with intensely red dots. With age, at a length of about 2 inches, these spots fade somewhat, resulting in an exceptionally beautiful fish.

Concerning the length of this species, textbooks give this as 2 to 2½ inches. Perhaps, however, this measurement does not include the tail for actually fully grown urichi easily reach 3½ inches.
Cultured and Other Foods for Fishes

by A. JENNO

Over the years, aquarists have found several small creatures which are easily cultured at home in quantity and which are very suitable fish foods. These are dealt with here in order of use.

Infusoria is a general name given to various groups of small organisms which are used as the first food for small fry. Infusoria can be collected from ponds, water lilies, etc., but to obtain it in any quantity it must be cultured.

The old-fashioned method, which is very effective, is to stand rows of jars in the sun, each containing crushed lettuce, hay or other vegetable pieces. The jars then become infected with Infusoria spores from the air, and in a few days the jar will be full of Infusoria. This is then fed to the fry. The quantity to be fed requires some judgment and does, of course, depend on the size of the fry. The trick is to keep enough jars going in rotation to ensure a constant supply.

Nowadays there are various Infusoria tablets etc. on the market which can be added to the fry tank and produce Infusoria easily. One method of producing Infusoria, which also provides additional aquatic interest, is the keeping of Amphilura snails. These large snails live mainly on green food and their droppings encourage the growth of quantities of Infusoria. Depending on the type of food given, different types of Infusoria will be produced, but unless the aquarist is prepared to identify the types with a microscope this is rather a futile point. The most favoured food for Amphilura is lettuce.

When using these snails it is essential that the water in their container is not allowed to cool as they will not tolerate bad conditions. Therefore, even when no fry are being fed, the Infusoria must still be removed and replaced with fresh water regularly. If it is wished to breed the snails, a temperature of about 78°F (25°C) is preferred. They are not bisexual so a pair is necessary. After mating, the female lays the eggs above the water line in the form of a large pink bunch which looks like an overgrown raspberry. The eggs take up to a month to hatch and must be kept warm and damp. There are several species of Amphilura, one of which is said not to eat aquarium plants, but unless the aquarist definitely possesses this species, it is best not to put these snails in planted aquaria.

One of the foods most favoured for young fishes is the brine shrimp. This small animal is found naturally in certain salt-water lakes in America and the eggs are collected, dried and sold all over the world to aquarists. The eggs can be kept for very long periods and are thus a convenient means of transporting the food. Having obtained some eggs, the aquarist must hatch them out in salt water, and it is the newly hatched shrimps which are then used as food. One dessertspoon of sea salt per pint of tap water will usually hatch the eggs. The time taken to hatch will depend on the temperature of the water. At 80°F (27°C) hatching takes place in 24 hours, and at 70°F (21°C) about 36 hours.

If the aquarist wants to use brine shrimp in quantity and to give daily feedings, several hatching containers will be necessary and must be used in rotation. The container should be wide and the water in it shallow, and some means of warming the water will be necessary. Many aquarists hatch their shrimps in large jars which are floated in an aquarium to keep warm. This is not a good practice as over a period of time a salt content may build up in the aquarium used, and this might not agree with the type of fishes kept. It is usually sufficient to stand the dish or jar on top of an aquarium which has a thin cover glass. Provided that the location of the aquarium is not cold, the jar will keep warm enough in this way. Aeration is beneficial and the water should only be a few inches deep.

The number of eggs used will obviously depend on the number of shrimps required at each feeding, but, as a start, put in as many as will cover a sp inauges and continue to add this amount at times corresponding to the feeding times. By doing this it should be found that once the initial batch has hatched, newly hatched shrimps should be available for each feed. When hatched the shrimps will congregate in the area of the container which receives the most light, and they can be siphoned off from there, carefully, into a fine net or clean white handkerchief. With care, no shells or dead shrimps will be removed as these will be either at the surface or on the bottom, although if aeration is used it will be necessary to stop this and allow the jar to settle before siphoning. The shrimps should be washed in the net under the tap to remove the salt from their bodies before feeding to the fishes. One container of salt water used in this way will usually last just over a week, after which time the water goes sour and the hatching rate drops. It is therefore necessary to use at least three containers if a constant supply is required; one for finishing, one going at its best and the third just starting. Brine shrimps can be raised to the adult stage by feeding with Infusoria etc., and they make a very good food for adult fishes, but to raise any quantity requires almost as much bother as raising a spawning of young fishes, so not many people do this.

It is sometimes possible to buy frozen adult brine shrimps, which are defrosted and then fed to the fishes, but so far these are not generally available in this country. Newly hatched brine shrimps are used by almost all breeders as an excellent first food for livebearers and large egglayers, and as a second food for other egglayers. Fishes should not be fed continuously with brine shrimp for more than a few weeks, however, as an excess of salt may be produced in the body, and this can prove harmful.

Micro worms are also used for very young fishes. These small, white worms are just visible to the naked eye, and when required in quantity must be cultured artificially. The method is to prepare a shallow dish or container, the bottom of which is covered with a layer of cooked porridge made up into a thick paste. The dish is kept at about 75°F (24°C), and preferably in the dark, and the new culture must be seeded with a small portion of an old one. After a few days the worms will have bred to such an extent that the surface of the culture will be covered with them and there will be a thick band of them on the sides of the dish just above the culture level. These can be removed with a fine paint brush and fed to the fishes. The culture will continue almost indefinitely, but usually...
after about a fortnight the smell becomes very strong and the worms do not breed quite so fast unless fresh porridge is added. It is better to start a new culture each week and use them in rotation (unless one possesses a very weak sense of smell and lives alone!).

Grindal worms are a stage larger than micro worms and are cultured in peat or earth. They too must be kept warm and the culture must always be very damp. It is usual to buy a culture to start with and to keep this going by feeding with porridge takes, bread, Breadcrumbs, dry fish foods, or practically anything convenient. The food is laid on the surface of the peat and a piece of glass placed on top of this. When the culture develops a lot of the worms will lie on the underside of the glass and this can then be dipped into the aquarium to feed the worms to the fishes. Avoid including the worms' food and the peat from the culture. The secret of keeping both Grindal and white worm cultures going well is to be a mix of so many at one time that the number left in the culture is reduced beyond that needed to keep up the breeding rate. If a large supply is required several cultures must be used. Dig the peat over occasionally and keep it wet. The worms seem to appreciate a change of food almost as much as the fishes do.

