

December
1967

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Aquarist
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monthly



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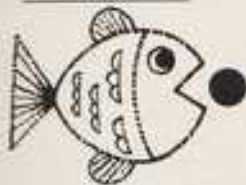
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 Please address all correspondence as address above.

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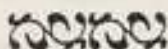
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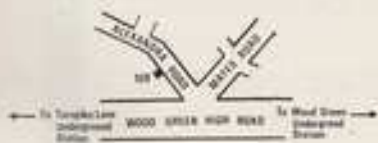
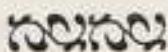
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The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



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Front cover by courtesy of Keith Barraclough.

Jottings

by M. J. Parry

PERHAPS the most bizarre of all freshwater aquarium "oddities" is the butterfly fish (*Pantodon buchholzi*), a native of West Africa, which alongside the hatchet fishes (commonly represented in the aquarium by two species, *Carnegiella strigata* and *Gasteroplectis levis*) is the only "flying fish" maintained in aquarium captivity. The fish is not brilliantly coloured, the body being of a brownish colouring, with indistinct dots and streaks appearing on the body and finnage. Sexes are distinguished by the pointed dorsal fin of the male, the female's being rounded. It has the rare distinction of being the only member of its family (the *Pantodontidae*).

In captivity, as in its native haunts, it spends all of its time at the surface in search of insects, which it feeds upon as they drop to the water. Alternative aquarium foods are mosquito larvae, floating dried food (which should be restricted to a minimum), and small worms, (*tubifex*, white worm, etc.), which should be forceps fed to the fish. As with all flying fish it is essential to keep the aquarium well covered if the aquarist is not to lose one of his prized specimens. Maximum length of the species is approximately 4 inches.

Breeding is, unfortunately, rarely accomplished under domestic conditions. Eggs are said to be laid, with no further interest being shown by either parent. Hatching occurs within three days, and after absorption of their yolk-sacs foods in the form of infusoria, brine shrimp, sifted daphnia etc. are required by the fry.

In the November issue of *The Aquarist* the press officer of the Bethnal Aquatic Society, Mr. L. R. Smith raises the desirability of staging a National Open Show in London, a cause that was championed by Mr. T. H. Marshall, in these pages, back in 1964. Arising from this, a show Exploratory Committee was formed, under the auspices of the Hendon Aquarists' Society, to give detailed consideration to the problem, and to form conclusions on the possibility of getting such a show launched. In the interim report, published in the April 1965 edition of this magazine, it was stated: "The Committee's findings based on replies received to questionnaires, revealed a widespread demand for such a show. Of 37 replies received only three societies replied 'no' to the question 'Do you want a show in London in 1966?' From answers to questions designed to determine the type of show that would be most

Continued on page 249

British Aquarists' Festival 1967

by A. Boarder



Above
A view of the hall at
the British Aquarists'
Festival

Right
Mr. R. W. Cooke
Show Secretary at the
B.A.F.

THE Aquarist Festival at Manchester this year was a huge success. I think that, without doubt, it was the best for many years. I have been reporting the exhibitions for many years and find it very difficult to describe this year's show as I have used up most of the adjectives in past years. The length of the hall had been increased again to well over a hundred yards. The great advantage of this hall is that it can be easily extended to at least two hundred yards long. There were hundreds of visitors on the Saturday but on the Sunday the hall was packed out for most of the day. Looking from one end, a sea of heads could be seen. More and more people visit this exhibition every year and it is remarkable how far many have travelled. Several visited *The Aquarist* stand to pay us a call from Ireland, Scotland, Wales and the South Coast.

There was certainly plenty for the visitors to see as thirty-two Societies had erected their attractive stands and 243 exhibitors had sent fishes, not including all the fishes which had won best fish in show all over the country. These were exhibited separately and were from many Societies. There were 1,388 fishes in the actual competition excluding the champions' class and there were thousands of fishes on the dealers' stands.

The Societies' stands were again very well constructed with a few outstanding. Some novel ideas were provided whilst some Societies relied on the more formal, but very

The British Aquarist Festival for 1967 held at Belle Vue, Manchester, was once again a huge success. Mr. Boarder, the author of this article, has attended a great number of these festivals and his article shows the growing support for this hobby.



Left

A particularly attractive marine set-up as mentioned by Mr. Boarder in his article

Below

This photograph shows the winning set-up in the aquascape section

neat stands often seen. It is a pity that more Societies could not have won prizes but someone must lose in such a strong class and all who made the attempt must be congratulated most heartily for putting in so much effort and expense to make the whole show such a fantastic success.

There were many fine specimens among the tropical entries and I was only sorry that time did not permit me to see many of them. One or two stood out for me and I was very impressed by the winning Fighter, a grand red. A fine team of Tiger barbs also caught my eye in the breeders' class.

Among such a large collection of tropicals it is unfair to pick out many outstanding fishes but there were enough really good ones to reward the efforts made by visitors to get to the show. There were some very attractive tanks of marine fishes and the vivid colours of some of them appeared to attract a large crowd round the tanks for most of the time. A small tank of sea anemones, crabs and prawns was particularly attractive to me as it showed most of our native sea anemones and very healthy they looked.

Among the coldwater fishes I was pleased to see a fine common goldfish which won its class. This fish was an almost perfect example of what a common goldfish should be. It had a good shape and a fine self-red colour with none of the very undesirable black and silver markings. I considered this fish the best coldwater fish in the show. A very nice Veltail was also present, obviously a young fish



nut with potentials of becoming a real champion. It had the lovely colours so often lacking in many of the present-day Veiltails. A small Oranda had a good form but was markedly lacking in the size of the hood. This was only on the head and did not grow over the gill-plates as is required. I saw one fine Oranda without a card but I must admit that I did not have time to examine it very closely. By the time I could get around to the exhibits there were so many people around most of the stands that close inspection was impossible.

Of course the chief attraction this year was the Champion of Champions class. The exhibits were all shown in a double row and one could not but be surprised at the quality of some of them. The coldwater entries were for the most part quite out-classed and I did not see one fish which I consider should have beaten most of the tropicals. Many considered that coldwater fishes should not have to compete with tropicals but if one has a Champion of Champions then all must compete. I know that a coldwater fish has to be extra good to stand a chance of being chosen as I have seen at so many shows that the coldwater do not get a look in. I always find that the tropical judges out-number the coldwater ones by about three to one and I would not be surprised that this was the case on this occasion. Not that I would have expected any of the coldwater fishes to have won in the Champions class.

The Champion of Champions was a very large Lemon Finned Barb which won in spite of some damage at the rear of its dorsal fin. The second was a nice *Scaphiargus argus* and the third was a Pacu (*Colomesoma* species). This fish I thought would have made a much better contender



if it had not been in such cloudy water. The best of the colours of this fish did not show up to advantage.

All three fishes were large types and I heard one visitor suggest that if the judges had been at the London Zoo judging animals all the elephants would have won the prizes.

Many visitors attended *The Aquarist* stand to ask questions and I must apologise to one for a temporary lapse of memory. I was shown a tube of small crustaceans and although I recognised them when I put my glasses on I

Above right
A view of the *Aquarist* stand showing prizes and awards to the various competitions

Right
The winning stand as presented by Stretford & District A.S.



could not remember their name. They were of course *Cypris*, the little crustaceans much smaller than *Daphnia* which swim about quite quickly but not with the typical *Daphnia* dance. I do not think these are of much use as a food as they have a very hard shell.

As usual the dealers had made a very outstanding addition to the general exhibition. There were many thousands of fishes for sale and also all types of appliances, books and foods for every taste. I suppose that on the Sunday it was possible to buy some of their fishes even if they had to be passed over the heads of rows of intending buyers. I saw wide smiles on the faces of the dealers and one particularly elated gentleman, representing Rochdale Aquarium Specialists, said that as a result of orders taken at the show his company would be able to carry out all their planned expansions. Certainly no one could say that the dealers had not done much to improve the over-all attraction of the exhibition and the needs of all aquarists had been well catered for.

