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<tr>
<th>Frames</th>
<th>Aquariums</th>
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<tr>
<td>24 x 13 x 12</td>
<td>£ 7 70</td>
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<td>30 x 15 x 12</td>
<td>£ 8 80</td>
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<tr>
<td>36 x 15 x 12</td>
<td>£ 9 90</td>
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<td>£ 11 10</td>
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<th>STRIPED TAIL CATS (BRAZIL) 50- each</th>
<th>LARGE CARDINAL TETRA 7/8&quot; each</th>
<th>BABY RED TAIL SHARKS 3&quot; each</th>
<th>ADULT DWARF GOURAMI 5- each</th>
<th>PELIGNECCTS 6- each</th>
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**"GREEN SHIELD" STAMPS GIVEN (PERSONAL SALES ONLY)**

<table>
<thead>
<tr>
<th>TROPICALS</th>
<th>ADULT RARE FISHES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neons, 9 for £1.25 each</strong></td>
<td><strong>Pomacentrus Halichoeres</strong> 7/8&quot; &amp; 10- each</td>
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<tr>
<td><strong>Roros, 9- each</strong></td>
<td><strong>Eyestripe Neon Fish</strong> 2/5&quot;, 2/10&quot;, 3/10&quot;</td>
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<tr>
<td><strong>White Clouds</strong> 2/5&quot; &amp; 2/7&quot;</td>
<td><strong>Bumblebee</strong> 2/0&quot; &amp; 2/5&quot;</td>
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<tr>
<td><strong>Plates</strong> 2/5&quot; &amp; 2/7&quot;</td>
<td><strong>Green Half Moon</strong> 2/0&quot;</td>
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<tr>
<td><strong>Black Widows</strong> &amp; &quot;Stingers&quot;</td>
<td><strong>Tiger Barb 2/7&quot; &amp; 3/4&quot;</strong></td>
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<tr>
<td><strong>Swordtails</strong> &amp; &quot;Stingers&quot;</td>
<td><strong>Pomacentrus Shoulder</strong> 2/0&quot; &amp; 2/7&quot;</td>
</tr>
<tr>
<td><strong>Cichlids</strong> &amp; &quot;Stingers&quot;</td>
<td><strong>Blue Damsel, Classical</strong> 2/0&quot;</td>
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<tr>
<td><strong>Cichlids, Midas</strong></td>
<td><strong>Red Tailed Shark 3/4-&quot; &amp; 4/5-&quot;</strong></td>
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<tr>
<td><strong>Cichlids, D.A.C., D.C.C.</strong></td>
<td><strong>Lampetra, Zebras</strong> 4/5-&quot;</td>
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<tr>
<td><strong>Teme Fish</strong></td>
<td><strong>Pomacentrus Shoulder</strong> 2/0&quot;</td>
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<tr>
<td>**Bottom Filter 3/4&quot;</td>
<td><strong>Pomacentrus, 2/0&quot; &amp; 2/5&quot;</strong></td>
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**ADULT BARE FISHES**

<table>
<thead>
<tr>
<th>Pomacentrus, 2/0&quot; &amp; 2/5&quot;</th>
<th><strong>Corydoras</strong> Aequidens 1 1/2-2</th>
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<tbody>
<tr>
<td><strong>Pomacentrus Shoulder</strong> 2/0&quot;</td>
<td><strong>Corydoras, 2/0&quot; &amp; 2/5&quot;</strong></td>
</tr>
<tr>
<td><strong>Bumblebee</strong> 2/0&quot; &amp; 2/5&quot;</td>
<td><strong>Tetra, Golden</strong> 3/4-&quot;</td>
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<tr>
<td><strong>Green Half Moon</strong> 2/0&quot;</td>
<td><strong>Tetra, Green</strong> 3/4-&quot;</td>
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**NYLON COATED AQUARIUM, STOCK SIZES**

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**SWIRL-AWAY**

Aquarium Vacuum Cleaner

<table>
<thead>
<tr>
<th><strong>STANDARD AQUARIUM</strong></th>
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<tbody>
<tr>
<td>12 x 6.5 x 4.5 &amp; 5.2</td>
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<td>12 x 6.5 x 4.5 &amp; 5.2</td>
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<td>12 x 6.5 x 4.5 &amp; 5.2</td>
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**COVERS**

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**STANDS**

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<tbody>
<tr>
<td>18 x 12 x 15</td>
<td>12 x 9 x 15</td>
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**FOODS**

<table>
<thead>
<tr>
<th>Everyday Floats</th>
<th>Eyestripe Neon Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6&quot; &amp; 2/0&quot;</td>
<td>2/5&quot;, 2/10&quot;, 3/10&quot;</td>
</tr>
<tr>
<td>1/6&quot; &amp; 2/0&quot;</td>
<td>2/5&quot;, 2/10&quot;, 3/10&quot;</td>
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6 Bucephalandra
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3 Pontederia Hair Grass

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1 Aponogeton
1 Water Lettuce
1 Giant Sagittaria
1 Cryptocoryne
1 Indian Fern
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No. 5 6 Vallisneria
6 Myriophyllum
6 Hygrophyta
6 Elodea densa

No. 6 1 Portion Hair Grass
1 Portion Clover
1 Portion Sagittaria
1 Bucephalandra

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9 Ludwigia

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9 Hygrophyta

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QUEENSBOROUGH HOUSE, JERRY LANE, HYTHE END, WRAYSBURY, HANTS

October, 1965
Are Prices Rising?

RISING prices and the increase in the general cost of living are subjects which have been in the forefront of the news for the past few months. Few fields have remained untouched by this trend, but how has the aquarist been affected in recent years? Prices of goods by an advertiser in The Aquarist of 10 years ago compared with those offered by the same advertiser in a recent issue produced an interesting result.

The first product which I compared was a famous specific for fungus and fin rot. In this case the price had remained unchanged for 10 years. From the same firm of manufacturers comes a special food for baby fish. This, too, has remained at the same price. One would assume that products which grow in popularity for at least 10 years have proven their worth. Comparisons of a popular range of thermometers showed the price to be exactly the same. A well-known thermometer had gone down in price by 1s 6d!

In the field of aerators a reduction of 8s 6d was noted in one case, whereas the cost of an air-operated aquarium cleaner had, in one case, risen by 1s 6d, and had, in another case, risen by 2s 6d. Corner filters remain at the same price whereas an outside filter increased in cost by 1s 6d. Comparisons of the prices of fish foods is difficult as the quantity sold may have varied. The cost of a 24 in. by 12 in. by 15 in. aquarium has, in one case, risen by only 2s 6d. White worms and micro worms show a rise of 6d per culture in one advertisement.

Plant prices show an increase of 3d each in Vallornesia, Bucephalandra, and Cryptocoryne have remained unchanged. Many more varieties of plants are now available. Tropical fishes also show small changes in price, the most marked one being a reduction of 4s for a large nano terra. White clouds and angelfish remain at the same price but Corydoras auratus show a rise of 1s 6d.

These prices can only be taken as a very rough guide as to the quality and efficiency of many products has risen. New strains of fishes of better quality certainly compensate where any price rise has occurred and in dealing with fish foods the quantity sold at certain prices may have changed, as may have the quality of the food.

In conclusion I would think that the aquarist today is better placed than he was 10 years ago. He has a much wider choice of fishes, plants and equipment, all of which have been tried, proved and improved over the years.

B. Whitttisde
Contrary Angels

by A. W. SKINNER

What is it that makes our angels behave so differently from what we are told they should do? For instance: we had six fairly big angels in a 36 in. by 15 in. by 15 in. tank and were so pleased one day to notice that two of them were cleaning a leaf of a Cryptocoryne. They cleaned this leaf well until it disintegrated, then they started on another with the same results.

Some fellow aquarists called and assured us they were male and female so we didn't feel too disappointed when they ruined two of the best plants in the tank, but decided to put the two fish in a tank of their own. After giving them a 36 in. by 15 in. by 12 in. tank and feeding them very heavily on Daphnia, whiteworm and earthworm for about two weeks, we were pleased to note they were cleaning a piece of slate we had hopefully placed in for them. They continued to clean the slate and numerous other things in the tank that appealed to them, but although we watched anxiously, not a single egg did we see.

They would, from time to time, lock jaws and pull one another all round the tank as described as courting. All to no avail. Eventually, after about 3 months, we reluctantly put the fish back into their first home with the other four angels. Somehow we felt these angels were both of one sex, presumably male as we didn't get any eggs, but were told by older and wiser aquarists that this could not possibly be.

Unfortunately one of the pair got scared one day and buried its head in the grit. Although it did not die immediately, sad to say it went off food and died about 2 weeks later.

Then, to our joy, two more of the angels paired up, and began to clean and after a couple of days you could see them spawning; at last we had some angel eggs. I took some water out of the tank and put it into a small glass tank and added methylene blue. Then I cut off the leaf with the eggs and put this in the small tank, being careful to weight the leaf so the eggs were facing downwards, and added aerator. This tank was floated in another tank, temperature 80°F (26°C) and covered with paper to keep the light out (all as instructed). The young fry were just trying to swim jerkily with their huge yolk sacs when we went out with our Aquarist Society to visit London Zoo. Arriving home about 12.00 p.m., we fed into the fish house to look at our precious babies only to find them all dead.