White worms are the largest of the cultured worms generally used as fish food. They differ from Grindal and micro worms in not liking heat and do best at 50-60°F (10-15°C). Their culture and method of feeding is as already described for Grindal worm, except that they are usually cultured on a larger scale in shallow wooden boxes. They are a useful food for adult fishes, but should not be fed to very young fishes as they can become entangled in the young fish and thus strangle it. Nor should they be fed too heavily to adult fishes as they are a very rich, fatty food, and if used in excess are said to cause degeneration of the reproductive organs. Apart from these points, however, correctly used white worms are an excellent food for promoting growth and getting fishes into breeding condition. They have the advantages of being cheaply obtainable and easily cultured.

The bacteria is the name given to a small wingless fruit fly developed by scientists for experimental use. It is also a very good food for medium and large sized fishes. The flies are cultured in bottles or jars kept at above 70°F (21°C). The top of the jar is covered with fine mesh gauze or fine cloth and a half-inch layer of fruit mash put on the bottom. This must be in a state of fermentation and must be kept damp. This last point is very important. Yeast may be added to the mash to speed up the fermentation, and may also be added to the new cultures. When a large number of the grubs have changed into chrysalids the culture is allowed to dry out and the newly hatched flies are then fed to the fishes. Remember to retain future breeding stock. It is important not to let ordinary winged fruit flies into the culture, as winged young may then be produced which would be difficult to feed to the fishes and also would not go down well with the aquarist's family. Dead flies can be obtained from biological supply firms, universities and large schools.

**Table Foods**

We now pass on to the foods for fishes which many aquarists ignore. Almost everything we eat will be taken to advantage by our fishes, in one form or another. This does not mean that you can throw all the leftovers into the tank, but it does mean that by a little bit of experimenting, several very useful foods can be obtained from the wife's shopping trips.

First in importance on my list comes cooked peas. Fishes invariably do not get enough green food in a mixed aquarium and this is an easy method of providing it. Remove the transparent shell and feed with the inside. Liver, salmon and various meats are excellent foods but should be prepared by immersing in hot water to remove any gristle and then crushed in the fingers before feeding. Be especially careful not to overfeed and pollute the tank. Further examples on my own fishes' diet are fish "fingers", hard-boiled egg yolks, dry cooked porridge, cheese (occasionally) and fish paste.

There are many other things which can be tried. The main points are to avoid introducing anything live into the aquarium and not to overfeed. When introducing fishes to a new food don't expect them to take it greedily at first. Feed a little in with their usual food and let them get used to it before feeding with it separately.

Some of the commercial pet foods can be used to advantage as well. In particular dehydrated cat foods consisting of hard dry lumps, usually sold in paper bags, are very good. The large fishes at London Zoo aquaria that we gain on canned meat usually sold for cats and dogs. The use of mawbrow jelly is probably a bit dodgy.

**Dry Foods**

There are available on the market today very many different prepared dry foods for aquarium fishes. Practically all aquarists use them and in most cases dry food is the major part of the fishes' diet. The better class and more expensive dry foods are almost a substitute for live foods, but they must not be regarded as the best food available. The serious aquarist must provide live foods in his fishes' diet if he expects good results. Dry foods are useful, and the better ones will even keep fishes going for long periods without live foods, but they must not be relied on entirely.

Dry foods should be fed sparingly otherwise clouding of the water will result, with consequent pollution, which can be obtained in tablet form, and this is useful where inexperienced persons perform some of the feeding duties. Most good dry foods carry an analysis of contents. This should be studied, and when buying a new food these can be compared. Special foods are also sold containing a high proportion of vegetable matter, and others with increased richness which are called conditioning foods.

One of the big controversies among aquarists, especially those who show fishes, is over the use of colour food. The basis of this food is aureomycin, which is an antibacterial, and this causes increased growth rate in young fishes and a very marked intensification in the colours of both young and adult fishes. Unluckily, what is lost on the roundabouts we lose on the swings, and aureomycin has its disadvantages. Heavy feeding with this causes lack of vitamins E and K, which produces sterility and shortens the life of the fishes. Therefore if it is desired to use colour foods, it is important to make sure that the contents of the particular food used contains additions of vitamins E and K to compensate for these disadvantages, and it is also better not to feed with the food too often, once or twice a week being quite sufficient.

These notes have been prepared with the aim of helping the beginner aquarist and also encouraging the more experienced aquarists to give their fishes a better diet than they probably do. It is sometimes a lot of trouble to feed our fishes properly and often takes up a fair amount of time, one way and another, but the reward is well worth it.

A tank of healthy, colourful fishes is one to be proud of, while unhealthy fishes, kept on a poor diet, will not encourage their owner or anyone else to have any enthusiasm for the hobby. Many troubles in set-up aquaria can be traced back to bad feeding or overfeeding and thus, by getting his fishes on to a good diet and maintaining it, the aquarist can win half his battles quite easily.

**Detailed instructions with illustrations for culture of live foods are given in "Fish Foods and Feeding" (4th, 114, post free from The Aquarist or from dealers).**

THE AQUARIST
Aquaria on the Screen

A report of the recent Hendon A. S. Convention written by A. E. STEVENS

An audience of well over 300, including aquarists who had travelled from the Midlands, South Coast towns and from Ireland, packed the lecture hall at Hendon Aquatic Society's annual convention last month to hear Mr. A. van den Nieuwenhuijen's talk and to see his photographs.

In the first part of his lecture, Mr. van den Nieuwenhuijen explained how Dutch aquarists furnished their tanks, with advice on the choice of plants and rocks. The interior design of the tank was obviously to be influenced by its position in the room and the placing of plants was very important to obtain "depth" in the final picture. Exhaustive use is made in Holland of dead wood and cork bark for tank furnishing. Slides, projected by the speaker's assistant, Mrs. L. Reinsche, clearly illustrated the points made and showed that tanks used on the Continent are made to blend with room furnishings. Another feature was the size of the tanks: in most cases they were 6 feet long, 3 feet wide and 2 feet deep, and in some cases were larger—a far cry from the usual 2 feet or 3 feet sizes that are so popular here!