To sum up it will be interesting to see how the next year's show can be improved but the first attempt at a Champion of Champions contest has certainly been a great success although a few new ideas have been devised which may be incorporated as an improvement next year.

For full results of the B.A.F. and details of winners for the Champion of Champions contest, fully illustrated, see page 246.



Above
This stand representing an artist's palette won 3rd prize in the stand competition

Left
The Fylde A.S. stand

The Junior Aquarist

Keeping and breeding the cebeles rainbow fish

by P. O. Blowers

THIS fish is the real jewel of any aquaria, if kept under the right conditions. Many aquarists have found it extremely difficult to keep mainly because it is said to be susceptible to water change. I may be one of the lucky ones as I have had immense success in keeping and breeding this lovely fish and I will endeavour to describe how.

Firstly the colour of the fish, which is quite fantastic, especially when seen under sunlight. The male is a lovely translucent gold and when under good light in ideal conditions you may see touches of blue and green as he swims through the water. He has a neon blue stripe running through his lateral line edged with black. His fins are butternut yellow some with black tips others with white. The dorsal and anal fin grow long sweeping rays which will often reach to over the tail fin. When buying your fish if they are of good size this is one of the surest ways of sexing. Finally, the eye has a black iris, surrounded by neon blue which gives the fish a most striking appearance.

The female's colours are much duller and she also lacks the long rays on the dorsal and anal fin.

The build of the fish is slender and long and they are extremely fast swimmers and good jumpers. I will now endeavour to explain the way in which I grew on and bred these fish.

Six fish were obtained in early 1966. They were placed in a ten gallon tank under natural light. The water had a pH of 7.4 and a hardness between 190 ppm and 200 ppm. The tank had 2 in. of washed coarse gravel on the bottom and was thickly planted with Cabomba, small *Hygrophila* and *Sagittaria*. The temperature was approximately 74-76°F.

We lost one fish only hours after receiving them and the other five were in good condition apart from ragged fins. For the first few days we offered nothing but live foods, i.e. *Daphnia*, mosquito larvae and *Corsetra*. We found they

preferred the last two in preference to the first. When we had them feeding successfully we tried them on a well-known flake food, which they took to straight away. This simplified the feeding and we then fed two live foods and one flake food every day.

The fish grew at an astonishing rate and within six weeks we could sex them. It turned out there were two males and three females. After a further two weeks we decided to divide the tank in two and separate the sexes. We also set up two 24 in. by 8 in. by 8 in. tanks with *Sagittaria* and small *Hygrophila* and let them stand and establish.

In ten days or so the females were full of eggs and the colour of the males was fantastic, so we decided to try with one pair. The pair were placed in one of the 24 in. by 8 in. by 8 in. tanks previously mentioned and some *Riccia* and *Myriophyllum* floated on the surface. We also placed a quantity of live food in the tank as we had been told that these fish were spawn-robbers. Within two days the first eggs were noticed. These were suspended in the water by a fine thread attached to the floating plant.

We decided to remove the eggs as we thought that to keep one week's laying in a plastic box (as used for lunch boxes), would be ideal. We removed eggs every day and found on dull days we were only finding two or four but on bright days when the sun was shining into the tank, anything from 6 to 10 eggs were taken out. The eggs hatched in 5 to 7 days at a temperature of approximately 76°F. When we removed the eggs we also took out a small piece of the floating plant and added a mere drop of acriflavin to the water. The fry hung on 2 days and were free swimming in 7 to 10 days.

For the first week we fed *Infusoria* and then went on to brine shrimp. As the fish grew we gradually increased the size of the live food, i.e. Cyclops, sifted *Daphnia*, small mosquito larvae. At 6 weeks old they were also taking flake food.

The only special thing I think these fish require is a certain amount of new water; we took out a third of the tank water every 7-10 days and replaced with tap water brought up to the required temperature.

We have now been successful in breeding these several times and I hope the above notes have seen some help to those who have not been quite as fortunate, in keeping this beautiful fish from Celebes.

Carolina Box tortoise

by B. I. Coggins

THIS terrapin, as its name implies, comes from North America, being found in the south, around Florida, and up to the Great Lakes area.

The name "Box" tortoise comes from the fact that this terrapin has the ability, like some other species, to close up the front portion of the plastron through means of a hinge. Also the back part of the plastron is hinged, this means the head and limbs are completely protected from any predator. The space between the closed plastron and carapace is enough to permit the entrance of the blade of a knife.

The Carolina Box tortoise is very attractively coloured,

the limbs and head being brown and the carapace brown, with many bright yellow or orange streaks and spots. The markings differ greatly from animal to animal.

Terrapene C. Carolina is in the interesting position of going from a terrestrial mode of life to a semi-aquatic one. This accounts for the highly domed shell, typical of the land tortoise and the webbed feet, typical of a terrapin. In the wild the Carolina Box tortoise usually lives in the marshy land near a stream or pond or in some similar damp habitat. This species of *Chelonia* is also unusual in that it is omnivorous, eating frogs, fish, etc., and also fruits such as wild strawberries which come within its reach.

Captivity

During the summer this tortoise can be kept outdoors in some form of enclosure which must be provided with bathing facilities. In the winter a vivarium, again with a bathing area, is necessary. The Box tortoise will eat pieces of raw meat, worms and soft fruits, e.g., bananas.

The sex of the Carolina Box tortoise is easily determined by the colour of the eye, the male's being bright red and the female's brown or grey-brown.

Terrapene C. Carolina makes an attractive and charming pet.

Eel takes photo

by M. Lorant

WESTINGHOUSE electronic equipment has recently been "plugged" into a tank of electric eels to officially open the new Pittsburgh Aqua-Zoo. An eel gave off an electrical "zap" that was heard over loudspeakers. The impulse turned on floodlights, and lit up a sign welcoming guests to the new \$1.5 million building in Highland Park, Pittsburgh, U.S.A.

The performance inaugurated a permanent electric eel exhibition at the Aqua-Zoo.

Electric eels can generate up to 600 volts—enough to kill a man. At the Aqua-Zoo, they vary in size. The largest is nearly five feet long and as thick as a man's calf.

An electric eel is a living battery—positive at the head and negative at the tail. When swimming, it gives off radar-like pulses of low-voltage electricity that serve as a kind of radar. When it detects food or an approaching enemy, it switches to full power and unleashes its death-dealing high voltage.

Electrodes at the ends of the eel tank pick up the electricity. At feeding time it can be heard over a loudspeaker; the pips caused by the radar signals and the radar pulses can be seen on the luminous line of an oscilloscope screen (an instrument that pictures electric signals).

When an eel attacks, spectators hear the startling "zap" and see the oscilloscope line jump all over the screen.

The number of volts registers on a row of coloured circles that light up and blink like the panel of a pinball machine.

If the voltage is high enough—over 375 volts—it also causes a strobe lamp to give off a brilliant flash.

An electric eel can strike several times before it has to rest for a few minutes to recharge. Actually, a single electrical discharge from an eel consists of a series of quick surges of current, the surges differing in voltage but

each lasting two-thousandths of a second. They follow quickly upon one another, but a long discharge includes several pauses of a few thousandths of a second. A discharge once recorded lasted five seconds.

Electric eels live in the mud at the bottom of South America's Amazon and Orinoco Rivers. They are related to catfish. Strictly speaking, they are not really eels at all, but air-breathing fish with extra-long tails. An eel's tail consists of thousands of power-generating muscle cells.

Even human muscles produce tiny electric currents. But an electric eel, unlike humans, can combine the currents into a single circuit by switching his cells into—what engineers call—a series connection. When an eel strikes, electric current flows out from his head into the surrounding water, where it traces zig-zag loops back to his tail along conducting paths formed by dissolved materials (pure water cannot conduct electricity). Electric eels are insulated against their own shocks and those from other eels.

But other fish and animals are good conductors, and if one is in the water nearby, the electric current will tend to follow paths that include it.

An electric eel has been known to kill a man standing in the water 25 feet away.

