

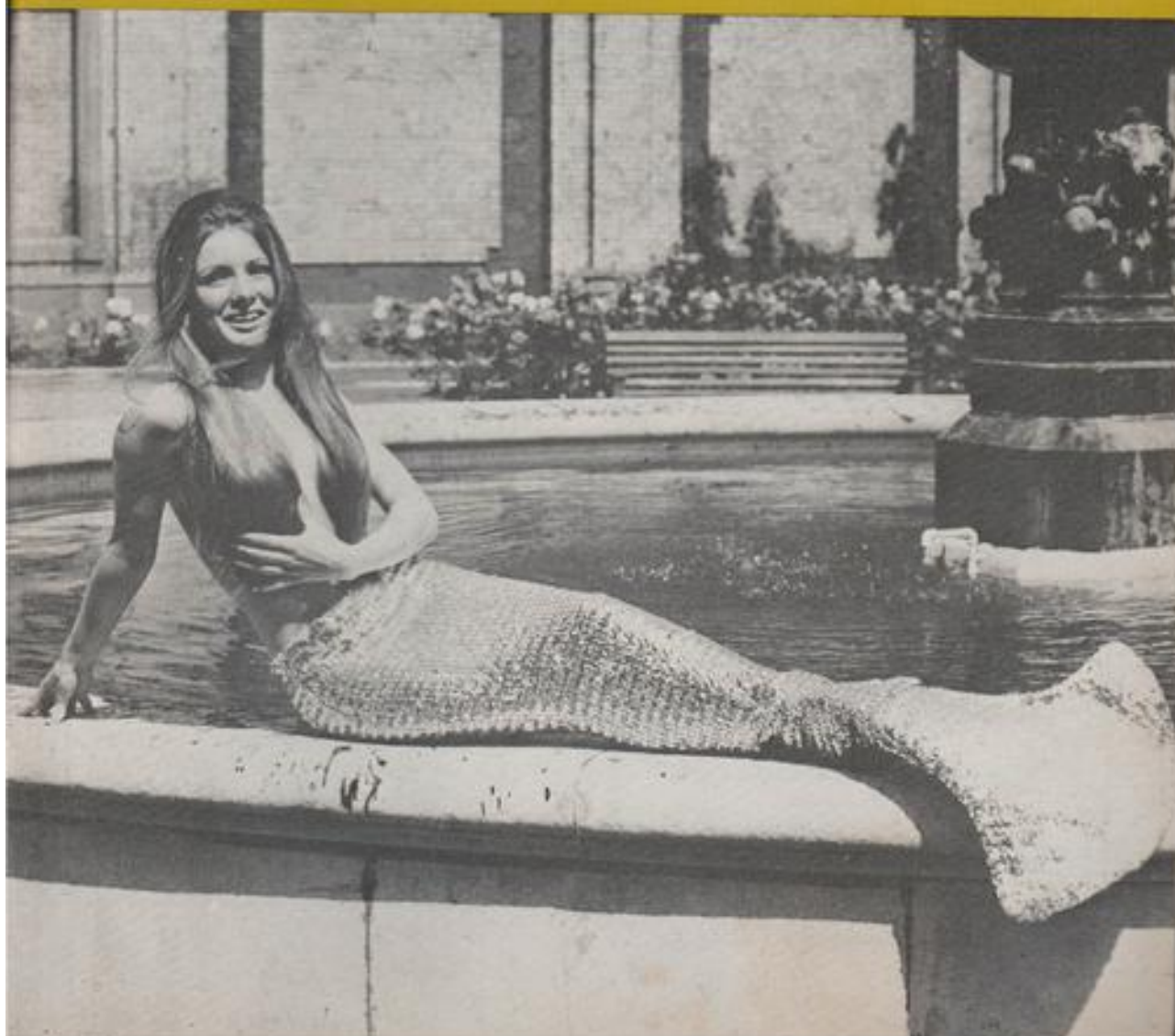
September
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Aquarist

and Pondkeeper



the Aquarist

and Pondkeeper

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Contents

OUR COVER

The Mickfield Mermaid.
18-year-old Sally
McLaughlin modelled
for The Mickfield Fish
Centre of Stowmarket
Suffolk at *The Aquarist*
Fishkeeping Exhibition.

	PAGE
The Aquarist Fishkeeping Exhibition	186
Product Reviews	188
Peat in the Aquarium	190
The Day Lily	191
Starting a Marine Aquarium	192
The Unknown <i>Umbra krameri</i>	194
Breeding Malawi Cichlids	196
Find the Plant	197
From a Naturalist's Notebook	198
Junior Aquarist: Effects of Overcrowding	199
Breeding Goldfish	200
Our Experts' Answers	202
<i>Corydoras paleatus</i>	206
Japanese Nasturtium	207
What is your Opinion?	208
Breeding Angel Fish	212
Herpetological Notes	214
Our Readers Write	216
Narrow Tolerance Ranges	217

The Editor accepts no responsibility for views expressed by contributors.

Editor: Laurence E. Perkins

September, 1970

185

THE AQUARIST FISHKEEPING EXHIBITION

By A. Boarder

THE ABOVE EXHIBITION was held on 10th-12th July, 1970, and proved a huge success. The first exhibition held last year was acclaimed a winner but I am sure that all who visited this show will agree that it far surpassed the one held last year. The venue, of course, could hardly be bettered as there is plenty of free space for car parking and even wives and children

not particularly interested in fishkeeping could find much pleasure in observing the view hardly to be beaten in or around London. Another improvement on last year was the splendid catering facilities which allowed one to obtain a first-class meal at a reasonable cost in comfortable surroundings.

The furnished tanks again proved a great attraction



Part of Broad Green Aquarium's attractive koi pool



The impressive water and rock-garden display staged by Aquapets just inside the main entrance in the hall

and one was able to obtain plenty of information as to how to set up a tank. This section is always very interesting to the person who is not an aquarist and who, up to then, thought that goldfish should be kept in a glass bowl. The choice of types was considerable and even rock-climbers would have found one of the winning tanks an ideal type for their particular hobby. Whether the tank I am thinking of would last long as set up is another point as there was plenty of hidden space for the reception of mulm. The classes for the younger generation were well supported and this is a section which all should encourage as much as possible. One or two of the school tanks were very good indeed and one could see the instruction of an expert behind the scene.

The classes provided for pairs of fishes was not as well supported as one would have thought and it is to be hoped that there will be a greater response in

future. There are surely plenty of good characins, cichlids, mollies, swords and platys around and let us hope that they will turn up another time. The guppies were very good but how I wish that in the search for huge flowing caudals the breeders would not lose sight of the fact that the bodies of many of such fish have lost their beautiful colouring which we all admired over twenty years ago. Where have all those brilliantly coloured spots and patches of yesteryear gone?

The plant section was the finest I have ever seen at any show. Not only were most of the plants of a very high class but their presentation was excellent. Being housed in very neat tanks and named, they presented an excellent opportunity for anyone to see what plants should look like and the varied kinds which could be grown. The whole range of tanks in the competitive section was as neat as any I have ever

seen and did credit to the organisers and their assistants. The marine section was not very extensive and I expect that we shall have to wait a year or two before we can expect as large a display of competitive tanks as can be found among the freshwater section.

If marines were missing in these classes then they were compensated for by the wonderful displays by the marine dealers. I do not think that I have ever seen such marvellous coloured fishes before, some of them were out of this world and resembled tropical butterflies rather than fishes. Not only were their colours extraordinary but their shapes were also most odd. I feel certain that everyone who saw these fishes will agree with me that this spectacle alone was worth their entrance fee.

Many dealers had gone to town with their exhibits and all added to the general attraction. One could get almost any accessory one needed, from filters and pumps to books and foods. Although there were

thousands of visitors it was never uncomfortably crowded as one could stray into the pleasant gardens adjoining for a rest when required. I know that many people found the exhibits very attractive as I was kept busy on the Sunday, on the public address system, calling for parents of lost children and even at times, lost wives and husbands.

The awards were presented by the vice-chairman of the Federation of British Aquatic Societies, Mr. F. Tomkins. The Federation is to be congratulated on the work they put in in assisting in the organisation of the exhibition and for helping to provide the many stewards who were on duty throughout the show.

Jack Hems and I were kept busy answering many questions and we both agreed that it was very nice to meet so many readers of the magazine and chat to them personally. Let us now look forward to the next exhibition and hope that it at least comes up to the quality of this one.

PRODUCT REVIEWS

"MIRACLE" PET PRODUCTS

"MIRACLE" PET PRODUCTS have now released their new range of aquarium remedies in Britain. They are distributed by T.F.H. (Great Britain) Ltd., 13 Nutley Lane, Reigate, Surrey.

The new range of liquid remedies are supplied in plastic 4 oz. dropper bottles. I do not yet know the price. The following are the remedies available: "Algae Killer," for the control of algal growths. The product does not harm normal aquarium plants if used as instructed. It is for the control of algae, but does not kill existing growths. "Copper Blue Cure" is for the treatment of external parasites on marine and freshwater fishes. It is especially suitable for Oodinium diseases, and contains copper sulphate, methylene blue, and deionized water. "Ich Remedy" is for the control of white spot in tropical fish. It contains malachite green, acriflavine, quinine sulphate and water. "Fish Sterilizer" is a general antiseptic for new fish; it is also suitable for eliminating disease organisms from nets, filters, etc., and effective against many parasitic, protozoan and fungus diseases. It contains sodium chloride (salt), methylene blue, malachite green, acriflavine and water.

"Tonic" is a treatment for new and sick fish in the community aquarium. It prevents endemic forms of Ich, and is effective against body fungus, tailrot, mouth fungus and shimmies. It contains methylene blue, malachite green, acriflavine, quinine sulphate and water. "Plant Fertilizer" aids the growth of plants in freshwater aquaria, providing nutrients and trace

elements. It contains potassium nitrate, calcium phosphate, calcium sulphate, magnesium sulphate, sodium chloride, trace elements and water. (It sounds as if it might harden soft water!) "Water Ager" removes chlorine from tap water and is a solution of sodium thiosulphate and quinine sulphate in water. "Water Clear" is to control and help clear cloudy water due to bacteria and protozoa in fresh water aquaria. It is a simple solution of potassium permanganate in water.

This is a most useful new range which will treat a multitude of aquarium conditions, and the products are attractively presented and labelled with clear instructions. It is very useful to know just what each remedy contains—something which we do not always find on British remedies. Unfortunately I have not been able to test the products as none of my tanks, or their inmates, are suffering from any of the listed conditions—at present (and I hope they won't be!) It is hard to judge the cash value of the products as I don't know the price yet. I would hope that there is not a fixed price for all the items as some would be much better value than others, if there is—e.g., a solution of potassium permanganate could be made for a few coppers, whereas some of the other mixtures contain a number of much more expensive chemicals; however, I cannot comment until I learn the prices. This range would probably cover most of the remedies which the average aquarist would be likely to require—except, perhaps, for a snail-killer. B.W.

NARROW TOLERANCE RANGES

By Stanley Fox

NORMALLY WATER TEMPERATURES in tropical fish-tanks are usually kept within the range of 70 to 78 degrees Fahrenheit; within these limits the majority of tropical water-plants will thrive.

When plants are subjected to an increased water temperature, temporary damage will occur to the protoplasm; the degree of damage is governed by the amount of increase and the duration of time that the plants are exposed to these higher temperatures and as a result of this increase, the rate or speed of photosynthesis will also increase; as the protoplasm becomes progressively damaged, the rate of photosynthesis will decline. This in turn will affect the ability of the plants to take in their normal quota of carbon dioxide from the water; when this happens the amount of carbon dioxide will increase in direct ratio with the number of fish kept within the aquarium; as a result of this increase, the fish will become lethargic in appearance and can be observed trying to take in air at the water surface. If these conditions are prolonged the fish will become physically weakened and death can occur unless the temperature is gradually reduced to within the plants' and fishes' more normal, but narrow temperature range.

Fish in their natural habitat and fish in artificial environments, all possess the inherent ability to detect fluctuations of water temperature of less than 1 degree Fahrenheit. These changes are sensed through the fishes' lateral line; by this means the fish are warned in time to take evasive action away from waters that are too cold, or too hot. (It is important to remember that fish in aquaria cannot take avoiding action.) Although there are regulatory mechanisms within the fish that help them to adjust to temperature changes, they are limited and take time to take effect; the ability of plants and fish to survive out of their normal temperature range must not mean that they should be exposed to this ordeal. This also applies to the fishes' ability to withstand chemical changes in their surrounding waters; again, their tolerance is low. Fish can be acclimatized to strange water conditions,

but in reality fish are healthier and will live longer in waters that really suit them. While it is impossible to duplicate natural waters in aquaria, acceptable and therefore satisfactory waters are easily provided, subject to the proviso that no chemical additives are used. It must be remembered that practically all fish have an upper and lower limit to withstand water changes; beyond these limits their bodies cannot function.

Freshwater fishes must maintain a balance between the salt in their blood and body fluids and the mineral salts and chemicals in the water, because the fluids in the fishes' body contain more salt than the surrounding waters. The fish are in constant danger when water enters their bodies through the tissues, gill-members and mouths (although fish do not drink much water), and unless the fish can get rid of this excess water, their bodies will swell. The kidneys filter the excess water from the blood, the water passes through the urinary bladder and is finally excreted from an opening situated just behind the anus (in a normal state of health fish urinate in large quantities).

If for any reason the fishes' kidneys fail to function correctly, are diseased or damaged through chemical additives to their water, then the body salts become diluted; this is dangerous for the fish, for they must maintain the correct density of salt within their body fluids. When the kidneys are not working correctly, the fishes' ability to pass urine is drastically impaired. The body of the fish becomes enlarged with excess water and as the body of the fish is still taking in water, the result is dropsy.

The fish's swim-bladder being subjected to abnormal pressure is also affected to some degree; therefore in all instances where chemicals are to be used, for whatever reason in tropical aquaria, extreme care must be taken.

Plants possess varying abilities to withstand some of the chemicals that are used to disinfect them; when undertaking this practice of disinfecting plants, the plants themselves should be considered; are they hardy, half-hardy or delicate? Each genus and each family or species within the genera must be considered separately, especially valuable or delicate plants. Plants should not be placed en-masse into chemical solutions regardless of which family they belong to. It must be remembered that plants can die when immersed in chemicals that they are allergic to; even temporary immersion can have a serious adverse effect on them, though this may take some time to become apparent, due to this sometimes substantial time lapse cause and effect may not be co-related within the aquarist's mind, and as a consequence is virtually ignored.

To avoid losses in plants and fish, there are three words to remember:

"NARROW TOLERANCE RANGES"

PEAT IN THE AQUARIUM

By G. F. Riley

IT HAS BEEN QUITE a popular view recently to advocate the use of peat in either filters or under the gravel for the healthy growth of plants in our aquariums and many articles have appeared in various monthly magazines supporting this view.

There may be, however, considerable confusion on the average aquarist's part as to why the use of peat should benefit plant growth, particularly as any gardener will know that peat contains no fertilising qualities that can be utilised by plants, and any fisherman will know that rivers or streams being fed by water passing through peat beds supports less plant life (and consequently less fish life) than those rivers being fed by water passing through chalk and other lime bearing rocks, and in order to clarify the position we should look more closely at the requirements of aquatic plants.

It should be realised that the use of peat will lower the pH reading of the aquarium water and continued use will eventually produce acid water. The water from our taps is invariably alkaline, produced purposely by the water boards by introducing lime to avoid damage to pipes by natural acid water. The use by aquarists of lime-bearing rocks and gravel will either maintain the alkalinity or increase it according to the local factors.

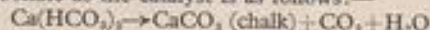
In order for plants to grow successfully a good source of light is necessary and whilst the light intensity varies in the requirements from species to species, a certain minimum requirement is necessary in any given species to enable photosynthesis to operate to the plants' best advantage. Photosynthesis is the process by which plants utilise "food" under the influence of light, taking in carbon dioxide (CO_2) and giving off oxygen. It is important for the plant that a ready supply of carbon dioxide is available so that this process can be continuous and unchecked.

Where lime is present in the water a convenient chemical exchange occurs. As the plant uses the available carbon dioxide the lime gives off its carbon dioxide content to the water, thus releasing a useful store of CO_2 . This process can be so efficient that the pH can drop measurably, even producing acid conditions and it has been known to kill all the fish in lakes where massive algae growths has used the lime so quickly the resulting drop in the pH has proved too much for the fish life. However, there are extreme

conditions which should not occur in the confines of our tanks.

The action of plants during darkness differs to the extent that oxygen is taken in and carbon dioxide given off i.e. the opposite of the action of photosynthesis, and this can cause a problem in overcrowded tanks. During darkness everything that is living in the aquarium produces carbon dioxide (fish, plants, infusoria, bacteria, algae, snails etc.) and since water has the ability to store carbon dioxide but not oxygen, deaths could occur. However, where the plants have used the carbon dioxide given off by the presence of lime, so the lime will take back any surplus CO_2 , restoring itself to its former state and relieving the water of too much surplus CO_2 . As dawn approaches the CO_2 , now locked up safely in the lime, will be ready to supply the plants' needs when photosynthesis begins. In short, the lime acts as a catalyst, i.e. it helps the chemical reactions of the plant but, over a period, remains unchanged.

For those interested in the technical aspect the chemical formula for this process, using calcium bicarbonate as the catalyst is as follows:—



This converts back into calcium bicarbonate at night.

Why, then, should we strive to alter the chemistry of our tap water which, according to nature, should, in most instances, be ideal for plant growth?

The answer lies in the fact that our tap water is often too good! Long before the plants in our aquariums can become established and propagate, making full use of the medium surrounding them, another plant begins to grow too quickly—algae. Algae requires exactly the same conditions as higher plants and given a chance will quickly take over. The problem, basically, is that the mere act of replanting a tank temporarily stops growth due to the destruction of their delicate hair root system. The root-system needs time to repair itself and, depending on the damage done, may either die back a little or go through a period of nil growth. During this time it is not competing for light or "food" and if very favourable conditions for plant growth exist, nature will provide the next best thing by producing algae.

In addition to algae growth we have the added disadvantage that alkaline water favours the development of bacteria and infusoria which can reduce the effi-

ciency of the available light and, with their associated life cycles of waste and deaths, a film of suspended matter soon settles on the few remaining healthy plants, preventing their normal processes from functioning.

In order, therefore, to give our plants a fighting chance during the establishment of a good healthy growth, we can produce conditions which have a sterilising effect on the unwanted organisms, but which only marginally effect the plants themselves. The safest and most natural way to do this is to produce acid water by the use of peat.

Acid water has a marked adverse effect on the ability of algae to grow and establish itself. It also effects the development of bacteria and infusoria and is to be highly recommended in filters for this reason alone.

The truth of the matter, therefore, is that peat by itself is of no use whatsoever to plant growth and the acid water it produces can even marginally hold them back, but the benefit to the state of the tank water can so greatly outweigh these disadvantages that its use can be of enormous assistance to all of us who take as much pride in our plants as we do with our fish.

THE DAY LILY

By Jas Stott

Hemerocallis, the Day Lily, is a hardy perennial which, until recent years, has been somewhat neglected in many parts of the country not only by gardeners but also by the pondkeeper for whom the Day Lily can be a useful subject because it is a moisture loving plant ideally suited for pool or stream margins. Granted, in the past the colour range was limited to several shades of yellow but, resulting from the efforts of British, American and Canadian plant breeders, the colour range of the modern varieties and hybrids is considerably extended. Some of the varieties are extremely handsome and still retain the hardiness of the original species.

The Day Lily blooms in July and August when the lily-like flowers are produced on sturdy stems and although lasting only a day (hence the popular name), the flowers occur in succession over a period of several weeks. The plant will grow in any average soil, providing it does not dry out quickly, which is why it can now be seen so frequently in the moister parts of the herbaceous border, but it thrives best in those positions where the head of moisture is fairly high and it is, therefore, a happy choice for the pondkeeper as a marginal or in the bog garden.

One of the species most frequently seen and grown is *H. flava*, a clear yellow, scented and flowering in late June to the end of July. It grows to a height of two to two and a half feet and is a sturdy plant. Another yellow, slightly lighter in shade, is *H. luteola*, bearing larger flowers and taller growing, in the region of three feet, and the flowers are also fragrant. Among the older yellow varieties I prefer

the richer yellow of *H. middendorfi* which, incidentally, is ideal for the smaller pond, growing as it does to only eighteen inches high.

Moving on to the orange tinted varieties *H. fulva* is probably the most common. The flowers are a shade of reddish-orange but the double form, *H. fulva-plena*, with its rich, large tawny-orange flowers is a much more impressive variety and would be my preference of the two. Another delightful orange variety is George Yeld with large, open flowers and growing to a height of some two feet. Golden Hyperion is equally attractive and the orange-apricot flowers with golden edged petals of Desert Song makes it a distinctive variety.

A comparatively new variety which came on to the scene a few years ago is Kathleen Hardy-Smith, a striking Day Lily producing large flowers a deep apricot in colour shaded with soft scarlet. It is about two and a half to three feet tall and a good grower. Another deep apricot coloured variety is Northern Light but here the flowers are flushed with orange and it is not so tall growing as the previous named. Deeper colouring still can be obtained with Hiawatha which is copper coloured tinted with crimson and yellow while Royal Ruby possesses a deeper flushing of red.