The aerator had stopped owing to one of the tubes jumping off, and we presumed the lack of oxygen had killed them.

What a blow! Still we had a pair of angels and we would have to try again next time they spawned.

We said our angels were awkward! They must have had a tilt and the male chose another friend. These two acted exactly as the first couple we had paired; they looked jaws and pulled each other around the tank, then settled to cleaning. They chose a piece of slate and cleaned it constantly for a couple of days, only stopping when food was put in the tank. Then at last they started spawning, but although they went up that slate for an hour or more not one single egg was there. Oh well, this was proof that two males had paired up.

A friend asked if we would like to purchase a large black lace angelfish and thinking perhaps it would split these two males up, we agreed. He said we could also have a female angel that he had, although she was only tiny. In due course the two newcomers were put into the tank with the rest of the angels and settled quite quickly. The fish were fed with plenty of Daphnia, whiteworm and earthworm and all seemed in good condition. The large black lace angelfish did not seem all interested in the others but the little female tried to attach herself to the males. Would this split the two males up? Oh dear no, all they did was drive her away. Then the males started cleaning the slate again and, as previously, tried to spawn. Then to our amusement the little female darted under them and laid a lovely row of eggs up the slate. The males chased her off and proceeded to both fertilize the eggs, or so we hoped. This went on for a couple of hours and we decided to take the slate with the eggs and put it into the small tank, which was already prepared with methylene blue added.

Quite a lot of the eggs started to grow fungus and by the end of a week I decided it was hopeless, as the tank seemed a mess of fungus. I started to throw the water away, when suddenly I noticed a few fry wriggling at the bottom of the tank. I quickly put in some more water from the tank it had been floating in and to our relief in another couple of days there were 14 little fry swimming round. We fed them on brine shrimp and micro worms for a few days and as soon as they looked big enough, on Grindal worm and sifted Daphnia. After this we moved them into a larger tank.
In the meantime, one of the male angels paired up with a black lace angel that had been in the tank about 3 years. They actually turned out to be a true pair and spawned. This time all went well and there was a nice batch of young angels. After this we took all the angels out of the big tank and put the pair in, and I'm pleased to say they spawned several times and we were able to raise some lovely bunches of young angels.

Are our angels now behaving normally? Afraid not! These two decided to stop spawning and although we gave them all the live food we could, it would not induce them to spawn.

As we had grown some of our second batch of youngsters up to quite a good size we put four of these in with the pair, thinking they might settle down again. Up to the time of writing the old male has spawned with two of the youngsters with good results. So now we are prepared to expect anything.

Therefore, if your angels are not acting according to what you have been told, don’t give up hope, as you never know.

It is well worth any trouble you have to take to see a tank full of young angels that you have managed to rear. It’s a real thrill for a couple of hundred youngsters to come over and greet you as you walk into the fish house. Ever ready for anything you may have to eat.

**Phenacogrammus interruptus**

*by* J. K. HEMS

**Phenacogrammus interruptus** is a peaceful and an active member of the family Characidae from the Congo. In soft, acid water over a dark-beded aquarium, well-stocked with plants and lighted from above, it is of striking appearance, and takes, when fully grown, about 3 in. in length.

The male, the larger of the two sexes, has an olive-brown back overlaid with a blue to green sheen, lemon-yellow lower parts, and a broad gold stripe along the middle of the flattened sides. These are further adorned with a wealth of mother-of-pearl and rainbow tints reflecting off the scales. The fins, with the exception of the colourless pectorals, are grey, with an overtone of pink, shading to white at the margins. The black-tipped caudal rays of the ragged-edged dorsal fin, and the leading rays of the backward-sweeping dorsal fin, are much extended. The female lacks the vivid splendour of the male, and her fins are smaller and shorter-pointed.

The species, popularly referred to as the Congo tetra, Characinae, feather-tail or feather-tail, was known to science (under its old name of *Mircobates interruptus*) more than 60 years ago; but it was not until the early 1950s that specimens first appeared in dealers' tanks in Europe and America. That it was well received by discriminating tropical aquarists is not hard to understand; for, apart from its beautiful, shimmering colours and gentle disposition, which qualify it for a place in any community tank holding upwards of 12 gallons of water, it is easy to feed on any food normally given to omnivorous fishes and, despite its strictly tropical origin, is seemingly quite comfortable in a temperature range of 68°F (20°C) to 75°F (24°C).

As has been mentioned above, *P. interruptus* looks its most brilliant in soft, acid water. Soft, acid water also increases its powers of resistance against minor ailments or more serious disease. For the benefit of the novice fish-keeper, let me say that water straight from the tap can be improved, that is, softened and acidified, by boiling it first and then passing it through about three handfuls of soggy peat. If the peat is placed in a large flower pot with its drainage hole covered by a pad of close-woven nylon fabric, water poured in at the top will come free from all sediment at the bottom. But here let me interpolate a word of warning: as no fishes take kindly to a rapid change (chemically speaking) in the quality of the water in which they are living, it is recommended that any addition of peat-water to an established aquarium should be made in pints rather than quarts over a period of 1-2 weeks.

It is of supreme importance, of course, that soft, acid water should be used for breeding. Unfortunately, all too often, propagating this species is not easy. Even if the fish themselves can be persuaded to perform, at a recommended temperature of 72°F (22°C) to 75°F (24°C), the large eggs deposited among the plants, which should be weighted down to the bottom, may come to nothing; for experience has shown that they are easily killed by certain micro-organisms, or by moulds spreading among them, or by too bright a light. But it is perhaps just these difficulties to be overcome that make attempts at breeding this fish so interesting. Obviously, a well-scrubbed tank (before filling and furnishing) greatly assists to keep harmful bacteria at bay. To this precaution must be added a thoroughly washed compost, and thoroughly washed plants.

The fish spawn in typical characin fashion. That is, the eggs are scattered every now and again as the fish chase about in the lower levels of the water. When driving is over, the parent fish must be removed from the tank; for if given the chance they will eat the eggs. The eggs incubate in about 6 days, and on the seventh the fry should be free-swimming and taking food. Among the most acceptable first foods to give them are freshly hatched brine shrimps, micro worms and large infusoria. About this time, too, the lighting should be very gradually restored to normal. With no overcrowding in clean, well-aerated water, and the right sort of food (live in preference to dried), the fry of *P. interruptus* should attain full size in the space of 9 months to a year.
Attractive New Display at Shirley

An extension incorporating novel ideas for display of fishes and plants has been opened at the well-known water plant nurseries and fish hatcheries of Shirley Aquatics Ltd. An area of 12,000 square feet incorporates an attractively decorated sales area, for apparatus and aquariums, from which leads a long central passage. Here customers can view the fishes and plants in tanks set into the walls and picked out by wooden frames. The display includes four large marine tropical tanks, and one particularly pleasing exhibit is a tank housing angels and discus fish above which can be seen a naturally arranged 'jungle' of terrestrial plants. Twenty-four smaller aquariums are placed at right angles to the wall so that they are each viewed through an end panel. Fish are netted for customers in the service gangways behind the display tanks, where additional stock tanks are situated. Mr. Colin Roe, proprietor of Shirley Aquatics Ltd., has announced that he is now importing marine tropical fishes through the German firm Tropiscarium Frankfurt.

Mrs. Colin Roe feeds the giant hi-goi carp in a large outdoor pond at Shirley, watched by Mr. Roe (centre) and a group of visitors on opening day.

Herr Hans Schmidt, director of Tropiscarium Frankfurt, discusses a plant with Herr A. Böhm, of Munich, behind the display tanks at Shirley's new extension.
Fish Foods and Feeding

by A. JENNO

Almost every action or function performed by any living creature is dependent on a constant supply to the body of nutritional substances. Without nutrition, no living creature can continue to exist, and unless adequate nutrition of the right type can be obtained, the vital functions cannot be performed.

All life on earth is maintained by energy from the sun, but only plants and certain bacteria are able to use this energy directly to convert inorganic substances into organic ones, and thus feed directly from the sun. Living things which do this are said to be autotrophic and are thus self-feeding. All other living creatures are directly or indirectly dependent on green plants for their nutrition and are said to be heterotrophic. Heterotrophic beings fall into two main classes: herbivores, which feed on either live or dead plants, and carnivores, which feed on other creatures which on their part have previously fed on plants.

As far as fishes are concerned, they may be herbivorous, carnivorous or both, and, of course, there are differences between the methods of feeding of aquatic and terrestrial creatures because aquatic animals and plants live in an environment which is a solution of many dissolved salts and gases, with the required substances fairly evenly distributed. These substances are continually finding their way into the fishes' body through the skin and the respiratory organs and this is why fishes are apparently able to go without food for long periods of time. It is a fact that the amount of energy used by aquatic creatures in filtering food is far less than that used by terrestrial creatures, because the terrestrial animal is constantly using extra energy in finding sufficient water to compensate for its increased needs due to evaporation. A fish, of course, does not need to go looking for water.

Diet

The main substances required to form the basis of a balanced diet for our aquarium fishes are proteins, carbohydrates, fats and oils, minerals and vitamins.