Plant growth with special fluorescent tubes originally produced for horticultural use (Geo-Lux lamps) was described by the lecturer, who had grown a variety of aquarium plants under these lamps during the last 18 months or more. In some cases, leaf form was distorted, that is leaves were of thinner width. The colour of the
leaves was also affected and a lightening of the green was a common result. With some plants the growth was very good, especially with the Madagascar lace leaf plant, but only for several months—algae would appear almost overnight and clog the delicate form of the lace leaves. Use of a mixture of this light with normal fluorescent light or tungsten filament lamps gave a better balanced growth, reported the lecturer. He also pointed out that fluorescent lighting, although efficient in terms of light output for power consumed, is expensive to install.

Slide sequences on fishes and their habits were most featured and described. The colours of fishes before and after spawning was a very interesting subject and some time was spent showing the changes. The feeding of fishes was also commented on.

During a refreshment break aquarists had the opportunity to meet each other and chat to the various lecturers, judges and writers who could be identified by name badges in their lapsels. Great interest was shown in the several exhibits. Mr. H. J. Voiper, well-known lecturer in the south-east, displayed a great variety of rocks and fossils and gave advice on the safe types of rockwork that could be used for aquarium use. To demonstrate easy methods for transporting plants to shows, Mr. P. C. Karrizky had brought along with him various species of aquarium plants and presented them in the manner recommended for showing rooted and cutting plants. The foyer and hall were decorated with very attractive settings of pot plants supplied by a local florist and pet shop, Flora and Fauna, and Mrs. J. Jackson of the Central Aquarium was present with a display of equipment, foods and accessories which could be purchased. Newer products on the market were available for inspection.

An aquarium lighting display was staged to show the effect of special lamps. Two 24 in. by 12 in. by 12 in. tanks were arranged side by side, each furnished with fishes, rocks and plants. By means of a control switch, the type of illumination over the tanks could be varied. Five illuminations were provided for: (1) low power tungsten filament bulbs (one 25 watt over each tank), (2) a 4 ft. white fluorescent tube, which resulted in a rather "cold" lighting effect but of much brighter intensity even though approximately the same amount of electrical power was consumed, (3) a warm white fluorescent tube, a much more pleasing effect than (2) being given by its addition of more of the 'red end' of the visible spectrum, (4) a Gro-Lux lamp, the light emitted being of a lavender colour, and (5) high power tungsten filament bulbs (one 100 watt over each tank) giving the same intensity of lighting as that given by (2) and (3).

Great interest was shown in the Gro-Lux demonstration. With it, the green of the plants was almost unaffected but the most startling effect was on the colours of the fishes. Those having reds and blues were changed quite remarkably. Neons and cardinals really glowed, but the effect on quite average coloured red snailwre had to be seen to be believed; their increase in colour was such that the writer is at a loss for words to describe the change. Even a blind cave fish looked as if it had been freshly skinned and was raw all over!

Continuing after the break with more information on fishes, Mr. van den Nieuwenhuizen also showed some other creatures from the same region as the fishes. Birds and snakes were amongst those shown and the speaker included some slides of his own and friends' pets, including monkeys and a amusing sequence on the bathing antics of a pet owl. With tropical marine fish-keeping becoming a little more popular in this country it was only natural that some information on the requirements and habits of some of these fishes was given. An outstanding sequence was one showing interdependence of the amusing clown fish and the sea anemone. The enthusiastic audience showed its appreciation with a terrific round of applause, which once more brought another successful Hendon A.S. Convention to a close. However, the busy weekend for the Hendon club members was not yet over, as on the following day a party travelled with their Dutch guests to Regents Park Zoological Gardens where, of course, visits behind the scenes of the Aquarium and the Reptile House were made. With Mr. van den Nieuwenhuizen's great interest in birds, he made a special visit to the newly re-opened bird cage designed by Lord Snowdon.
ABOUT THE POND THIS MONTH

Pure Water for the Winter

by A. BOARDER

At this time of the year the question arises as to whether to clean out the garden pond or not. There can be no hard and fast rule about this as so much depends on the type of pond, its position and its inhabitants. Any small pond will benefit from a thorough clean out but what constitutes a small pond is another question. Any container pond of less than 12 ft. by 10 ft. should be cleaned out, especially if the water looks impure. This may not be obvious to the beginner whereas an experienced aquarist can tell at a glance if the water is in good condition. It should smell sweet and have no smell. Poul water usually looks bad and lacks that crystal clearness so sought after by pondkeepers.

It has often been said that a pond with green water is a healthy one but this state can suddenly become very dangerous. If the green algae are too thick the pond can become anything but healthy and if much of the algae die off the water can soon become very foul with a putrid smell. A bad condition is when there is mauve or purple patches of floating weed round the edges of the pond or on plants. The water in such a pond will smell badly and must be changed. I know that green water has often been spoken of as very good for fishes and I know that in the past I have held that opinion. However, time has made me change my mind as I have lost whole batches of fry by putting them water too thick with green algae. I do not mean admitting that I may have been wrong in the past as I am old enough in the trade to admit faults or wrong ideas. We are all inclined to take as gospel truth anything which we read but it is only after years of experience that we come to question some of these so-called truths.

The good aquarist is always experimenting and it is surprising how many of the old ideas he can prove to be wrong. I am the question of cleaning out the pond can cause many arguments. We all know the aquarist who claims that he never cleans out his pond and has no trouble, but there are many losses of fishes caused by the owner of the pond neglecting to do this task.

One might raise the point that in Nature a pond is not cleaned out, but there are many things which can tend to keep waters clear. For one thing there is the natural movement of the finest going on among the fishes and other inhabitants. Few ponds in Nature would function well if as well ventilated as many fish per gallon as the average garden pond. Not so such ponds have to be subjected to the planting feeding which the garden pond has to suffer.

If the pond has any trees in the vicinity it is almost certain that some leaves will have blown into the pond. The water is able to take a large amount of these but if the pond is small or the water shallow it is probable that the decaying leaves will soon pollute the water. A pale brown discoloration soon occurs in such a pond and although some fishes seem to be able to withstand such water there are others which will soon succumb.

The time to clean out the pond will be when all the leaves have fallen and the water lilies have died down. The way, it is a good plan to remove the water lily leaves as they start to die as they soon pollute the water. A decaying leaf on top of the water will soon show oily scums around it, which indicates that purification is taking place. The pondkeeper who has wisely planted his lilies etc. in separate planting crates will now be rewarded for his care, as it is easy to slide out these containers to the side of the pond when some of the water has been removed. If the lilies and other water plants have been set in a depth of soil at the bottom of the pond it will be almost impossible to remove them. In such a case it will be possible only to remove most of the water and carefully refill with fresh.