Hemerocallis can be planted in autumn or spring and, when planted, should be left undisturbed for a few years to develop and spread. They can be easily increased by root-division which is best done in the autumn.

STARTING A MARINE AQUARIUM

By Roland Jack

IF AN AQUARIST TALKS of "tropical fish" one can usually presume he means freshwater tropical fish. It is a sad fact that so few people seem to be even aware of the marine side of fishkeeping. Originally the technical difficulties and financial expense of a marine tank made such a venture impractical for most people. However, over the last decade these limitations have almost disappeared and yet even now very few aquarists have dared to experiment with saltwater.

This is indeed sad. Even the most colourful freshwater fish cannot compare with the original shapes and gaudy brilliance of many marines. A marine tank may be slightly more difficult to keep but this is in itself a challenge. The site of a well kept clear marine tank, with fish flashing against a background of coral, makes the ordinary tropical tank seem very traditional.

Three developments have made marine fishkeeping as viable a prospect as freshwater fishkeeping. Originally, one of the great problems was that water always had to be brought from the sea, which was difficult and very expensive, but now it is possible to buy salts which will make artificial seawater suitable for most varieties of marine fish. The second development is the great expansion of air freight services, which has made fish much cheaper to transport. The third is the use of the aqualung to catch the fish in their native water. Consequently, marine fish now usually cost only slightly more than their freshwater counterparts. When starting a marine tank there are few basic rules which must be observed. With regard to the tank itself, the aquarist must be very careful to ensure that the water will not react with the metal frame to produce poisonous salts. Originally this problem was solved by using an all-glass tank, but these are hardly satisfactory as they produce a very distorted view of the fish and are liable to suddenly crack. Angle iron is not poisonous, but tends to rust very quickly unless frequently painted. Except for expense, the ideal solution is a stainless-steel tank. Again, care must be taken to see that the kind of putty used will not react with the salt.

If one can obtain natural seawater in sufficient quantities, it is more satisfactory than artificial saltwater, but one must remember to keep enough in reserve for emergencies. When collecting seawater

make sure that it does not come from an area likely to be contaminated by drains or harbour filth. Most aquarists would probably find it easier to use artificial salts, mixing them with freshwater as directed by the manufacturers.

Any sand or rocks should be thoroughly cleaned before use and the latter should be checked to ensure that they will not dissolve. Sand should be very fine so that no waste matter will sink between the particles to breed bacteria. Coral looks very good in a marine tank but should always be thoroughly boiled first to clean it of the dead organisms always found on coral.

Ordinary aquatic plants will not survive in saltwater and the marine aquarist will find himself limited to the various types of seaweed. It is useful to have some form of vegetation in the tank as it will absorb light that would otherwise be available for the growth of algae. Because of this, if there are no plants in the tank, it is a good idea to rely on natural light (but not direct sunlight) for illumination. At least this has the advantage of cutting electricity costs.

Some form of aeration in the tank is vital. This is not only to oxygenate the water, but to produce the constant movement in which the fish would normally live. This can either be done by pumping air through the water or by circulating it through a filter, or best of all by a combination of both. Most aeration pumps will produce enough power for this. Spun glass is preferable to cotton wool as a filter medium. Care should be taken to replace it frequently although it can usually be washed and re-used several times.

Besides watching the temperature, aeration and cleanliness of the water, the marine aquarist must also ensure that the salt content of the water is correct. This is checked with a hydrometer, a floating instrument which sinks into the water according to the latter's density. The neck of the instrument is graduated and a reading obtained by noting the position of the water level on the graduation. Most coral fish thrive at about 1.028 density. It is vital to check this reading regularly because, while the water will evaporate, the salt will remain and the density of the water increase alarmingly in a very short time. The temperature of the water should be slightly lower than that of an ordinary tropical aquarium, between 70°F and 75°F.

In any tank overfeeding quickly results in decomposing food fouling the water. This process happens rather faster in saltwater and, added to this, there is the fact that most marines require an organic diet and such material will very quickly deteriorate. Any food left over must therefore be quickly removed and overfeeding avoided. Daphnia will not survive long in saltwater and are therefore best avoided. Most marines will not take dried food, so the best solution is to give them small lumps of meat, shrimp or fish. Some species prove tricky to feed, and may need to be offered food individually with forceps.

In a short article such as this, it is obviously impossible to give any detailed description of the broad range of marine tropicals that can now be obtained. However, to give some idea of the nature and habits of the sort of fish the aquarist could keep, let me say something of the more common species.

BLUE ANGEL (*Pomacanthodes annularis*). A very beautiful fish with flat sides and an almost triangular outline. The body is a golden bronze colour with vivid blue stripes. Like most marines, the Blue Angel will not usually grow to its natural large size in confinement, normally attaining a length of about six inches. Although on the whole peaceful, they can prove aggressive if placed with smaller fish. They will eat shrimp and white worms and also like some vegetable matter in the form of seaweed.

BLUE DAMSEL (*Pomacentrus caeruleus*). Another beautiful fish, bright royal blue in colour, with yellow fins and tail. It grows to between two and three inches and, although not aggressive with other fishes, can be rough with its own kind. Unlike most marines it will take some dried food, as well as shrimp, fish and meat.

STRIPED DAMSEL (*Dascyllus aruanus*). Again a species which can be aggressive, although only two inches in length. The body is very striking, with three broad black bands against a background of silver. It is hardy and easy to keep.

THREE SPOT DAMSEL (*Dascyllus trimaculatus*). Named because of the three large white spots (one on each side, one on the head) on its otherwise jet black body. Like its relative the Striped Damsel, it grows to about two inches and is easy to keep.

CLOUDY DAMSEL (*Dascyllus carneus*). Perhaps the easiest marine to keep, being unaggressive, hardy and easy to feed (it will soon learn to take dried food). It usually grows to about two inches. The front of the body is a deep grey, which darkens to black farther along. The caudal fin and rear part of the body are light grey.

BUTTERFLY FISH (*Chaetodon vagabundus*). Growing to about five inches, the Butterfly fish has a distinct disc-shaped flat body, with a curved snout. The body is basically a yellowish bronze, there being first a broad black, and then a white, band behind the eye. The upper part of the body, beneath the dorsal

fin, is quite dark. They are not aggressive and the only problem is food. They like worms and chopped prawn, but, because of their slow movement, they often lose food to other fish.

BLUE SERGEANT MAJOR (*Abudefduf undecellatus*). A small hardy fish which will eat most foods but which can be a little aggressive. They grow to about two and a half inches. The body is pale blue with six or seven vertical stripes. They are fun to have in a tank as they are very lively, drawing the eye from more colourful varieties by their darting movements.

SEA HORSE (*Hippocampus brevicestris*). There are many species of Sea Horse, mostly from coral seas, and they make an exciting addition to an aquarium—but they have disadvantages. They have a bony skeleton outside their bodies and a long curved tail with which they can anchor themselves to the coral. They move by vibrating the dorsal fin very rapidly, which induces a swaying motion resembling a prancing horse—hence the name. Unfortunately they are not easy to keep. Their slow movements and lack of defence means that other fish are quick to take advantage of them, snatching food from them and often attacking them. They must either be kept with small non-aggressive fishes, or better, in a tank by themselves.

I hope that gives some idea of the range of fish available. Their exciting shapes and colours beg the aquarist to take an interest in this glamorous side of the aquatic sphere, and to realise that the extra problems involved are soon overcome.



"Are you looking for an experienced assistant?"

THE UNKNOWN

Umbra krameri

By Steve Forster

ABOUT 18 MONTHS AGO, the factory where I work was visited by a group of Polish engineers who were over in Britain negotiating some licensing agreements. During the various works tours, lunches and evenings out, I came to know them pretty well and quite unexpectedly I discovered that one of them, Andrezi (his surname is totally unpronounceable) was a fanatical fishkeeper. This of course led to a visit to my home and excursions to the local aquatic stores. After two days and many visits he confessed that he had not seen as many species of fish in two years in Poland as he had seen in the last two days in Glasgow and London.

At the end of the week when he was leaving for home I offered Andrezi some of my fish but as he was returning via East Germany and it was the middle of the winter, he reluctantly refused.

We parted, promising to correspond whenever possible, in order to keep in touch with each other regarding the state of the hobby in our respective countries. We wrote to each other fairly regularly for the first few months but then the letters from Poland became more and more infrequent until they stopped coming altogether.

I had almost forgotten about Andrezi, when in the middle of March, the telephone on my desk started ringing. On the other end of the line was the much harassed manager of a local hotel, who said that he had spent about two hours trying to converse by mime and hand signals with a very voluble Pole. The visitor had arrived at the hotel and thrust a piece of paper, on which my name and telephone number was written, into the hands of the mystified manager.

I did not connect this unknown Pole with my friend and when I asked the hotel manager what was troubling his visitor, he replied that as far as he could understand, the Pole had a package for me and was desperately keen to get rid of it as soon as possible. There was nothing for it but to go to the hotel and sort the whole thing out.

On my arrival, I was ushered into the manager's office and confronted by the flustered hotelier and a

huge blonde Pole, who, when he was introduced to me, shoved a huge thermos flask under my nose and mumbled something about small fish in very broken English. Luckily before we had to resort to hand signs the Pole handed me an envelope in which was the answer to the whole episode.

The letter was, of course, from Andrezi, and explained that the courier was one of his colleagues and that on learning that he was coming to Scotland he had given him some fish for me. After thanking the Pole and the distracted manager I grabbed my gift and took my leave.

On the journey home I tried to imagine which species of fish I had been sent and with mental pictures of some of the magnificent white clouds, black widows and guppies which have been developed behind the Iron Curtain, I was convinced that I was in possession of very fancy specimens.

As soon as I got home I emptied the contents of the flask into a small, all-glass tank in order to get a proper look at my unknown fish. My first reaction was that my friend had spent a lot of effort in sending me five common minnows (*Phoxinus phoxinus*) all the way across Europe. On looking closer however I could see that whatever they were, the fish were not minnows, so I referred again to the accompanying letter which enlightened me to the extent of learning that the fish were *Umbra krameri*. This piece of information left me none the wiser and only when I referred to Frey's Illustrated Dictionary of Fishes did I find that *U. krameri* or European dogfish, is a coldwater species found in the area of Europe which used to be called Bohemia, i.e. Austria and Hungary.

According to Frey, this species is found only in the region of two lakes, Lake Neusiedler and Lake Platten and its natural habitat is in the fringes of reed beds.

An interesting feature about this species is that it has no lateral line in its anatomy, the functions of the lateral line being carried out by a series of sensory cells running along the body. The name dogfish is given because the pectoral and ventral fins are moved alternately in the same manner as a dog moves its legs.

My five specimens were placed in a 24 in. x 12 in. x 12 in. aquarium which was heavily planted with cabomba, horn wort, hair grass and elodea densa. At first, all five fish took to the dense vegetation and were only rarely seen during the first few days. After a week however they could be seen for longer periods especially during and after feeding.

Feeding is no great problem provided it is alive, *Asplanina*, tubifex, whiteworm and chopped earthworm were all eagerly accepted. The only other food which even interested them was beef scrapings but even this was only taken after some days fasting.

All five specimens were eating well and after five weeks they had attained a size of about three inches. Coloration was very plain, being a brownish body with various darker stripes and spots. The ventral, dorsal and tail fins are similar in shape to those of the pygmy sunfish, *Elassoma evergladei*, being well defined and rounded.

Close examination of the fish confirmed Frey's comment that the sexual characteristics were indistinguishable as they all seemed to be identical in every respect. It did occur to me that all five could be of the same sex but the odds were against this.

At the end of their sixth week one of the fish was seen to have all its fins closed and generally looked very sorry for itself. Within hours the other four were in the same condition and they seemed to degenerate even further as I watched them. As there was no indication of any infection I immediately syphoned off half the water although there was nothing to indicate, either by odour or cloudiness, that there was anything wrong with it. On replacing the first bucketful, all the fish gathered underneath the hose and then swam in and out of the water stream. By the time I had replaced all the water the fish were back to their best, darting in and out of the plants. Frequent partial water changes and heavy aeration prevented a recurrence of the trouble and replacing the internal filter with an outside "bubble up" type gave the fish a continuous flow of water to swim through and their general health and well being improved greatly.

On a day after one of the water changes, I noticed that one of the fish had developed a red edging to its gill plates and was confining the other four to one corner of the tank. There then followed one of the most unusual exercises that I have ever seen a fish carry out. The individual with the red gills manoeuvred the other fish further into the corner, swam around each one in turn and then closely examined them by swimming alongside each one from head to tail and then back again. This routine was repeated time upon time and eventually the fish carrying out the inspections seemed satisfied and rushed into a plant thicket. It reappeared and then swam in a figure-of-eight motion around the others until one of them broke out of the group and followed the "inspector" into the

plants. These actions indicated mating behaviour and I presumed that the individual with the red gill plates was the male and the other four were females. The male then rushed into a tangle of plant roots and leaves and seemed to be intent in bashing his brains in. This continued until he had "dented" a small cave in the thicket. When this was big enough, the male then backed into the cave and by sideways thrusts of his body widened the opening until it measured about 1½ inches in diameter.

The colouring on the gills of the male began to spread until he was flushed with a red tinge from his mouth all the way along his underside. The female which had followed him into the vegetation then joined him in the cave and amid great tremblings spawning took place. After about 40 minutes the male then chased his partner out of the nest and he took up guard duties over the spawning. Even his mate of less than an hour ago was unceremoniously chased whenever she approached the nest. The other fishes approached, out of what appeared to be curiosity, and were ferociously despatched.

Once he was happy that there was going to be no more intrusions the male started to seal up the nest by jamming bits of plants into the open end. On completion of this work the nest was completely sealed and the eggs were well protected by the envelope of vegetation.

On the seventh morning after the spawning the nest had been burst open and the male was seen herding numerous tiny fry at the rear of the tank. The fry were so small that they could not be identified as small fish without the aid of a magnifying glass. The other fish soon noticed the fry and made determined attempts to attack them. The male made a successful defence action for the first two hours but eventually the fry were beginning to disappear one by one and the male gave up and joined in with the others and the remaining fry vanished within minutes.

There were no further attempts at spawning and this may be due to the fact that they are seasonal breeders, spawning only in the spring.

At the end of May the temperature in my fishroom rose above the 65°F mark and all the fish died within three hours. There were no signs of injury caused by parasites or disease, no toxic build up in the water so I think it is safe to assume that it was the elevated temperatures that finished them off.

I wrote to my friend in Poland thanking him for fish which were neither beautiful nor long lived but by their unique method of pairing, spawning and incubation of their eggs, had proved to be one of the most interesting of fish that I have ever kept.

It is unlikely that this particular fish will ever be sold in Britain but in America there are two related species, *U. limi* and *U. pygmae* and they may find their way over here sooner or later.

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BREEDING MALAWI CICHLIDS

By C. W. Gorwill



Pseudotropheus auratus (female)

HAVING KEPT a great variety of Cichlids over the past 20 years and had a good deal of success with breeding, I was most gratified when I managed to obtain a few pairs of a new species, namely Malawi Cichlids. The following procedures are how I managed to spawn four of these attractive species, but I feel sure that there must be other methods that have proved just as successful. All tanks I used were 48in. x 15in. x 15in. with plenty of hiding places, broken flower pots, etc., plenty of aeration, no filtration; as much natural light as possible, temperature between 74°-78°F. The parents I brought up to breeding condition on a diet basically of greenstuff, i.e. peas, cabbage, lettuce, spinach and rabbit pellets, which I found were also ideal for bringing up the young. The area I live in has a water supply that is about neutral. So I didn't have any trouble with water additives.

Pseudotropheus auratus

My biggest difficulty with the *auratus* was obtaining a suitable pair. Either the male was much larger than the female or vice-versa. Eventually I purchased a medium size male and a female, approximately two-thirds of its mate's size. Over a period of eight months I tried all prescribed methods and many of my own to get these fish to spawn and I eventually achieved success using the following procedure.

For a period of one month I kept them in different parts of the fish house so that they couldn't see one another. The male being rather aggressive in a 4ft. x 15in. x 15in. on his own, the female in a same size tank but with other fish but no Malawis. When I noticed she was full of eggs, I divided the male's tank in two, placing her in one half. Both fish immediately showed up in their most brilliant colours, and the

female started digging a pit in the gravel. The next day I removed the partition and after a short period of showing off, but never touching the female, the male took up a position about six inches above the female and at an angle of 45° and stayed motionless except for a slight shimmering action. The female then laid two eggs, transferred them to her mouth, swam under the male, placed her mouth on or near the bright spot which had developed on the male's anal fin and the male fertilised the eggs. This procedure carried on for about half an hour with sometimes one, two or three eggs in the female's mouth. The male then turned on the female with such ferociousness that I had to separate them, this time using a solid partition in preference to a glass one. The female immediately retired into one of the many hiding places I had provided and was seldom seen again for the next eight days. So I put a few bunches of artificial spawning grass in the tank to see if this would induce her to release her young. Exactly 21 days later, I noticed about a dozen perfectly formed young fish swimming around the female's mouth. The youngsters were about ½ in. long and a perfect replica of their mother with their yellow and black stripes just as vivid. Any slight movement and the young swam straight back into their mother's mouth.

I tried putting food into the tank to induce the young to leave the female's mouth but with no luck, then I noticed that the female took the food with the young in her mouth and I surmised this was to feed the brood. After a further week the young seemed no longer interested in their mother and vice-versa and I was pleased to notice that my first count was wrong and I had my biggest brood to date. There were 29.

Not wishing to risk anything happening to the young at this stage I removed the female into a tank on her own and I'm glad to say both mother and children are doing fine.

Labotropheus fuelleborni

I tried the same spawning process with this species as with the *auratus*, but met with no success so, deciding to admit defeat temporarily, I put them into a community tank well stocked with mollies, guppies, platies, etc. After about a week, I noticed that they had completely taken over one corner of the tank and were making the other fishes' lives a misery. Unfortunately, I was unable to observe the spawning procedure at the female's mouth was already full of eggs. I immediately removed her to a 36in. × 15in. × 15in. tank and after 10 days she ejected 14 young from her mouth. From then on I followed the same procedure as with the *auratus*. I tried for another 12 months to get the parents to spawn again but they fought with such viciousness that both ended up blind and torn to shreds. Not wishing to keep them in this condition I decided to destroy them, but upon netting the female I was astonished to find that once

more she had a mouthful of eggs, which up to the time of writing she still has.

Pseudotropheus tetravivax

This species I have had the most success with to date, having had six spawnings ranging from 7 to 20 a spawning. Unfortunately the female looks after the brood for so much longer than the *auratus* (up to two months), and during this time takes no food so that it leaves her in such a weak condition that I have great difficulty in saving her. Spawning procedure is very similar to the *auratus*, with these few noticeable differences: (1) A flower pot on its side is preferred to digging a pit; (2) Males nowhere near as aggressive as other Malawis. In fact, I have left the male with the female right up to the time the youngsters were ready to leave the female's mouth; (3) Instead of laying a couple of eggs at a time, the female lays, picks up and fertilises the eggs in one action; (4) Adult males live together without any serious fighting.

Pseudotropheus zebra

I found this species the hardest I've tried to spawn to date. It has taken me eight months of many failures before I achieved success. The female has been reduced to a bare hulk on many occasions and has a deformity due to severe damaging by the male who is the most aggressive Malawi I have come across to date. Nevertheless, I finally succeeded, using the same method as with *Fuelleborni*; one noticeable difference is that the female held on to the young about two weeks longer than the other species, but the moment she did release them she started taking food and didn't take any further notice of her brood.

In conclusion, I would like to say that I hope this article is of some assistance to anyone keeping Malawis.

FIND THE PLANT

By Doreen Thiel

The first is in SNOW but not in HAIL
The second is in PAN and also in PAIL
The third is in BLANKET and also in SHAWL
The fourth is in BAT but not found in BALL
The fifth is in TRUMPET and also in FLUTE
The sixth is in SWEET and also in CUTE
The seventh is in ROBIN but not in GULL
The eighth is in DRAB and also in DULL
The ninth is in COOL as well as in HOT
The tenth is in NICHE but not in SLOT
The last is in KNIGHT and also in KNAVE.

Solution on page 207.

FROM A NATURALIST'S NOTEBOOK

By Eric Hardy

HOW TREE-FROGS SLEEP, the importance of undersand respiration in reptiles underground during the day, and the changing heartbeat of a diving alligator are some of the interesting examples of recent research into how creatures live, instead of how they found their way into museum pickle-jars. In Germany, for instance, Flindt and Hemmer have shown how toads recognise each other's sex by calls, which wasn't unexpected of course, while zoo studies by Hans Petzold on pellet-formation by reptiles, specialised in these vomited food-remains by monitors.

At Tennessee University, Burghardt and Hess have shown how water-extracts of normal prey release the stimulus to attack in newborn snakes without having to smell or see their prey. Although reptiles are called cold-blooded, changing their temperature in accordance with that of their surroundings, Australian workers have shown that even in identical heat conditions, one species of lizard maintains a slightly higher body temperature than another. Lizard-keepers may already know that in the same species, the survival limit in low temperatures depends upon the size of the specimen. Otherwise species native to high altitudes (mountains) are more tolerant of low temperatures than are species from low altitudes (valleys and plains); but the latter are more tolerant of high temperature. These tolerations are also related to the natural activity periods of different lizards.