Proteins are the basic and most essential item in the diet. They are manufactured exclusively by living body cells and are used to promote growth and the replacement of worn-out tissues. They consist essentially of compounds of oxygen, hydrogen, carbon and nitrogen. Animal proteins are in meats and live foods. Vegetable proteins are also used in the diet.

Carbohydrates give energy and can form food stores. In general they are the starches and sugars formed by plants.

Fats and oils also promote energy and in addition, form parts of living tissues. They are stored in the body as a reserve supply of food for times of shortage.

Mineral salts are present in most foods in the form of calcium, phosphorus, iron etc. They are necessary for the development of bones and keep the nervous system, circulation and muscles in healthy condition.

Vitamins are active substances which are most essential to promote health and protect the body against disease. Two of the several important vitamins are vitamin A and vitamin B1.

The basic substance required for the formation of vitamin A in the body is called carotene and is obtained from plants. Fishes get carotene by eating algae, or creatures which feed on algae, and are dependent on it for the development of the colour pigments in the skin, and hence for the brilliance of their colouring. Vitamin B1 is also obtained by fishes from green plants and is important for health, growth and the correct functioning of the digestive organs. The fact that vegetable foods are the primary supplies of vitamins shows the importance of allowing fishes more of an opportunity of feeding on green foods than is usually provided.

Each species of fish has its own manner of acquiring its food, and in its natural habitat it will hunt for the food which yields the best results for it. In captivity, however, the fishes are dependent entirely on the food supplied by their owner, and this is why in some cases they fare worse than in nature, because their dietary requirements are not understood.

If the aquarist wishes to keep specimens of a particular species of fish, and to maintain their health and encourage them to live in the manner typical of that species, then he must first study their food requirements, and unless he can obtain certain foods, or types of food, which are essential to that fish, he should not entertain keeping them.

It is useless to expect large cichlids, for instance, to thrive mainly on a diet of dry foods. They may exist, certainly, but they will neither grow nor give their owner any satisfaction from their keeping. Similarly, the feeding of the same live food or other foods is not recommended to be carried on for long periods of time without variation. Each fish has its own characteristics, some of which are beneficial to the fishes and others which are not, and it
is therefore important to provide as wide a variety of invertebrates as possible.

Rules to be followed to keep a particular species of its best are first, find out what are the best possible foods for the fish concerned, and then organise a supply of as many varieties of these as is possible. Many aquarists seem to think that if they keep one easily obtainable live food, such as white worms, then their fishes should grow as well as the clark's white fish have several different live foods, particularly secondly, do not overfeed and pollute the aquarium in your eagerness to grow fishes fast. With a little trial and error, the amounts needed to keep the fishes well fed can soon be found. Thirdly, offer all the foods which are not completely carnivorous plenty of green food. Algae and cooked peas are two easy ways of providing this.

Luckily, most of our common tropical fishes are both carnivorous and herbivorous and the range of foods which can be offered to them is quite large. For simplicity they can be divided into four classes: natural foods, cultured foods, table foods and commercially prepared dry foods.

Natural Foods

Natural foods are probably the most difficult to obtain but are almost certainly the best and are well worth the trouble. One of the most valuable of these is the common earthworm. Larger fishes will take them whole, but for most they must be chopped or mashed. To make the most as clean as possible the worm should be washed, chopped and then washed again, otherwise the dirt and slime which comes with them will cloud the aquarium. Earthworms are particularly recommended for growing-on young fish and for bringing adults into breeding condition. They may be encouraged to a particular spot in the garden by digging a shallow hole and covering it with ten leaves, peppings and other kitchen scraps.

Various kinds of insects are suitable as food, particularly for larger fishes, but they are difficult to catch and may be affected by garden spray or insecticide which might be dangerous. Some care should therefore be taken if insects are used.

Live foods from ponds form the majority of natural foods consumed by aquarists. Daphnia, Cyclops and the rotifers can be considered together as they are usually caught together and very often the use of the name Daphnia (water fleas) covers a mixture of all three, they are all crustaceans and are related to the crayfish. They have a hard outer shell, which is actually an external skeleton, and a soft interior which is the valuable part as far as the fishes are concerned. The shells do not provide excellent roughage in the diet, however. One of the few things which an experienced aquarist will not usually tell a beginner is the location of his own favourite Daphnia pond. Information on what they look like and their possible whereabouts is freely given, but to get to know of a particular pond without hunting it down is like trying to grown needles in a haystack.

Daphnia usually live in fairly shallow water in ponds whose situation enables minute animal and vegetable organisms, on which the crustaceans feed, to flourish in large numbers. Ponds frequented by cattle are particularly good ones, as the droppings encourage rapid development of small organisms. Ponds tend to be seasonal in their production of Daphnia, and are usually at their best in mid-summer when the sun warms the water green. There are several varieties of Daphnia with colouring varying from green to red, usually depending on the type of water they have been living in, and the type of organism they have fed on.

Collection of Daphnia requires a large net of fine mesh, such as butter muslin. It is important to see that none of the larger pond animals are put in the aquarium with the Daphnia as these may attack the fishes. It is also recommended that as little pond water as possible is placed in the aquarium. Daphnia in any quantity require a large amount of oxygen to continue to live and it is therefore unwise to bring home more than will be used immediately, unless a pond or other large vessel is available for storage.

It can be cultured by seeding a pond with live Daphnia in the first place and then tipping in kitchen scraps, cow dung etc., which will encourage the growth of the organisms on which the Daphnia feed. Small Daphnia, Cyclops and rotifers are excellent fry foods and can be separated from large ones by placing a quantity in a nylon stocking and shaking this in the aquarium, when the smaller crustaceans will pass through the mesh.

Tubifex worms are found in the filthiest ponds where they live in the mud and slime on the bottom. They also thrive in large quantities in the estuaries of tidal rivers used to discharge sewage. Collection is unpleasant and long-winded as it entails sieving vast quantities of what we will politely call mud through a fine mesh which traps the worms. The easiest way to obtain Tubifex nowadays is to buy them in bulk by post, but it is necessary that they be fresh on arrival. They must be thoroughly washed before feeding to the fishes and if stored must be kept in cold, shallow, running water. The use of Tubifex as a food for aquarium fishes is not recommended unless the aquarist is absolutely sure of his method of cleaning and storing them. Fishes fed on unclear Tubifex have been known to develop boils and other disorders and the worms can strangle a fish by becoming entwined in the gills. Worms which reach the bottom of the aquarium will quickly dig in, and it will be found that only certain fishes can dislodge them. If allowed to dig in in large numbers they may die, becoming tangled in the gravel and thus food the tubifex.

The insect larvae commonly called "grass worms" are often found in ponds containing a surplus of decaying vegetable matter. They are usually about a quarter-to-half an inch long, and should not be put with very small fishes as they can catch and eat small creatures. Otherwise, they are an excellent food for adult fishes and have the advantage that they do not need as much oxygen as Daphnia and will stand crowding for some time. They can very often be found in ponds in winter when Daphnia is unobtainable.

Various other foods are obtainable from ponds, but usually only Daphnia and grass worms will be found regularly in any quantity. When introducing other pond animals as food, make sure that the fishes are large enough to take them and that they are of a type that the fishes will eat, otherwise it may be a tricky job to get them out again before they flourish and cause harm. Tadpoles, water spiders and the larvae of various water beetles will all be eaten by larger fishes, but they can be dangerous to small fishes and fry.

Aquarium snails often breed so much that the aquarium is eventually over-run with them. Don't throw them out. Crush them up and feed to the fishes. A tank containing large fishes seldom has any snails, because the fishes kill them themselves, but in fry tanks snails often abound, and these can thus be used as an occasional change in the diet.

Soft algae in the last of the natural foods to be considered. A certain amount can usually be grown in the aquarium and will often be enough for the needs of the fishes. If, however, the fishes are not getting enough algae, then the use of substitute green food such as cooked peas is recommended. The peas should be free from gristle and the transparent skin should be removed, otherwise the fishes will have difficulty in eating them.

To be continued
Around the Aquariums

with MIKE SHEEDY

THE Aquarium at Llanerch Deer Park and Gardens is to be extended. Built in the unique fifteenth century wine cellars of Llanerch Hall, the Aquarium was opened earlier this year and will be extended in the coming winter months to include a further two cellars.

Designed by Mr. Douglas Petrie, formerly Superintendent at Flamingo Park Zoo and now General Manager and Zoological Director of Llanerch Zoo, the 20 tanks that are now in use will be increased to 22. Mr. Petrie's personal collection of snakes and turtles will form part of the extension, one of which is a specimen of the rare and valuable diamond back terrapin. Mr. Petrie has also purchased a large collection of other rare and valuable terrapins.

Apart from the cellars, an extension will be made to the display rooms, allowing for more exhibits of the many rare and valuable reptiles now on show. In addition, the Aquarium will be open to the public during the winter months, and Mr. Petrie hopes that this will help to raise revenue for the Aquarium.

The Aquarium is situated on the banks of the River Clywd, famous for its salmon and trout. The Zoo itself is situated on the banks of the River Clywd, famous for its salmon and trout.

Adjacent to the Aquarium is a small Reptile House which houses Mr. Petrie's personal collection of snakes and turtles etc. This collection would have been considerably larger had it not been for the un-noticed power failure during the winter, which resulted in the loss of some 40 turtles and terrapins, many of them very rare specimens.