The emptying of the pond can present problems. The thoughtful pondkeeper who made the pond at the highest part of the garden, if any, will be able to siphon out much of the water. Others will have to resort to the bucket unless they are the happy possessors of electric pumps. I bought one of these over 25 years ago and it has been very useful many times since. My plan is to set this pump working before breakfast and then by mid-day the pond is nearly empty. Once the water is low enough the fishes are carefully caught and placed in a spare tank or bath. Then the plants in their containers are dragged out to the side. Do not try to catch the fishes too soon or you will cloud the water so that the fishes cannot be seen. Once the water level is lowered the fishes can be seen and caught with less trouble.

When I made my pond I constructed a deep bowl-like structure in the middle to take the water lily. This has since proved most useful as all the mud gradually slips into it, where it can be removed with a bucket. Once all has been removed the pond sides can be examined to see if there are any cracks. These are easily mended with Prompt cement and sand in equal parts. The sand must be fine to penetrate into small cracks. This cement sets in half an hour, when the whole concrete surface can have a good brush round and thorough washing with a hose.

The fresh water can now be run in and the water plants gradually returned to their right positions. At the same

November, 1965
time, if any have become too large they can be divided or pruned. Do not be too much of a hurry to return the fishes. I find that they are not too fond of fresh tap water and so I never like to put any fishes directly into this until it has had a chance to lose most of the chlorine. Whether this is what the fishes dislike I cannot be sure, but if young goldfish are suddenly placed into tap water, freshly drawn, after they have been in mature water, they are anything but comfortable and their mucous covering looks wrong, rather milky in appearance and uneven. After a time the water appears to get in better condition and this is helped by the fact that some of the old water from among the water plant roots will tend to alter the tap water somewhat. When using fresh tap water for a tank of young fishes I like to have half the tank at least filled with mature water from a pond or another tank. The fishes are then undisturbed and can start eating immediately whereas they will not start to do so for perhaps a day if they are changed suddenly from mature water to fresh tap water.

As the fishes are returned to the pond they can be examined carefully to see that they are not infested with pests, such as leeches,lice or anchor worms. These last-named appear to be on the increase in garden ponds and I have had notice of several infestations during the past few months. They appear as small hair-like projections hanging from the fishes and are quite difficult to pull off. A touch with near Dettol or Milton on cotton wool will usually kill them.

Once the pond has been cleaned out it will be necessary to inspect it now and again to make sure that no more leaves have fallen in. If these are netted from the surface soon after falling they are easily removed, but if many are allowed to sink they may take a lot of clearing out. The main purpose of clearing out the pond is to save the lives of the fishes during a severe freeze-up. Many pondkeepers think that it is the cold which kills their fishes when the pond freezes over, but this is not so. Goldfish can withstand hard frosts and just remain dormant whilst the water is frozen over. What kills the fishes at such a time is that once the water freezes over the fouls gases cannot escape and fresh oxygen cannot enter the water. Foul water when it is covered with ice is then a death trap for the fishes underneath.

A hole in the ice is very important, as for one thing it allows the pressure under the ice to escape. It is surprising how much pressure can build up under ice on a concrete pond. One way to help to reduce this pressure is to have a strong box standing in the water. This can be about a foot square and must stand on bricks or be tall enough to have at least 6 inches above the top of the water. A strong lid is fitted and then when ice forms the water inside the box takes longer to freeze than that outside it and so the water can rise inside it and lessen the pressure on the rest of the water. To open a hole in ice a hammer must not be used but if a can of boiling water is stood on the ice a next round hole will soon be formed. If electricity is at hand it is easy to install a tropical tank heater to switch on when severe frost occurs.

Pencil Fishes

by B. WHITESIDE

There are a number of different varieties of characins called pencil fishes available to the aquarist but none of them is as popular as it deserves to be.

Commonly available to the aquarist is the golden pencil fish (Nannostomus anomalous), which only grows to 1 in. in length and is ideal for the community aquarium. The fish has a relatively long thin body ending in a pointed snout, which, combined with a narrow black line running from the snout to the centre of the tail, gives it its name from its resemblance to the stub of a pencil. Above the black line is a reddish golden line. The body of the male has a reddish purple shem, and the male has a red anal fin and white tips to the ventral fins when in breeding condition. The female is a pale golden colour with the golden line very prominent.

Golden pencil fish seem to thrive best in a temperature of about 75°F (24°C). They are seen at their best when a number of fish (four or five) are kept together. When not on the move, the group often remains static, with fins beating rapidly.

Adult fish are not difficult to bring into breeding condition and this can be done in the community tank if a variety of live foods is included. These should be small, as the fish have small mouths. A good dried food is also readily eaten (a recipe for one by Mr. A. Vernon Ashford I find excellent; see "Our Readers Write", The Aquarist, January 1955). When in breeding condition the fish will be quite easily distinguishable into male and female as the males will have bright colours, the black line being much thicker than usual, and the white tips to the ventral fins being prominent. The female fish will be plumper than the males and the colours less conspicuous.

To spawn the pencil fish I introduced a group of five fish, three males and two females, into an 18in. by 10in. by 10in. aquarium which had been set up a week previously. Water quality does not seem to be important and the temperature was gradually raised to 82°F (28°C). Two days later, in the afternoon, spawning began. Two male fish would adopt an aggressive side by side attitude, fins fluttering and colours fashing. They continued in this position for several seconds, like Siamese twins, and then one of the two would dart off after a female who would be moved into a position beneath a selected leaf. The female placed the ventral surface of her body on the lower surface of the leaf and the male joined her in an embrace, as the eggs were deposited. Repetitions of this process continued for several hours, all five fish taking part in pairs, until the females had lost their rounded shape. Eggs which did not adhere to the plant leaf were eaten by the spawning pair as they sank in the water. After spawning the parents were removed. Two weeks later the fry were again seen to be spawning in the community tank in which they had been placed.

To provide suitable leaves for spawning, the bottom of the breeding tank must have a layer of gravel and some plants with broad leaves, such as Cryptocoryne, must be planted.