Stratiotes aloides

by B. Fry

A NATIVE water plant that adds considerably to the charm of a garden pond is *Stratiotes aloides*, commonly called the water soldier or water aloe. The rather leathery-textured and spiny-margined leaves are narrowly tapering in shape and light to dark green flushed with red in colour. They grow in the form of a rosette and average a length, when outstretched, of from nine to twelve inches.

S. aloides stays rooted to, or near, the soil or gravelly base from the autumn to the spring. But with the arrival of the longer and brighter days, it frees itself from the collected mud and debris and rises to the surface. There it floats with its new young leaves standing out of the water. In due course, say, sometime between June and August, the water soldier comes into flower. The flower is white, three-petalled, and held aloft on a short but stout stem.

The male and female flowers are borne on separate plants. Male plants are rare (at least in this country) and reproduction normally takes place by offsets or stolons rather than by seeds. Generally speaking, the water soldier is not backward in producing progeny. These can be detached from the parent plant when they have made some progress. Left where they are they will eventually form a tufty colony.

S. aloides is among those aquatics which demand a rooting medium about 6 in. deep under at least 12 in. of water. Given this, and an open position, it will be a joy to look at and withstand the worst of weather.

In the wild state, *S. aloides* occurs not only in Britain (though it is becoming increasingly difficult to find, except in some localities in eastern regions) but on the mainland of Europe and parts of N.W. Asia. According to authoritative writers it flourishes best in chalky waters.

What is your opinion? No. VI

by B. Whiteside

Due to shortage of space in our last issue we had to hold No. VI of What is your opinion? We have therefore amalgamated the two articles for this month.

The two questions, posed for answering in this article, concerned (1) *the problem of unwanted snails and (2) the breeding of the more "difficult" kinds of fish such as neons and cardinals.* As both questions produced a total of three letters, one might suppose that few people can breed neons or cardinals and that few either have, or know how to deal with, unwanted snails. Although the latter supposition may be true, I am sure that there are aquarists in this country who have bred the neons, and possibly the cardinal, but either they do not want to disclose their methods or they have used the standard ones described in the larger books on fish breeding.

Mr. D. B. Reid, of Henfield, Sussex, wrote to tell of how, by chance, he induced his neons to spawn. A few weeks before writing the letter, Mr. Reid had occasion to transfer his community tank to another room because of decorating. Mr. Reid used half of the old aquarium water in the fresh tank and topped it up with boiled tap water which was hard and alkaline. Fish and plants were transferred that evening. To Mr. Reid's surprise for the next three mornings he watched helplessly as the pair of neons swam agitatedly round the tank, coming together every two to three minutes to deposit 15-20 eggs at a time. These were immediately devoured by the other fish. Mr. Reid went on to say that he wondered if the eggs would have been fertile and that he was eagerly awaiting a chance to put the seemingly ready spawners together in a tank to themselves. He wonders whether he should duplicate the conditions that he provided before, or follow the instructions contained in what he calls "all the discouraging literature" he has read.

Fifteen-years old **Peter Burns** of Chesham has done some experiments on reddish-brown ramshorn snails. Peter has two ways of dealing with unwanted snails in his tropical aquaria. He tried putting unwanted snails into a coldwater aquarium with little hope of their survival but he found that the young snails not only survived in the cooler water but continued to grow well beyond the maximum size which they would have reached under tropical conditions. The average tropical size was 8 mm. in diameter but the coldwater size was nearer 17 mm. As the snails grew larger they lost their more attractive colour and looked exactly like wild, great ramshorn snails. Peter kept his tropical snail population in check by removing all the snails near the surface at each feeding time. The snail population was soon reduced.

An interesting solution to the snail problem is offered by **Mr. T. S. Sullivan**, of Sandhurst, Surrey. Mr. Sullivan advocates the addition to the infested tank of a pair of medium sized Schaubert barbs. He finds they are always successful provided that the same pair are not used continuously, because, after a couple of months on this diet, the fish become very big and lazy. Mr. Sullivan says that the growth of these fish on a snail diet has to be seen to be believed, but that a mature pair placed in a tank full

of snails appear to be too lazy to de-shell snails, preferring the more easily obtained dried foods, tabifex, fresh meat, etc.

These are all of the opinions which were received this month. I have no comments to make on the breeding of difficult fish as I have never tried to breed them. As regards snails, I sometimes use pieces of fresh meat lowered on to the aquarium floor on a piece of thread. A number of snails will collect on the meat if it is left over-night and these can be removed with the meat on the thread. Although there is an aquarium snail-killer available on the American market, I have not seen it advertised for sale in Britain yet. Perhaps when it becomes available it will, like the algae killers which have solved the problem of unwanted algae, once and for all rid our tanks of unwanted snails.

What is your opinion? No. VII

THE two problems posed for answering in this article concerned treating diseases in aquarium fish, and suitable backgrounds for aquaria. Seven people were kind enough to answer, including one person from Germany. As yet, no letters have been received from aquarists in N. Ireland. Can we expect any next month?

R. Brown, (14) of Hartlepool, Co. Durham, has had his share of tropical fish diseases since he started keeping tropical fish, nine months ago. He lists a number of points which he finds useful. When the disease is spotted, some action should be taken immediately; no cures or treatments should be used until it is fully understood how to administer them; the fish should be isolated (the writer of the letter uses a polythene bag floating in his tank and thus does not have to treat the whole tank); all equipment should be sterilized. Master Brown finds a commercial remedy best for white spot, and that the most useful cure for most diseases is methylene blue. For a tank background he uses a piece of cardboard painted blue and stuck onto the back of the tank.

Fifteen years old **Wilfred Vernon**, of Beckenham, Kent, uses white expanded polystyrene tiles, $\frac{1}{2}$ in. thick, and costing 1/6d. for a two-foot square, as a tank background. They are easily cut with a sharp knife or a razor blade and can be held in place flush with the glass, by the angle iron frame of the tank. These tiles soon repay their cost by conserving heat, being good insulators. Wilfred goes on to say that the tiles can easily be painted if wanted, but that dark fish show up better if they are left white.

Mr. D. R. Hubble, of Sheppey, Kent, has not had much experience of fish diseases, except in the case of white spot. For it, he has found that most "pills" are effective, providing treatment is started as soon as the disease is manifest. Mr. Hubble's answer to the tank background is plants, and possibly some rock-work. Mr. Hubble does not like pictorial backcloths.

From Dukinfield, Cheshire, Mr. J. Antill writes to say that his 3 ft. tank is backed with a sheet of dark blue plastic, stuck in place with adhesive tape. He says that condensation has got in between the plastic and the back glass, and that the result is very pleasing, looking like natural rock. Mr. Antill has not yet encountered fish diseases.

A simple but successful treatment for severe fish-louse damage comes from Mr. L. Thornley, of Warrington, Lancashire. One of Mr. Thornley's goldfish had such an injury in front of its dorsal fin and it looked ghastly. Using a small paint brush he painted the affected part direct from a tablet of green household soap. The sufferer was then quarantined in very green water and the treatment repeated every day or so until, after about twelve days, the fish had recovered, apart from a scar.

Cpl. B. Leighton, R.M.P., Rheinlahlen Garrison Provost Company, Royal Military Police, Rheinlahlen, British Forces Post Office 40, sent a long letter from Germany. The two main diseases from which his fish seem to suffer are "Ich" and "Velvet". The former he has not had for some time now since he stopped feeding live Tubifex, which in his experience always starts the disease no matter how well they are washed or disinfected. Cpl. Leighton suggests that this may be caused by the source from which Tubifex are obtained in his part of Germany, and that British aquarists do not suffer similar troubles. He has, on purpose, fed fish with the worms to prove his theory and has been proved correct every time. He cures, using a German remedy called "Rote und Weiss" (Red and White) Cure, which consists of an equal number of red and white tablets some 1/2 in. across. After about five days the disease has practically vanished. As the tablets may leave the water stained slightly green, Cpl. Leighton quickly removes this using charcoal or carbon (very popular in Germany), in his filter.