The two main animals are the rare and valuable terrapins, certainly the largest of their kind in the country, and have proved very popular. When first arrived at Llanerch Zoo early in the year they refused to eat, and, when after 6 months Mr. Petrie was beginning to despair, they were offered some dead goldfish from stock purchased for ponds, these were readily accepted from the hand. Since then they have never looked back and continue to feed readily on herrings and mackerel fed by hand, a sight that astounds many of the visitors to the Zoo.

From the Bronx Zoological Society, New York, comes very interesting news of their Aquarium. Overlooking the sea at Coney Island (just minutes from Manhattan by subway and the new expressways), the Zoological Society and the City have jointly created the New York Aquarium.

There are great pools for white whales, walruses and seals, tanks that ‘bloom’ with sea anemones from tropic reefs and a large collection of sharks and sea horses. There is also an hourly electric eel demonstration. Labels identify everything in the Aquarium and give information about habits etc. Talking storyboards broadcast anecdotal and informative talks about the Aquarium and Curators—conducted tours take Members and special groups “behind the scenes”. A quarter of a million schoolchildren visit the Bronx Zoo and Aquarium every year in organised groups. The Zoo’s Question House is the place to visit if anyone has a question about animal life. The Education Department also answers questions by mail.

The beautiful Reptile House is one of the finest in the world and visitors can see reptiles of every description. Expert planning by the Society’s staff and architects makes

safe, comfortable and attractive homes for the many species which are on display in the Aquarium and Reptile House. The cost of new buildings is normally shared by the Society and the City of New York, and in the past 10 years the Zoological Society has spent more than $2,500,000 dollars of its own money for new buildings and improvements in the Bronx Zoo and Aquarium.

Many readers of The Aquarium have written to me saying how much they enjoyed my review of the Belle Vue Aquarium and also my note “Around the Aquariums”. Well it’s nice to know that readers like what I write, and to the two writers who ask for some more reviews on Aquariums, I would like to say that I will do my best to review the Aquariums as best I can in future issues of The Aquarium. Thank you for your letters; I am always glad to supply information to any readers of The Aquarium.

When a ‘patient’ is off colour and looks jaded at the Bristol Zoo, a doctor will be called and he will sometimes recommend a complete change. Even, perhaps, a stay in the country. That is what the animal specialists ordered for Tessie, Bristol Zoo’s giant tortoise. For Tessie was looking a trifle jaded. Instead of wading into her daily diet of a dozen lettuce, several turnips and carrots, with orange dessert, Tessie toyed languidly with her food.

So a complete change of air was recommended. But sending a giant tortoise weighing a hundredweight and a half off for a holiday in the country poses problems. However, these were all solved when a friend of Bristol Zoo offered to have Tessie, the tortoise, as his guest at his country home.

Tessie was lifted by her keepers into a van, securely packed round with straw and left Bristol for her first ever holiday. Since then she has had the freedom of a large paddock with as much grass and fresh greenstuff as she could desire. Latest reports indicate that the change of air and scene are having the desired effect.

From reports received from various Zoos and Aquariums, I am glad to note that more and more people are taking great interest in the many fishes etc. on view in aquariums throughout the British Isles.

Bristol Zoo, Belle Vue Zoo, Flamingo Park Zoo, London Zoo and Llanerch Deer Park (who, on August Bank Monday, had over 6,000 visitors) all report good summer attendances.

A Visit to Chester

by L. BRADLEY

For anyone living within easy reach of Chester or finding themselves in the near vicinity a visit to Chester Zoo will be extremely enjoyable. The area covered by the Zoo is so great that to get the full benefit and to see everything a full day, if possible. This up-to-date Zoo has ample car parking facilities. Please turn to page 128.
a store which does not either specialise in fish, or have a specific aquarium section. The single tank in a corner store, or shop that otherwise stocks only puppy biscuits and kittens, will never be as satisfactory as a reputable aquarium specialist. The Buyers’ Guide in The Aquarist is a fair guide when in doubt, although I would hasten to add that there are thoroughly satisfactory stores which do not appear in this list.

Perhaps more perplexing than anything else in the letter was the statement in evidence to dealers’ stock, that nearly all of them were “hump-backed”. At first I could not understand what was meant by this, but I think it must refer to spinal conformation, a condition which occasionally afflicts fish as the result of excessive inbreeding. As this is a purely hereditary complaint, and has nothing to do with environment, I cannot conceive that there can possibly be more such fish in dealers’ shops than in fair, or even, as I revealed earlier, the fish frequently come from the same source. Can it possibly be that the ‘missaplan’ fish Mr. Bloomfield has seen, indeed ordered from a “well-known firm”, are fanned, velveted, or similar fancy goldfish which to the inexperienced eye could possibly appear to be “stunted”, because foreshortening of the body is a characteristic feature? Certainly that would explain the absence of such specimens at fairgrounds!

As in everything else one just can’t expect something for nothing in buying goldfish. Just as one can’t expect to get fine specimens by gambling for them at a fair, nor can one expect to buy them for a few pence at a pet-shop. A high quality goldfish in fine breeding condition, can cost as much as £20, although of course, there are very few fanciers who would pay as much as this. It is better to pay a little more for your fish than always to go for the lower grade. Fancy goldfish, and large pond fish, will, of course, cost far more.

I think it is high time this ill-informed slanging of pet-shops ceased. I hope I have shown conclusively that whereas there are individual instances in which Mr. Bloomfield’s observations may be true, there are numerous pet-shops of the best quality up and down the country. They have our support and praise. By far the best way to foil the bad dealer is simply to take your custom elsewhere; a very unfair image has been created by adverse comments directed at particular shops and which is usually taken as referring to the trade as a whole, and it is about time we started to realise that the average standard of our pet-shops is probably the best in Europe.

I have seen pet-shops in France, Italy, Switzerland, Germany, and Turkey. In many other countries they don’t even exist in any recognisable form at all (e.g. Greece). None of them match up to the standard prevailing in England, and I suggest we appreciate this extremely difficult trade for its true worth.

I remember, some years ago, reading an item by a famous Notebook contributor in The Aquarist, in which he condemned: “The unnecessary cruelty” shown in a film in which the editor is shoveling the contents of an aquarium into the trash can, and the crushing of terrapins under an actor’s feet. Even the subsequent revelation that the terrapin in question were merely plastic substitutes did not allay the aquarist’s anger: “Be that as it may, the intention is still there and the suggestion to the teddy-boy type obvious”. In The Flight from the Buchanant, a book by the extremely popular Irish novelist, Iris Murdoch, she describes how a frustrated boy there were the sister to throw a paper-weight at an aquarium to forestall what he believes to be an attempt at blackmail by diverting the attention of the guests at a party. The account of the subsequent scene is vivid in the extreme: connection with this saint. Perhaps he should be made the patron saint of aquarists!

The story of St. Francis of Assisi preaching to the birds is well known; perhaps not so popular is the story of St. Antony preaching to the fishes. On one occasion he had gone to Rimini in Venetia to try and show some heretics the error of their ways. Nobody listened to him. “Since you show yourselves unworthy to hear the word of God, behind I turn to the fishes in order to put your unbelief to shame”. Rimini is situated on a river estuary, and so St. Antony turned seawards to deliver his sermon. Much to the astonishment of onlookers, the fishes rose to the surface “with bowed heads and open mouths” to hear his words. Aquarists who know the work of the painter Bosch will be aware of the fish symbolising this connection with this saint. Perhaps he should be made the patron saint of aquarists!

Can Goldfish be Bred for a Living?

continued from page 120

surprising what a small percentage of the fry turn out to be good specimens. Strains vary, I know, but the prize-winning fish is only about one in a hundred, with many fair specimens. The best fish will fetch a price when the right buyer comes along. However, the usual buyer wants a first-class winner for a few shillings. From a fancy goldfish strain it is probable that many of the fish which should have a double tail, have either a web-tail or a tri-tail. Then none may not have the desired paired anal fin. Even when these fins are all right it is possible for the dorsal fin to be mis-shapen and the body may not conform to the desired standard.

Added to all these possibilities is the fact that many of the fry may take a long time to change colour. This is when the breeder of shubunkins scores over the breeder of visibly scaled fish. The former can change colour at a very early age whereas the scaled types can take up to 2 or 3 years in doing so. The young shubunkins, being coloured, will sell easily but few people will pay much for an uncoloured goldfish, no matter of which variety. The breeder of ocellaris and lionheads is also up against the fact that it may take a year or two for the hood to develop properly, and so he is forced to keep his youngsters much longer than the breeder of shubunkins.

To the would-be commercial breeder I would say that it is grand to breed some fish as a hobby and to sell a few scaleless fish to help pay for food etc., but do not think that you can make your fortune at breeding goldfish in this country. Even the experts cannot do it here so what chance has the amateur?

THE AQUARIST
Aquarium Plants of the Water-Plantain Family

by ARIE DE GRAAF

The water-plantain family is the Alismataceae, and in particular the varieties of Echinodorus, Alisma and Sagittaria have received some publicity lately among the aquatic plants. One reason for this is that in recent years more tropical plants of this family have been imported into Europe; another is simply that more attention has lately been paid to these plants. There are, however, widespread misunderstandings about the naming of these plants which I hope to eliminate in the course of a series of articles.