Hatching of the eggs took 3 days, the fry becoming free-swimming on the fifth day. A tubed fry food was introduced into the water 3 days after spawning and the water was termed with Infusoria when the fry were ready to feed. Only a few of the fry were lost. After a week the remaining fry were fed on a second grade of tubed fry food and then micro worms were introduced into the diet. The home-made dried food previously mentioned, steamed through a nylon stocking, was next added to the diet and the young fish, now 4 weeks old, are approaching fish in length.

A group of these little fish will add an attractive element to any community tank and the prospect of raising a few young ones from eggs gives an added interest.

THE AQUARIST
A fish caught off the coast of Dar es Salaam has been causing quite a sensation among the Muslim adherents in the region. Apparently it bears certain characteristics of its tail which resemble the Arabic prayer "Allahu Akbar", which being translated reads "There is no God but Allah," reports The Observer. Although three single vertical strokes do not appear in the characters, which are situated at the base of the caudal fin of the fish, it has been confirmed by The Institute of Islamic Studies, London. The report goes on to quote an earlier recording of a similar find in J. R. Norman's "Fishes: "A specimen which made its appearance in the fish market at Zanzibar the markings on the fin bore a remarkable resemblance to the old Arabic character, reading on one side of the tail 'Allahu Akbar' and on the other side 'Shami Allah' (a warning sent from Heaven)

The fish, which was bought for a penny, eventually sold for 5,000 rupees.

Reported recently in a leading magazine is the story of giant crabs which were being flown from Almas to European aquariums in Manchester, London and Hamburg. When the plane stopped at Orly Airport in Paris, they were transferred to a cold storage room for safe keeping until the next day, when they were to resume their voyage. Unfortunately, the chef of the airport restaurant was not informed that the crabs were to be sent to aquariums, and, assuming them to be for kitchen use, he served them up in a crab salad "a façon du chef!"

On a recent visit to the Swiss lakes, one of the most interesting things I noticed was the widespread habit of keeping fish in tanks in restaurants and some hotels. One such tank was placed just outside a café in Montreux, a popular tourist resort near the French border. Customers to the restaurants can thus choose the particular fish they wish to eat, and have it, what is more, absolutely fresh. I should imagine that the keeping of wild fishes in tanks in this way presents its own particular problems, but one comfort to the proprietors is that assuming the business is good, the expectations of life of the fishes is comparatively short. I did notice, however, that every tank was subjected to constant aeration, and protected from the direct sunlight of the sun. On one occasion I saw a large garden pond crammed full of freshly captured trout awaiting consumption at the owner's leisure.

I was delighted to read reports in the Daily Mail recently of researches into fish culture at present being undertaken in the British Isles. The theory behind it is sound. By selective breeding "super fish" for the table can be evolved in much the same way as the common anchovy has been evolved from its wild-type ancestors. Of course, the experiments will not be looking for aesthetically satisfying points, as does the aquarium breeder, but merely for size, and other factors tending to improve the species for human consumption. The protection afforded gives a vastly increased survival rate, and consequent increased efficiency for the industry. Mr. James Shellbourne, director of the experiments, claims to have achieved a 70 to 80 per cent survival rate with sole as compared with the survival rate in the wild, which is believed to be well under 1 per cent.

The world's first experimental fish farm for place is situated at Ardmore, Achnamarchan in Argyllshire, where approximately 150,000 baby place are being fed on boiled mussels by a housewife, having been reared to the inch-long stage at the large indoor tanks at Port Erin, Isle of Man. As a control, a further 150,000 are separated and hunting for their own food, to compare the standard of artificially fed fishes with those which have to feed themselves, as under natural conditions.

It seems the time may well come when fish farms are as common a sight as their terrestrial equivalent, and when one will begin to see various artificial strains of sole, plaice and herrings in the fish shop just as there are various breeds of hens, pigs and aquarium fish which would never have evolved without the intervention of man. Another feature of the fisheries to come will undoubtedly be the eventual absence of trawlers and fishing vessels altogether. Whereas there are undoubted examples of romantic bravery in the thought of men weathering storm and tempest to obtain the fish we eat, it is equally certain an inefficient method of doing so, and the eventual installation of fish farms in a big way will surely render it obsolete.

It is well known that travellers tend to exaggerate their experiences, and also well known among those who have come into contact with the fish that reports of the ferocity of piranhas tend to be somewhat over-dramatised. However, sufficient damage to herds has been caused in areas where they are indigenous to force the native people to have an "early warning system" installed, enabling them to keep themselves and their animals away from the water when a large shoal is passing through. The fishes are said to attack cattle by tearing the flesh from the ankles, thus causing the creature to stumble and fall into the water where the fish can demolish the remainder of its body. Apparently the only instances where human beings have been killed after encounters with this fish have been when the victim has been haemophiliac; because wounds tend to bleed profusely, such an individual's chances of survival after receiving a bite are negligible when it occurs in isolated places in the wild.
The Flame Fish

by JACK HEMS

The flame fish, sometimes called the red tetra or inra from Rio, after its native home in Brazil, is a deservedly popular member of the family Characidae. Apart from its charming coloration and peaceful disposition, it is always on the go, accepts any small live or dried food, and has a life-expectancy of about 31-4 years. More than that, it can be bred quite easily in a small fish aquarium by almost any enthusiastic beginner. It is formally referred to as Hyphessobrycon fluminensis and, as a rule, attains about 11 in. in length.

In general the posterior part of the body and all the fins except the pectorals, which are clear, are vivid red; the front portion is brassy to greenish silver reflecting pinpricks of greenish gold, with two dark vertical bars on the shoulders. Sexing is best done by observing the anal fin. In the female the outer margin is concave, in the male it is more nearly straight and quite heavily lined and tipped with black. A temperature of 75°F (24°C), with a range of 5°F either way, suits the species very well, and soft water is advised both for normal maintenance and for breeding.

A scrupulously clean 12 in. by 8 in. by 8 in. tank is large enough for spawning a pair, though as will be readily realised, the employment of a larger tank always ensures more rapid growth of the fry. The furnishings of the tank, apart from the essential thermoregulator, heater and a reliable thermometer, should consist of a layer of well-washed compost and several tied bunches of any plant with finely divided or bushy foliage.