Being a confirmed killie specialist, and a member of the B.K.A., Cpl. Leighton's fish also suffer from "Velvet". He has found methylene blue to be useless but "Fonash", in very strong doses, will sometimes do the trick, provided the disease has not got a hold. Usually he tries frequent changes of water and a slightly higher temperature, which sometimes works. Malachite green, he finds, usually knocks the fish off faster than the disease, and the use of copper coins cannot be regulated, so the result is again usually fatal. Other diseases he refers to the books which seem to be stuck, he says, at "give a salt bath". At the back of his community tank he has a piece of reversed, mottled grey plastic sheet, with a marble effect, which looks well between the plants, being quite realistic.

Mr. D. B. Barker, a professional aquarist, of Charteris, Camb., has about five thousand fish to look after and can always find a few needing some treatment. Quite a number of people bring him ailing fish and he is becoming very interested in fish diseases. Mr. Barker found by mistake that chlorinated water, fresh from the tap and slightly warmed, will kill white spot. Having a tank of fish, well advanced with white spot, Mr. Barker had no mature water in which to place the fish. He filled a wash bowl with fresh, cold, tap water, and let it warm to 75°F. He placed the infected fish in it and forgot to treat them. Next day he found a great improvement in the fish so he left well alone and all signs of the spot had gone on the second day. Thinking that this was an isolated case, Mr.

Barker waited until he found another outbreak of white spot, and set up six small tanks with heaters and cold tap water. He placed two fish in each tank and within two days all fish were well. He has tried this a number of times with no losses. He has also used a certain type of tablet with great success.

Mr. Barker thinks that dye treatments are better than colourless drugs as one can add more dye to keep the colour right. With colourless drugs it is difficult to tell whether or not the drug is active. For "Velvet" disease he uses cooking salt—two tea-spoons per gallon on the first day, repeated on the second day, and finds that the disease clears completely in about ten days—but all the plants will suffer. A 2 per cent. solution of Aquafavin, at the rate of two drops per gallon, will do the job and, if the colour fades, add one drop per gallon, keeping the colour going for a week. Plants do not suffer at all. Mr. Barker's best results for anchor worm, flukes, etc., have been obtained by using electrical treatment. He uses a 4½ volt battery (for a bell) and two stainless steel electrodes, 2 in. square. Each plate is drilled and a length of single core plastic covered flex is twisted around each hole. About two inches of plastic covering is removed further. The bare wire and joint is then painted with clear varnish so that the stainless steel plate only is in contact with the water. One plate is placed at each end of the aquarium and the wires attached to the battery. Mr. Barker gives the tank three hours on and three hours off, during the day, for three days. He ends by saying that if left on continuously for six hours, Hydra will be killed, and if left on for ten hours, snails will die.

Fortunately I have never had any experience of either white spot or velvet, or indeed any of the major diseases, but in August, 1966, after introducing some new fish to two tanks, I had an outbreak of a most potent disease which I was not able to identify. Fish became infected and died within six hours. The disease, which affected my tropical fish, first showed itself by the fish remaining near the top of the tank with its mouth apparently, permanently open. A white patch (unlike fungus, but looking as if the area had been dipped in shoe whitener) appeared on the lips and mouth, and spread slightly onto the head. The fish died in a matter of hours. From what I could gather from literature, I guessed that the disease might be caused by the bacterium *Glyptothorax colossalis*. I treated the infected tanks by removing most of the water, leaving three gallons in each, and adding 7 ml. of chloromycetin to each tank on the first day, and 5 ml. on the second day. Before adding the chloromycetin I lost fifteen fish consisting of six varieties, but after adding the drug, no more fish died. I had a post mortem carried out on one fish and it was stated to have died from a virus infection which could not be identified. I am still not sure as to what the disease was but the chloromycetin certainly cleared it up completely and permanently, and had no effect on the plants. As the drug was colourless, I had only to top up the tanks on the fourth day, and have had no bother since.

Now for a couple of problems for the next article:

- (1) What, do you consider, is the best live food for adult aquarium fish, and why?
- (2) What plants have you found to be the most suitable for the coldwater aquarium?

BRITISH AQUARIST FESTIVAL RESULTS — MANCHESTER

Best Fish of the Show: B. Parkin (TAB). **Best Tropical Fish:** B. Parkin (TAB). **Best Goldwater Fish:** J. Frazer (Northern Goldfish). **Best other than Best Fish in Show:** Tropical: K. Rogers. R. Moorcroft (Merseyside). Tropical Livebearers: R. Preston (Belle Vue); Goldwater: J. Frazer (Northern Goldfish). **Best Society Furnished Aquarium (Tropical):** 1. Blackpool 82 pts.; 2. Barry 74 pts.; 3. Vales 73 pts.; 4. Bury 72 pts.; 5. Accrington 67 pts.; 6. Northern Goldfish 65 pts. **Best Furnished Aquarium (Individual Tropical):** J. Taylor (Blackpool) 83 pts.; 2. K. Preston (Belle Vue) 81 pts.; 3. B. Little (Blackpool) 77 pts. **Best Furnished Aquarium (Individual Goldwater):** 1. M. Smith (Accrington) 90 pts.; 2. H. Probst (Oxton) 77 pts.; 3. Mrs. M. Pugh (Bradford) 75 pts. **Best Aquascape Furnished Aquarium:** 1. Mrs. Manslow (Northern Goldfish) 83 pts.; 2. Mrs. M. Knowles (Sheffield) 80 pts.; 3. M. D. Smith (Glossop) 74 pts. **Novelty "Aquascape":** 1. Mrs. M. Knowles (Sheffield) 84 pts.; 2. H. Haslam (Belle Vue) 77 pts.; 3. E. Robinson (Sheffield) 74 pts. **Common Goldfish and Comets:** 1. H. T. Jago (Bristol) 86 pts.; 2. B. Ramsden (Northern Goldfish) 77 pts.; 3. B. Ramsden (Northern Goldfish) 75 pts. **Shubunkins (Bristol and London):** 1. B. Rothwell (Northern Goldfish) 82 pts.; 2. N. S. Farrell (Northern Goldfish) 80 pts.; 3. B. Ramsden (Northern Goldfish) 79 pts. **Morris:** 1. J. Hodgson (Accrington) 75 pts.; 2. T. D. Smith (Hemdon) 85 pts. **Veiltails:** 1. H. T. Jago (Bristol) 89 pts.; 2. B. Ramsden (Northern Goldfish) 71 pts.; 3. B. Rothwell (Northern Goldfish) 70 pts. **A.O.V. Fancy Goldfish (Pezomachus, Lambdoid and any "New Variety"):** 1. Mrs. G. Holmes (Bradford) 78 pts.; 2. H. T. Jago (Bristol) 77 pts.; 3. G. Hammet (Glossop) 73 pts. **Any species of Goldwater Fish other than those above:** 1. J. Frazer (Northern Goldfish) 90 pts.; 2. B. Ramsden (Northern Goldfish) 79 pts.; 3. B. W. Siskin (Sheffield) 75 pts. **Guppies:** 1. Mrs. M. Crook (Glossop) 75 pts.; 2. J. Haig (Salford) 72 pts.; 3. G. Allen (TAB) 70 pts. **Livebearers A.O.V. (pairs):** 1. R. Preston (Belle Vue) 80 pts.; 2. J. Hill (Ashton) 78 pts.; 3. J. & H. Derrin (Workop) 77 pts. **Livebearers (Single Fish):** 1. D.