Members of this family are to be found in the tropical and temperate fresh waters over the whole world. Submerged, marsh and floating plants are included in the genera of the family: Alisma, Barbitophyta, Caladenia, Dianium, Echinodorus, Limnocharis, Lephotocarpus, Luronium, Nuphar, Pontederia, Sagittaria and Vallota, which in turn consist of approximately 60 varieties.

Botanical Notes

Here are some botanical notes on the characteristics of these plants, necessary to be studied for their recognition and identification. Their leaves have stalks which are, as a rule, distributed over the stem. The roots are fragrant. The flowers occur in strongly branched types of inflorescence, and are bisexual or unisexual, with a clear distinction between the three-lobed persistent calyx and a three-
lobed deciduous corolla. Flowers are said to be actinomorphic, that is, if they are cut through vertically, the left-hand side of the seccorn would be of the same appearance as the right-hand side. The number of stamens is six, those on the extreme outside being sterile. Ovule of the flowers are superior and are frequently intergrown at the base. Ova may be single or numerous. The fruit is mostly contained in a many-seeded capsule, or it is a one-seeded nut. The seeds have no endosperm.

I want to thank Professor H. C. D. de Wit, who identified a number of plants for me, and Mr. H. W. E. van Bruggen of S. A. van der Gaaag, and Mrs. Doornberg, who have helped me with photographs in my investigation of the Alismataceae.

Right: Nuts of the plant Lophocarpus
Photo by M. W. L. van Bruggen

Know Your Rocks — 2

SEDIMENTARY ROCKS

by H. J. VOSPER

(Photographs by the author)

In Part I we considered the nature and form taken by the igneous rocks, produced by the solidification of molten magma. Two further groups are those composed of the debris of previous materials and those resulting from either the activities of or the remains of living organisms.

Sedimentary Rocks

This group is composed of those rocks which are derived from previously existing materials and they are classified according to the nature of their origins: (1) mechanical origins; (2) chemical origins.

The rocks from which the mechanical sediments are derived may have been of an igneous nature, they may have been earlier sediments or they may have been metamorphic (changed) rocks. This last division will be discussed in due course. The breakdown and deposit of the material concerned may have been part of a long history of such actions, dating back to the earliest rocks ever formed. Rocks such as sodium chloride or rock-salt have been ignored for the purposes of this discussion.

Mechanical Sediments

Water, dehydration, heat, cold—these are the primary factors which cause a rock to break up into small particles. Once the initial fracture has occurred the pieces are moved along, in a stream for instance, and they are ground smaller and smaller and are carried further and further until at last they may be deposited far away as tiny grains on the bottom of the ocean or lake, where they form the layers or beds which are eventually consolidated into a hard rock. Depending upon the size to which the particles have been ground and the intermixture with more finely ground or larger particles, so the character and classification of the rock is determined.

Sedimentation. This is a general term that can be applied to those sediments in which the grains of silica, of which sands are normally composed, are all of approximately equal size. Secondary classification depends upon average grain size, so that there are coarse, medium and fine sands and also silt. There are also such structural definitions as "soft" sand.
stones (i.e., unconsolidated) and "hard" sandstones (firmly cemented or compacted), which must also be distinguished one from another.

Mudstone. Clay consists of very fine grains and when this forms a hard rock of uniform structure it can be termed a mudstone. However, where the grains are really very fine and the rock is clearly stratified it is given the name shale, the two forms being easily distinguished.

Shale. When the grains are ground down to such a small size that they may be likened to flour then the material is known as a shale, being rather soft unless the quartz content is above normal. Shales vary in colour, with iron providing a red or yellow tint (ferruginous shales), bitumen imparting a black coloration (bituminous shales) and calcareous shales being normally light in colour and so on. The calcareous shales react to the hydrochloric acid test, which will be described in Part 3 of this series.

The presence of such soft rocks as shales, when interbedded with harder materials, is often the cause of origin of cavernously beautiful waterfalls, for the comparatively rapid disintegration of the shales results in steps and even the undermining of the more compact rocks. The photograph shows such a fall, and the shales have been so far removed as to allow the harder rocks above to form a lip, under which one may pass and so walk behind the fall.

Conglomerates. If the particles in a sedimentary rock are of clearly differing sizes then they form what is termed a conglomerate. In some cases the differently sized grains may be only barely distinguishable; there may be several grades or even perhaps only two grades of vastly opposite character, as in in the "pudding-stone" of Hertfordshire, in which good sized pebbles are cemented together by a fine clayey matrix (see photograph). Most pebbles and the binding media are of silice, with the result that such a rock is a quartz conglomerate but the classification depends upon the most abundant constituent in any particular specimen.

Grit. Whereas sandstones, in general, contain rounded grains, there are some forms which have angular grains and for these the term grit is used. Note that a conglomerate formed of such angular fragments is known as a breccia.

Sources of certain Sedimentary Rocks
Devonian sandstones and allied:
S.E. Wales
N. and S. Devonshire
Cornwall
Northumberland
Yorkshire
Lancashire
Cheshire
Wales
Warwickshire
Hertfordshire
Gloucestershire
Cumberland
Northamptonshire
Yorkshire
Somersetshire
N. and Central Devon

Other sandstones and conglomerates:
Northumberland
Yorkshire
Lancashire
Cheshire
Wales
Warwickshire
Gloucestershire
Cumberland
Northamptonshire
Yorkshire
Somersetshire
Lancashire
N. and Central Devon

Some calcitic sandstones:
Central Northern England
Central Scotland
Warwickshire
Lincolnshire

Chemical Sediments
Most members of this composite group are composed of calcium carbonate (calcite); other types discussed are of silica and of carbonaceous substances. The calcite group enters in a great abundance of forms, but whatever their origin or texture, they may be referred to as "limestones". Briefly they are rocks made of the consolidated materials which have been separated from sea water by the concerted action of a multitude of living organisms, which rocks now form a fine-grained mass often many hundreds of feet thick. Some members of the limestone group contain the fossilised remains of both large and small organisms which had a hand in the original formation of the beds; indeed there may be so many of these fossils present that the particular rock is named after them, hence crinoidal limestones, which contain numerous crinoids or "sea-lilies" (Echinodermata) for example.

The fossils found in limestones, sandstones, shales, clay...
etc. (never in igneous material, seldom recognisable in metamorphic rocks) are studied in the science of Palaeontology, another aspect of Geology.

Limestones. This division of the rocks contains accumulations which vary in content, colour, texture and hardness. One can expect to find colours ranging from white through cream, yellow, grey, brown to red and black, and even blue is far from being unknown. The texture can range from massive crystalline to sandy; hardness may range from a soft material which can be cut by a knife to one that is so hard that it requires the use of hammer and chisel or especially devised tools. All general limestones will react to the acid test but not always to cold acid, whereas some of the other limestones will react but the texture will hide the effervescence.

Chalk. This is a fine-grained limestone which is normally soft and white but may be hard and grey; some aspects are reddish owing to iron staining. It is composed of the fragmentary remains of the shells of tiny organisms called foraminifers (Procoza) and other similar materials. Some aspects of the chalk are so hard that it can be used as building stone, but even these are likely to be dangerous in aquaria.

Oolite/pisolite. These limestones are generally somewhat harder than chalk and indeed some are extremely hard. The texture is derived from the fact that they are composed of small grains or concretions, which in the oolite are so tiny that they often resemble the eggs of fishes and it is upon this fact that the common name is based (Greek oos; egg). Pisolites grains are larger and less spherical (Greek pisos; pea).

Flint. This may be considered a generic term for such limestones forms as travertine and drupstonite (stalactites etc.), the material having been dissolved out and re-deposited in springs, caves and rivers and even under railway arches on occasions.

It may be of a variety of colours in the lighter tones and very often shows banding and mottling due to the presence of iron or other staining. The texture is usually crystalline and the rock will be found to be made up of numerous fine layers.

Flint. Here we leave the limestones and return to the silica (quartz) which is so common in most igneous and sedimentary (mechanical deposit) rocks. Flint is composed entirely of silica and to this extent has no connection with the calcite of the chalk in which it appears. It occurs in solid layers or as isolated nodules; in the former the layers may be several inches thick and, as can be seen in the face of various chalk cliffs, may extend for miles in an unbroken sheet. Nodules may be quite isolated one from another, may lay in groups or be present as a nodular bed or layer. Flint is, somewhat naturally, found in the debris at the base of chalk cliffs and is common among the drilled material in southern England. Both layered and nodular flint is very hard but also comparatively brittle, breaking with a typical ‘conchoidal’ fracture and sharp edges that was a very useful function to early Man in his manufacture of stone implements.

Chalk flints are black or very dark grey but the surface is composed of a porous layer of silica particles which are so small that they scatter incident light they receive and thus appear white in colour. But some staining will often occur, even when this outer coating is eroded away, so that flints may be light grey, brown, yellow or a variety of other colours. Fresh or unweathered flints direct from the chalk will have this calcite material within the pores of the outer skin; weathered flints will have had the skin removed.

Marlstone. There are brown nodules, cylinders, balls and so on which are often found in association with chalk or chalk-derived debris and which, owing to their iron-like appearance and weight, are often termed ‘metsite’ or ‘thunder-bolts’. In fact this is a form of iron sulphide and if the nodules are broken open they will reveal a radiating crystalline structure of bright silver, which runs to a brown colour.