Let's go back a bit on lizards. Texas A & M University investigators tagged northern fence-lizards with gold-198 radio-isotopes for hourly tracings of their positions and activities, for three days at a time. More than half the time was spent up a tree, and selection of the nightly resting position depended upon temperature and wind (which was to be expected). Washington University studies have shown that lizards differentiate insect prey by colour pattern and shape. They were shown to take more single-coloured than multiple-coloured insects, which again wasn't unexpected because most brightly-coloured insects with yellow, orange or red patterns are bitter or even poisonous.

Delayed fertilisation takes place after mating in some lizards and skinks, while testosterone propionate stimulates courtship outside the breeding season.

Consider frogs, for instance. Argentinian research

has shown how temperature influences the mating calls of tree-frogs. Female frogs responded in a North Carolina University lab to taped calls played back to them, and also to other sounds within similar harmonic qualities of $\frac{1}{4}$ - $\frac{1}{4}$ second duration and 1 second intervals between, as well as frequency. Who wouldn't have thought that? As bird-watchers use taped recordings to stimulate the calls of isolated uncommon wild birds, which would otherwise be silent for lack of challenge to their territory, it didn't need another expensive piece of American university research to disclose that the spring peeper tree-frog calls more when a recording is played to it than without.

More interesting was Shroeder and Baskett's work at Eastern Kentucky University, to tell the age of bull frogs up to six years by growth-marks on the posterior limb of the pterygoid bone of their skulls. Growth-rates apparently aren't different with different foods or populations. Older frogs were fewest in regions where most collecting took place.

How bright is a salamander? C. W. Schneider, an American commercial chemist, has revealed avoidance-learning in the response of larval *ambystoma* salamanders to light-stimulation. Dusky salamanders traced by radio-isotope tags by Kentucky University moved no more than 17.1 metres in 24 hours, most of them less than 2 metres, with peaks of activity at 8 a.m. and 11 p.m. Their average home range was between 25 and 114 square metres. Courtship was also induced in reluctant salamanders by injection of pituitary gland from a frog, and pregnant mare serum, at another university.

Selective mortality caused by pesticides among Mississippi cricket frogs has increased the resistance of survivors to aldrin, DDT, etc. It will be interesting to see if the recent increase of frogs in parts of Britain previously depleted by DDT sprays comprise more resistant frogs. Even so little as 0.001 per cent copper-sulphate, used to check water-weeds, will kill frogs and some fish; but the small amount in tap-water doesn't affect them. Thyroid-extract used to speed up the metamorphosis of several salamanders as well as the famous axolotl should speed up that of frogs, whose tadpoles sometimes tarry on in larval form to the following autumn, or winter.

Continued on page 205

EFFECTS OF OVERCROWDING

By Dylan Pugh (age 16 yrs)

AQUARISTS ARE OFTEN warned, in books and magazines, of the dangers of overcrowding fish, but little or no explanation is given as to the causes of this danger, of its effects.

The main cause of danger in overcrowding of fish arises from lack of sufficient oxygen. Oxygen is necessary to all life (excepting certain bacteria and yeasts, which "respire" without using oxygen, and kill themselves by overproduction of ethyl alcohol), including "oxygenating" plants.

The problem confronting fish is that the amount of oxygen which can be dissolved in water is very small. In well aerated water the oxygen content is about 1-2 per cent, and in saltwater even less (as compared with 20 per cent in the atmosphere). This means that streams may have a good quota of oxygen, but lakes and ponds, where the water is still, have much less.

Another factor is that the warmer water is, the less oxygen it is capable of holding. In streams this does not pose much of a problem, as they are at about the same temperature all through. However, lakes have thermal layers, and the bottom may be cooler than the surface during summer, and possibly warmer during winter.

It is obvious, therefore, that fish have much less usable oxygen than land dwelling animals, and that they should never be overcrowded.

This problem can be eased somewhat by having oxygenating plants in an aquarium or pond. However, during the hours of darkness, the plants, like any others, use oxygen themselves, and give off carbon-dioxide. This is because during the day plants use light, carbon-dioxide and water to produce sugar (glucose) and energy. The glucose is partly stored in plant tissues and, during darkness is broken down to make energy needed for night-time growth. This process requires oxygen, and produces carbon-dioxide. So, although plants help the daytime problems of fish, at night, in a well planted and overcrowded container, they do the reverse of helping.

This can quite easily be avoided by having a long day length in artificially lit aquaria, to give a good stock of oxygen, and by providing artificial aeration at night.

Also it must be remembered that fish from rivers

and streams need more oxygen than fish which come from lakes; and faster moving fish need more oxygen than more sluggish types; and fish which swim nearer the surface need more than bottom dwelling kinds.

The effects upon fish of lack of oxygen are many and varied. Fish which need a greater amount would quite readily die under extreme overcrowding, particularly at night, due to the previously mentioned reasons. However, the labyrinth fishes, with their peculiar adaptations for breathing atmospheric oxygen, could withstand a great (proportionately) degree of crowding. Again, in community tanks, fish more sensitive to changes in oxygen content may be more affected, become sluggish, and not get a fair share of the food. This would weaken them making them more prone to attacks by disease.

Young fish, being reared, may be individually sensitive to oxygen changes, and this would impair the growth rate, possibly for the remainder of the life of the fish.

However, lack of oxygen can have more tragic effects on any animal. The organ which uses more oxygen than any of the others is the brain. If fish were to be subjected to long periods of crowding, with oxygen shortage, then the brain could become badly damaged, particularly in young fish. This could have many results, including impaired senses, slowed reactions, and even the metabolic rate (breathing heart-rate, speed of digestion, etc.) could be affected.

In young and developing fish, the brain damage could stop growth, but lack of sufficient oxygen could impair growth without this. The lack of oxygen would slow down the rate of digestion, and food would be passed out of the body before being fully utilised. This would mean that despite eating quite a large amount of food, the fish would be getting very little nourishment from it, and this would cause the stunting of young fish which is a common result of crowding.

Of more consequence commercially is the fact that the developing reproductive organs require large amounts of oxygen, and that overcrowding could render young fish incapable of growing properly,

Continued on page 201

BREEDING GOLDFISH

By A. BOARDER

PROVIDING ALL HAS GONE WELL with the breeding operations it is possible that many youngsters will be in the hatching and rearing tanks. How to dispose of these may cause a problem. If the fish are common goldfish it may be that it is very difficult to get rid of them. The main reason for this is that so many goldfish are imported from abroad at a cheap rate that the home-breeder has little chance of getting a fair price for his youngsters. On the other hand, if a good strain of fancy goldfish has been bred these should have a much better market. The reason why goldfish are so cheap from abroad is that there is usually much more warmth available for rearing and colouring the fry. In this country it would be a rather expensive method of rearing common goldfish if constant warmth had to be supplied.

One is sometimes surprised at the fact that the imported fish are fully coloured when they are so small. However, during this year I have found that many young scaled fantails had changed colour when only two months old. This is rather unusual but the reason has been that the warm weather of July has brought many of the fry into colour much earlier than would have been possible had the weather been cooler. Many of my fry have been in concrete tanks in an outside garden frame where the temperature of the water has been between 70°F, and 80°F, for much of the time. No artificial warmth has been necessary. The fry have grown well and some, when only half an inch in length over-all, have changed colour. This inclines my belief that the imported fish have been kept at very high temperatures. Some may be inclined to think that warm water is not good for the usual coldwater fish, but during their early life all types of goldfish will appreciate warm water and providing enough oxygen is available it is probable that the fry will grow very quickly.

It will soon be discovered that it is much easier to get rid of good quality fancy goldfish than is the case with the ordinary goldfish. If anyone thinks that it is possible to make a living by breeding common goldfish in this country he should think again, as with imported ones so cheap to the dealers it is quite impossible to make much profit by breeding these fish. If

any of the fancy varieties of goldfish are being bred it will be possible to get a fair price for the better fish. The number of these in a spawning can vary considerably. It is not always the particular strain which produces good fish but it is quite possible for one spawning to produce plenty of good ones whilst another spawning from the same parents can give an amazing number of runts. With the fancy goldfish the good ones can soon be disposed of but the others may hang on, eating good food and being more of a nuisance than of any value.

With any of the double-tailed varieties, such as fantails, veiltails, moors, orandas, lionheads, celestials and bubble-eyes it would be a good spawning which would produce 50 per cent of good fish. As one has to feed all the youngsters for some months before many of the best can be sorted out, it can be seen that it will be quite expensive to get many fish to a selling stage. Unless one has used some form of heating it is probable that few fancy goldfish will be ready for disposal until they are about nine months of age. If warmth has been used then it is possible to have some fish large enough to go by five or six months of age. What then would be a fair price of the good ones? I consider that about five shillings would be the value of the better ones, but one would be lucky to get much more than a shilling each for the others. When anyone is considering breeding fancy goldfish for a profit he should try to work out what the costs are likely to be. If one has to build a fish-house or buy several tanks in the first place, this could prove very expensive. It would then be a long time before any profit at all was made. The cost of good specimen fish in the first place could also be a considerable sum. So many breeders want to get weaving straight away and cannot wait a year or two. If only a steady start was made by buying young fish at a cheap rate and then growing them on for a year, it would save a lot of the initial expense. Also many rearing tanks could be made cheaply or plastic ones bought from supermarkets.

Having made a start with plenty of tanks, heaters, aerators and, with advantage, a pond, one has then to consider the cost of warming the water. I know that it is possible to rear fry with no artificial warmth, as I did

this for very many years, but with some warmth it is possible to not only rear more fry but to get them to a selling size far more quickly. The same applies to the use of aerators. Far more fry are likely to be hatched from a large spawning if aeration is used and also the rate of growth of the youngsters will be increased greatly as they can eat far more food when the water is in a good state of oxygenation.

On top of the initial costs of equipment and electricity must be added the cost of food. In the first instance Liquifry may be used and at 2s. 6d. a tube, it is probable that a pound or two can be spent on rearing a large spawning. Then one will usually use a good form of flake-food and the cost of this can be very considerable. The recent rise in the cost of fish foods, in one case from 29s. 1d. to 33s. 4d. per packet, will give some indication of the costs involved in rearing a fair number of fish. The longer it takes to rear fry to a selling stage, the more costlier it is likely to be. If one has to continue feeding with an expensive food one can realise that the price often asked for a good fancy goldfish may not be as exorbitant as may be at first thought.

I remember that good and keen aquarist Jack Carnell coming to me for a few young fantails for a friend and when I wanted to let them go at a very cheap rate, he insisted on paying a fair price and said that after all they had had to be fed. This may not be apparent to newcomers in the hobby. I get people coming to me and asking for fish. They insist that they only want to get some of my strain and are not particular as to finnage. After an hour or two sorting over a few, ultimately a couple are bought for 5s. each but only when dozens have been discarded because of the slightest bend of a fin. Yet these same types would go to a dealer and willingly pay as many pounds for an inferior fish as they would give me shillings for a good specimen.

I once had a man call for two two-year-old fantails of show quality. I had asked 25s. each for them. He liked the fish but said that they were dear. I then told him that I had some youngsters at 2s. 6d. each. He immediately wanted to see them and afterwards said that they were not as good as the 25s. ones. Can you beat it? The late Arthur Dereham used to tell callers the price at "the run of the net," and if this was

not accepted, then no sale was made. I sometimes wish that I had the business acumen to do likewise. If only one was able to dispose of their fry at the run of the net, one could then get rid of all types at a uniform rate and not be lumbered with a lot of specimens not worth the food they eat. Some years ago I used to sell very young fry at 10s. a dozen, just as they came from the net. I don't know how many of these were reared but I know of one buyer who won a first prize at a very large show with one bought at the above rate.

Although this summer so far has been a good one for warming the water and increasing the rate of growth of the youngsters, I do not think that it has been such a good one for spawnings, at any rate in my case. The fish spawned well early in the year when the temperature of the pond was in the lower sixties but once it warmed up to over 70° F the fish were not inclined to spawn as the water held less oxygen. I do not use a fountain or waterfall but those pondkeepers who do will no doubt have had many more spawnings than would have been possible if no such aeration help was available. A point which may be of interest to some breeders is the fact that a temporary separation may encourage some fish to spawn. One of the conditions which appear to encourage a male fish to chase a female one is the extended belly of the female. If the fish are always together it is possible for this feature to be ignored but after an absence it is possible that the male fish will take notice and start chasing. I heard recently of a pondkeeper who introduced a fantail to a pond of common goldfish. This new introduction was chased unmercifully until it was almost devoid of scales. I do not know if this fish was a female or not but it is quite possible that the goldfish seeing a distended belly on the new fish were excited into the spawning act, whether the fish was a female or not. It then seems that a temporary parting could encourage a spawning when other attempts have failed.

In conclusion I must repeat that it is possible to cover the costs of fish breeding and perhaps in a good year to get enough profit to buy a new book, but remember that it is a good hobby and can pay for itself, as long as one has another source of income which is adequate. If one counted the time spent at 2s. an hour, one would be on the losing side.

EFFECTS OF OVERCROWDING

continued from page 199

and being able to produce enough young themselves for commercial business, or even sterile. This is possibly one of the worst effects of overcrowding.

This then, is a brief account of the reasons for and the effects of oxygen shortage. The only effective remedy for this is a good balance between the number of fish and plants per tank, and possibly

artificial aeration and good filtration. (Crowding will give a build-up of concentrated toxic wastes—taking up oxygen space and also weakening fish.)

I sincerely hope this short article will help those who keep fish realise the dangers of overcrowding to the fish, and that there is only one real remedy—don't overcrowd!

OUR EXPERTS' ANSWERS TO YOUR QUERIES



READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex.

TROPICAL QUERIES

By Jack Hems

Has *Etoplus suratensis* got a common name?

E. suratensis is sometimes called the pearl chromide on account of its pearly dots. But it is also known as the banded chromide, the silver chromide and the green chromide.



Pearl Chromide

I furnished my aquarium with well-washed compost, shells, corals, an air-pump and a filter, but all the fish I keep on buying die off within a few days. Please tell me where I am going wrong?

Throw out the shells and coral, siphon out every drop of water, and start all over again with fresh water from the coldwater tap heated, of course, to about 75°F (24°C), and plenty of plants to fill in the back and both ends. I feel certain that the shells and corals dissolving out lime and goodness knows what else into the water brought about your troubles.

Is it absolutely necessary to feed live foods to tropical fish as often as possible to keep them in good health and colour?

There are some freshwater tropicals that must have live food in order to keep alive, but the general run of popular tropicals can live long and well on a good balanced dried food enriched every so often with scrapings of raw red meat or shredded raw white fish.

Please tell me something about red devil cichlids?

The cichlids popularly known as red devils are found in the natural state in Central America. They are of the genus *Cichlasoma* and go under several formal names such as *C. dovi*, *C. labiatum*, and *C. erythraeum*. They are aggressive, grow to a length of about 15 in. and are mostly garbed in shades of reddish orange, pink, yellowish red and red with some darker blotches. They are rare, even in the U.S.A.

Please can you tell me why the bodies and dorsal fins of sailfin mollies differ so considerably in size in dealers' tanks in various parts of the country?

First of all let me say that there are two distinct species of sailfin molly. The largest and handsomest is *Poecilia (Molliensia) velifera* from Yucatan. This fish reaches a length of about 5 in. and has a huge (long and tall) dorsal fin. But captive-bred specimens seldom grow so large or develop the truly sail-like fins of the wild fish. *M. latipinna* ranges from the Carolinas to north-east Mexico. It is a smaller fish in body and dorsal fin, though the latter is quite sail-like. The true velifera molly always fetches a higher price than the less spectacular-looking latipinna molly.

No one appears to know the botanical name of the aquarium plant called ivy-leaved *cryptocoryne*. Can you give me any information about this attractive foliage plant?

The ivy-leaved *cryptocoryne* is not a *cryptocoryne* at all though it is a member of the same family, the *araceae*, and is almost as accommodating, that is to say it will grow in or out of the water (in habitually moist mud). Its generic name is *Syngonium*. It has been around in good class florists' shops for years. The *syngonium* sold for aquarium decoration will flourish best if it can be potted up in a mixture of clay and peat and allowed plenty of head room above the surface of the water. Then it will produce magnificently marked and shaped leaves held aloft on 15 in. stems. I believe *syngoniums* are widespread over south-east Asia.



Mastacembelus pancalus

I have a steel aquarium frame 60 in. by 17 in. by 17 in. Would $\frac{1}{2}$ in. glass be strong enough for this size frame?

$\frac{1}{2}$ in. glass might support the weight of the water alone, but by the time you have furnished the tank with a planting medium, rocks, plants, apparatus, and the rest, a dangerous situation would arise. My advice to you is to use $\frac{1}{2}$ in. plate glass.

COLDWATER QUERIES

By A. Boarder

Since fitting a Butyl lining to my pond two years ago I have had repeated leakings from a seam. What can I repair it with?

I was told that Indian fern (*Ceratopteris*) would stay around 9 to 12 in. high. My plant has fronds of 2 ft. and they appear to be lengthening every day. Is my plant exceptional?

No. This fern can grow to a height of 7 ft. and more given sufficient headroom, and warm atmosphere, and a good depth of undisturbed grit or mud to root in.

I have bought a spiny eel called *Mastacembelus pancalus*. It is about seven inches in length and takes no notice of the other fishes in my tank. But what can I feed it on? It will not accept any of the dried foods or even pieces of raw beef or washed liver that the other fishes devour with relish.

The spiny eels, of the family *Mastacembelidae*, are not at all accommodating with regard to food. They seldom, if ever, accept anything but worms, red or white, gnat larvae, tiny fry, or large *Daphnia*. When you feed an acceptable food, you must make certain the spiny eels get their fair share of it. Lots of spiny eels introduced into a community tank die after a month or two of starvation.

I bought a small metal framed aquarium tank that I think will come in useful for breeding. It is rusty and rust-pitted in places. What can you suggest I paint this tank with to delay complete disintegration over the next few years and yet not harm the fish?

Give the metal parts a good scouring with a wire brush or coarse emery cloth, dust well, then apply two thin coats of black bitumen paint. When this paint has dried fill the tank to the top angle bars and leave to soak for at least a week. Give another wash round with clean water and the tank should be quite safe for fish.

I have been told that there is a blushing angel fish on the market. Is this true?

I have not come across the blushing angel fish in this country, but there is such a colour variety in the U.S.A. It is a light-coloured fish, silvery to pearly white, with a red marking that comes and goes on or near the head.

Could I mate a guppy to a molly?

You could try. Cross-breeding has been accomplished several times in the past but it is something of an achievement and any youngsters from guppy X molly crossings either fail to survive more than a few days or grow sterile.

First of all you will have to make sure that the seam to be repaired is perfectly dry. Then apply a liberal coat of plastic liquid such as Pondseal and add a patch of similar type Butyl. See that the sealer comes right to the edge of the patch and after a day the pond can be refilled and it should remain quite leakproof.

I have just completed an outside pool into which I placed four large goldfish, eight small ones and two tench. I accidentally spilled a solution of permanganate of potash into the pool and as the amount was small I did not empty and refill the pool. Three days later I found the two tench dead and most of the other fish in a terrible state with flukes, fin-rot and fungus. Could the pot. permang. cause this?

The permanganate of potash could not have been the direct cause of all your troubles. I can only think that it was strong enough to upset the mucus covering on the fishes and then they would be liable to attacks by pests and diseases. Flukes are parasites which must have been introduced into the pond and the causes of fin-rot and fungus could not have been due to the chemical. The pests and diseases must have been introduced to the water by something added. This could have been water plants from an infested or infected source. The feeding with live foods such as *Daphnia* and *Tubifex* could also be a cause. Even though the chemical could have lowered the resistance of the fishes it could not have given them the troubles you describe. You had better clean out the pond and when you restart make sure that no foreign matter is added and you should keep free from further trouble.

I cannot keep water beetles from walking on top of the water in my pond. Is there any way to stop this?

I suspect that your "Beetles" are just "Pond skaters" (*Gerris*). These will do no harm at all to your fish. They only travel on the surface film and never actually enter the water. They feed on insects, etc., which fall on the water. Fish will not touch them and so they are of no use as food for them.



Pond Skater

The water in my pond is brown in colour. I think this may be due to the mould I put in containers for water lilies. Is there anything I can do to improve matters?

The brown water may be partly due to the compost you used for the lilies. It could also be due to decaying uneaten food. This causes certain forms of infusoria to thrive and some types can turn the water brown. As a rule the water clears after a time as long as nothing else is done to encourage its formation. Do not feed at all for at least a week and as the water plants grow the water should clear. A partial change of water may help.

If I feed garden worms to my fish will it encourage them to breed? Should the worms be broken up?

Garden worms are one of the best types of food for conditioning fish for breeding. It is better to break them in half if they are on the large size or your fish are not very big. Garden worms can live in water for a few days and so they are not likely to foul the water in a day or two if they are not eaten immediately. Incidentally your fish will not breed unless you have both sexes and they are large enough to breed.

I have two fairly large ponds in my garden containing goldfish and shubunkins. Several females died during March and April and when examined were full of spawn. Could their deaths be due to the severe cold weather?