Parkin (Bradford) 78 pts.; 2. S. Foley (Salford) 77 pts.; 3. G. Greenhall (Kingston) 76 pts. **Angels:** 1. P. Myerson (Accrington) 76 pts.; 2. P. Woodward (Blackpool) 75 pts.; 3. A. Hudson (Bradford). **Dwarf Cichlids (pairs):** 1. W. Bury (Bradford) 77 pts.; 2. J. & H. Derrin (Workop) 77 pts.; 3. Mrs. R. Straton (Leyce) 68 pts. **Dwarf Cichlids (single fish):** 1. W. Bury (Bradford) 83 pts.; 2. B. Phillips (Ashton) 77 pts.; 3. R. Phillips (Ashton) 75 pts. **Cichlids A.O.V.:** 1. S. Carr (Macclesfield) 82 pts.; 2. C. Woodhead (Huddersfield) 79 pts.; 3. K. Parkes (Merseyside) 78 pts. **Figthers:** 1. D. C. M. Durran (Thursley) 81 pts.; 2. D. C. M. Durran 80 pts.; 3. A. E. Wheelock (Tadcaster) 78 pts. **Gouramis and Paradise (pairs):** 1. F. Abilla (Merseyside) 87 pts.; 2. E. Prier (Gorton and Openshaw) 78 pts.; 3. J. & H. Derrin (Workop) 76 pts. **Gouramis and Paradise (Single Fish):** 1. Prie (Gorton and Openshaw) 80 pts.; 2. T. D. Smith (Hendon) 78 pts.; 3. K. H. Hill (Haywood) 74 pts. **Barbs (pairs):** 1. K. Parkes (Merseyside) 80 pts.; 2. J. & H. Derrin (Workop) 78 pts.; 3. A. Pirth (Bradford) 73 pts. **Barbs (Single Fish):** 1. B. Parkin (TAB) 83 pts.; 2. A. Pirth (Bradford) 84 pts.; 3. E. Parneshugh (Clayton) 79 pts. **Characins:** 1. Mrs. M. Bone 78 pts.; 2. V. Parker (Merseyside) 77 pts.; 3. S. Riebeck (Clayton) 76 pts. **Carp and Minnows:** 1. R. Moorcroft (Merseyside) 88 pts.; 2. D. Richardson (Sheffield) 83 pts.; 3. D. Carr (Bradford) 77 pts. **Catfishes:** 1. B. Booth (TAB) 83 pts.; 2. J. & H. Derrin (Workop) 80 pts.; 3. A. B. White (Stratford) 79 pts. **Egg-laying Toad**

Carp (pairs): 1. J. Hodgson (Accrington) 79 pts.; 2. G. Richardson (Glossop) 76 pts.; 3. D. M. Cawther (Dunbury) 87 pts. **Egg-laying Toad Carp (Single Fish):** 1. M. Robinson (Macclesfield) 74 pts.; 2. J. Holmes (Lancaster) 71 pts.; 3. C. Holdsworth (Bradford) 70 pts. **Loach:** 1. W. Taylor (Oxton) 84 pts.; 2. J. Hill (Gorton and Openshaw) 82 pts.; 3. C. Holdsworth (Bradford) 81 pts. **A.V. other than classes above:** 1. P. Moorhouse (Bradford) 85 pts.; 2. W. Taylor (Oxton) 83 pts.; 3. A. B. White (Stratford) 82 pts. **Breeders (Egg-layers):** 1. J. & H. Derrin (Workop) 85 pts.; 2. Piller and Crook (Glossop) 84 pts.; 3. J. McCann (Glossop) 81 pts. **Breeders (Livebearers):** 1. J. Hill (Ashton) 81 pts.; 2. W. T. Kelly (Merseyside) 78 pts.; 3. S. Foley (Salford) 76 pts. **Breeders (Goldwater):** 1. H. T. Jago (Bristol) 84 pts.; 2. B. Ramsden (Northern Goldfish) 80 pts.; 3. B. Rothwell (Northern Goldfish) 80 pts. **Plants:** 1. G. Greenhall (Kingston) 80 pts.; 2. Mrs. M. Crook (Glossop) 76 pts.; 3. T. Haslam (Bury) 75 pts. **Best Marine Furnished Aquarium:** 1. M. Haslam (S.M.A.) 80 pts.; 2. B. Somers (Blackpool) 67 pts.; 3. P. Renda (Glossop) 66 pts. **Marine Fish (single):** 1. K. Parkin (TAB) 79 pts.; 2. Piller and Crook (Glossop) 73 pts.; 3. R. V. Rothwood (N.M.A.) 71 pts. **Society Brackets:** 1. J. Mansfield, 2. Blackpool, 3. Leyce. **Society whose members won the most points:** Northern Goldfish. **Individual exhibitor getting most awards:** J. & H. Derrin (Workop). **Best pair Societies:** 3. Harrook (Workop), 2. Ross Shield, 1. Lonsdale.

Top right
A view of the stand showing the competition cups and shields, also the awards for the Champion of Champions contest

Right
Winners of the Champion of Champions Contest
(R. to L.) R. Atherton-2nd,
B. Parkin-1st,
J. A. Robinson-3rd

Far right
The winning fish Lemon Finned Barb as exhibited by Mr B Parkin



THE CHAMPION OF CHAMPIONS CONTEST



RESULTS



1st	B. Parkin (TAB)	93·0
2nd	R. Atherton (I.M.S.G.)	88·5
3rd	J. A. Robinson (Merseyside)	87·4



A plug for squirrelfishes

by Rodney Jonklaas

EVER since I was introduced to tropical marines (and that was many many years ago), I have felt very kindly towards squirrelfishes, the *Holocentridae*, which is represented by many species all over the tropical seas. According to the systematists, the family *Holocentridae* is placed rather soon in the evolutionary classification with the triggers, puffers and their like at the very end. If this implies that the squirrels are stupid in contrast to the undisputed intelligence and resourcefulness of the triggers, I beg to disagree. If it is mainly because of structural differences, I am all for the squirrels' construction—it appears ideal for the average marine aquarist who likes his fishes hardy, peaceful, suitably-sized, disease-resistant, beautifully shaped and gloriously-coloured.

So, why this relatively meagre publicity over the years for so desirable a marine family? I have questioned several eminent dealers and hobbyists from Europe, America and England and the most frequent answers were:

"They don't sell well."

"They look too much like goldfish."

"Few hobbyists know very much about them."

What is wrong with a marine fish resembling a goldfish, and that very remotely? Is a goldfish so despised a creature as all that? I hope not! And now with the wonder of Gro-Lux the lovely squirrels can be rendered even more dazzling in their tanks. I remember my friend Arnold Lambert's reaction to one 100 gallon marine exhibit I installed at a Colombo Convent Fair—it was stocked with moonish idols, *Heterostichus acuminatus*, a large *Gasteria lineatus* and a shoal of squirrelfish. Red *Tubipora musica* coral, staghorn and some large shells formed the decor but what did the trick was Gro-Lux over the squirrels. They literally glowed crimson and outshone the beautiful selection of fancy goldfish in an adjacent tank. Arnold was here representing Inter-Pet Fish Supplies from Dorking, and of course he is now not only a very good friend but also a valued client. I constantly keep hoping he'll order more squirrelfish; the reason being they are easy to get all year round, easy to keep, easy to ship and moderately-priced if not cheap, and because of their many advantages over other marines.

To my great dismay I found out some time ago that in the Pacific Isles and especially in Tahiti and Hawaii, squirrelfish are eagerly sought-after for food. They are said to be a delicacy. They are taken with nets, lines, traps and speargun and huge prices are paid for the poor things in the markets. In Ceylon they are not as all esteemed and few fishermen bother to catch them. A few large ones are taken on light night-lines but otherwise they are left alone so that the reefs round Ceylon literally teem with them. The squirrelfish has one rather unique function, however. That of a car-killer. Fishermen are constantly plagued by cats of the alley or stray variety, which, not content with what is given them for food, rob with great cunning and determination. The robber cats soon meet their match when a large squirrelfish is presented

to them, hung head downwards in such a way as to force Pussy to leap upwards with outstretched talons to grab dinner. Practically every scale on a squirrel fish has a backwardly-directed sharp spine and Pussy's talons and pads are instantly engaged by these spines, thereby effectively trapping the unfortunate feline for the vengeance of the fishermen. These spines, on the other hand, also render the squirrels somewhat easy to net. They are collected by shallow divers working at night with waterproof flashlights and hand-nets. Once a squirrel enters a net and strikes the meshes he is well and truly caught and seldom, if ever, wriggles out to freedom.