Coal. The final class of sedimentary rock that will be mentioned here is the group which originates from plant matter, the coal series, which actually includes every stage from peat to anthracite. Special mention might be made of the slate (sic) which sometimes accompanies coal deposits. This is a claystone or shale and it occasionally may be found to exhibit fossil traces of the coal plants: ferns, club-mosses and horsetails which grew as giant trees in the Carboniferous period. The examination of coniferous waste heaps can often prove rewarding in this respect.

Sources of some harder limestones:

- Central and W. Scotland
- Shropshire
- Warwickshire
- Westmorland
- Extremes N.E. Wales
- Cumberland
- South Wales
- Northumberland
- Anglesey
- Durham
- Somerset (Mendips)
- Yorkshire
- Devon (Plymouth, Torquay)
- Lancashire
- Kent (Kentish Ragstone, Bourne Stone)
- Derbyshire
- Surrey (Bargate Stone, some aspects)

Next article: Metamorphic Rocks.
Swimming Speeds

A GOOD deal more is known about the swimming speeds of fish than Mr. Fry indicated in his interesting article (The Aquarist, August). Dr. Richard Bainbridge of Cambridge University has measured the swimming speeds of trout, dace and goldfish 1 to 12 inches long, and has collated the observations of other zoologists on other species (Journal of Experimental Biology, volumes 35 and 37). The maximum speed depends on the time for which it is sustained, just as a man can run faster for 100 yards than he can for a mile. It seems that the following simple rule applies to fish of a wide variety of sizes and species: they can swim at a maximum speed of 10 to 12 times their length per second for a second or two, but the maximum speed they can sustain for an hour or so is only three to five times their length per second. A fish a foot long, for instance, can reach about 8 m.p.h. in a short burst and can cruise at about 3 m.p.h.

Mr. Fry does not give the sizes of the fish whose speeds he gives (indeed he says, contrary to Dr. Bainbridge’s findings, that size has little to do with speed), but a few of the speeds he gives seem improbably high, and one wonders whether the observations on which they are based are entirely reliable.

R. McN. Alexander, Bangor, Caernarvonshire.

British Marines

With reference to Mr. H. J. Vupper’s letter headed “British Marines” (The Aquarist, September), I must agree that he is probably correct about the staklocks amonoes (Amoana ovalis) and that this amonoe does, under certain conditions, react to its termites. Unfortunately this particular species is not found in my local collecting area and the ones I have kept in tanks have shown no reaction to those conditions which cause other amonoes to withdraw their tentacles.

It may be of interest to note that I brought a couple of staklocks amonoes from South Devon to West Cumberland in the boot of my car without them suffering any ill effects. They were carried in a carton containing damp seaweed.

A month after introduction to my amonoe tank; the smaller of the two animals divided longitudinally, starting at the base and gradually extending upwards. After a few hours I had three “staklocks” instead of two. The two amonoes resulting from the splitting process were, strangely enough, different shades of green.

Like Mr. Vupper, I have successfully used angle-iron tanks for marine creatures, but have found corrosion a constant source of trouble, a difficulty easily avoided by the use of nylon-coated tanks.

With regard to aeration, I have kept amonoes without using an air pump but under such conditions the specimens remained in a half-open state even at night and after feeding, when most of them should be at their best.

In my article I purposely avoided mentioning the plume amonoe (Mastutum spicata), for, as Mr. Vupper points out, this creature is not one for beginners, being a plankton feeder. Crushed white fish and mussels will sometimes be taken but there is always the possibility of water pollution. There is, however, always room for experiment, but amonoes of the same species do not always react to food in the same way.

May I, finally, thank Mr. Hurlock for his suggestion for the prevention of water from the cover glasses of tanks running down the sides. It certainly is less complicated than the devices I have so far tried.

A. J. McLean, Egremont, Cumberland.

Plops in the Night

The following true anecdote may interest your readers. Touring on the Continent means sleeping in all sorts of rooms to an accompaniment of all sorts of noises: dustbins in Rennes, trains in the Aosta valley, wedding celebrations in Cologne, parties in Ypres—I grew used to the ice but my strongest background noise occurred at Poligny in France.

I had enjoyed an excellent meal (trout cooked to perfection and good wine). My room overlooked the hotel yard but seemed peaceful enough. At first, that is. Soon a peculiar plopping, gurgling noise disturbed me. It continued all night and I feared the worst re sanitation. Daylight came and I located the sound. Bubble—bubble—bubble—pleep! No wonder the trout had kept so fresh. Beneath my window was a tank full of fish, hygienically aerated. My drains were only the bubbles in the fish tank. I must say this is the nearest I have ever come to sleeping with fish.

(Mrs.) E. Harper, Hayling Island, Hants.

October, 1965
A Visit to Chester

restaurants and cafes and with modernisation and extensions taking place to such a degree that something different appears nearly every time one visits it.

The idea of a Zoo without bars is becoming quite a reality. In a great many instances only a small wall or water channel separates the animals from the public, and inside the newer houses glass boxes are replacing wire mesh and some of the birds are in free flight.

As one looks around the Zoo the number of young animals seen that have been born in the Zoo proves that the conditions provided for the animals are as ideal as can be.

Beside the animals the gardens are delightful to walk through with well laid-out flower beds and borders wherever you go, which are filled with flowers from the beginning of the year to the end.

A novelty feature of the Zoo is the inland waterway, and by means of a block of tickets bought at the waterbus terminus one can visit various parts of the Zoo by boat, using it in a similar manner to a bus service.

For the aquarist, however, the Aquarium is the centre of attraction and is well worth visiting. The tanks are illuminated by natural light and contain a wide range of water life, including tropical and coldwater fishes, pond life, marine fishes and marine life from round our coasts. Except for one tank containing marine life from around Holyhead all seemed in perfect health and judging by the large amount of Daphnia present in nearly all of the tanks were well fed too.

The tanks are well set up with plenty of healthy-looking plants and in most cases one species of fish to each tank. This seems to be a very effective way to display them, for some were really outstanding. The tanks that I admired most housed a shoal of large beautiful cardinal tetras, a shoal of rosy barbs, brown pompadour fish (discus), the one whose rockwork was covered with various types of anemones and the one with a shoal of large piranhas.

It seems a pity that excess fish not required by the Zoo cannot be purchased by aquarist visitors, for in some tanks what appeared to be live food for larger fish would have graced the tanks of many an aquarist!

The labelling of the fishes on display left a lot to be desired, especially where there were more than one species to a tank.

My only real criticism about Chester Zoo is that an additional charge of 2s. 6d. is made to enter the new tropical house. This is nearly as much as the admission fee and must deprive a lot of people from the pleasure of seeing some fascinating animals, birds and reptiles in their natural surroundings. I personally would prefer the entrance fee to be raised say by 6d. to cover extra cost. However, this Zoo is really magnificent and I do not think that anyone who visits it will be disappointed.

The Aquarist Crossword

Compiled by M. W. SAUNDERS

CLUES ACROSS
1. Do the Labyrinthios live at home? (5)
6. Speechmakers (7)
9. I'll run round to prevent flooding (5)
10. Small fish whose name appears in lights (4, 5)
11. Very tasty but not knowing it is (6)
13. To have really (9)
15. Cast off, animals, for being stimulation (9)
19. Home of the sword plant (9)
20. Speeches to accomplish (9)
21. First signs of winter, Jack (8)
22. Their operation is growing (9)
23. Small red fish (9)
26. A true dog (5)
30. Miserable from the start, through书记 (8)
31. Sudden all is well (4, 5)

CLUES DOWN
1. Home of the live plant (10)
2. These winds may help the import dried (5)
3. Where fishermen buy, counting their money (5)
4. Fabric from mills in England (5)
5. When white men first explored in a ship (4)
6. Join in reproduction (8)
7. Complaint and objection (8)
8. If you can, it is not easy to get warm (4)
12. Sounds like an expression of water - Underwater (7)
15. Might provide cover for your goldfish (7)
16. Descriptive of a jewel child (5)
17. New (5)
18. Red and green in a circle (8)
19. The mark you leave and the mark you get (10)
20. South American city (5)
21. Now about what you possess (8)
22. Bury of (3)
23. Animal kingdom (5)
24. Lot of holes tied up with string (5)
25. One of their weeds is Zebra (7)
27. By way of (5)
28. A contradictory thermometer is (5)
29. Suitable for catching fish - or animals (5)
31. Given is a nicer show the next month (9, 2)
33. On lettuce they cannot be raised (9)
34. Funny to eat (5)
35. Tank occupants do (5)
37. And this helps them to do it (4)

Solution on page 133
from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarist societies for inclusion on this page should reach the Editor by the 15th of the month preceding the month of publication.