The cold weather would not have caused the death of your fish. Goldfish can stand plenty of cold as long as the water remains pure and well oxygenated. What often happens is that when a pond freezes over any foul gases cannot escape and fresh oxygen cannot enter the water. It is then that the fish will soon be in trouble. However I do not see why female fish with spawn should be any more likely to be killed than other fish. In your part of Scotland the fish would not have been ready to spawn as early as March and April and so they were not likely to have been killed by the over-vigorous attentions of male fish. In future try to clean out your ponds in late autumn or early winter and if this is not possible, change most of the water and remove any decaying matter. Dying water lily leaves can soon pollute the water.

Can the water in a fish pond become polluted by over-feeding?

If you over-feed with dried foods it is certain that the pond water will become polluted. More ponds are upset and fishes killed by this means than by any other I know. What a lot of pondkeepers forget is that there is usually plenty of food present in a pond for the fish and they are likely to remain in much better health if they have to forage for food than if it was

being continually thrown into the water. Any fairly well planted pool with not too many fishes therein could go for a year with no artificial feeding of the fishes. I know some people will say impossible but if you have the courage, just try it and you will be surprised how clear the water will keep and how healthy the fishes will be.

I propose to keep Minnows and Sticklebacks in a small coldwater tank. Is it possible for me to feed them on a good quality flake food?

It is quite possible to feed these fishes on a good flake food. They are not fussy over diets. However you may not be very successful at keeping these two species together. It will be much better to separate them. Minnows are not likely to thrive for long in a small tank.

I am going to set up a coldwater tank and would like to know if placing some soil in the bottom will help the plants to grow?

In my opinion some soil will assist the water plants to grow, especially in the early days of setting-up. Once the plants can get the benefit of the droppings from the fish they can get sufficient nourishment from this but I have found that a little loam near the back base of the tank is very beneficial to plant growth. This loam can be covered by gravel and so is not likely to be disturbed by the fishes. Do not use any form of manure in the compost as this could foul the water. After a few months there would not be anything coming from the loam which could spoil the water in any way.

Is it necessary to have water snails in a garden pond? I find that some writers recommend them but others do not.

Water snails are not essential in a garden pond. This is my opinion based on experience. Other people may have their own ideas on the subject and they are quite entitled to this. However a little common-sense investigation will soon give the correct answer to your query. Let us see what use water snails are first. They can eat some of the decaying vegetable and animal matter in the pond, but there would have to be a large number to be able to do any good in even a medium sized pond. Their very tiny young can be eaten by many fishes but this food would not be very extensive. If one had a pond mainly for investigation of many types of water inhabitants, then it would be quite in order to keep some.

Now what are the disadvantages of keeping water snails in the pond. First of all when they eat they must discharge their droppings and these can be quite copious according to the amount they eat. If they do eat decaying vegetation they can also eat holes in water plants which are in a healthy condition. No one who needed water plants for exhibition tanks would ever allow snails to get at them. The snails can also eat fish eggs, and so the fish-keeper who would like to breed more fishes in the pond will find the snails a nuisance. One must then make a choice and it is quite an individual one. If one does not wish the fish to breed in the pond then it does not matter very much whether snails are included in the set-up or not. Personally I do without them.

FROM A NATURALIST'S NOTEBOOK

continued from page 198

Fish-culturalists stimulate spawning in reluctant fish, like pond carp, by two or three injections of pituitary gland hormone, or its synthetic form, into the shoulder or tail. This is useful for inducing fish which normally spawn only in running water, to breed in the still waters or ponds or tanks. The hormone stimulates sexual maturation and spawning, but large fish must first be placed in a tank containing water to which a mild tranquillising chemical has been added to keep them calm when handled. The fish are then laid on a special cradle to receive the injection. Brazilian biologists have used it to breed uncommon local species and the Chinese and the Indians use it with carp-breeding. The Czechs sped up the breeding of pond carp by a month by feeding with warm water effluents from power-plants, at 77-86°F, plus granulated feeds.

How frequent is albinism among amphibians and reptiles? Most of us have seen examples in snakes

and Mexican axolotls at zoos. I've mentioned before rare wild examples in the common frog in Lancashire, an almost white Dutch pike (except for its eyes) and albino and part-albino soles and plaice. It occurs oftener among birds, like cock (rarely hen) blackbirds and wild flowers (rarely in yellow ones). An investigator at Michigan State University traced 87 published records of albinism in North American amphibians and reptiles, then added 96 more by circulating questionnaires.

Recent research by an Anglesey biologist into the duck-leech *Theromyzon tessulatum*, of lowland wild fowl lakes rich in aquatic plants, has been reviewed in the new 1969-70 Report sent to me by WAGBI, the Wildfowlers' Association. Indicates that this parasite causes the deaths of ducklings in Cheshire and North Wales. It is widespread in Anglesey and the Northwest. Of the 14 British freshwater leeches, this and the rare medicinal leech alone feed on warm-blooded animals.

Corydoras paleatus

By Jack Hems

Corydoras paleatus from northern Argentina and southern Brazil has a life-expectancy of upwards of 10 years and is remarkably resistant to disease—parasitical, at any rate. It is said on good authority that the bony plates that cover the sides afford excellent protection against attack. It also has the all-important virtue of a gentle disposition: even livebearer fry are safe in its company. And one can happily say it never grows too large for the average tank; two-and-three-quarter inches is about maximum size. And, since it does not burrow deeply into the compost—well-rooted plants are left undisturbed. Furthermore, it has a range of temperature extending from the lower sixties to the upper eighties (°F). Finally, unlike the general run of catfishes, it can be bred.

A female in breeding condition not only looks markedly bloated but her ventral region assumes a bright pink hue. Even out of breeding condition she is not too difficult to tell apart; for size for size she is the heavier-bodied of the two and her dorsal fin is usually rounded whereas that of the male is pointed.

That the raising of fry is more likely to be successful in alkaline rather than acid water is known to all serious aquarists at the present time, but it is interesting to note that this fact was pointed out in this journal at least a quarter of a century ago. Mr. Barry Funnell, who kept and bred a huge variety of common and uncommon fishes at his St. Leonards-on-Sea home before the outbreak of the Second World War, recommends (in our issue of August, 1946) the presence of alkaline rocks (in the tank set aside for breeding) to counteract any drift towards acidity; for it seems fairly certain that calcium, in one form or another, is needed by the fry if they are to stay alive and well.

A rather abrupt lowering of the temperature of the water from the regular 75°F (24°C) to about 65°F (18°C) often, but not necessarily, supplies the stimulant to promote spawning. The spawning procedure is interesting.

Firstly there is a lot of unaccustomed activity in all levels of the water during which the male initiates chasing but is later led or encouraged by the distended-sided female. Then the fish begin to look around for suitable spawning sites. The glass sides of the aquarium or smooth stones are favoured places. They will be made meticulously clean. There is some diversity in mating positions, but almost always the female sidles up to the excited male and nuzzles against him as he turns over on his side. After each brief encounter the female swims away carrying some eggs between her close-pressed ventral fins. She plonks them (they

are sticky-coated) on the prepared surfaces. It is not unknown for the parent fish to eat their eggs, but cannibalism is not a common practice among this species.

The fry break free after about 48 hours and drop to the bottom. There they ferret about in the mulm or interstices of the compost for their first food: tiny living organisms. As these are quickly exhausted the aquarist should make every effort to keep up a supply of suitable substitutes such as micro worms, brine shrimps or chopped tubifex. Later, that is as the fry increase in size, the usual graded dried foods may be given.

In a spacious aquarium the parent fish may be left with their young, but in a small aquarium, say, an 18 in. by 10 in. by 10 in., it is advisable to remove the parent fish to fresh quarters; for too much disturbance on the bottom will kill all, or most, of them off.

The general colour of *C. paleatus* is yellowish green to muddy brown or greeny grey. The fins are clear except for some grey or brown flecks, most noticeable in the dorsal and forked caudal. The anterior half of the body is overlaid with a bronzy sheen shot with metallic green and gold. This is very apparent when the fish is viewed before a strong light. The gold-rimmed eyes are frequently rolled in their sockets. There are two pairs of fleshy barbels. They point downwards and are sometimes worn down to stumps when the fish has to forage for edible scraps on a sharp-gritted floor. (I hasten to say that catfish often die of starvation in a community tank if the other fishes get all the food first.) Quiescent *C. paleatus* maintains an even keel by using its ventral and pectoral fins as props. Active it proceeds over the bottom in a series of short leaps or shuffles. Now and again it rushes to the surface for a gulp of air. Disturbed or frightened it gives a flick of its tail and is off.

C. paleatus has been known to tropical aquarium keepers for a very long time—since the 1870s to be precise. Pierre Carbonnier, who first bred the Chinese paradise fish (*Macropodus opercularis*) in Paris in 1869, went on to spawn *C. paleatus* exactly nine years later. By the end of the nineteenth century the fish was widely known among German tropical aquarium keepers. They gave it the popular name of *Punktierter Panzerwels*, which means in English dotted or peppered armoured catfish. And peppered or mottled catfish are the popular names by which it is known today. Some 70 distinct species of *Corydoras* catfishes have been described for science. They belong to the family *Callichthyidae*, which ranges over Central and South America.

Do you know this plant?

JAPANESE NASTURTIUM

By Bill Sims

THIS PLANT, SOMETIMES called the Japanese Nasturtium, comes from the more northerly parts of Russia, China, and Japan, so it is definitely not the plant to use in a tropical aquarium, for there it usually fades away. At temperatures between 60 and 68 degrees F. it does particularly well, but it can tolerate lower temperatures.

Cardamine lyrata is closely related to our native Lady's Smock, which has pale mauve flowers, and always grows in damp ground. *C. lyrata* is very beautiful, with gracefully branching stems, bearing round leaves that are mainly alternate, but sometimes opposite. The leaves are light green and snails find them irresistible. Therefore, be careful that there are no snails in a tank where the plant is growing.

The stems rise from a creeping rhizome and also develop some roots from the lower leaf axils. The main roots develop from the junction of the stem and creeping rhizome, and therefore propagation is fairly simple. One waits until a sufficient number of stems have grown, and then lifts the plant. Cuts made halfway between these rooted nodes will provide a number of young plants. A leaf allowed to rest on moist soil will root also, but the atmosphere must be kept humid.

When growing in shallow water, so that some foliage rises above the surface, the leaf character changes and blooms can then be produced. The emergent leaves are compound, with a terminal leaf like the underwater form, and two or three pairs of smaller narrower leaflets among the stem. A number of white flowers can appear on long stems. If this plant is grown on marshy ground in the open air during summer plenty of seeds will develop. Sprinkled on to a muddy seed pan, with the soil just awash, these seeds should germinate easily if the atmosphere above them is kept close.

Some loam below the sand, or a mulm-loaded form of old sand, will form a good compost for growing fine specimens of this plant, but great care should be taken to see that the water temperature does not rise above about 68 degrees F.

Placed in front of a dark rock in a cold aquarium, this plant, with its brilliant green rounded leaves, can look very charming. To keep it bushy continual pruning of the growing point is necessary. This causes it to branch and improves its appearance considerably.



Answer to Find the Plant
SPATTERDOCK

WHAT IS YOUR OPINION?

By B. Whiteside



I AM PLEASED to report on the good progress which my injured hand is making. I can now swim and type almost as well as before.

This should please Mr. P. Brown, of Wrekin College, Wellington, Salop, who begins his letter by handing out a reprimand for some type setting errors in the June issue, resulting in the incorrect spelling of some brand names. Possibly the errors were in the type setting but they may, just possibly, be due to my having submitted many of my articles in my not too neat handwriting during the period when I was unable to type properly, or write neatly. I can also confirm, for Mr. Brown, that many of the letters which I receive—either written or typed—wouldn't get very many marks out of one hundred if I were to mark them to G.C.E. standard. However, each of us is fallible, thank goodness, otherwise I'd be out of a job! Mr. Brown goes on to say that he hopes that any publicity given to products in this column will help to promote better products, thus greatly helping the hobby in general. He suggests a poll in which readers nominate the best new product introduced in the past twelve months. Which new product would you nominate as the best, or the most useful? (I can confirm that adverse publicity certainly improves products with defects as I know of several instances where items have been changed after I or other readers have criticised them adversely—and justifiably. However, it is not unusual for two people to disagree over a particular product.)

Mr. Brown's favourite air pump is the "Miracle Twin." It has two diaphragms and each gives out a large amount of air, he considers. The pump has an off/on switch, and the price is very reasonable. He has tried a "Rena Super" and considers the Miracle one to be superior. (I'm afraid that I'm a Rena fan. I've also tried one type of Miracle pump—not the type which Mr. Brown favours—but it did not please me!) Mr. Brown has grown *Vallisneria* and *Hygrophila* in tanks with both large and fine gravel, using soft, fairly alkaline water. Both received a reasonable amount of light but he has found that the *Vallisneria* will grow well, though more slowly, under a weaker light. With *Hygrophila* he finds that regular pruning is necessary for more and better quality plants. Mr. Brown thinks that coal in aquaria is becoming more popular because

it gives a good contrast with many fishes and plants. It is easily obtainable in a variety of shapes and needs no soaking. He keeps *tubifex* alive for a couple of weeks under running water and has read that the Americans have developed a powder which can keep *tubifex* alive, and even enable it to breed. He wonders how well it works.

After Mr. Brown's rebuke comes a compliment from Mr. J. A. Higham, of St. Helens, Lancs. He wonders how I've got through so much writing with a disabled hand, and is grateful that it's been kept going as he always finds some useful tips and good advice, amongst your opinions. (Determination and a liking for writing are good motivators!) Mr. Higham has not tried every pump, but he finds the "Rena 100" a good, reasonably priced, and above all, quiet air pump. He has had one in use for 24 hours per day, over a period of several years, and it shows no sign of needing a new diaphragm yet. He replaced a noisy piston pump, which did not have a very high air output, with a "Rena Super," and found it to have a colossal air output, but rather noisy, so he fitted it outside the house, in a metal box attached to a wall, and ran a 10 yd. length of tubing through the window frame and round the picture rail, tapping off outlets where necessary. Other advantages which he found were a fresher air supply and a handy aeration supply for live food containers, etc. He quietens pumps by setting them on foam plastic or by placing them in a cupboard and running out an air line behind bookcases, etc. He has only had success with *Vallisneria* out of doors in cold water, where it flourished in an old sink used as a *daphnia* container, and which had a good layer of mud on the bottom. He has also had difficulty in growing *Hygrophila* although giant *Hygrophila* (*Nomaphila*) grows well for him. The latter he finds to be particular as to its tank mates—either refusing to grow in their company, or refusing to let them grow in its presence. He recently cleared out thick growths of *Nomaphila stricta* and found that the *Cryptocorynes* in the tank started to grow for the first time. In another tank he had a potted *Nomaphila* but, when he introduced another unidentified plant, the former shed all its leaves within hours. Mr. Higham states that Stodola's book on water plants lists compatible plants but he thinks that this is too empirical

a subject on which to be dogmatic. Mr. Higham once brought home a few blennies from N. Wales and he found them to be both interesting and easy to keep in a small, all-glass tank with plenty of aeration. They fed from his hand right from the start.

He has never taken to coal in aquaria as he has found that it takes on a grey, dusty appearance, but he has seen it used to good effect in the tanks at Chester Zoo, where they seem to have the magic touch. When buying *tubifex* he always gives them a good swill under a running tap, to wash away obvious dirt. They are then kept in an earthenware bowl, in a cool, dark place, and the water is changed at least once per day. They keep perfectly well for a couple of weeks, when the bob's-worth is done. He once collected his own *tubifex* from a field drain which was fertilised by cattle. The worms and mud were kept in a bucket and the water changed often. Daily helpings were removed in a plastic tea strainer, sluiced in cold water, and floated in his goldfish tank. The worms crawled through the holes and they, together with infusoria, encouraged a 9d. goldfish to spawn, quite a few fry surviving—his only experience in breeding coldwater fish.

Andrew Patterson is 13, and he lives at North End, Durham, and has been keeping tropical fish for three years. From the start he has kept Vallis, and has had excellent results. He uses two 25 watt bulbs over each of his 3ft. tanks and many new plants form on runners, but he wonders why the leaves of his plants are narrower than those of plants which he orders by post, and asks how he can make his broader. (Perhaps, Andrew, you could try removing the runners from older plants, as they form, thus encouraging all the food in the plant to go to the formation of larger leaves. It's worth a try!) He uses ordinary gravel and lives in a fairly soft water area. He has found that the addition of "Florapride" to the water has speeded up plant growth. Andrew has several reasons why he thinks that combined heater/stats. are not so popular: (a) the price is sometimes double that of separate items, (b) the heater element is very small, (c) the longer tube is sometimes difficult to conceal, and (d) a friend has told him that combined units are not as reliable as separate ones. He keeps angels and would very much like a pair of brown discus. The plant which he can grow best is the Amazon sword, with *Cryptocoryne willisii* coming second. A 4in. sword, in six months, has grown to 18in. in height, with a spread of 2ft., and has produced five young plantlets. He does not earth his tanks. He quietens his air pump with a bed of filter wool and warns of the dangers of overheating and fire. Andrew does not like *daphnia*, brine shrimp or white worm but uses a lot of *tubifex*. He keeps his *tubifex* fresh in a little container which hangs in the toilet

cistern, thus providing frequent water changes. Failing this he suggests a preserving jar, with water changes about twice a day, kept in a cool place.

The next letter I found at the bottom of a drawer. It is dated 1968 but its contents are still interesting. It's from Mr. A. Marshall, of Chesterfield, Derbyshire, and he writes about his experiences of hatching cichlids away from their parents. He has tried *Pelmatochromis kribensis*, *A. ramirezi*, *Nannacara anomala* and orange chromides and thinks that angels would react well to similar treatment. Thoroughly clean a small tank—say 16in. x 8in. x 8in. and fill with tap water; fit heater and thermostat and aeration stone weighted with lead; plants, gravel, etc., are not necessary. The temperature is set to that of the tank from which the eggs are to be removed and the slate, plant pot or leaf, on which the eggs were laid, is gently removed and placed on the base of the new tank. Exposure of the eggs to the air does not seem to affect them. The air stone is placed 1in. from the eggs and very gentle aeration is begun. Methylene blue is added drop by drop until the pot, etc., cannot be seen. By the seventh day the fry will be free-swimming and the water will have almost cleared. In the case of *kribensis* and "rams" brine shrimp can be given immediately but orange chromides need infusoria for the first week or they will die. Mr. Marshall has used this method many times and has found that only a small proportion of the eggs fungus.

Mr. F. Bolt writes from West Bromwich about the breeding of blue acaras. He uses tanks of 2ft. and upwards, putting in gravel and rocks that have sloping sides, for a pair to clean and spawn on. From a tank with half a dozen fish he takes two that have already paired. He considers this to be half the battle. In random pairs fighting may occur and Mr. Bolt separates them until a later date, if this occurs. A happy pair soon start shaking their heads and moving the gravel about. Plants are unnecessary and will be destroyed. In a day or two the breeding tubes start to project from the point from which the eggs come. At this stage Mr. Bolt feeds the adults all sorts of cooked, chopped meat, the best being tinned dog meat, as much as they will take. After the eggs are laid, if there is no fighting, the fish are left to their own devices. If they were well fed he found that they reared all their young and didn't eat any. When the fry are free-swimming he feeds them on very fine food—fish paste being a favourite. A small piece of paste is shaken up in some of the tank water, in a jar, and the suspension added to the fry's water. Later the paste is given just chopped. The young were left with the parents to retard the breeding urge. He has bred acaras in a 4ft. community tank, the pairs keeping all

other fish at bay until the young could fend for themselves. He has found the acaras to be the most bold and courageous fish when guarding their young and has got a lot of pleasure from them as they feed on all and sundry.

Mr. D. Finbow comments on the article on *Labeo bicolor*, in the June issue, from Ipswich. He only started keeping fish in October 1969, with a 24in. x 8in. x 8in. tank which he stocked with a pair of very young angels and a small *Labeo*. The well-planted tank was kept at 75-80°F and the fish fed on "Tetramin," but he has only once seen his *Labeo* feed at the surface. (The plants are well covered in algae.) The fish is now 3in. in length and the angels a good 4½in. across. He once fed his fish on *tubifex* and lost a male fighter and a swordtail. He does not intend using *tubifex* again! He has got the angels feeding on flakes of "Tetramin" from his hand. The tank is lit by two 20 watt bulbs and he runs a "Slimline" filter continuously, topping up the tank with hard tap water. Mr. Finbow considers that there is too much emphasis on the hardness of water. His electric kettle is thick with lime yet the same water is put into his tank with no visible harm to the fish—fifteen in all. A few fights occur now and again, especially between his *Labeo* and a sucking loach, although as soon as the loach attaches itself to the glass, the *Labeo* leaves it alone. Mr. Finbow is amazed at the speed which these fish can reach in a chase across the tank.