Many species of squirrels are found round Ceylon, a country rich in marine tropicals. Not all are suitable for aquariums but most are small enough to be suitable for export and keeping in home aquariums. They do not grow very fast or so big as to be a nuisance a few months after purchase, which is true of platys, lionfish, scats and some marine angelfish, groupers and gacrinis. Most of the squirrels seldom exceed 8 inches in length as their maximum, and only one, the spectacular spiny squirrel (*Holocentrus spinifer*, formerly termed *H. leo*) grows to over 2 lb in weight. But even an 8 inch squirrel can quite easily be kept in a 25 gallon aquarium and remain perfectly happy for years, provided he has his air supply, heat, light, food and filtration.

The commonest of the squirrels is *Myripristis murdjan*, a typically shaped beauty, glowing crimson-red with elegant black and white edging to fins on dorsal and ventral surfaces. Great big expressive eyes, a pert manner, extreme hardness, a friendly disposition, a good appetite for live or even dead food, the ability to make quaint murmuring sounds especially when kept in groups of its own kind, make this one of the nicest, cheapest and desirable of the squirrels. In their wild state squirrels are nocturnal and spend the daytime hours in shady caves and caverns in the reefs or under rocks where there is no coral. But on gloomy days when there is no sun or where it is very deep and the light does not filter down so brightly, we see the squirrels out even in the day. The skin-diver gazing into a deep cave is often confronted by a confused shoal of indignantly-murmuring squirrels, most often *M. murdjan*, which then seek deeper recesses of the caves in which to hide. The underwater cameraman armed with flash, always goes in for the spectacular squirrelfish shot. A diver lucky enough to possess an underwater flood-lamp is advised to shine it on a cave full of squirrels and then gasp at the spectacle.

Holocentrus rubrum is the most crimson of all squirrels found off Ceylon. His eyes are huge as usual, and he is plain crimson-red all over, the fins unmarked and his black eyes standing out clearly. Rarer than *Myripristis murdjan*, *Holocentrus rubrum* is also harder to collect.

One of the commonest is *Holocentrus diadema*, the white-striped squirrel which is probably also the hardiest of the hardy. Habits are almost identical with *Myripristis*

wardian. Closely resembling *diadema* is *Holocentrus xanthurus*, which when fully grown is a small and slimmer fish but with more elegant white lines which are finer, edged with grey and more tastefully placed. There is also a silvery-white saddle placed far back under the second dorsal fin which makes it distinct from *H. diadema*.

A particular favourite of mine is *H. spinifer*, formerly *H. leo*, which is not numerous but very widespread and something of a prima donna. In the Maldives I encountered enormous *spinifer*, well over 3 lb in weight and when short of food we sometimes speared them and found the fish excellent. *Spinifer* is red-gold all over and has a longer snout than the others. But what is most striking is the first dorsal fin, absolutely brilliant red. This elegant adornment is seldom in evidence but the best way to view it is to offer your spinner a tit-bit on the floor of the tank he lives in. He will view it intelligently with his lovely eyes, swim over, raise that glorious first dorsal, then stand on his snout and engulf the food. It is a sight that never fails to evoke oohs and aahs of approval.

Less dazzling, but nevertheless attractive in his own right, is the slim long *Holocentrus sawara*. Brassy-gold over neutral olive-green and brown is the main coloration, there are parallel lighter stripes as in *diadema*, and the eyes are huge, the fins longer than usual and of course, this is also one of the hardiest.

These then are the most familiar of the Indian Ocean squirrelfishes found off Ceylon and those you are most likely to encounter in a dealer's tanks. There are several other species less common but all attractive, hardy, peaceful and easily-fed.

Feeding squirrelfishes presents no problems. They prefer live-food in the shape of shrimps and guppies but will soon readily accept chunks of crab-meat, shrimp, even fresh fish. In the wild state I have observed them feed avidly on shoals of small shrimp by night, opening their big mouths and taking in several at a gulp. Largish guppies are delightedly pounced upon.

Very occasionally will a squirrel bully another of its kind; never a fish of another family. A group is always nicer than a single fish and if provided with an arch of coral, squirrels soon become very much at home. In a community tank they will happily accustom themselves to living with anything from an anemone to an angelfish and will never bully or rip fins as would an angelfish, for instance.

I have found squirrels remarkably resistant to that bugbear of all marine aquarists, *Oodinium*. Don't ask me why but that's the way it is. The only delicate thing about a squirrelfish is his eye. The cornea is very large and obvious and can be injured by improper handling or by terrifying him in a tank too full of sharp coral. I remember vividly once collecting too many red squirrels and overcrowding them in a metal container. I lost every one in a few days with acute corneal infection arising from damage caused by scraping against each other's spiny scales and the sides of the container which had rusted. But now plastics have replaced metal containers and I never collect more squirrels than I really need, and that, by the way, is much too few! So let's hope that there will be soon a greater demand for these really nice fishes. Frankly, it's not the profits I anticipate because squirrels are in the

low-priced range, but the satisfaction I will get from knowing that many other lovers of tropical marines will begin to appreciate another truly suitable fish for their collections.

Jottings

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favoured it appeared that most support would be forthcoming for a show designed to attract the general public and which would include sections for other pets, although several delegates stressed that they thought these other sections should be restricted to amphibians, birds and perhaps some small mammals." The report continued, "nineteen societies indicated that they would be prepared to make some degree of financial contribution to the cost of a show."

Alas, of this excellent idea we have heard no further. Could it be that a little prompting is all that is necessary?

Marine fishkeeping in this country can be said to be with us on a much larger scale than ever before, carrying in its wake the frustrations and problems that befell the early enthusiasts to the tropical hobby. The problems currently posed, however, would not appear to be insuperable, and, given time, I have little reason to doubt that the keeping of such species as the trigger fish (*Rhinocentrus aculeatus*), the scorpion fish (*Pterois volitans*) and the damselfish (*Dasyatis aruanus*) will be as simplified as the keeping of the guppy (*Lebistes reticulatus*) is at the moment. Experienced mariners would be the first to agree that success with marines doesn't come overnight. Instead, it can only be achieved by moving cautiously, one step at a time. The first rung of the ladder starts with freshwater fish keeping and an understanding of its many complex problems. Stage 2 would be the keeping of brackish water species, examples being the Malayan angel (*Momodactylus argenteus*), the sea (*Scorpaenopsis argus*) and the puffer (*Tetraodon spp.*), before moving on to native marine aquaria, and finally tropical marines. With the lessons learnt on the way success should be much easier to obtain.

Apart from Mr. Tom Ravensdale, a fellow contributor to this magazine, perhaps the greatest single influence on the marine hobby in Britain has been the founding in recent years of the International Marine Study Society, (formerly the Marine Study Aquatic Society of Great Britain), under the directorship of Mr. Gerald Jennings, a member of the Marine Biological Association, a former member of the Federation of British Aquatic Societies' (F.B.A.S.) Council, and an F.B.A.S. judge. To anyone contemplating the keeping of marines, either native or tropical, then this society is an ideal one to join. The advantages of membership are many, and include an excellent monthly journal with views, suggestions and articles on a wide range of subjects, a technical advisory Panel who are only too prepared to give advice on any problem, and a library of books and magazines that can be borrowed free of charge. Details of individual or society membership are available from the General Secretary, Mr. T. R. Hall, 23 Canfield Gardens, London, N.W.6.

Goldfish breeding—effects of warmth

by A. Boarder

IN my previous articles on goldfish breeding I have described the development of the embryo and treatment after hatching. The rearing of the fry followed the ordinary pattern used by those breeders who use no artificial heating or aeration. In this article I shall describe the effects of heating and aeration as used to hatch and rear a batch of young fantails.