Before placing the fish in the tank, it is recommended to condition them. This means that the sexes are parted for a while and, during their separation, fed on live food plus the richest (in food value) tit-bits you can lay hands on, such as scrambled lean beef, crumbs of hard-boiled egg and cooked and shredded liver. A word of warning: always swirl the liver around in a tablespoonful of water to separate the larger particles from the unwanted, and potentially polluting, bloody residue.

This extra attention should result in the fish showing enhanced coloration, markedly so in the male, and a sprightlier manner. Another thing, if the female is filling, or has filled up, with Roe or spawn, her flanks will show a distinct bloatedness or bulge. When you feel certain that the fish are ready for spawning, transfer them to the breeding tank—adjusted to the temperature they have been used to, last thing at night or first thing in the morning. Then raise the temperature very slowly to about 78°F (26°C).

If everything goes as planned, it will not be long before the male starts driving the female all over the aquarium. During these drives, he will frequently open and close his dorsal and anal fins with all the adroitness and coquetry one usually associates with the performances given by a fan-manipulating grisha. Sometimes he will even involve his drives with jerky little dances or abortive glides to attract the female’s attention. All this, of course, leads up to the actual egg-laying, which begins when the female, obviously worked up to a high pitch of excitement, makes a mad dash into the plants. And there, with the glowing male trembling at her side, she will release some sticky eggs. Thereafter the couple will repeat their actions elsewhere in the plants. And so spawning continues in this manner until roughly 150 eggs have been laid.

As soon as egg-laying is over, the parent fish must be transferred to another tank. If you neglect to carry out this instruction, the eggs will be eaten very quickly. Ordinarily, the fry hatch out within the space of 2 days, and then hang tail down on the sides of the aquarium and the vegetation. But after another 2 days of this inactivity, they will, in increasing numbers, assume a horizontal position and swim away.

To feed the tiny fry, Infusoria, soupy-looking green water and flour-dine dried food may be given. But do take care not to introduce more than the merest pinch of dried food at a time, or else trouble will ensue. As with adult fish, a little food given often (but more often for fry) should be the rule. There is, however, little danger of spoiling the balance of the water if you keep to a microscopical live food for the first week or so, after which such things as micro worms or brine shrimp can be placed on the menu.

With the right sort of attention (regular dip-tubing of the bottom to remove accumulating debris, and plenty of food) the baby fish develop their colours in under 8 weeks, and a few score of them shoaling together in clear water is a thrilling sight.

Diseases of Fishes

The Principal Diseases of Lower Vertebrates by H. Reichenbach-Klindworth and E. Elkan, 600 pages, 100 plates, 600 white illustrations, 1 colour plate. Academic Press. 126s.

NB: third of this book is concerned with diseases of fishes, the remainder covering diseases encountered in amphibia and reptiles. In their Preface the authors state that they have not attempted to make their work “popular”, and some knowledge of biological subjects is undoubtedly expected of the reader. However, serious aquarists and herpetologists will find much to interest them, not least being the practical details of treatments of the diseases, which are given wherever this is possible. Useful summaries of symptoms and treatments are also included. A good deal of information from work hitherto published only in foreign languages is presented and numerous references to all sources are given in the text. The illustrations, many of them photomicrographs, are of a uniformly high quality and the book as a whole is luxuriously produced. It has a detailed subject index and two glossaries of trivial and scientific names and habitats of all the animals mentioned.
our readers

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.

Growth of Aquarium Plants

I WOULD like to compile some information, for later publication on specific facts relating to the healthy growth of tropical aquarium plants. Many aquarists find some plants which they would like to grow in their aquaria, impossible to grow. Information in books is often vague and over generalised and does not include specific facts obtained in a scientific manner, from a number of sources. A set of specific facts governing healthy growth for each aquarium plant would be very useful information.

I would be pleased to receive such information from any reader who is successful in growing one or several tropical plants and who can supply reasonably accurate information on such facts as: water hardness, pH, temperature, sort of compost in which plants thrive (e.g. grade, whether or not peat or leaf-mould is used or if fertilizers are used), whether under-gravel filters etc. are used, the wattage of lighting used and for how long each day, whether the plants receive natural sunlight, whether bulb or tube lighting is used, what types of fishes are kept, what other types of plants thrive or do not thrive in the tank with the named kind, whether or not the plants have bloomed, whether the pH of the water has been adjusted by the use of chemicals. In other words, any relevant information which may have a bearing on the growth of healthy aquatic plants. All of the above facts need not be included but the more that are, the more accurate should be the resulting conclusions.

I will not, unfortunately, be able to answer letters refereed, but the results should, if they are of use, be made available to readers. Any information will be greatly appreciated.

B. A. Wutherspoon
91 Glenarm Road, Larne,
Co. Antrim, N. Ireland.

Criticism of Fish Breeding

I FEEL that your contributor, Mr. A. Burch, in his article "A Criticism of Fish Breeding" (The Aquarist, September), has been a little unfair towards clubs. May I be permitted to answer his criticisms in case he has influenced potential club members and fish breeders away from their aims?

Mr. Burch does not say what experience he has had of clubs, and it would appear that his knowledge, both of club activities and the disposal of surplus fishes, has been gained secondhand. As Mr. Boarder states in his article in the same issue, success by club standards is measured on the show bench.

It should be pointed out that as far as breeding fishes for show is concerned, and this is the true aim of a club member, the emphasis is on quality rather than quantity. One breeder's entry consists of either four or six fish, depending on the rules of the governing body. For this reason, a club member will not breed except with fish of a high standard, which will therefore give breeds of good quality. This means that dealers are always ready to take surplus stock from club members, although I am quite ready to believe that Mr. Burch has had difficulty in disposing of his surplus through a wholesaler—this is probably due to the fact that he does not have the quantity required.

As for the amateur being likely to have disease in his broods, surely the reverse is the case, owing to the fact that his work is primarily a 'labour of love'.

I would suggest that Mr. Burch or anyone having doubts of the above statements join a local club and see for himself.

G. W. BOVSOCK
Hon. Secretary
Hendon and District Aquatic Society.

I MUST violently disagree with the comments of Mr. A. Burch in his article "A Criticism of Fish Breeding" (The Aquarist, September).

To my mind your contributor has rushed into print without giving the matter just consideration, and it would appear that he has never taken part in the varied activities of club life. If, however, he has then he will, I am sure, have difficulty in proving his comments—"It cannot be really doubted that the local club is responsible for encouraging excessive breeding as a means by which it can perform its natural but perhaps not altogether desirable function as judge of a member's relative skills."