The favourite air pump of Mr. J. Ochsner, of Exeter, is the "Rena Super." To quieten a noisy pump he strips it down and replaces all worn parts but he considers most noisy pumps to be due to incorrect adjustment of the air-bleed screw valves. Mr. Ochsner grows *Vallis* and *Hygrophila* in his 36in. and 38in. tanks. The *Vallis* should be planted with the crown just showing above the compost, and the runners cut as soon as three or four leaves show. If left uncut they do not seem to do well. *Hygrophila* he trims well. He uses warm white light tubes and find them very effective; in fact he bought an *Echinodorus brevipedicellatus* and planted it in a tank with the above light, and within three days he had a runner shoot with seven small plants on it. He has a tip on *tubifex* which he received from a professional collector: place the worms in a suitable container (not too deep), add enough water to three-quarters cover the worms, and keep them cool. He made himself a *tubifex* keeper out of a plastic tub in which flake food, for feeding large fish by hand, was sold. He removed four sections from the base, leaving a "cross" shape intact. Across the base he stuck a piece of nylon stocking top. He fitted this into an empty Vaseline tub (Woolworths), removing the centre of the lid.

The Aquarist sure gets around, as a letter from Mr. D. L. Izzard, of Stubbs Road, Hong Kong, shows. His interest in aquaria was born of seeing the multiplicity of tropical fish bred in, and exported from the Colony, and nurtured by the purchase of an 18 in. x 12 in. x 12 in. tank. The tank was sparsely planted and an external filter was used, but problems with algae arose. The tank would not keep clean. A chat with a Chinese fishkeeper brought the suggestion that Mr. Izzard replace his tank with a 24 in. x 12 in. x 15 in. as the volume was greater, and that he planted it lavishly: he was also told to maintain a temperature of 80°F rather than the usual 75°F and to use a high turnover under-gravel filter. Following the advice the tank had no algae problems and no visible sediment. The tank has not needed any vacuuming, scraping or water changing in the year which has followed. The plant life is luxurious under ordinary fluorescent lighting of 15 watts for nine hours daily and the fish are healthy on a diet of daphnia, *tubifex* and flake food.

Mr. Izzard's guess at the main factor which controlled the algae is the high capacity filtration at about twice the normal rate. He has tried one kind of vacuum cleaner but found that it left behind as much sediment as it collected. In conclusion Mr. Izzard says that while fish-keeping is widely practised in Hong Kong, most of the available foods and equipment are West German in origin, and quite expensive. He says that good British brands are rarely seen and wonders if we are not interested. "The climate here cries out for freeze-dried foods to save shopping every day for live food that is on its last gasp before you get to it, or it to the fish," he says.

From nearer home comes a letter from 14-year-old Paul Hower, of Nottingham, and he has tried three types of air pump, his favourite being the "Rena 100" which, he says, gives a good, strong air flow almost silently, and which also has an external air regulator. To quieten a noisy air pump he would place it on an old bath sponge. Paul has kept locally-caught marines. He started off with very small tanks, made of plastic, and sea water carried home in buckets. In these he was able to keep sea anemones and marine snails. Progressing, he bought a 24 in. x 8 in. x 8 in. glass tank, sealed with silicone rubber. He also bought a bag of artificial salt which he mixed with sea water. For filtration he used an "Interpet" outside filter and a wooden diffuser. In his tank he has about 20 assorted brown, red and green anemones, a hermit crab, a shore crab and various marine snails. He feeds them on scraps of fish, once per week. A couple of weeks back he had two eels but these died because of the heat—despite his attempts with the floating of ice in the tank and filter, to cool down the water. Why use coal in aquaria? Paul says that it acts as a carbon

filter, and that it clears cloudy water as well. (Interesting ideas, Paul. Perhaps you would care to tell us how you think the coal does these two things?)

Mr. Howard Smith, of Bletchley, Bucks., sent me a letter concerning a faulty filter. I have forwarded his comments to the manufacturer. Mr. Smith sets two subjects for discussion in the next article. He asks for readers' experiences with the keeping and breeding of freshwater shrimps for fish food. He also asks if there is any easier, more effective way of killing flies, wasps, etc., in a room containing fish, than by chasing them round the room with a rolled-up *Aquarist*. (Yes; let the wife do it!)

Finally, a long letter from Mr. T. Dalley, of High Green, Sheffield. Mr. Dalley manages a large chemists' shop and his base is the former warehouse for a chain of shops. He has the use of an enormous garage for himself. Down one side was a large, galvanised iron tank, with a $\frac{1}{2}$ h.p. motor driving some machinery (a bottle-washing machine). Mr. Dalley was permitted to make a "conversion," and he began by giving the iron tank three coats of "Hermastic," a special paint made locally. He rigged up three lamp-holders over the tank, in a shade made from an old "Kodak" sign. He removed the motor and began to look at the containers in which the firm's goods came. These are made of thick, rigid polythene and measure 22 in. \times 14 in. \times 12 in. deep. He cut a panel out of the long side of one with a coping saw, and found a piece of plate-glass shelving with a chip off the corner. He has four marvellous aquaria—so far! The large section of his "machine" measures over 3 ft. in length, \times 2 ft. wide and 18 in. deep and he has one hundred and fifty lace gouramis, aged two months in it and they're growing very fast. The ancient central heating plant is in the corner of his garage and it serves his shop and the one next door. He turns it on every night, even at this time of the year (June), very low—just enough to keep the tanks from using any electricity. On top of it there are three plastic containers, made by cutting in half those five-gallon plastic containers in which bulk sherry comes. They make excellent brine shrimp hatchers for Mr. Dalley. His two boxes of white worms flourish in the warm, moist air—and there is still room for his car, which hasn't frozen up all winter.

Mr. Dalley says that everyone who writes to me wants to talk about filters but he has never used one and wonders why they should be necessary. He feeds his fish with masses of white worms and the ramshorn snails eat what the fish can't get at, yet he has never had a cloudy tank. He thinks that this may be due to his using peat. He puts a good inch of peat on the bottom, dry, and covers it with half an inch of shingle; then he runs the water in very gently. Under a good light the plants go ahead like wildfire. He does use an

air pump—mainly to hatch his brine shrimps, but also to keep the water gently moving with a diffuser stone to prevent temperature "layers"—especially where there are very young fry, otherwise they get down to the bottom of the tank where it is cold, and get between the stones, and die. His favourite pump is the "Rena 100" and he can obtain enough air to operate five diffuser stones. With a separate clamp to each stone the pressure, and the noise, can be controlled. At present he is working on a low voltage pump of his own, using solenoids and coils from his children's broken toys. He also likes the "Jeto Silent" and the "Jeto Junior" pumps. Mr. Dalley admits that he has not tried many different types of pumps but suggests that it is time that the magazine *Which?* got to work on some aquarium items. What about it? (It's a good idea I would say but how does one get the Consumers' Association interested?) *Vallis* and *Hygrophila* both grow well in the conditions which were described above. The letter-writer helped to found the Whitby Aquarists' Society about 18 years ago and about that time he had a go at local marine life. He wonders if his old friend Mr. Ken Mason still keeps the Society going. Living in Sheffield now, Mr. Dalley has no access to marine life. He does not like to see coal used in aquaria but prefers grey granite as it is more natural and beautiful and whole cliffs can be built up at the back of a polythene tank with only the front glazed. Mr. Dalley once bred a hundred or so golden orfe from half a dozen big specimens in a home-made pond at Birchington, in Kent. And for all he knows, the bungalow, called "Lebistes," is still there.

What an interesting letter to end with. Mr. Dalley certainly shows how the aquarist with ingenuity can make the best of odds and ends. I can imagine chemists' shops and off-licences up and down the country getting requests for empty polythene containers as a result of this letter.

Well, now to next month's questions, not forgetting those included in the preceding letters. (a) What would you nominate as the best new piece of equipment, for the aquarist, introduced in the past twelve months? (b) Have you raised any freshwater shrimps as fish food? (c) What pond plants would you recommend for a beginner? (d) Have you had any experiences, in guppy breeding, where the fish appear to develop an extreme fear, and spend most of their lives hidden from view in a planted tank? (e) What have been your experiences with any of the more expensive tropical fishes? (f) What are the attractions of marine aquaria over freshwater aquaria? (g) Have you raised any aquatic plants from "home-produced" seeds? (h) Have you found, as I have, that light bulbs seem to have a much shorter life over the aquarium nowadays, than they did several years ago? Keep the letters coming in!

BREEDING ANGEL FISH

By Pamela M. Hansen

WHEN MY HUSBAND AND I were making our first tentative attempts to breed angel fish, I was struck by the fact that in none of the previous literature we had come across on the subject had we found a detailed account of what actually happened, both when things went well and when they went badly. This account might therefore be of interest.

We placed four adult angel fish, of undetermined sex, and an adult *Cichlasoma festivum* pair together in an 80-litre (22 in. x 14 in. x 16 in.) tank, which was dominated by a large Amazon sword plant. After about two weeks two of the angel fish began to take an interest in each other, and tried to chase away the other fish. The breeding tube of the larger of the two fish, which we thus took to be the female, became evident, followed in a few days by the appearance of a similar but smaller extension in the male. Meanwhile the pair busily began to clean the most newly-appeared leaf of the sword plant.

When the female began to drop her eggs indiscriminately, not upon the prepared leaf, we immediately moved away the two remaining angel fish and the *festivum* pair, which we thought must be having a disturbing influence; half an hour later she began to spawn upon the prepared leaf. She moved slowly up the leaf, her breeding tube extended, as if she were mowing a lawn, the eggs dropping out in a lovely straight row. She did this over and over again until the leaf was packed with eggs (113 being the final approximate count). The male was finally persuaded to attempt to fertilize the eggs but at first he seemed uncertain as to his role in the matter.

As the evening progressed the pair took it in turns to stand by the leaf and fan the eggs with their fins. The eggs which fungused were promptly eaten. In the morning only 27 eggs remained. My husband, convinced that the eggs were being devoured indiscriminately, removed the leaf with the remaining eggs to a bare 13-litre (16 in. x 9 in. x 7 in.) tank specially prepared for this emergency, where he somehow attached it with a clothes-peg. On the third evening there were 13 eggs left, 12 of which fungused. The remaining one hatched out in 72 hours, but the baby fish died.

Jorgen, my husband, decided that the next time the fish spawned he would remove the fish immediately the process was completed. Exactly 15 days after the first spawning, the second spawning began, this time only five days after the pair had begun cleaning a leaf. We were out for the evening at the time but returned to

find that the babysitter, enthralled, had observed the event. When the time was right we moved the leaf into the same 13-litre tank we had previously used but this time it contained ripened water to which had been added one tablet of CILEX, a German medicinal preparation which we had been advised to use as a preventive against fungusing of the eggs.

As the eggs fungused (some of them did despite the medicine), we removed them with the point of a needle, letting them drop into a cup placed underneath. We noted down the events of the following week:

Second Day seven eggs fungused.

Third Day four eggs fungused. Hatching out begins.

Fourth Day six eggs fungused. All other eggs hatched out.

Fifth Day Half of fry hanging from leaf while half lie at bottom of tank.

Seventh Day Many fry have fallen into cup and died perhaps because of proximity to white fungused eggs in cup. Little more CILEX added. Yolk-sacs almost used up.

Eighth Day All fry have fallen to bottom and perished within 12 hours.

Our Angel fish pair spawned again 17 days after the second spawning. The female was so distressed at the third theft of her eggs that she made an unexpected attack on Jorgen's hand as he removed the leaf. The leaf was placed in a plastic eight-litre (17 in. x 5 in. x 8 in.) tank (in reality the vegetable compartment of our fridge) which contained six day-ripened water to which was added one CILEX tablet.

This time we took the white eggs right out of the tank, instead of letting them drop into a cup. The following incidents occurred:

Third Day two eggs fungused.

Fourth Day three eggs fungused. Hatching out began.

Fifth Day More CILEX added. one egg fungused. All others hatched out. Half on bottom of tank, half hanging from leaf.

Sixth Day Three-quarters on bottom of tank, rest hanging. Aeration put on in tank.

Ninth Day Fry dying on bottom.

They seemed to be stuck to the tank by the top of their heads. Sometimes they managed to swim up an inch or two but immediately fell back again. A large heap of dead and dying fry collected at the front side of the tank, each fish struggling to reach the top of the heap and once there making painful efforts to swim.

Two or three fry did swim short distances from the bottom to the side of the tank, or from the side of the tank to the leaf, and we hoped that these might survive. But by the 10th day all the fry lay dead, scattered along the bottom of the tank, like the victims of an awful battle.

One out of several fry transferred to another empty tank as a last resort on the ninth day did survive but only for four days, despite feedings of Liquifry.

We were naturally disheartened by these failures, mostly because we didn't understand why the young didn't become free-swimming as they were supposed to, and thus could do nothing about it. We decided, therefore, to let the pair try to raise their next brood themselves after all, as perhaps we should have let them do in the first place.

This fourth spawning took place 13 days after the previous one. More eggs than ever were laid, at least 250. We added four CILEX tablets, as it was an 80-litre tank. For the first two days the eggs were carefully guarded by both male and female and were continually being cleansed by mouth and spat back upon the leaf. Eggs which fell were promptly chased after, caught and spat onto the leaf again. On the third day hatching out began and the fry were transferred by the female to a different leaf, carefully cleaned beforehand, of course. For the next six days both parents were kept busy day and night. The fry were

moved at least a dozen times in the six days. At night-time, when the light was switched off, the female moved them onto the front glass, presumably because it was lighter there and she could therefore keep a better eye on them.

On the 10th day the number of fry was reduced by about three-quarters but by the following day the young that remained, about 50, were beginning to swim about. From then on all went well. The parents kept chasing their adventurous fry and placing them back on the leaf, only for the fry to dart off again. This went on for several days, and got more and more on my nerves, until eventually I was afraid that the parents, in a fit of temper, might suddenly snap up and eat the baby fish. We therefore moved the adult fish to another tank.

The fry were fed first on Liquifry, then brine shrimp, micro-worms, and finally daphnia and cyclops. They grew at a terrific rate, the increase in size being discernible almost day by day. Now at the age of two months the fish have a span of from 2½ to 3½ inches. The parent fish, living rather unhappily in a large community tank along with swordtails, black and red tetras, black sphenops and female guppies, have spawned several times but eaten the eggs. However, they will soon be returned to their original tank and will be allowed to spawn again in peace, when we sell their fifty offspring in a few days' time.

PRODUCT REVIEW

"ROSEWOOD AQUAFREEZE" range of new, freeze-dried fish foods, manufactured by Eric Woods (Rosewood) Ltd., Arleston, Telford, Shropshire.

The new "Rosewood Aquafreeze" range of fish-foods is manufactured from top quality raw materials which are then pre-treated and freeze dried. This British range of foods is sold in plastic containers, but the weight of the contents is not given on the container, so it is hard to judge the value for money. The range consists of: Tubifex, with an analysis of protein 53.05 per cent, oil 6.25 per cent and fibre 1.8 per cent. I liked this food as the worms were not in solid packed lumps which were difficult for smaller fish to attack. The worms had a powdery texture, some being in powder form and some in larger but powdery pieces. It suited fishes of various sizes, in a mixed collection. Shrimp has an analysis of protein 56.4 per cent, oil 2.7 per cent and fibre 7.6 per cent. I was not so keen on the shrimp for smaller fishes as many of the pieces were quite large and the shrimps' shells were included in the food. The shrimp costs 6s. 10d., and the tubifex 3s. 6d.

The liver has an analysis of protein 69.3 per cent, oil 9.45 per cent and fibre 0.30 per cent. Most of the

particles are large but break down, between finger and thumb, quite easily. Liver costs 5s. 6d. per drum. The granules of heart are smaller and these can also easily be broken down with the finger and thumb. Like the liver, this food will also break down in the water. Heart has an analysis of protein 71.6 per cent, oil 10.85 per cent and fibre 0.25 per cent, and costs 5s. 6d. Both of these foods are high in protein and were greedily devoured by a variety of my fish.

Roe has a very high protein content—79.6 per cent, oil 1.15 per cent and fibre 0.2 per cent. It costs 6s. 0d. It is in a fine powdered form and was suitable for even small fish. It was keenly accepted by all of my fish and, with such a high protein content, should encourage quick growth. It is especially suitable for the more difficult feeders, including many marines.

All of the foods in the range are suitable for freshwater tropicals and for marines. As much of each food as will be eaten in ten minutes may be fed. I must say that I was quite pleased with this range of foods. I liked the texture of the foods (with the exception of the shrimps' shells) and, especially, their high protein content. I would recommend them—and they are British! B.W.

Herpetological notes

By Stephanie J. Peaker, B.Sc.

PROBABLY the best way to house most European lizards is in an outdoor reptiliary. I am showing diagrams in these notes to illustrate how one can be constructed and during the summer months I shall describe the species suitable for keeping in such an enclosure.

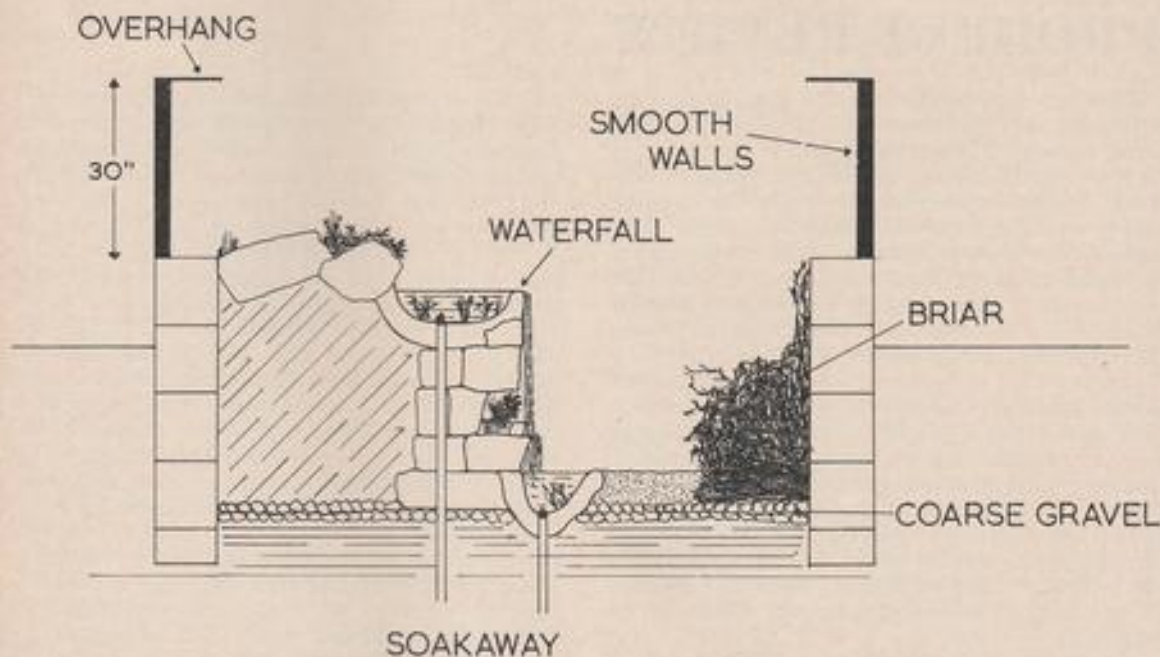
The reptiliary should be as large as possible and it must be remembered not to make the walls so high that they shade most of the area from the sun. I should also make it clear that the height of the walls shown in the diagram is not suitable for a reptiliary for snakes. If the area enclosed is large, as many different types of habitat as possible should be made. Different lizards like different surroundings and a mixture of rocks, grass and sand together with a small bush means that a number of species will soon settle in. In the diagram I have shown an area higher than the rest with a waterfall to a pool in the bottom. While a pool is

necessary, this split level arrangement is not but it makes a more interesting display. Incidentally, the soil dug out of the pit can be used in a tortoise enclosure to provide hillocks over which tortoises like to scramble.

I recommend setting up a lizard enclosure well before the inhabitants are introduced so that the plants become established and natural shelters are formed.

In some areas a wire-netting cover will be necessary to guard against cats and in northern areas part of the enclosure can have a glass roof in spring and this helps the lizards to warm up quickly in the morning sun. Smooth-sided walls are essential to enclose lizards and gloss-painted hardboard facing inwards is ideal for small enclosures if it is securely fastened to a strong wooden frame.

The biggest problem with an outdoor reptiliary is what to do in winter. If the reptiliary has a good



rockery and is well planted it is possible to let at least some of the inhabitants hibernate. This course can be helped by piling straw into the enclosure when the lizards have disappeared for the winter. It is not a good idea to cover the reptiliary with glass during the winter as the winter sun may heat the ground sufficiently to rouse the lizards and this can be disastrous if more cold weather arrives.


In a large reptiliary in a country district the lizards


will obtain a good deal of natural food. Insects fly in and are quickly caught by the active lizards. Mealworms and earthworms, hedge sweepings, spiders, etc., can be given and many lizards will accept food from the hand or large forceps.


Although not often seen by day, a colony of newts or small toads (fire-bellied toads, for example) will provide interest at dusk and with luck will breed regularly if allowed to hibernate.


POOLS



 GRASS

 SAND

 ROCKS

 LOGS



**OUR
READERS
WRITE**

Ted Jessopp

FOLLOWING the recent death of my husband (Ted Jessopp) Chairman F.B.A.S., I have received so many flowers and letters of condolence, that I find it almost impossible to answer everyone individually. Could I therefore, through the medium of your magazine, thank all the Affiliated Societies to the F.B.A.S., The Goldfish Society, all sections Fancy Guppy Association and Members of S.P.A.(S.)S. for their kindness and understanding to myself and family during this time of great stress.