Early in the spring of 1967 I had lost a fairly large spawning as I was away on holiday about the time and think that many of the eggs obtained had not developed properly because of the changeable weather. I use concrete tanks which I have made for hatching and these are about 2 ft. by one, tapering narrower at the base. They hold about six gallons of water and are about nine inches deep. The tanks are housed in an outdoor frame which has a foot of glass all round the sides and glass top. This can get most of the available sunshine and so gets very warm in summer. Unfortunately, on a hot day the temperature of the water in the tanks can get well above 80° F., and then at night it can drop considerably. No aeration was used and I think that the water got too warm with the consequence that there was insufficient oxygen to enable the eggs to develop properly. In fact no fry hatched at all from the eggs I had managed to collect from the pond. Many eggs showed a well developed embryo inside but none hatched out.

Having decided that excess warmth and alternate cold had killed the embryos I decided that I would make an experiment with some warmth and aeration with the next batch of eggs. I was away from home during the month I expected more spawnings and so had come to the conclusion that my experiments should wait until another year.

However, on September 3rd, 1967, I had a small spawning from my fantails. The weeds with eggs was placed in two concrete tanks and aerators started. As the weather was on the cool side I decided to insert heaters into the two tanks. A thermostat kept the water at 72° F., for practically all the time. On one or two occasions the water did become rather warmer when there was a lot of sunshine but by opening the frame well I was able to keep a fairly steady temperature.

It may be thought that giving artificial warmth for coldwater fish was unnatural, but it must be realised that in most waters where fishes breed the water temperature in the warmer months of the year can rise to 80° F. and above at times, especially in the shallows where the fishes are likely to spawn. I have often found my garden pond temperature to be in the eighties.

After four days one or two fry were seen. Not many hatched as the spawning was not a large one, but there were enough fry for my experiment. The aerators were kept on and the heaters all the time. Some Liquifry was added to the water and on the fifth day some of the fry were free swimming. The fry appeared to be growing well and they were seen to take the Liquifry and also infusoria which had developed in the tanks. I did not at any time introduce any actual infusoria as I dislike adding the liquid in which these creatures are usually cultivated. I kept

to the Liquifry for just over a week without any addition. There was about a third of the tank well covered with Hornwort, (*Ceratophyllum demersum*), and the fry were to be seen browsing about among it and also picking at the sides of the tanks. As the fry appeared to be getting enough food I continued with the liquid food until they were about a fortnight old. At this time I went away for ten days from home and the fry were left completely unattended. The heaters and aerators were left on and someone opened the frame during the day times. On my return all seemed to be going along quite well. The fry had grown considerably and so I started to feed with additional matter.

I used a pair of fine 'worm shredders' and reduced some flake fish food to a powder. This was taken quite well by the fry and from then on I saw quite a good rate of growth. In addition to the dried food I gave some mashed white worm (*Enchytraea*), which I had reduced in the worm shredders. The fry were feeding very well and with the temperature steady at 72° F., I began to notice rapid growth. About this time I took three of the fry from the tanks and placed them in an unheated one in the house. I had gradually reduced the temperature of their water so that the change was not too great. The three were of no use to me as they had single tails and so I did not mind if they were lost during the experiment; also I had found in the past that single tailed fish grew faster as a rule than the double tailed ones. The idea was to check the rate of growth of these fish in cool water against those with warmth and aeration. Neither was used with the cool tank. The same food was offered but it was very noticeable that the fry in the warm tanks ate much more than those in the cool tank.

After three weeks the fry were fed with white worm which I chopped up with a razor blade on a piece of wood. This food was readily taken and at the same time I continued with the fine dried food. When they were a month old the fry were an inch in body length and were eating very well. The larger pair of worm shredders were used to grind up the flake food and this was quickly accepted by the fry. Some white worm, chopped, was also given every day.

When the fry were five weeks old I made a mixture of food as follows: Two parts Bimat, one part dried shrimp, one part flaked food and one part cat food. (The dehydrated meat and fish type). This was all put through an old-fashioned coffee mill and reduced to a powder. If any aquarist can get hold of one of these mills they will find them of great benefit. My method of feeding was now to chop up some white worms and add a quantity of the fine mixture. This was stirred together until it formed a firm pudding like consistency. Lumps of this food were dropped in the tanks and the fry immediately gather round it and started feeding like a bunch of pigs round a feeding trough. The rate of growth now became more noticeable and by six weeks of age they were mostly

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by B. Whiteside

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Goldfish breeding

continued from page 250

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It will now be very interesting to see if the youngsters will start to change colour at an early date. I have always bred into my strain an early indication of colour change as I have never used any breeder which had not changed completely within a year of being hatched. My fish are the visibly-scaled type of fantail and so change as do the common goldfishes.

No fish have appeared to be in anything but good health although, at one time I thought that a slight attack of Velvet disease showed up in one tank. I added a teaspoonful of sea salt and the next day there was no trace of it. The fry appeared to be rather whitish on their bodies and I have noticed this when they are about three or four weeks old before. It may be that it was only a tendency of mucus change due to age, but I like to be on the safe side and the sea salt certainly had the effect of bringing the fry back to a normal condition. I have used no *Daphnia* nor *Tubifex*, as I do not believe in introducing any live foods from water sources. Neither have I used garden worms so far as I have had a good supply of white worms. I would use garden worms, the softer parts, if I had insufficient white worms as I believe in them as a good food. I hope to be able to report the further progress of the youngsters in a later article, but at the moment at six weeks old they are as big as others I have bred in the past which are six months old, when no warmth was used. It is quite simple to reduce the temperature when placing the fish in the pond.

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our readers



write

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

Preventions not cures

IN my opinion in most cases of fish diseases the elimination of the cause will bring about a cure. In all cases, except malignant disease, the prevention of the cause will ensure that no disease is experienced.

After my first three years of trial and many errors I found that by following the rules laid out below I have had a very happy five years with extremely healthy fish. No. 1. Quarantine all new arrivals. No. 2. Sterilize nets after use, one per tank. No. 3. Select all live food carefully. No. 4. Give your fish as good a diet as possible. No. 5. Wash your hands when you have to put them inside the tank. No. 6. Leave well alone.

This is one of a selection of verses I am working on at the moment

White Spot

When white spot strikes as well it might,
Then view your fish in dimmer light.
Hot things up but play it cool,
With chemicals try not to fool.
In fourteen days a cure for sure,
Remember water keep it pure.
But oh! the pain we suffer thus,
Cause for ourselves a lot of fuss.
Instead of seeking for a cure,
A little sense prevents for sure.
Contamination introduced,
Woo't swell our chests our ego's boost.
But hygiene gives us, don't be glum,
A clean and safe aquarium.

I hope you will be able to put my ideas to some use.

Yours sincerely,

E. W. McFARLANE.

P.S. Thank you for your very interesting article "What's Your Opinion". I hope you won't find it too difficult to carry on with this subject. It's good, very good.

Whiteworms are out

I HAVE, for quite a few years now, had the highest regard for Mr. A. Boarder's articles in *The Aquarist* and often benefited from his advice and experience. For the first time, however, I must disagree with him on his praise of whiteworms for goldfish (article in November issue).

Address letters to The Editor, *The Aquarist*,
The Butts, Half Acre, Brentford, Middlesex

The fat content of whiteworms is around 5 to 6½ per cent. and in my opinion this makes them an unsatisfactory food unless used very sparingly. I rear my own *Daphnia* under controlled conditions (using liquidy tube food) and I believe this is the best live food apart from earthworms. My veiltails and fantails wouldn't know a whiteworm if they saw one, I never use them.

Yours faithfully,
S. JACKSON.

The Raft Spider

IN the article "The true water spider" in the November *Aquarist*, Bill Simms refers to the Raft Spider. He states that this spider constructs a raft of leaves and floats on the water with it. According to Britowe in "The World of Spiders" this notion is derived from a century-old error in the literature, "which has been blindly copied ever since." The spider concerned is *Dolomedes fibriatus* and lives in swamps and dykes where the water is invariably still, and may be seen sitting on water plants or growing leaves with its front legs resting on the water surface, from which position it darts across the water to capture its prey.