THE results of the Bathyal Green A.S.'s annual general meeting are available. The President, Mr. T. L. E. Gillman (Greenwich), reported on the activities of the society during the year, which included visits to the London Aquarium, Weymouth Aquarium, and the new aquarium at Elephant and Castle. The Secretary, Mr. R. H. Turner (Bath), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE Council of the Gondwanan A.C. held its annual general meeting recently at the Royal Geographical Society. The President, Mr. R. H. Turner (Bath), reported on the activities of the council during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the council's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the council. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE Waverley A.C. held its annual general meeting recently at the Waverley Hotel. The President, Mr. R. H. Turner (Bath), reported on the activities of the council during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the council's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the council. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the National Aquarium A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Southwark A.C. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the council during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the council's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the council. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Bristol Aquarium A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the London Aquarium A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Southampton A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Ramsgate A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Weymouth A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Bath A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Southend A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Grimsby A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Hull A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Skegness A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Cleethorpes A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

THE report of the Lowestoft A.S. was received with interest. The President, Mr. R. H. Turner (Bath), reported on the activities of the society during the year, which included visits to the London Aquarium and the aquarium at Elephant and Castle. The Secretary, Mr. J. E. Gillman (Greenwich), presented the society's accounts, which showed a small surplus. The Treasurer, Mr. J. E. Gillman (Greenwich), gave a report on the financial aspects of the society. The meeting concluded with a friendly discussion and a vote of thanks to the retiring officers.

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with his trophies, Mr. R. Burt made a fine short comment on each fish in the show, pointing out major defects and indicating the features he would look for in a prize-winning specimen.

The Society is conscious of producing a result of colour slides of members' fishes and aquaria, but no club member has sufficient knowledge to do the job properly. If any fellow aquarist can give some practical help, the Society would be grateful.

The secretary is Mr. E. K. Simons, 85, Station Crescent, Barrow-in-Furness, Lancs.

**THE Portsmoutb A.S. held their 13th annual open show recently. The main attraction was a large coldwater aquarium set up in the entrance by Mr. P. Furse and Mr. J. H. Andrews. An exhibition of aquariums by Mr. Howard, and a world-fish show by Mr. Hunt. Out of a record number of entries the winners were as follows: Club Furnished Aquarium: 1st, R. M. C. Newland; 2nd, A. R. Milne; 3rd, R. J. Brown. Individual Furnished Aquarium: 1st, R. M. C. Newland; 2nd, R. J. Brown; 3rd, A. R. Milne.

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IN the second annual open show held by the Henley and District A.S. over 200 entries were received. The results were as follows:—


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Fantasy presents

an entirely new range of Aquarium coloured gravel
with the NATURAL look

NEW BUCKLAND FANTASY ‘PEACOCK’ BRAND AQUARIUM GRAVEL

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Mottled Red, Mottled Green, Mottled Lavender, Mottled Primrose, Mottled Blue,
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The professional food that wise amateurs prefer.

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Fantasy Pet Products Ltd
13, Nutley Lane,
Reigate, Surrey.
### Tropical Fish

**Interesting fish this month**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>Young Kribensis</td>
<td>3.50</td>
</tr>
<tr>
<td>Blood Gourami</td>
<td>2.50</td>
</tr>
<tr>
<td>Yellow Banded</td>
<td>2.00</td>
</tr>
<tr>
<td>Ruby Red</td>
<td>1.50</td>
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<tr>
<td>Magenta Skirt</td>
<td>1.00</td>
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<tr>
<td>Electric Bluegill</td>
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<tr>
<td>Red Dwarf</td>
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**Labyrinth**

<table>
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<tr>
<td>Slender Stinger</td>
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<tr>
<td>Green Dragon</td>
<td>0.10</td>
</tr>
<tr>
<td>Green Gosling</td>
<td>0.05</td>
</tr>
</tbody>
</table>

**Barbs**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheaper</td>
<td>0.50</td>
</tr>
<tr>
<td>Tiger</td>
<td>0.30</td>
</tr>
<tr>
<td>Capetrel</td>
<td>0.20</td>
</tr>
</tbody>
</table>

**Guppy**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden</td>
<td>0.50</td>
</tr>
<tr>
<td>Half Black</td>
<td>0.30</td>
</tr>
</tbody>
</table>

**Platies**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>0.25</td>
</tr>
<tr>
<td>Red</td>
<td>0.10</td>
</tr>
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</table>

**Rasbora**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harlequin</td>
<td>0.50</td>
</tr>
<tr>
<td>Blue Parrot</td>
<td>0.30</td>
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</tbody>
</table>

**Cichlids**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angelfish</td>
<td>0.25</td>
</tr>
<tr>
<td>Blue Ridge</td>
<td>0.10</td>
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</table>

**Dwarf Cichlids**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Kribensis</td>
<td>1.00</td>
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**Apistogramma**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Spotted</td>
<td>0.10</td>
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</tbody>
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**Danios**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Red Pin</td>
<td>0.50</td>
</tr>
<tr>
<td>Red Tail</td>
<td>0.30</td>
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</table>

**Sharks**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>0.25</td>
</tr>
</tbody>
</table>

**Various Others**

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Flag</td>
<td>1.00</td>
</tr>
<tr>
<td>Red Tail</td>
<td>0.25</td>
</tr>
</tbody>
</table>

---

All fish guaranteed live delivery and in good disease free condition, 7/6 rail and packing charge to be included with every order. All consignments of fish to be collected from nearest main-line railway station.

**Also Full Selection of Plants Equipment Etc.**

**Keith Barracough**

215 Great Horton Road - Bradford 7 - Yorkshire

Telephone: Bradford 75572 (Trade Supplied)

October, 1965
New from Denmark

Vacation Food. When taking your holiday, drop one Hykro Vacation Block in your tank. This will feed your fish in an average size tank for at least 2 weeks and does not foul the water.

Also New. Nylon Clamps, Tees and 4 ways. These are as strong as metal, do not wear or rust; obtainable at all good Aquarist and Pet Shops.

Hykro Foods. Although reasonable in price are still the best and stocked by all good retailers.

JOE GRASSBY
The Hykro Depot, Mobberley, Nr Knutsford, Cheshire
When fish are properly fed, they keep fit and they live longer

There is a ‘Hobby’ Food for all circumstances

Hobby Yolk Flakes (Yellow):
Made from pure egg yolk, easily digested, therefore the best food for young fry.

Hobby Leaf-Green Flakes (Green):
Containing chlorophyll, recommended for such algae-eaters as Planktomoon & Phallas.

Hobby Mixed Foods (Red):
A mixed diet which over the “difficult” fish water.

Hobby Gold:
A diet rich in vitamins and protein which will maintain all fish in perfect health.

At 3s. each per packet, or 2s. 4d. by post.
Breeders’ packs of any of the above, 7s. each, or 7s. 6d. by post.

HOBBY ‘BLUE DAILY’
Hobby “Blue Daily” is vacuum packed, so it is as fresh when you open it as when it left the factory.
Made from crushed insects, flies, and mosquito larvae. Your fish will really appreciate it.
Price 3s. per packet, or 2s. 4d. by post.

HILLSIDE AQUATICS

New from U.S.A.

GRO-LUX FLUORESCENT TUBES
Specially designed to stimulate plant growth. Danish Aquarists to whom they have been available for 12 months, used nothing else at this year’s show in Copenhagen. The results were amazing.

18” tube £1. 12. 6d. + 5/8 p.t.
2’ “ £1. 15. 0d. + 6/2 p.t.
3’ “ £2. 0. 0d. + 7/- p.t.
4’ “ £2. 0. 0d. + 7/- p.t.

These tubes will be available in the next six weeks.
Terms CWO plus 7/6 rail and packing.

All enquiries to—
PEDERSEN’S RADIO & TELEVISION LTD.
145 Newgate Street, Bishop Auckland, Co. Durham
Phone 8p. Auckland 3706.

BRITISH AQUARISTS’ FESTIVAL
27th - 28th November, 1965
The show with a different approach
Schedule covers all classes as in 1964 and copies are now available from —

G. W. COOKE,
“SPRING GROVE”, FIELD HILL, BATLEY,
YORKSHIRE
Trade stands: Details from above address
AQUATIC PLANTS
In response to numerous enquiries we have now started a special Mail Order dept. for Private Aquarists. Now YOU too can choose from the finest range of Cold/Tropical plants.

Many varieties on offer, unattainable elsewhere.
(Wholesalers Trade Only) RETAILER ENQUIRIES ALWAYS WELCOME. Lists on request.
All callers are invited to appointment only please
J. ELLIS, Healing, Grimsby, Lincs.
Tel. Healing 2205

WESSEX AQUARIA
AND PET STORES
(Member of the Pet Trade Association)
25, Beehive Road, BINFIELD, Berkshire. Tel. Bracknell 670
(Nr. "Shrubland of Plants" Public House)
For tropical fish, Marine Coral Fish, Plants,
Accessories, Tubifex, White Worms, Reptiles
and Amphibians. S.A.E. for Lists.

I’ve Got Millions!

WORMS! FOODS! COMPOSTS! RESULTS!
EUGLENA, MICRO-WORMS, MICO-FOOD
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GRINDAL-COMPOST
WHITE WORMS
WHITE WORM FOOD
WHITE WORM COMPOST

1. With 8 page instructional booklet
2. Complete with feeding powder
3. Special breeders for Marine
4. Highest protein content. Pure meats
5. Finest ground with organic base
6. With complete instructions
7. Planted cultures in wooden boxes
8. Fast-grown for quicker breeding

Ask your dealer, or free delivery from
E. ARNOLD, 80, MONEGA ROAD, LONDON, E.T.