If you would publish my sincere thanks I would be most grateful.

BETTY R. JESSOPP,
116 Lincoln Road,
Slade Green, Erith.

A. G. E. Jessopp

ALL MEMBERS of this Society were deeply shocked to hear of the sudden death of Mr. A. G. E. Jessopp, the Chairman of the F.B.A.S.

All Societies were well acquainted with "Ted" as he was known to many Aquarists and his activities in the hobby were many.

Besides being Chairman of the F.B.A.S., a position which he carried out admirably, his reputation both as a Judge and Lecturer were well respected, and his life-long experience of fishkeeping was readily available to all who asked.

Throughout a normal year he covered thousands of miles for the furtherance of this hobby and as a Show Secretary I know he was ever ready to help unless his popularity had already meant the date was booked previously.

He has left his mark on the Hobby—and he will be sadly missed, but never forgotten for the work he undertook on behalf of us all.

To his family in this time of sorrow we extend our deepest and sincere sympathies, and feel sure that all Societies of the F.B.A.S. throughout the Country would wish to join us in this tribute.

W. R. SHERWIN,
Hendon & District A.S.

Disgruntled M.I.M.S.S.

APPROXIMATELY 15 months ago I requested that I become a member of the International Marine Study Society, at the same time I requested some advice. About six weeks later I received a reply, no receipt, no mention of the Society's activities. Amongst other things I was expecting a monthly Newsletter. But not a word.

After a few months I wrote again to the membership secretary and again the weeks slipped by and I received a reply stating I should be hearing from the secretary. Nothing followed.

In desperation, in November I wrote again asking for the return of my 30s., informing the secretary that I was sending a copy of the letter to the Editor of *The Aquarist*. I thought surely I will get a reply now. But no—not a word.

What a Society!

JAMES R. LAWRENCE.

Attractive Marines

HAVING VISITED the Aquarist and Pondkeepers' Fishkeeping Exhibition last Saturday, with a party from the "Brighton & Southern Aquarist Society", I personally must give praise to Mr. Graham Cox of "Sea Aquariums Ltd." Croydon, for his magnificent stand of marine fish, which I think was by far the best at the Exhibition.

As an Aquarist myself I also enjoyed the entries of Fish and Furnished Aquaria, especially the Single Plant entries, but hope next year there will be many more entries.

V. A. ALDIS,
15b Palmeira Mansions,
Hove, Sussex.

Breeding Kissing Gouramis

I am writing to you, to see if any readers of *The Aquarist* have been lucky enough to breed Kissing Gouramis for, in the books I have read, nothing is stated about them breeding. My pair of Green Kissers are 5 in. in size. I put them in a 2 ft. 6 in. tank on their own and six weeks later I noticed fry. No bubble nest was built, and I didn't know that they had bred, until I saw the fry. I have been able to raise seven to a size of $\frac{3}{4}$ in. and they seem to be doing well now. I did notice that the parents, when placed in a tank on their own, did a lot of kissing and chasing around the tank. One fish was very colourful, while the other was very pale.

I have placed the Gouramis in a tank on their own again and am hoping they will breed again for me. Perhaps I will be lucky enough to raise a few more fry this time. If any of your readers have bred kissers, perhaps they would be good enough to write back to you, for you to publish their letters.

C. HARDING.



from AQUARISTS' SOCIETIES

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

THE decision of the newly elected committee of the **Grimshy and Cleethorpes A.S.**, to hold a meeting every fortnight, appears to be much appreciated by the members. Every effort is being made to get the members together as much as possible, and to give entertainment as well as advice on all matters arising out of the hobby. Films and slides, alternating with Guest Speakers and the monthly Table Show, make meeting nights something to look forward to with pleasure. The society would like a few more new members, who can be assured of a welcome at the Newby Centre Headquarters.

The Guest Speaker for the July meeting was the society's president, Mr. Les Stone, who spoke on two subjects—Fish Diseases and Aquatic Plants. An aquarist of over twenty years' experience, Mr. Stone answered many questions from anxious newcomers, and was very well received, and thanked by all members. There was a record entry for the Table Show, which included for the first time a Breeders Class. Results:—Barbs (under 3 in.): 1, L. Deardon; 2, E. Parker; 3, T. Metcalf. Anabantids (over 3 in.): 1 and 2, C. Easton; 3, Master D. Kirk. Male Guppy: 1, M. Jermy; 2, C. Riggall; 3, R. Lloyd. Breeders' Class: 1 and 2, P. Jensen; 3, C. Easton.

THERE was a total of 430 entries at the **Alfreton and District A.S.** Open Show. Sherwood A.S. won the points Rose Bowl and the Aquarist Pin was won by J. Igoe of Sherwood A.S. with a Molly.

Guppies: 1, P. Duffy; 2 and 3, S. Buchanan. Platies: 1, 2 and 3, J. Lyall. Swordtails: 1, W. Selby; 2, D. Hartley; 3, Mr. Godbehere. Mollys: 1, 2 and 3, J. Igoe. Small Barbs: 1, J. Wright; 2, Mr. and Mrs. Cohen; 3, Miss Gerrard. Large Barbs: 1, S. Hall; 2, Mrs. Herbert; 3, I. Heptinstall. Small Characins: 1, M. Alltop; 2, Miss Gerrard; 3, J. Wright. Large Characins: 1, J. A. Stiff; 2, B. Hicking; 3, D. Sewell. Killifish: 1, Mr. Booth; 2, Mr. Stiff; 3, D. Sewell. Minnows and Danios: 1, I. Heptinstall; 2, R. Clarke; 3, M. Alltop. Sharks and Foxes: 1, J. Dermie; 2, R. Harlow; 3, J. R. Dicker. Rasboras: 1, Miss Hill; 2, Miss Gerrard; 3, D. Warg. Dwarf Cichlids: 1, I. Heptinstall; 2, J. Dermie; 3, W. Selby. Large Cichlids: 1, J. Wright; 2, M. Cox; 3, D. Sewell. Angel: 1 and 2, D. Sewell; 3, M. Alltop. Catfish: 1, C. Cooper; 2, J. Jordan; 3, S. Buchanan. Loaches: 1, J. R. Dicker; 2, W. Morell; 3, E. Lyall. Siamese Fighters: 1 and 2, J. Fellows; 3, Mr. and Mrs. Cohen. A.O.V. Anabantids: 1, Mr. Herkinson; 2, H. Harlow; 3, W. Morell. A.O.V. Tropical: 1, I. Heptinstall; 2, J. Dermie; 3, E. C. Smaller. Pairs (egg-layers): 1, Hans Kuhn; 2, J. Igoe; 3, M. Alltop. Pairs (livebearers): 1, Mr. Godbehere; 2, S. Buchanan; 3, P. Reynolds. Junior Egg-layers: 1 and 2, G. Thickbroom; 3, A. Kaye. Junior Livebearers: 1, Master Igoe; 2, Master Duffy; 3, J. Senior. Goldfish and Comets: 1, C. Asquith; 2 and 3, E. Makison. Shubunkin and Fancy Goldfish: 1, C. Asquith; 2, C. Hill; 3, G. Thickbroom. A.O.V. Coldwater: 1 and 2, C. Hill; 3, G. Thickbroom. Breeders (egg-layers): 1, Mr. Cuff; 2, Hans Kuhn; 3, J. Igoe. Breeders (livebearers): 1, P. Duffy; 2, P. Reynolds; 3, Mr. and Mrs. Cohen. Novice: 1, Mrs. Igoe; 2, Mr. Booth; 3, Mr. Paver.

AT the **Harrogate and District A.S.** meeting in July there was a slide show on Anabantids. It had a typed commentary which Mr. S. M. Whitehouse read, and also there was a question panel, which consisted of Mr. J. Hartley, President; Mr. P. Stotbard, Secretary and Mr. S. M. Whitehouse, Committee Member. There was fine response regarding an organised trip to Chester Zoo later on in the Year.

NEW members have joined the **Aireborough and District A.S.** at every meeting so far this year. At this year's "Members' Show" 77 entries were benched by members, which were judged by A. M. Drakin of Worksop. Best exhibit of the show was a Congo Tetra earned by Roy Taylor, the class winners are as follows: Guppies: H. Gardner. Barbs: R. Rayler. Cichlids: M. Dwyer. A.O.V. Anabantid: A. Cox. Catfish and Loach: Mr. and Mrs. Whiteley. Any other variety: R. Taylor. Junior—any variety: Master Dwyer. Breeders' egg: J. and A. Stretton. Furnished Mini-jars: B. Megson. A.O.V. Livebearer: B. Megson. Characins: R. Taylor. Siamese Fighters: R. Taylor. Flying Foxes and Sharks: G. Monk. Coldwater Fish: B. Megson. Novice—any variety: Master Johnson. Breeders—live: H. Gardner. Any variety pairs: B. Megson.

The society is now busy preparing their stand for this year's "British Aquarists' Festival," arranging two social evenings (1) Inter-society table show and social evening. (2) Fashion Show for members, members wives and friends. Arrangements for this year's annual open show are also well in hand and schedules will be available from the secretary September onwards. Interested, prospective member, aquarists, will upon request receive from the secretary, duplicated information about the society's activities, etc. Alternatively they will be welcome at any of the meetings, which are held the first Thursday of each month at 8.00 p.m. in the Co-op Hall, Guiseley, Nr. Leeds. The secretary of the society is G. E. Walker, 2a West End Terrace, Guiseley, Nr. Leeds, LS20 8LX.

THE **Southampton A.S.** invited members of their New Forest counterpart to their monthly meeting held in St. Denys Church Hall, Southampton, and entertained them with a co-ordinated slide show and tape lecture. The slides were all taken by members of Hendon A.S. and included some photographs of a rare and interesting nature.

The table show, for Danios, Minnows and Rasboras was judged by I. Goddard of Salisbury and the results were:—Advanced class: 1, E. Hearn; 2, D. Jones; 3, J. Gilbert; 4, D. Harding. Novices class:—1, Mrs. Snellgrove; 2, P. Brown.

IN July the **Llanwit Major A.S.** held its annual general meeting, when subjects for the next twelve months were discussed and a new committee elected as follows: Chairman: Mr. Vinicombe; Vice-Chairman: Mr. Ireland; Treasurer: Mr. Edwards; Secretary: Mr. Thomson; Librarian: Mrs. Jones; Show Secretary: Mr. Ibbertson; Assistant Show Secretary: Mr. Archer. The club holds its meetings in the Lessor Hall, Llanwit Major and all fish enthusiasts are welcome to attend and join the club if they so wish.

The annual show results were:—Corydoras and Brochis: 1, Mrs. Williams; 2, Miss Jones; 3, A. Ibbertson. Junior Egg-layers: 1, Master D. Player; 2, Master K. Williams; 3, Master R. Gordon. Junior Livebearers: 1, Master D. Player; 2, Miss P. Welch; 3, Master K. Williams. Rasboras: 1 and 2, R. W. Hill; 3, A. Lewis. Danios and W.C.M.M.: 1, Mr. Limbrick; 2, N. Llewellyn; 3, P. Brown. Loaches: 1, P. Brown; 2, R. W. Hill; 3, Mr. Pumphrey. A.O.V. Egg-layers: 1 and 2, P. Player; 3, W. Hill. Pairs: 1, Mr. Wilkie; 2, R. Wilkie; 3, R. Wigg. Guppy Male Long Tail: 1, R. S. Hearn; 2, Mr. Norvewear; 3, C. Morn. Guppy Female: 1, Mr. Branton; 2, D. Jones; 3, C. M. Jones. Swordtail: 1, Mr. Scudmore; 2, T. Hedge; 3, R. W. Hill. Platy: 1, Mrs. Mitchell; 2 and 3, A. Ibbertson. Molly: 1, C. Morn; 2, Mr. Scudmore; 3, Mrs. M. Williams. Breeders (egg-layers): 1, Mr. Treadgold; 2, Mr. Bateman; 3, Mr. Churchill. R. Wigg was extremely grateful with the presentation which was made to him by the Cardiff, Penarth and Rhondda Aquarist Societies making him a life member of the three societies. The scroll and club badges were presented to him by Mrs. Churchill at the annual show.

A GOOD attendance with some new faces made the July meeting of the **Garshulton and District A.S.** a successful evening. The speaker and judge was Cyril Brown who gave his own intimate and lighthearted views on fishkeeping plus some invaluable and first hand information on Killifish with the aid of slides taken of his own fish. The table show results were: Corydoras and Brochis: 1, David Pilgrim; C. Aeneus; 2, Christopher Lamb, C. Aeneus; 3, Nigel Tucker, C. Aeneus. Botias and Loaches: 1, Ian Davies, Khuli Loach; 2, Christopher Lamb, Khuli Loach; 3, Joan Dixon, Khuli Loach.

THE **Smethwick and District A.S.** are now well established in their new clubhouse at Arden Rd. School and have an interesting evening from 8 p.m.-10 p.m., fortnightly, on Wednesday. The next three meetings are 12th and 26th August and fortnightly up to 30th December. On 12th August the Society is going to Bingley Hall, Birmingham for the Midland Show. The Secretary is W. Downes, 173 Arden Road, Smethwick, Warley, Worcs., and new members can be assured of a warm welcome.

RECENTLY the **Cardiff A.S.** moved their venue to the "Ruperra Arms," City Road, Cardiff. As the June meeting was also the Annual General Meeting the Committee is now as follows:—Chairman, R. S. Chard; Vice-Chairman, H. Humphreys; Treasurer, Mrs. P. Harding; Librarian, E. Townsend; Hon. Secretary, Gordon Churchill.

Programmes have been arranged as follows:—27th August: Judging and talk by visitors from Vale and District A.S., Bristol. 24th September: Representative from British Killifish Association with a slide show. 29th October: Publicity evening with displays of equipment, set ups, and slide show for the General Public.

THE Three Counties annual open show was staged at West Wycombe Hall, West Wycombe, Bucks, early in July where a total of 384 entries were benched. The results were as follows: Barbs: 1, S. Cowell; 2 and 3, C. Pike; 4, A. Marshall. Hyphes, Hemi and Cheironid: 1, M. Strange; 2, S. Cowell; 3, Mrs. O. Leslie; 4, E. Leavy. Labyrinth: 1, R. Hicks; 2, F. Kendrick; 3, S. Cowell; 4, B. Sargent and C. Fisher. A.S. Loach: 1, Mrs. G. Carter; 2, M. Carter; 3, T. Butler; 4, D. Armour. Rasbora: 1, Mrs. G. Carter; 2, R. Hicks; 3, Mrs. N. Jordan; 4, T. Flood. A.O.S. Tropical Egg-layer: 1, M. Strange; 2 and 3, P. Arnold; 4, R. Cox. Characins: 1, T. Summers; 2, M. Carter; 3, J. Davidson; 4, A. Howe. Cichlids: 1 and 3, B. Sargent; 2, Mrs. M. Netherell; 4, M. Strange and D. Larder. A.O.S. Tropical Catfish: 1 and 3, T. Summers; 2, D. Walls; 4, Mr. and Mrs. T. Abbott. Corydoras and Brochis: 1, J. Stamp; 2, D. Armour; 3, H. Thompson; 4, C. Pike. Danio and W.C.M.M.:

1, B. Dibley; 2, D. Pitt; 3 and 4, M. Carter. Pairs of Fish: 1, Mrs. J. Garrad; 2, Mrs. E. Rutland; 3, C. Pike; 4, M. Carter. Swordtails: 1, 2, and 4, R. G. Cox. A.O.S. Livebearers: 1, M. Carter; 2, T. Butler; 3, Mr. and Mrs. Abbott. Breeders' Egglayers: 1, Charmouth St. John; 2, M. Strange; 3, L. Jordan; 4, Mr. and Mrs. Jeffs. Common Goldfish, Large Shubunkins, Comets: 1, L. Weller; 2, A. Seed; 3, C. Lewis; 4, F. Radford. Twintails: 1, A. Smith; 2, H. Jager; 3, S. Tibble; 4, A. Seed. Breeders' Coldwater: 1, S. Tibble; 2, H. Jager; 3, A. Seed; 4, A. Smith. Platy: 1, B. Cooke; 2, D. Schramm; 3, C. Pike; 4, Mrs. M. Netherell. A.O.S. Goldwater: 1 and 3, D. Pitt; 2, D. Arkell. Breeders' Livebearers: 1, 2 and 3, R. G. Cox; 4, C. Pike. Singletails: 1, 2 and 3, A. Seed; 4, C. Lewis. Guppies, Pearlscales, Lionheads, Celestials, Bubble-eyes, Pom-Poms: 1, Mrs. A. Seed, Lionhead; 2, Mrs. A. Seed; 3, S. Tibble; 4, A. Seed; 3, F. Radford. Club Furnished (Tropical): 1, High Wycombe. Ind. Tropical Furnished: 1 and 2, D. Schramm. Club Furnished Coldwater: 1, Bracknell; 2, High Wycombe.

Trophy Awards. Three Counties: High Wycombe Trophy, Best in Show: S. Cowell. Bracknell Cup, Highest Club Points: High Wycombe. Speedy Edmonds/Bill Lock Bowen, Best Barb: S. Cowell. Three Counties Shield, Breeders' Tropical Egglayers: Charmouth St. John. Home Counties Trophy No. 2, Breeders' Livebearers: R. G. Cox. Best Breeding Achievement: M. Strange. Basingstoke Cup, Best Characin: T. Summers. Randle Rose Bowl, Best Livebearer: R. G. Cox. Roundell Cup, Best Anabantid: R. Hicks. Didcot Shield, Best Cichlid: B. Sargent. Oxford Cup, Ind. Tropical Furnished: D. Schramm. High Wycombe Trophies: Ann Seed Rowbow, Best Goldfish: Ann Seed. '67 Committee Trophy, Breeders' Egglayers: Charmouth St. John. '68 Trophy, Breeders' Livebearers: R. G. Cox. '69 Bovingdon Trophy, Breeders' Coldwater: S. Tibble. Turner Trophy, Highest Points Wycombe Member: R. G. Cox.

The following officers have been elected by the **Salisbury and District A.S.**: D. C. Hargrave, Show Secretary; 1 The Cottage, Lower St., West Hamden, Salisbury, Wilts. 1. Goddard, Secretary, 106 Carmelite Way, Salisbury, Wilts. T. Blanchard, Chairman. The Club now meets on the second Monday of each month at St. Gregory's Church Hall, just off Roman Rd., Salisbury, at 8 p.m.

The open annual show of the Salisbury and District A.S. was well attended and there were just under four hundred entries. Results: Barb: 1, S. Cowell (London); 2, A. Blake (Basingstoke); 3, C. Cook; 4, D. Jones (Southampton). Characins: 1, G. Greenhalf (Kingston); 2, J. A. Pollard (Kingston); 3, R. Weston (Basingstoke); 4, N. Stead (Reading). Hyphs, Hemi, Cheiron: 1, J. A. Pollard (Kingston); 2, S. Cowell (London); 3, G. Orton; 4, J. Jeffery (Bournemouth). Cichlids: 1, K. Clough (Gosport); 2, C. Cook; 3, T. Hatton (Weymouth); 4, R. Boves (London). Apist, Pel, Nann: 1, T. Hatton (Weymouth); 2 and 3, M. Strange (Basingstoke); 4, R. Boves (London). Labyrinth: 1, S. Cowell (London); 2, G. Greenhalf (Kingston); 3 and 4, A. Blake (Basingstoke). Fighters: 1, T. Jones (Weymouth); 2, A. Blake (Basingstoke); 3, G. Greenhalf (Kingston); 4, Mrs. Jeffery (Bournemouth). Egg-laying Toothcarps: 1, T. Jones (Weymouth); 2, I. Ferman (Gosport); 3, N. Stead (Reading); 4, J. Vincent (Southampton). Tropical Catfish: 1, J. Turner (Weymouth); 2 and 3, G. Greenhalf (Kingston); 4, S. Cowell (London). Corydoras and Brochis: 1, G. Carter (Weymouth); 2, T. Blanchard (Salisbury); 3, M. Squibb (Weymouth); 4, G. Greenhalf (Kingston). Rasbora: 1, D. Hayes (Gosport); 2, J. A. Pollard (Kingston); 3, E. Hearn (Southampton); 4, I. Goddard (Salisbury). Danios-White G.M.M.: 1, G. Carter (Weymouth); 2, H. Earl (Bournemouth); 3, D. Jones (Southampton); 4, J. West (Salisbury). Loach: 1, L. Little (Bracknell); 2, K. Clough (Gosport); 3, P. Morris (Bournemouth); 4, M. Squibb (Weymouth). A.O.S. (Tropical Egg-layers): 1, T.