To illustrate my point, my own Society has 12 perpetual trophies, of which only one is awarded to the most successful breeder of the year. The remaining 11 are awarded for success in activities that we consider to be just as important and desirable; for example, to the non-committee member who, in the opinion of the Society has contributed the most to the life and work of the Club within the year; for the Furnished Aquarium Competition held annually for three classes (aquariums up to and including 2 ft. in length, aquariums over 2 ft. in length, and Ladies’ Section), and as a final example, the Points Shield, most prized of all the Society's trophies, awarded to the member obtaining highest aggregate points for all the above (including the Breeder's Competition), plus points for awards won in table and open shows. My Society is, I am positive, not alone in their recognition of these above competitions,
and I would suggest that Mr. Burch looks to these for his criticisms, not to Societies which are exceptions to the general rule.  

M. J. PARRY, Show Secretary,  
Newport A.S.

I WOULD like to answer the article “A Criticism of Fish Breeding” by Mr. A. Burch, in the September issue of The Aquarist.

Mr. Burch’s article states: “The successful breeding of fish is often thought to be the ultimate goal of every aquarist. It is the means by which every fish-keeper is popularly judged.” I have never yet judged a fellow aquarist by his breeding conquests and it is beyond my comprehension how Mr. Burch manages to do so. The fact that someone is a successful breeder does not make him any better than a knowledgeable non-breeder. How many of our judges today are true breeders? Yet still they are judges and very popular too.

And really Mr. Burch! Surely you must realise that if it were not for clubs performing this “not altogether desirable function as judge of the members’ relative skills” we would still be a nation of slow-rans instead of one of the top three in the tropical fish world.

The majority of fish-keepers and breeders get their experience and knowledge from clubs and in my view, it is most desirable that a club be the initial judge of member’s relative skills. Where else is the beginner (and we all were once, you know), to learn all the complexities of breeding and showing, sportsmanship and enthusiasm?

W. T. LAVOUSTRE, Secretary,  
Lytham Aquatic Society.

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Speaker at Assembly will be Mr. J. KELLY  
Illustrated lecture on “American Visits”  
Sunday 28th November

The AQUARIST Crossword Compiled by L. BRADLEY

CLUES ACROSS
1. Thick-lipped gourami (6, 7).
2. A sucker fish (6).
3. Gathering together (9).
4. Side of the mouth (6).
5. Fish that are very similar (7).
6. Horses are commonly found on them (9).
7. Used to catch fish (5).
8. As well it can be seen in the Royal Society (3).
9. Undertaker (9).
10. Ref. more (away) (and existence strictly the love of the game) (7).
12. Instant (of these months) (9).
15. Is this fish made of stone? (6, 7).

CLUES DOWN
1. Perhaps continued in 6 down (4).
2. Not the hero’s first line of defence (7).
3. Wasted expenditure (4).
4. Argus (7).
5. Animal composition (4).
6. Doublet (4).
7. An exhibit of gourami fish (5).
8. Star among coldwater fish (5, 6).
9. Theorist’s delusion (7).
10. Organ enabling fish to breathe (5, 6).
11. Instantly (5).
12. Group of animals or plants (9).
13. There is a school for this according to Shakespeare (7).
14. Concerning to plants (5).
15. A fish that looks like a parrot but is not a swimming of (5).

Solution on page 149

THE AQUARIST
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.

The results of the Nottingham and District A.S. show that over 2,000 aquariums were entered. The winners are:

- Best Single Aquarium: Mrs. J. L. Smith, 2nd Place: Mrs. J. K. Mason, 3rd Place: Mr. H. G. Randall.

- Best Group Collection: Mr. J. E. F. Jones, 2nd Place: Mr. J. K. Mason, 3rd Place: Mrs. J. L. Smith.

Other winners include:

- Mr. J. K. Mason: 1st Place in the Spruce, 2nd Place in the Broadleaf, 3rd Place in the Coniferous.
- Mrs. J. L. Smith: 1st Place in the Aquatic, 2nd Place in the Shrub, 3rd Place in the Foliage.

A S A L S E of surpice fish, plants and equipment was held for members of the monthly meeting of the A S R A and District Aquarists and P e n k e e - s k i e s Society's annual general meeting was held on the 10th October and was attended by representatives from the District A S R A and the A S R A and District Aquarists and P e n k e e - s k e s Society.

The society was successful in winning the V i l l a c a k a r s Cup and the 1st prize in the national aquarium competition at the recent British Open. Special thanks go to Mr. J. E. F. Jones, Mr. J. K. Mason and Mrs. J. L. Smith for their efforts.

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THE monthly meeting of the Dundee A.S. was attended by 50 members and the main subject dealt with was the care and feeding of the South American Betta fish. The meeting was held at the North End Hotel, and the speaker was Mr. A. J. Rankin, the local dealer in tropical fish and plants.

Mr. Rankin gave a very interesting talk on the care and feeding of the Betta fish, and the members were also shown a collection of Betta fish that he had brought from his supplier.

The meeting finished with a show and sale of tropical fish and plants, and many members bought some of the fish and plants that were on sale.

The meeting was a great success and the members were all very interested in the talk that Mr. Rankin gave.

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OBITUARY

The death is recorded of Mr. G. Smale, one of the active members of the Nottingham Aquarium and Fishkeeping Society, who lived at the time of his passing fish and he will be greatly missed by the Society.

MEMBERS of the Leycester Aquariums held their annual meeting on 23rd March. The meeting was well attended and featured a discussion on the care and breeding of tropical fish. The Chairman, Mr. J. Smith, gave an overview of the Society's activities for the past year and outlined plans for future events.

The Chairman thanked all members for their contributions and announced that a new member had been accepted into the Society. The meeting concluded with a vote of thanks to the Chairman and officers for their hard work.

THE Nottingham Tropical Fishkeepers recently enjoyed an evening with an episcopal perspective and colour presentation together with a special feature on the care and breeding of tropical fish. The evening was hosted by Mr. J. Maloney, Vice-Chairman of the Society. The meeting was well attended and featured several talks on various topics related to tropical fishkeeping. The Chairman, Mr. J. Smith, thanked all members for their contributions and announced that a new member had been accepted into the Society. The meeting concluded with a vote of thanks to the Chairman and officers for their hard work.