REPTILES — AMPHIBIANS
Imports from all Continents
Write for current price list
Sale agency for England:
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"The Anton", Beechwood Drive, Eaton, Congleton, Cheshire

DRS. W. DE ROVER
Ericlaan 9
Ernelo, Holland

REGAL TETRA FOR BETTER FILTRATION
We supply the best type of filter medium — a scientifically prepared, chemically pure compound of RT exchange resins guaranteed to remove harmful nitrates from your tank without affecting pH values. Can be used in any filter. Does not contain any Phenolics but removes these dangerous substances.

N.B. This filter medium can be cleaned and re-used; under normal conditions cleaning every 3 months is sufficient.

PRICE 21/- Complete with simple using instructions from all Pet Shops or send 21/- P.O. to

REGAL TETRA LTD 133, SIRDAR RD., LONDON, N.22
PREPAID ADVERTISEMENTS—continued from page 9

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AQUARIUM BURNT: food for birds. J. N. BURTON, 31-35 South Road, Bury St. Edmunds.

FOR A GOOD BUT A CHEAP REST: feed McNair's fish food.

CAMBRIDGE FISH. 250 varieties, tropical, coldwater and Pond fish. 100 varieties available. Prices include tanks and accessories. Catalogue 10s. 6d., 1s. 6d. C. C. WALLACE, 65-67 Upper Street, Cambridge.

TROPICAL MARINES, large and inexpensive variety, write for prices. Tropical and coldwater. The Aquarium, 2, Gurneene Road, X. 19.

THERE are a young lady from Cardifl Dock.

Tropical fish are all the stock

To grow extra fish.

She needs them. Call me.

The original seed to the plastic box.

SITUATIONS VACANT

MODERN AQUARIUM AND PET SHOP require assistant staff for shops in West London and London area. Applicants who should be over 18. Some experience desirable in Tropical and Coldwater Fish. They should also be able to work on their own initiative. Excellent salary will be paid to successful applicants. Apply in writing giving details of experience to—J. T. HAIN (Aquarists) Ltd., 17, Lauderdale Road, West Ealing, W. 13.


WANTED

LARGE GOLDEN ORCHAR. Wanted urgently. Good price paid for quality fish. Min. 12"—24". Phone: Ealing 58995.

WANTED: a hefty Junior Plunger Pump. Perfect condition. Remi-


SUPPLY OF TROPICAL marine fish, further supplies required. Smaller size. The Aquarium, 2 Gurneene Road, X. 19.


WANTED to buy both copies of The Aquarium and Water Life on

W. CHAMPION, 242, White Street, Brooklyn, 11, N.Y. When have you? A. E. BLAIN, 222, White Street, Brooklyn, 11, N.Y.

WANTED. TOP PRICES paid for good-quality plants and fish. Super Pet Stores, 116 Victoria Street, Blackheath. Tel.: 15056.

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R. HOLTON & SONS, 309, Oxford Road, Southwark, 40. Plaques, Shells, Medals, Cups and Medallions for Aquarium and Bird Societies. Tropical and Coldwater fish for sale in full colour. Write for details to above.

REPAIRS

GUARANTEED HEATER REBUILD, 5s. 6d. each. Send old heaters and spare wattages required. New heaters, year’s guarantee. 6s. 6d. A. WAGNER, 33, Warwick Road, Wombwell.

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STAFF REQUIRED in London and Books for aquarium’s business. Call anytime including Sundays.

Visit...

MRS K. COOPER
Bean Hatchery, Bean, N.R. Dartford, Kent

(Just off A2 Trunk Road, few doors from Black Horse PH.)

Large selection of

TROPICALS, PLANTS, ACCESSORIES

Call anytime including Sundays

October, 1969

...but the better aquariums are glazed with

ARBOLITE Q.S.

Aquarium Glazing Compound

This versatile, watertight compound is now available in a range of pleasant shades—grey, cream, red, green and blue. Packed in 1 lb; 2 lb; 4 lb; 7 lb and 14 lb. tins and in ½ cwt., 1 cwt. and 1 cwt. kegs.

ADSHEAD RATCLIFFE

ADSHEAD RATCLIFFE & CO. LTD.

BELPER • DERBY • Tel: Belper 2891 (3 lines)
# TACHBROOK TROPICALS

244 VAUXHALL BRIDGE ROAD, LONDON, S.W.1

**Telephone: VICTORIA 5179**

## ANGLE IRON TANKS

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Quantity</th>
</tr>
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<tbody>
<tr>
<td>18 x 12 x 10 in.</td>
<td>12 x 10 in.</td>
</tr>
<tr>
<td>24 x 12 x 10 in.</td>
<td>12 x 10 in.</td>
</tr>
<tr>
<td>24 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
</tr>
<tr>
<td>36 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
</tr>
<tr>
<td>48 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
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## PRESSURE STEEL TANKS

<table>
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<th>Quantity</th>
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<tbody>
<tr>
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<tr>
<td>24 x 12 x 10 in.</td>
<td>12 x 10 in.</td>
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<tr>
<td>24 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
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<tr>
<td>36 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
</tr>
<tr>
<td>48 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
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## WHITENWOOD CULTURE

<table>
<thead>
<tr>
<th>Size</th>
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<tbody>
<tr>
<td>Small</td>
<td>3 x 6 Large</td>
</tr>
<tr>
<td>PISTON PUMPS</td>
<td></td>
</tr>
<tr>
<td>Helly</td>
<td>22 x 6</td>
</tr>
<tr>
<td>Helly &quot;A&quot;</td>
<td>22 x 6</td>
</tr>
<tr>
<td>Helly &quot;B&quot;</td>
<td>22 x 6</td>
</tr>
<tr>
<td>Helly &quot;C&quot;</td>
<td>22 x 6</td>
</tr>
<tr>
<td>Helly &quot;D&quot;</td>
<td>22 x 6</td>
</tr>
<tr>
<td>Exhaust</td>
<td>22 x 6</td>
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<tr>
<td>Assembly</td>
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<tr>
<td>Cast Iron</td>
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</tr>
<tr>
<td>Cast Iron</td>
<td>22 x 6</td>
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## BOOKCASE SETS

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<th></th>
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<tbody>
<tr>
<td>2 x 2 x 2 in.</td>
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## BOW FRENCHER SLIDING DOORS

<table>
<thead>
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<th>Size (in)</th>
<th>Quantity</th>
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<tbody>
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## HEATERS

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<tbody>
<tr>
<td>36 x 12 x 18 in.</td>
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## COMBINED HEATER & THERMOSTAT

<table>
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<tr>
<th>Size (in)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
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</table>

## THERMOSTATS

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<thead>
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<tbody>
<tr>
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</tr>
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## VICTOR ALL OVER SHADE STANDS

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>36 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
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## ARBRE PLASTIC AQUARIUMS

<table>
<thead>
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<th>Size (in)</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>36 x 12 x 18 in.</td>
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## OUTSIDE FITTING TANKS

<table>
<thead>
<tr>
<th>Size (in)</th>
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</thead>
<tbody>
<tr>
<td>36 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
</tr>
</tbody>
</table>

## POSTAL CHARGES

Aquariums, Stands, Gravel, Mastic and Rockwork at owners' risk. Carriage at cost invoiced after despatch.

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 x 12 x 18 in.</td>
<td>12 x 10 in.</td>
</tr>
</tbody>
</table>

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**THE AQUARIST**
VISIT OUR NEW SHOWROOMS

Aquarium Fishes and Plants Displayed to Perfection

A MANUAL OF AQUARIUM PLANTS
110 pages cram packed with invaluable information and extravagantly illustrated. Notes on cultivation on most species. No serious aquarium keeper can afford to be without this book.

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We are working in close cooperation with the Famous Tropicanum Frankfurt and are able to offer the same excellent range of Marine Tropicals carried by them, the same species being obtained to order.

We are also stockists of the New Tropicalium Gaseous Reactor Tube which is invaluable in marine aquarium keeping. Send S.A.E. for details.

TROPICAL AQUARIUM PLANTS

SPECIAL!
TELANTHERA VIOLACEA
New Variety

5/- each 6 for £1

TWO NEW GIANT HYDROPHILAS
H. Constan. H. Apollinaria

1 of each for 10/-

Special Offer for October/November only—Nicandra, Alpinaria (various), Symposis,
2 of each of above for 10/-; 3 of each for £1

NEW SEASON'S LACE PLANTS & KING APONOGETONS

7/- each, 3 for 20/-, 7 for 40/- assorted as required

TROPICAL FISHES FOR CALLERS

Interesting collection of live-beaters including
Shirley brilliant red swordtails
Liberty medallies
Blood-red wagtail plecos
Young green pterophyllums
Half-bows
Platy varieties
High-fin swordtails

A good variety of ornamental carps

PLEASE NOTE—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 6 mile from Birmingham, M.60. Bus No. 150 from Bus Station, Birmingham, passes the door, light at "The Crown," Monkspath.

HOURS OF BUSINESS—

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CLOSED ALL DAY EVERY MONDAY

TERMS OF BUSINESS—Cash with order please. Fobs sent by rail. Tropical mustard order £15, insulated container and carriage 10/-.

Cold water minimum order £3 plus 10/- and carriage. Plants by post (minimum order £10) please add 10/- post and packing.