Hatton (Weymouth); 2, S. Cowell (London); 3, M. Strange (Basingstoke); 4, M. Muspratt. Pairs of Fish: 1 and 2, A. Blake (Basingstoke); 3, G. Carter (Weymouth); 4, G. Greenhalf (Kingston). Guppy (Male): 1, G. Carter (Weymouth); 2, G. Orton; 3, M. Medway (Weymouth); 4, D. Hargrave (Salisbury). Guppy (Female): 1, J. Turner (Weymouth); 2, R. Lane (Salisbury); 3, M. Squibb (Weymouth); 4, C. Cook. Swordtails: 1, L. Lovesgrove (Basingstoke); 2, J. Turner (Weymouth); 3, H. Greenhalf (Bournemouth); 4, T. Blanchard (Salisbury). Platy: 1, 2 and 4, L. Little (Bracknell); 3, M. Squibb (Weymouth). Molly: 1, M. Sainsbury (Amesbury); 2, C. Cook; 3, G. Greenhalf (Kingston); 4, P. Garrett. A.O.S. (Livebearers): 1, 2 and 3, A. Blake (Basingstoke); 4, J. A. Pollard (Kingston). Singletail Goldfish: 1, 2 and 3, D. Langton (Yeovil); 4, J. Jeffery (Bournemouth). Twintail Goldfish: 1, 2 and 3, V. Collins (Yeovil). A.O.S. Goldwater: 1, I. Ferman (Gosport); 2, V. Collins (Yeovil); 3, V. Hirst (Portsmouth); 4, R. Shaw (Salisbury). Breeders' Tropical Egg-layers: 1, M. Strange (Basingstoke); 2, D. Jones (Southampton); 3, C. Cook; 4, E. Hearn (Southampton). Breeders' Tropical (Livebearers): 1, G. Greenhalf (Kingston); 2, L. Little (Bracknell); 3, D. Hargrave (Salisbury); 4, J. West (Salisbury). Plants: 1 and 4, G. Greenhalf (Kingston); 2, H. Earl (Bournemouth); 3, D. Jones (Southampton). Cups were awarded to the following classes: Best Fish in Show: T. Hatton (Weymouth); Best Cichlid: T. Hatton (Weymouth); Best Corydoras: G. Carter (Weymouth); Best Characin: G. Greenhalf (Kingston); F.B.A.S. Trophy for Plants: G. Greenhalf (Kingston).

There was a total of 272 entries at a recent successful first Open Show of the **Bishops Cleeve A.S.** The results were as follows: Best Fish of the Show: Corydoras Catfish, Mr. Williams (Rubery). Guppy (Male): 1 and 4, J. Wheeler (Trowbridge); 2, Mrs. L. Whitfield (Rubery); 3, Atwood and Williams (Rubery). Guppy (Female): 1, 2 and 3, J. Wheeler (Trowbridge); 4, M. H. Carter (Bedwood). Mollies: 1, M. H. Carter (Bedwood); 2, C. Hurst (Rhondda); 3 and 4, Mr. Williams (Rhondda). Swordtails: 1, R. F. Stevens; 2 and 3, B. Snell (Yate); 4, Atwood and Williams (Rubery). Platy: 1, J. Parker (Uxbridge); 2, G. R. Furber (Bristol); 3, F. Scriven (B. Cleeve); 4, N. Furness (Rubery). Barbs: 1, D. A. Warneant (Cardiff); 2 and 3, P. J. Beard (Leamington). Danios, Minnows, Rasbora: 1, N. Furness (Rubery); 2, M. Samuels (Trowbridge); 3, R. A. Bennett (Yate); 4, B. Snell (Yate). Bettas, Loaches, Sharks, Flying Fox: 1, G. R. Furber (Bristol); 2, F. Brain; 3, Mr. Williams (Rubery); 4, T. Evans (B. Cleeve). Hybombrycos, Hemigrammus, Cheiron: 1, J. Wheeler (Trowbridge); 2, F. Pulman (Stockton); 3, M. Butcher (Trowbridge); 4, B. Whistaker (Stroud). A.O.V. Characins: 1, Atwood and Williams (Rubery); 2, R. Shakespeare (Bedworth); 3, Mr. Williams (Rubery); 4, F. Brain. Dwarf Cichlids, Apisto, Nannacara: 1, M. Butcher (Trowbridge); 2, F. Brain; 3, P. Jenkins (Rhondda); C. E. Strickland (Yate). Large Cichlids, Angels, Cichlasoma: 1, N. Dooley (B. Cleeve); 2 and 4, M. Samuels (Trowbridge); 3, G. Muford (Trowbridge). Siamese Fighters: 1, B. F. Hirst (Coventry). A.O.V. Anabantids: 1, R. Shakespeare (Bedworth); 2, G. R. Furber (Bristol); 3, C. F. Pies (Rhondda); 4, C. E. Strickland (Yate). Corydoras Catfish: 1, 2 and 4, Mr. Williams (Rubery); 3, J. Wheeler (Trowbridge). A.O.V. Catfish: 1, Whitfield and Massey (Rubery); 2, F. Brown; 3, F. Pulman (Stockton); 4, Atwood and Williams (Rubery). A.O.V. Tropical Fish: 1, R. Shakespeare (Bedworth); 2, T. Davies (Rhondda); 3, L. Smith (Yate); 4, R. Woodward (Rubery). Pairs: 1, R. Shakespeare (Bedworth); 2, F. Brown; 3, M. Butcher (Trowbridge); 4, F. Pulman (Stockton). Coldwater A.O.V.: 1, Mr. Sudd; 2, A. Tatterfield (B. Cleeve); 3, Mr. Wood (Gloucester); 4, Gambles (B. Cleeve). Breeders' (Livebearers): 1, J. Wheeler (Trowbridge); 2, Ann Davis; 3, D. R. Stevens (B. Cleeve); 4, L. Smith (Yate). Breeders' (Egg layers):

1 and 2, B. and F. Hirst (Coventry); 3, J. Wheeler (Trowbridge); 4, N. Dooley (B. Cleeve).

At the annual general meeting of the **Rhonda A.S.** Mr. M. Williams was awarded the Shield for the highest number of points obtained during the year. This was due chiefly to winning at every show he has entered during the year, and it was no surprise when he was awarded the Pin for Best Fish at Bishop's Cleeve with a Corydoras. The Committee wish to thank all members for their support during the year.

Recent activities of the **Brighton and Southern A.S.** included a Table Show for Dwarf cichlids and A.O.V. Cichlid, the results being as follows: Dwarf Cichlid: 1, M. Whittington; 2, R. Smithers; 3, C. Ayard; 4, V. Alda. A.O.V. Cichlid: 1, Mrs. M. Tee; 2, R. Howard; 3, P. Tee; 4, K. Orange.

The **Yeovil D.A.S.** were defeated by Weston-super-Mare A.S. at their Inter Club Show when they were beaten 83 pts. to 56 pts. There was 14 classes with two fish per class from each Society. A Quiz organised by Mr. Hulbert was won by Mr. K. Forward with Miss Forward being the winning Junior. The monthly draw was won by C. Rendell and Mrs. S. Langdon. C. Bushell, Treasurer, presented a financial report and stressed an all out effort would be necessary at the Open Show to balance the year.

At the July Meeting of the **Belle Vue A.S.** a tape recorded talk and slide show by Jim Kelly was given by the chairman, S. Taylor. Results of the Table Show were: Seniors: 1, Mrs. Millar; 2 and 3, Mrs. Heap. Juniors: 1, Miss Millar; 2 and 3, Master Gee. The fish were judged by Mr. G. Thompson. At the September meeting R. E. Leaps, Superintendent, Belle Vue Zoological Garden and President of Belle Vue A.S. will be giving a talk on how to set up furnished aquaria.

The July meeting of the **Suffolk Aquarists and Pondkeepers Association** was devoted to a "do-it-yourself" evening. The President, Mr. Gard, took up the first half of the evening with a demonstration of making an all glass tank. The second half was by the Secretary, Mr. Fellingham, who showed how to make a very cheap and efficient undergravel filter. The Table Show for Livebearers was won by Mr. Chapman with a Delta Tail Guppy.

For the fifth year in succession the weather was warm and sunny for the **Swillington A.S.** Open Show and once again the entries passed the five hundred mark. The results were as follows: Guppies: 1, H. Gardner (Aireborough); 2, S. Buchanan (Sherwood); 3, L. Longfellow (Swillington). Mollies: 1 and 2, J. Igoe (Sherwood); 3, A. Douglas (Hull). Platy: 1, Mr. Barton (Privatere); 2, I. Heptinstall (Castleford); 3, W. Cook (Doncaster). Swordtails: 1, Mrs. Cohen (Castleford); 2, D. Dickson (Swillington); 3, Mr. and Mrs. Burnap (Aireborough). A.O.V. Livebearers: 1, J. Blamires (Huddersfield); 2, A. Hirst (Chapelton); 3, J. A. Whiteley (Aireborough). Toothcarps: 1, B. Blackburn (Sherwood); 2, M. M. and A. Crowther (Swillington); 3, J. Halsey (Cleveland). Fighters: 1, Mr. and Mrs. Gates (Castleford); 2, F. Ponsoby (Knottingly); 3, Mr. Hutchinson (Dukeries). A.O.V. Anabantids: 1, J. Danielson (Huddersfield); 2, Mr. Purvis (Hull); 3, Mr. and Mrs. Batten (Castleford). Corydoras: 1, Mrs. Stringer (Swillington); 2, A. S. Allison (York); 3, Mr. and Mrs. Grimshaw

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(Sunnybrow), A.O.V. Cats and Loach; 1, D. Jackson (Dukeries); 2, Miss J. Helms (Horsforth); 3, A. S. Allison (York). Characins (small): 1, J. Derris (Dukeries); 2 and 3, M. Allsop (Alfreton). Characins (large): 1, D. Bennett (Dukeries); 2, Mr. and Mrs. Hatton (Castleford); 3, G. Thickbroom (Castleford). Cichlids (small): 1, K. Willbraham (Oram); 2, J. Derris (Dukeries); 3, J. A. Whitley (Aireborough). Cichlids (large): 1, Miss J. Helm (Horsforth); 2, Mrs. Stringer (Swillington); 3, M. Woodley (Dukeries). Barbs (small): 1 and 2, J. Wright (Alfreton); 3, Mrs. Stringer (Swillington). Barbs (large): 1, M. Woodley (Dukeries); 2, J. Shelton (Knottingly); 3, D. Smith (Tadcaster). Sharks and Fox: 1, A. Hirst (Chapelton); 2, J. Scall (Selby); 3, W. Gibson (Huddersfield). Rasboras, Danios and Minnows: 1, J. Halcy (Cleveland); 2, M. Parvis (Hull); 3, R. Clarke (Sherwood). A.O.V. Tropical: 1, A. E. Whitehead (Tadcaster); 2, Mrs. Helm (Horsforth); 3, J. Hepinstall (Castleford). A.V. Coldwater: 1, 2 and 3, C. Aquith (Castleford). Livebearers (Pairs): 1 and 3, H. Gardner (Aireborough); 2, J. Igoe (Sherwood). Egglayers (Pairs): 1, M. Allsop (Alfreton); 2, Mrs. Cohen (Castleford); 3, D. Boyes (South Leeds). Livebearers (Breeder): 1, W. Gibson (Huddersfield); 2, Mrs. Cohen (Castleford); 3, H. Gardner (Aireborough). Egglayers (Breeder): 1, A. Hirst (Chapelton); 2, E. Wells (Droccaster); 3, L. A. Dearden (Grimby). Furnished Jars: 1, B. Megson (Aireborough); 2, R. Shanks (Mount Pleasant); 3, J. Robertson (Mount Pleasant).

The Best Exhibit in Show went to D. Jackson of Dukeries A.S. for a Clown Loach. Mr. Jackson received the Aquarist Gold Pin and the A.Y.A.S. Diploma, as well as the L. Longfellow Trophy for the best Catfish or Loach.

Miss J. Helm received the Swillington Ladies' Trophy for the lady with the highest pointed exhibit. A. Hirst received the Coral Reef Aquaria Trophy for the best breeders exhibit, and M. Allsop received the Jessie Reynolds Trophy for the best pair of fish.

The Duralife Trophy went to Castleford A.S. who gained 23 points. Second was the Dukeries A.S. with 16 points, third was Sherwood A.S. with 13 points, and joint fourth were Alfreton A.S. (last year's winners) and Swillington A.S. with 11 points each.

THE Basingstoke and District A.S. annual open show was a huge success with a total of 800 entries. The quality of the exhibits were praised by the judges and with some classes of over 50 entries to receive an award was really an achievement.

Mrs. Nicol of Reigate and Redhill club provided the best fish in the show with a Corydoras Julii. The best coldwater fish was a Peacock eyed Bass shown by V. Voysey.

The full results were: Miniature aquaria: 1, Mrs. W. Voysey (Salisbury); 2, M. Strange (Basingstoke); 3, H. Gough (Basingstoke); 4, L. Jordan (Bracknell). Barbs: 1, C. Pike (High Wycombe); 2, W. Harper (Kingston); 3, T. Jones (Weymouth); 4, S. Cowell (Bethnal Green). Characins: 1, A. Blake (Basingstoke); 2, R. Cooper (Kingston); 3, J. Greenhalf (Kingston); 4, R. Ridley (Basingstoke). Hypoclineryon, Hemigrammus, Cheridon: 1, J. Pollard (Kingston); 2, R. Ridley (Basingstoke); 3, S. Cowell (Bethnal Green); 4, G. Orton (Weymouth). Nannostomus and Poeciliobrycon: 1, M. Cott (Gosport); 2, T. Jones (Weymouth); 3 and 4, P. Grosvenor (Kingston). A.O.V. Cichlids: 1, C. S. Walker (Hounslow); 2, L. Jordan (Bracknell); 3, T. Flood (Reading); 4, B. Sergeant (Bletchley). Angels: 1, A. G. Cox (Weymouth); 2, T. Hatton (Weymouth); 3, R. Bowers (Walthamstow); 4, G. Orton (Weymouth). Apistogramma, Nannacara and Petmatichromis: 1, M. Strange (Basingstoke); 2, Mrs. D. Barrett (Kingston); 3, T. Hatton (Weymouth); 4, A. Blake (Basingstoke). Labyrinths: 1, M. Blowell (Bethnal Green); 2, J. Greenhalf (Kingston); 3, G. Carter (Weymouth); 4, R. Bowers (Walthamstow). Siamese Fighters: 1, Mrs. C. King (Bath); 2, C. Wood (North Kent); 3, A. Blake (Basingstoke); 4, C. Cooper (Kingston). Egg-laying

Toothcarps: 1, B. Humphreys; 2 and 3, M. Cott (Gosport); 4, S. Tarrant (Hendon). A.O.S. Catfish: 1 and 2, J. Greenhalf (Kingston); 3, J. Wood (Reigate and Redhill); 4, D. Walls (Basingstoke). Corydoras and Brochis: 1, Mrs. Nicol (Reigate and Redhill); 2, T. Blanchard (Salisbury); 3, M. Squibb (Weymouth); 4, R. Cox (High Wycombe). Rasboras: 1, K. Barrett (Kingston); 2, Mrs. Humphreys (Reigate and Redhill); 3, J. Pollard (Kingston); 4, R. Hicks (High Wycombe). Danio and W.C.M.M.: 1, R. Weston (Basingstoke); 2, J. Wood (Reigate and Redhill); 3, S. Crabtree (Havant); 4, S. Tarrant (Hendon). Loaches: 1, M. Carter (Bracknell); 2, Mrs. Greenhalf (Kingston); 3, Mrs. D. Cruickshank (Uxbridge); 4, C. Pike (High Wycombe). Egg-layer A.O.S.: 1, R. Cox (Weymouth); 2, S. Cowell (Bethnal Green); 3, M. Strange (Basingstoke); 4, T. Jones (Weymouth). Male Guppy: 1 and 2, T. Jones (Weymouth); 3, D. Hargreaves (Salisbury); 4, M. Medway (Weymouth). Female Guppy: 1, P. Grosvenor (Kingston); 2, R. Lane (Salisbury); 3, J. Turner (Salisbury); 4, D. Hargreaves (Salisbury). Swordtails: 1, T. Cruickshank (Ealing); 2 and 3, R. Cox (High Wycombe); 4, K. Dryden (Croydon). Platys: 1, L. Little (Bracknell); 2 and 3, L. Little (Bracknell); 4, H. Thompson (Uxbridge). Mollusca: 1, G. Greenhalf (Kingston); 2, S. Crabtree (Havant); 3, D. Cruickshank (Uxbridge); 4, R. Smith (Kingston). Livebearers A.O.S.: 1, S. Crabtree (Havant); 2, Miss P. Hammond (Freetance); 3, M. Carter (Bracknell); 4, A. Blake (Basingstoke). Egg-layers (Sexed Pairs): 1, A. Marshall (Basingstoke); 2, Mrs. Nicol (Reigate and Redhill); 3, G. P. Carter (Weymouth); 4, L. Little (Bracknell). Livebearers (Sexed Pairs): 1, Mrs. Nicol (Reigate and Redhill); 2, M. Carter (Bracknell); 3, K. Dryden (Croydon). Common Goldfish: 1, 3 and 4, V. P. Voysey (Salisbury); 2, L. Mendenham. Goldfish Society of Great Britain. Shubunkins and Comets: 1, 2 and 3, D. E. Goodbody (Walthamstow); 4, Miss M. Crutenden. Faintail Goldfish with Dorsals: 1, 2 and 3, V. Collins (Yeovil); 4, A. Marshall (Basingstoke). Coldwater A.O.S.: 1, N. Collins (Yeovil); 2, D. Pitt (Basingstoke); 3 and 4, V. Voysey (Salisbury). Centrarchidae: 1, 2 and 3, V. Voysey (Salisbury); 4, A. Marshall (Basingstoke). Breeders (Egg-layers): 1, P. Grosvenor (Kingston); 2, R. G. Cox (High Wycombe); 3, R. Ridley (Basingstoke); 4, Mrs. B. Humphreys (Reigate and Redhill). Breeders (Livebearers): 1, R. G. Cox (High Wycombe); 2, Mrs. Nicol (Reigate and Redhill); 3, G. Greenhalf (Kingston); 4, K. Dryden (Croydon). Plants: 1 and 4, P. Lange (Yeovil); 2, V. Voysey (Salisbury); 3, A. Chandler (Walthamstow).

The main item at the July meeting of the **New Forest A.S.** was a film slide show with taped commentary on Common and Uncommon Aquatic Plants supplied by Brentwood Aquatics. The show was presented by G. Danby, one of our own members, who also loaned the equipment. The slides were very first rate and showed many plants which were completely new to all persons present. During the evening arrangements for the Southampton and Triangular show at Salisbury were completed. The results of the table show were as follows: Coldwater Plants: 1 and 4, D. Lane; 2 and 3, R. Travers. Tropical Plants: 1, R. Moseley; 2, D. Lane; 3 and 4, B. Higginson. A.O.V. Coldwater: 1, D. Harding; 2, M. Lee; 3, A. Williamson. Specials: Minnow and Tench: 1, Mendenham.

At the July meeting of the **Tonbridge and District A.S.**, a very interesting and enlightening talk was given by C. A. T. Brown to twenty-five members. The talk, in conjunction with colour slides, on various types of Corydoras Cats, Guppies, Mollies and Killifish, gave members useful information on identification, together with some important facts which judges look for when judging fish. Result of the Table Show: Rasboras: 1, T. Heines; 2, D. Mathison; 3, J. Bellingham. Danios: 1 and 2, R. Baker; 3, R. Taylor.

A request was received from the Headmaster of Sandown Court School, Tunbridge Wells,

Kent for the Tonbridge and District A.S. to arrange for a selection of tanks and Tropical Freshwater Fish to be displayed at a Fete the School was holding on Saturday, 11th July, 1970. As a result thirty-five tanks of various measurements and forty-five show jars of Tropical Freshwater Fish were on display for patrons of the fete, together with different varieties of live and dry food. A stand of nine tanks from "Aqualet" of Northfleet, Kent, had been given on loan to the Society for this purpose, and these tanks contained a variety of fish for sale to people who attended the fete. It is estimated that during the four hours the fete was open at least 1,000 people saw the display.

The main item for the evening at the **Bournemouth A.S.** August meeting was an informative talk by Colin Cook, entitled "Keeping the Killies." Mr. Cook brought with him several pairs of these colourful fishes and was thanked warmly by the Chairman when he had finished his talk.

R. Matley, Hon. Sec of the Bournemouth A.S. then accepted entries for the "Furnished Aquarium Competition" which is to be held shortly, the date to be announced later. The Table Show of the Month was won by H. Earl, who also took second place. Mr. Earl showed two *Pelmatochromis Kribbenis*. Third place was taken by Mrs. Cowdry, who showed an Orange Chromide.

The **Hastings and St. Leonards A.S.** enjoyed a lively and entertaining quiz at the first July meeting. The quiz was conducted by Barry Funnell who also arranged the questions which were varied in subject and degree of difficulty. The result was a win for Graham Pyke (club chairman) and Roger Slett (a junior member). They both gained 80 out of a possible 96 points. The table show for the 10th July was for Junior Livebearers (excluding Guppies) 1, Brian Reed; 2, Clive Chalkcraft; 3, Andrew Bristow.

A coach outing was also arranged for The Aquarist Fishkeeping Exhibition at Alexandra Palace. This was well supported and appreciated by all who went. On 31st July R. D. Eason gave an illustrated talk on "Coldwater Fishes" which was well received by the members including the many who do not keep coldwater fish.

ALTHOUGH the holiday season always accounts for several absences, there has been no lack of interest at meetings of **Ealing and District A.S.** Recent events have included a Quiz and a talk on Diseases.