NEW SOCIETY

A new club has been formed at York and will be known as the York and District Aquarium Society. Meetings will be held at the local library on the first Tuesday of each month.

The new club was formed to bring together enthusiasts of all ages and abilities who share a common interest in aquariums. The inaugural meeting was well attended and featured several talks on various aspects of aquarium maintenance and fish care. The Chairman, Mr. J. Smith, thanked all members for their contributions and announced that a new member had been accepted into the Society. The meeting concluded with a vote of thanks to the Chairman and officers for their hard work.

Crossword Solution

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| 1   2   3   4   5   6   7   8   9   10 11 12 13
| 1   B   T   B   T   T   T   T   T   3   5   2   2
| 2   I   O   E   R   R   C   T   T   5   2   5   2
| 3   E   E   N   E   S   E   E   4   3   3   4   3
| 4   E   P   L   E   C   O   S   E   M   O   S   U   M   O   S
| 5   C   H   E   E   T   E   S   T   E   T   E   T   E   T
| 6   B   I   T   A   N   I   C   A   N   E   T   E   T
| 7   S   E   M   I   N   A   R   I   S   M   E   T   E   T
| 8   H   A   A   I   B   A   T   H   M   A   R   B   L   E   C   I   C   L   I   D
+-----------------------------------------------+-----------------------------------------------+
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Feather Monik: Best entry, A. W. Goodall (entries: Best Breeders, A. W. Goodall (superior); Best entry, J. Roberts (entries: A. W. Goodall (superior)); Best entry, J. Roberts (entries: A. W. Goodall (superior)).

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November, 1965

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PLEASE NOTE that during Christmas week, 23rd—26th December we shall remain open until 8 p.m. every night, including Wednesday 22nd.

E. C. O. Wednesday.

Elections and Sundays by appointment only.

November, 1965

xiii
Announcement
by TETRACRAFT LTD., 11 Station Road, Marlow, Bucks.

Revised Prices of all Tetramin Aquarium Products effective from 15th October

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<th>TETRAMIN STAPLE FOOD</th>
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<tr>
<td>Habitat style food</td>
<td>4.3</td>
</tr>
<tr>
<td>Growth food</td>
<td>4.3</td>
</tr>
<tr>
<td>Condition food</td>
<td>4.3</td>
</tr>
<tr>
<td>Copepods</td>
<td>4.3</td>
</tr>
<tr>
<td>Baby fish—Lonebrine</td>
<td>2.1</td>
</tr>
<tr>
<td>Baby food—Explorer</td>
<td>2.1</td>
</tr>
<tr>
<td>TETRAMIN MARINE FOODS</td>
<td></td>
</tr>
<tr>
<td>Tetramin flakes</td>
<td>4.3</td>
</tr>
<tr>
<td>Tetramin tube</td>
<td>4.3</td>
</tr>
</tbody>
</table>

| TETRAMIN FRINGE FISH FOOD    |              |
| No. 1 two-unit size         | 1.10         |
| No. 2 four-unit size        | 2.20         |
| No. 8 eight-unit size       | 4.4          |

<table>
<thead>
<tr>
<th>TETRACARE REMEDIES</th>
<th>Retail Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackwater tonic</td>
<td>4.5</td>
</tr>
<tr>
<td>General tonic</td>
<td>5.3</td>
</tr>
<tr>
<td>Contra ich</td>
<td>(inc. P.T.) 5.3</td>
</tr>
<tr>
<td>Fungi stone</td>
<td>5.3</td>
</tr>
<tr>
<td>Floraide</td>
<td>4.8</td>
</tr>
<tr>
<td>Contra chlorine</td>
<td>4.6</td>
</tr>
<tr>
<td>Blackwater tonic 1 pint</td>
<td>3.25</td>
</tr>
<tr>
<td>Contra ich 1 pint</td>
<td>(inc. P.T.) 25.6</td>
</tr>
</tbody>
</table>

| TETRACARE BRINE SHRIMP       |              |
| 6 c.c.m. tubes               | 1.9          |
| 10 c.c.m. tubes              | 2.9          |
| 50 c.c.m. tubes              | 5.4          |
| 100 c.c.m. tubes             | 6.0          |
| 1 litre size                 | 40.0         |
| Brine shrimp sieve           | 5.6          |
| Strain sets                  | 25.0         |

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- Windmill Feedwell - 2
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- Line Feedwell - 2
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- Floating water feeders - 4
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- Floating feeder - 8
- Floating outlet - 8
- Floating feeder box - 3
- Floating outlet box - 8
- Windows Alveus worm feeder - 4
- Nippers - 4

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- Sera - 1
- Sera Goldfish - 1
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- Darae Prawns - 1
- Darae Pond Fish Food - 2
- Hyra Flakes - 1
- Hyra Shrimps - 1
- Hyra Dried Fish - 1
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- Red Sea No. 1 - 2
- Hobby Dany Food - 3
- Hobby Leaf green Flakes - 2
- Hobby Fish Flakes - 2
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- White Spot Remedy - 2
- Anmion Tablets - 2
- Phosphate Tablets - 2
- Treasure Chest Neutralizer - 2
- Turf Black Neutralizer - 2
- Ph, Test Kit - 2
- Winter - 7
- Tetracete - 2
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- 4 fl. oz. - 3
- Anti-Chloramine Compound - 4
- 1 fl. oz. - 4
- 4 fl. oz. - 4
- Aqua-Flavour - 1
- 1 fl. oz. - 4
- Pond - 2
- Fish - 2
- Pond - 4
- Pond - 4
- Plant food - 2
- Hachimura Blue - 4
- Germania Cornish Disease in Aquaria - 4
- Superman Resin - 4
- A.O.P. Free Prevents Tape - 4
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- Two-way treatment for fungus infections - 4

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- All at 66 each
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- As a regular tonic in the Aquarium - 4
- Anmion tablets - 4
- Reproduces natural tropical salt - 4
- and water conditions in Aquaria. - 4
- Bacterial - 4
- Curbs body fungus, fil and slimy mucus - 4
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- Cures White spot, slimy and Clean - 4
- Neutralizes chlorine contents of - 4
- fresh water - 4
- Harmless for making sea water for Marine Fish - 4
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