The main interest at this time of year is the Jim Irvine Trophy competition and after the first round total of 56 entries it was nice to see 34 of these returning for Round Two. This resulted in very close placings as follows: 1, T. Tagg, *Mylossoma Aurum*; 2, J. Ankin (J), Silver Tetra; Mrs. D. Cruickshank, *Sardinia Mollie*; J. Healey, *Speckled Mollie*; 3, J. Harts, *Mystus tengara*; J. Irvine, *Metyznia* sp.; 4, T. Tagg, *Metyznia* sp.; T. Tagg, *Geophagus* sp.; R. Todd, *Chilodus punctatus*. Plans are in hand for the Club's second Open Show on the 4th October, and on the lecture side there will be talks by members on Native Marine Life and on setting up Aquascapes.

The evenings schedule for the July meeting of the **Plymouth A.S.** at Beaumont Hall was disrupted by the inability of the programmed speakers to attend. As usual, however, the Chairman, Bill Rundle, was able to step into the

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breach and he gave a comprehensive talk on "white spot". In stressing the importance of quarantining all new fish and plants he claimed to have eradicated the parasite from his show tanks for nearly eighteen years.

The July Table Show was for "the best tropical fish" and was very successful in all respects according to the judges. Not only was there a high number of exhibits but the quality and condition of most of the fish was excellent. Results: Premier Class: 1, W. Rundle; 2, D. Horsgood; 3, D. Budd. Advanced Class: 1, M. Lucas; 2 and 3, Mrs. Padner. Novice Class: 1 and 2, Mrs. Clarke; Joint 2, W. Hodge. The best fish in the show was W. Rundle's Marble Angel.

Because of the normal congestion of business during next club meetings the committee has decided that in future there will be two meetings each month. The present meetings will continue but without the table show. This will be staged separately on another evening with no other business scheduled. It is hoped that this will give members a better chance to study the fish exhibited and to indulge freely in informal conversation and exchanges of ideas.

The month of July also saw the Plymouth A.S. stage its first ever Open Show. A great amount of the Club's funds had been invested in this Show and it is fair to say that there was much anxiety for its success. However, there was a good attendance and a small profit was made, which was quite an achievement for a first attempt. Next year it is hoped to stage the show in Plymouth's fine Guildhall with more exhibitors from all over the country.

RECENTLY the Penarth A.S. had an inter club Table Show Contest with the Harlech A.S. from Cardiff. The result was very close with the visitors winning by 202 pts. to 198 pts. The winning three entries were for Harlech, first and second being W. Goswell and third M. Wilkie. For Penarth, first A. Trotman, second, K. Swenson, third, M. Dennison. A general knowledge quiz was also arranged with Penarth members filling the first two places. The Penarth members visited Velindre A.S. on the 13th July for the return leg of the inter-club K.O. comp. with the host team winning back the challenge shield from Penarth.

The result of June's Table Show for Anabaptists was 1, J. Allen; 2, A. Trotman.

THIRTY-SIX members were present at the July meeting of the Yate and District A.S. Mr. Frank Fulman of Stockton-on-Tees, an enthusiast on cichlids was welcomed. The programme consisted of a double slide show, the subject being "Exotic Marine Fish of the Great Barrier Reef of Australia and the Green Isle Coast" and "Livebearers from Nature through to Man's Hybrids".

The table show was for Furnished Jars and Danios, Rasboras and Minnows, the results being as follows: Furnished Jars: 1, R. Bishop; 2, C. Webb; 3 and 4, S. Green. Danios, Rasboras and Minnows: Open Class: 1 and 2, D. Noble; 3, K. Winters. Novice Class: 1 and 3, D. Waters; 2, R. Bennett.

IN July, the Mid-Sussex A.S. warmly welcomed Mr. F. C. Katritzky, F.R.H.S., F.Z.S., who gave a most enlightening talk, accompanied by a slide show of tropical plants for the aquarium. At the age of 84, Mr. Katritzky is retiring and the Society were honoured to be able to hear one of his last lectures. In his retirement he hopes to visit as many Botanical Gardens throughout the country and overseas as is possible, to further his already extensive knowledge.

In his talk, he suggested that all aquarium plants be planted in shallow trays or half-pots filled with a suitable potting material. This allows the plants to grow well without causing damage to the roots, which would normally occur when moving plants or generally redesigning the aquarium. He also explained that if it is necessary to soften hard water, this can be done by leaving a quantity of water containing the plant fibres to stand for a few days, after which time, the "hardness" can be seen in the form of a deposit on the leaves

of the plant. At the end of his lecture the Chairman, Mr. R. Johnson, thanked Mr. Katritzky for visiting the Society and wished him a happy retirement. A selection of tropical and house plants was donated to the monthly auction by Mr. Katritzky.

The month's table show of furnished show tank or jar was judged by all the members present excepting those who had entered and the results were as follows: Show Tanks: 1, C. P. Corbin; 2 and 3, D. Soper; 4, A. Temple. Show Jars: 1, R. Smith; 2, D. Soper; 3, N. Short; 4, S. Cauderbank; 5, J. Walker. At the next meeting the Chairman will give a talk and the Table Show to be judged by Mr. K. Nutt will be for "Novices", "Fish of the Year" and "Breeders". Any further information on the Society may be obtained from the Secretary, Mr. J. Reeve, 36 Rumbolds Lane, Haywards Heath 5702 (evenings only).

AT the quarterly meeting of the Goldfish Society of Great Britain, R. D. Eason, continued his talk on line breeding. A talk was also given by S. Freeman on general topics. The result of the table show for pairs of twin-tail fishes, bred in 1969, was as follows: 1, Miss D. Morris; 2, S. Tibble; 3, J. Linal.

THE members present at the July meeting of Hinckley and District A.S. were entertained by K. Tedds, who organised a Fish Recognition quiz instead of his original talk. Owing to the fact that there were so few members present. The next meeting will take place on 8th September at 8.0 p.m. at the Hinckley Labour Club. The programme will consist of a table show and lecture. The show will be for A. V. Biglayers, and A. V. Livebearers, and is the last show of the club's year. New members are welcome, and enquiries should be made to the Secretary, D. E. Sparrow, 55 Rugby Road, Hinckley, Leicester, LE10 0QA.

THE Hull A.S. Show results are as follows: Coldwater: P. Wilkinson, Driffild; 2 and 3, C. Brown, Hull. Catfish and Loaches: 1 and 2, A. S. Allison, Hull; 3, B. Stabler, Hull. Guppy: 1 and 3, B. Stabler, Hull; 2, G. Andrews, Hull. Livebearers: 1, B. Stabler, Hull; 2, E. Storey, Hull; 3, Mr. Johnson, Hull. Danios, Rasboras, Minnows: 1, M. Purvis, Hull; 2, T. Douglas, Hull; 3, M. J. Allison, York. Barbs: 1 and 3, F. Ledger, Top Ten; 2, A. E. Whitelock, Tadcaster. Cichlids (large): 1 and 3, T. Douglas, Hull; 2, K. Barker, Hull. A.O.V.: 1, E. Chapman, Hull; 2, A. E. Whitelock, Tadcaster; 3, L. Kaye, Top Ten. Cichlids (small): 1, F. Ledger, Top Ten; 2, G. Andrews, Hull; 3, Master S. Kirk, Hull. Characins: 1 and 2, Mrs. B. Cooper, Hull; 3, K. Barker, Hull. Fighters: 1, 2 and 3, A. E. Whitelock, Tadcaster. Anabantids: 1, K. Jesney, Hull; 2, E. Storey, Hull; 3, A. E. Whitelock, Tadcaster. Egg Laying Toothcarps: 1, Ms. Booth, Leeds; 2, F. Ledger, Top Ten; 3, L. Kaye, Top Ten. Breeders (Egg layers): 1, W. Vint, Hull; 2, E. Storey, Hull; 3, J. Warcup, Hull. Livebearers (Breeders): 1, G. Andrews, Hull; 2, J. Mitchell, Hull; 3, A. S. Allison, York. Sharks and Foxes: 1, D. Hockley; 2, D. Haagenen; 3, Master S. Kirk; Best Fish in Show: K. Jesney, Hull, Thickkipped Gourami.

THE main item under discussion at the July meeting of the Bournemouth A.S. was the 1970 Annual Open Show which attracted almost 400 entries and is one of the leading events of its kind in the south of England. The chairman, Mr. Coombes, thanked the members present for their help and support, which had helped to make the event a success.

During the interval the Table Show of the Month was judged by Mr. Jeffery, and the results were:—Labyrinths, except Fighters: 1, Mr. Ryan; 2, Mrs. Davies; 3, Mr. Merrifield. Mollies: 1, Mr. Watkins. After the interval there was a general discussion on fishkeeping when members questions were answered by various fishkeepers. H. Greenhalgh also gave

an interesting talk about how he had bred species of the Barbus family, and how he had raised the fry to maturity.

Results of the Open Show: Barbs: 1, T. Jones; 2, D. V. Jones; 3, A. G. Cox; 4, C. Cook. Characins: 1 and 2, J. Jeffery; 3 and 4, T. Jones. Hem-Hyph Cichlodon: 1, W. J. Merrifield; 2, G. T. Orton; 3, J. Jeffery; 4, M. Squibb. Cichlids: 1, M. Strange; 2, T. Hatton; 3, C. Cook; 4, J. Turner. Angels: 1, A. G. Cox; 2, T. Hatton; 3, A. J. Ryan; 4, G. T. Orton. Labyrinths: 1, C. Fisher; 2 and 4, I. S. Lamb; 3, G. T. Orton. Fighters: 1, T. Jones. Toothcarps: 1, T. Jones; 2, N. Stead; 3, D. Davis; 4, J. Jeffery. Tropical Catfish: 1, J. Turner; 2, T. Jones; 3, D. V. Jones; 4, T. Blanchard. Corydoras and Brochis: 1, G. P. Carter; 2, M. Squibb; 3, I. J. Perman; 4, D. V. Jones. Rasboras: 1 and 2, D. Haines; 3, I. J. Perman; 4, C. Cook. Danio and W.C.M.M.: 1, R. Matley; 2, B. Coombes; 3, H. G. Earl; 4, A. E. Rendell. Loach: 1, T. Woolley; 2, P. C. Morris; 3, L. G. Little; 4, M. Squibb. A.O.S. Egg-layers: 1, A. G. Cox; 2, M. Strange; 3, B. J. Bastlow; 4, D. C. Hargrave. Guppies (Male): 1, T. Jones; 2, D. A. Love; 3, P. Sealey; 4, M. H. Medway. Guppies (Female): 1, R. Heather; 2, T. Jones; 3, T. Hatton; 4, R. Lane. Swordtail: 1, T. Blanchard; 2, H. Greenhalgh; 3, N. P. Brown; 4, R. G. Rodley. Platy: 1, L. G. Little; 2, R. Cox; 3, H. Greenhalgh; 4, A. E. Rendell. Mollies: 1, C. Cook; 2, R. Lane; 3, A. E. Rendell; 4, J. S. Morgan. Swordtail Goldfish: 1 and 4, K. J. King; 2 and 3, D. S. Langdon; Common Goldfish: 1 and 3, J. Jeffery; 2, B. Coombes; 4, J. Hurford. Twin Tail Goldfish: 1, 2 and 3, R. J. King; 4, V. Collins, A.O.S. Coldwater: 1, V. Collins; 2, Miss N. Brewer; 3, S. Collard; 4, I. J. Perman. Tropical Egg-layers (Breeders): 1 and 3, M. Poole; 2, D. V. Jones; 4, M. Strange. Tropical Livebearers (Breeders): 1 and 3, L. G. Little; 2 and 4, J. S. Morgan. Coldwater (Breeders): 1 and 4, B. Coombes; 2, V. Collins; 3, D. S. Langdon. Best Fish in Show—Tropical: M. Strange, Apex Ramirez. Best Fish in Show—Coldwater: J. Jeffery, Common Goldfish.

AT the last meeting of the Selby and District A.S., it was agreed that we hold the First Open Show next year. The date is to be on Sunday, 4th October, 1971. No further arrangements were made at this stage, but details such as venue, etc., will be published, or can be obtained from the Show Secretary W. A. Bunnage, 22 Heath Croft, Pulford, York, at a later date. Meetings are held on the first and third Monday of each month, at the School of Further Education, New Lane, Selby, commencing at 7.30 and any prospective members are invited to attend at any time.

THE Whitechurch and District A.S. first Table Show was held on the 25th June. Results were: 1, H. Harris; 2, J. Phillips; 3, B. Humphries. The Judge was Mr. Pritchard from Wrexham. A visit was made to Chester Zoo Aquarium on 28th June for a look behind the scenes at the filtration system, etc.

AT the end of June, Hemel Hempstead A.S. met in their new hall in Adeyfield Secondary School for the first time. At their meeting which took place on the 9th July there was a table show judged by the members. The results were: Junior Furnished Aquaria: 1, G. Trenwith; 2, D. Whitby and J. Whitby. Rasboras: 1, T. Craddock; 2, E. Leavey. Coldwater: 1, V. Leavey; 2 and 3, E. Leavey. Mollies: 1, P. Tucker; 2, Mr. and Mrs. Collins; 3, P. Tucker and Mr. and Mrs. Collins. Plants: 1, Mr. and Mrs. Collins; 2, I. Sellick.

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J. Mr. and Mrs. Collins and I. Sellick. Anyone is welcome, every other Thursday at Adeyfield Secondary School at 8 o'clock.

AQUARIST CALENDAR

5th September: Rhondda A.S. Second Open Show at the Rhondda Transport Club, Porth. Details from P. Jenkins, 22 East Road, Tylorstown, Rhondda.

6th September: Yate and District A.S. Open Show at Christchurch Hall, North Street, Dorsland, Bristol. Details available from Show Secretary, C. E. Stokland, 20 Burgess Close, Chipping Sodbury, Glos.

6th September: Cleveland A.S. third Open Show. Held in British Legion Hall, West Gate, Guisborough, Yorkshire. Show Secretary, Mrs. Avery, 7 Dorset Road, Guisborough, Yorks.

6th September: Weymouth D.A.S. Open Show. Schedules from Mr. T. Hatten, show secretary, 53 Brownlow Street, Weymouth, Dorset.

6th September: Wellingborough and District A.S. First Open Show, Cooperative Hall, Northampton Road, Wellingborough. Schedules from R. Bentley, 100 Park Road, Wellingborough, Northants.

6th September: Mid-Sussex A.S. Tropical Fish Exhibition from 10 a.m.-6 p.m. at the Park Centre, Park Road, Burgess Hill, Sussex.

6th September: Seaham and District A.S. Seventh Annual Table Show in the Community Association Hall, Seaham, Co. Durham at 2 p.m.

12th September: Hounslow and District A.S. Open Show at Hounslow Youth Centre, Cecil Road, Hounslow, Middlesex. Schedules from D. J. Woodward, 34 Uxbridge Road, Hanworth, Middlesex.

12th September: Harwich and District A.S. Annual Exhibition of Tropical Fishes, Queen's Hotel, High Street, Dovercourt, Essex.

12th September: Penarth A.S. First Annual Open Show at St. Augustines Church Hall, Albert Road, Penarth. Details from M. Hesketh (show secretary), 37 Upper Adarce Street, Pontycymer, Bridgend, Glam.

12th September: Baling and District Second Open Show.

13th September: Warrington A.S. Third Annual Open Show, St. Benedict's Y.C., Bell Hall, Orford Lane, Warrington. Usual classes. Show secretary: J. Higham, 42 Hood Lane, Scauby, Warrington. Phone 36939.

13th September: Kettering A.S. First Open Show at St. John's Hall, Fuller Street, Kettering. Details from R. Vickers, 13 Salisbury Street, Kettering.

13th September: Brighton and Southern A.S. Seventh Annual Open Show, Marnion Centre, Marnion Road, Hove. Schedules available from Mr. R. Browning, 34 Rowan Close, Port Slade, Brighton.

19th September: South Staffs. A.S. First Open Show at Joseph Leckie School, Deives, Walsall. Schedules from G. Parker, 134 Alexandra Road, Walsall, or G. Chatwood, 161 West Bromwich Road, Walsall.

19th September: Newport (Men.) A.S. Open Show, St. John's Parish Hall, Victoria Avenue, Malindoe. Schedules and details available from G. James, 6 St. Peter's Close, Peterstone, Wentloog, Men.

20th September: Stone A.S. Open Show, Walton Community Centre, Stone, Staffs. Schedules can be obtained from N. Plant, 18a High Street, Stone, Staffs.

20th September: Oldham and District A.S. Annual Open Show, Music Room, Werneth Park, Oldham. Show Secretary, J. C. S. Williams, 3 Queen Street, Shaw, Lancs.

20th September: Four Star A.S. Second Open Show at the Hemsworth High School, Station Road, Hemsworth. Details are available from J. Rhodes, Show Secretary, 105 Barnsley Road, Hemsworth, Yorks.

20th September: Reigate and Redhill A.S. Open Show at the Cobman Institute, Redhill, Surrey. Schedules are available from J. Wood, 22 Rickman Hill, Coulsdon, Surrey, CR3 3DN.

20th September: Bracknell A.S. Open Show.
20th September: Riverside A.S. Open Show to be held at St. Ethelredus Church, Pulham Palace Road, Pulham, S.W.6.

20th September: Bracknell A.S. Open Show, Priestwood Community Centre, Bracknell. Ample car parking. Show Secretary: I. Little, 126 Shephards Lane, Bracknell. Show schedules now available.

27th September: Torbay A.S. Annual Open Show. Venue details later.

27th September: Hucknall and Bulwell A.S. Third Open Show. Bulwell Youth Club, Coventry Road, Bulwell, Notts. Schedules from M. T. Harrington, 5, Greenwood Vale, Hucknall, Notts.

27th September: Torbay A.S. Open Show, Torquay Town Hall, Torquay. Schedules from L. Doubleday, 69a Newton Road, Torquay.

27th September: Northampton and District A.S. Schedules available from B. Edwards, 38 Dovecot Road, Roads, Northamptonshire.

3rd October: East London Aquarists and Pondkeepers Association Annual Open Show, Ripple Road School, Barking. Schedules from J. Smith, 2 Hatch Grove, Chadwell Heath, Essex.

4th October: Castleford and District A.S. Open Show at the Boys' Modern School, Pentraet Road, Castleford. Further details from R. Illingworth, 67 Dawtrey Street, Ferry Pryston, Castleford, Yorks.

4th October: Baling and District A.S. Second Open Show.

4th October: Suffolk Aquarist and Pondkeepers Association. Colour Fish '70. An Exhibition of Tropical and Coldwater Fish in the Art Gallery, High Street, Ipswich.

10th-11th October: British Aquarist Festival, Belle Vue, Manchester.

17th October: Goldfish Society Great Britain Convention and Open Show, St. Marks Church Rooms, Belgrave Gate, Leicester, at 2.30 p.m. Details from Mrs. F. Whittington, "Visca Lodge," Ringley Park Avenue, Reigate, Surrey.

18th October: Sherwood A.S. First Open Show. Venue, Lady Brook Community Centre, Lady Brook Lane, Mansfield. Schedules from the Show Secretary, D. J. Birkbeck, 173 Petermanns Drive, New Ollerton, Newark, Notts.

24th October: Kingston and District A.S. Open Show. Schedules available from G. Greenhall, 39 Garth Close, Morden, Surrey. Tel: 01-337 4042.

25th October: Doncaster and District A.S. First Open Show. T. A. Barracks, Sandford Rd., Balby.

1st November: Association of Yorkshire Aquarist Societies. "Aquarists Fair," Victoria Hall, Victoria Park, Koughley, Yorks.

8th November: Hartlepool A.S. Twelfth Annual Show, Longscar Hall, Seaton Carew. Schedules available September from J. D. Watson, 42 Sydenham Road, Hartlepool.

14th November: Henden and District A.S. Annual Congress. Whitefield Secondary Modern School, Clarendon Road.

28th November: Airedale and District A.S. Annual Open Show, Greenacre Hall, Rawdon. Schedules available September from G. E. Walker, 2a West End Terrace, Guiseley, nr. Leeds, LS 20 8LX, Yorks.

6th December: Horsforth A.S. Second Open Show at Greenacre Hall, Rawdon, nr. Leeds.

OBITUARY

It is with deep regret that the Federation of British Aquatic Societies announces that its chairman, A. G. Jessopp, passed away suddenly on 14th July last after a short illness following a heart attack. "Ted" Jessopp became the vice-chairman of the FBAS in December 1963 and chairman in December 1965.

He was for many years a member of the Federation's Council and Judges and Standards Committee.

Ted's service to the Federation was second to none and he was known throughout the country as a jovial but knowledgeable lecturer and an excellent judge.

He officiated at many open shows and represented the Federation of British Aquatic Societies as a judge at the British Aquarists Festival at Belle Vue, Manchester, and also at the Furnished Aquaria Championships held at Bradford.

He took part in the negotiations that led to the agreement with the Goldfish Society of Great Britain and was always seeking means of achieving close liaison with the Midlands, Northern and Scottish Federations. Ted's tremendous work for the Federation and his high sense of humour which often brought a measure of geniality into the most difficult of situations will be sadly missed. On behalf of all affiliated societies, the Federation of British Aquatic Societies extends its deep sympathy to Mrs. Jessopp and family in their sad loss.

F. C. Tomkins—Vice-Chairman

K. J. A. Pye—General Secretary

Federation of British Aquatic Societies