My own observations on this spider, in the New Forest, confirms those of Britowe.

Incidentally, *Dolomedes* is a very handsome spider, chocolate coloured with two white or yellow stripes down either side of the body from the head to the tip of the abdomen. It is probably our largest spider and for anyone interested is well worth seeking out and watching.

Yours faithfully,

G. H. KEABLE.

Ed.—Savory, in his *Spiders and Allied Orders of the British Isles* remarks—"that since it hunts on the water surface and may be seen resting on floating leaves. *Dolomedes* has earned the name of Raft Spider but", he states, "It does not construct and launch its own raft".

Circuit for Higher Temperatures

The letter which appeared in the October issue under this heading was wrongly credited to T. J. Zind and the Editor takes this opportunity of extending his apologies to Mr. Z. J. Swzed, the letter's true author.

F.S.A.S. Handbook

ENCOURAGED by the tremendous success which the second edition of the Handbook of the Federation of Scottish Aquarist Societies enjoyed, the Council have decided to proceed with more ambitious plans for the next edition to be published in January.

While much of the content will remain directly connected with the F.S.A.S., it is intended to expand the section devoted to the activities of associated organisations such as the British Killifish Associations and the Fancy Guppy Association and to include details of the Associations which were overlooked in the last issue.

It is also intended to continue a section on Programme Aids, giving information on films and slides which are available for hire to Societies.

The Pet Shop Directory, it is hoped, will be enlarged, particular emphasis being placed on those shops which retail tropical fish in any part of Britain.

Such an undertaking cannot be accomplished without the co-operation of individual aquarists, active societies, and pet traders throughout the United Kingdom. To this end the enclosed questionnaire is sent to you in the hope that your Society will be prepared to help us obtain the necessary preliminary information.

Entries in the Pet Shop Directory will be made without charge as we consider this a service to readers and not primarily a service to dealers.

Traders who wish to have advertising space may have details on request.

Last year's Handbook was printed to a very high professional standard and was circulated to some 600 aquarists in Scotland. In addition, 200 copies were also sent to aquarists in England, Wales, Ireland, Scandinavia and America and were well received in these countries.

The cost will be 3s. 6d. plus the following postal charges:

1 copy 6d.	5 copies 1s. 6d.
2 copies 8d.	6 copies 1s. 8d.
3 copies 1s. 0d.	7 copies 2s. 0d.
4 copies 1s. 2d.	8 copies 2s. 6d. etc.

Your remittance should be included with your order and a receipt will be sent. It is regretted that further orders cannot be placed after publication.

Should your Society hold, or know of any other Society which holds an Annual Open Show, please furnish us with details which will then be printed in the Handbook, no charge being made.

In conclusion, may I express the hope that aquarists throughout the United Kingdom will rally to support this bold venture by sending helpful information and by ordering a copy.

Thanking you in anticipation,
Yours faithfully,

ROBERT G. FERGUSON,
Hon. Treasurer,
Federation of Scottish Aquarist Societies
27 Watson Street,
Paisley,
Stirlingshire.

CORRECTION

I must apologise to your readers for a stupid mistake made in my article "The Japanese New Year" (November issue).

December, 1967

Referring to one of this year's abandoned formal names, I gave it as Cynops triturus. Many readers will know I should have written Cynops pythagaster.—JACK HARRIS.

Pen Friend Required

I AM an aquarist living in Madras, India, who would like to get in touch with other aquarists in England or elsewhere who are interested in having contact with another aquarist and also if possible exchange fishes of their respective countries. I wonder if any of your interested readers would like to contact me. Thanking you.

P. B. Krishnamurthy, Advocate,
4 Beach Road, Madras-41, India.

Softly, Softly

I HAVE found that the scouring pad, known as "Golden Fleece," is ideal for cleaning algae off the inside of an aquarium; it does not scratch the glass and is quite harmless to the fish.

I hope this will be of help to someone else who is having the same trouble as I was with algae.

ROBERT J. LOON.

Book Review

Coral Fish, Their Care and Maintenance

By T. Ravensdale, F.B.I.S., F.M.S.S., A.M.Z.S. Published by John Gifford at 50/-.

Readers of *The Aquarist* will already be acquainted with Tom Ravensdale's treatment of the marine aspect of the hobby and his style of writing which infects his readers with his own boundless enthusiasm for his subject. This book of his is a compact fund of his own observations on this up and coming branch of the aquarium-keeping hobby and while it won't be the last book on this subject, it is certainly the first in the field since marine fishkeeping came within the compass of the average hobbyist.

Covering all aspects of marine aquarium keeping from collecting specimens to treating ailments, this book should enjoy a great success as a primer for the newly emerged coral fish addict.

To all our readers and those who just browse,
from the *Aquarist & Pondkeeper* a

**MERRY
CHRISTMAS
HAPPY
NEW YEAR**

The physiology of snakes

by Don Reid

RECENT years have seen a considerable growth in the hobby of Herpetology, or keeping reptiles. One has only to study *The Aquarist's* advertising pages to note that an increasing number of pet-stores are finding a lucrative business in the sale of reptiles and amphibians. Many exotic species are now readily available, and by far the most interesting—and the most misunderstood—branch of the reptile family are the snakes. These unique creatures hold a wealth of fascination all too often overlooked due to man's seemingly instinctive revulsion of them. Therefore I shall attempt to explode some of the unfounded beliefs that are rife, and in so doing to give a simplified picture of the snake's physical make-up and to offer advice on any problems arising from keeping snakes as pets. Although much of what follows can be applied to snakes in general, the emphasis is on the primitive snakes, i.e. the pythons and boas, which figure among the most popular as pets.

As previously stated the pythons and boas are regarded as the most primitive of the order ophidia, as they have skeletal vestiges of hind limbs; in fact they still carry a pair of movable claws positioned one either side of the anal cleft. Also these snakes have a well-developed pair of lungs, while other higher snakes have the left lung collapsed, with the right lung elongated to fit the body shape.

Sloughing

The shedding of a snake's skin is carried out at intervals throughout its life. A young, quickly growing snake may shed its skin, or "slough", every four weeks or even more often but the interval increases as the snake gets older. The actual divesting of the old, dead skin is in normal circumstances done quite quickly, but several symptoms are observed during the fortnight preceding this. The first sign to the casual observer is a slight cloudiness of the coup or eye-cover (this is a permanently closed lower eye-lid; no snakes have movable eye-lids), together with sluggishness and a refusal to eat any but the smallest meals. Also a cloudiness over the entire body is noticed, particularly on the darker areas of the pattern. This clouding lasts for roughly six days then rapidly clears for a further six days after which the skin is rubbed off, usually in a complete or almost complete state. The only attention a captive snake needs at this time is a bowl of water in the cage which is large enough for the snake to completely immerse itself, and a roughish stone or log on which to rub the body to pull the old skin off. It is an interesting point that this dead skin is formed of Keratin, a nitrogenous compound from which our own fingernails are formed. At this point it could be mentioned that the skin of a snake is not slimy; it does not take much thought to realize that were snakes slimy they couldn't lie in the sun for long periods (as they all love to do) without being badly scorched. Also we would have slimy fingernails!

Locomotion

The snake's method of propelling itself has long been a



subject of much study and diversity of opinion, but in recent years a great deal of work has been done with x-ray cameras to record the locomotive process. It has been established that different species use varying methods, but as we are mainly concerned with pythons and boas, theirs is the method I shall briefly describe.

Many of the heavy-bodied species, including all the pythons and boas employ the rectilinear or "straight-line" motion. This is brought about by the belly scales—operated by two sets of muscles; one relaxing, the other contracting in turn—working much on the principle of a ratchet. Each scale is moved rapidly in turn, forming a continuous ripple along the body, lifting it very, very slightly off the ground and propelling it forward. This method enables it to move in a straight line, and is the usual method when creeping at normal speed. If, however, a greater speed is required they may revert to the method used by the greater majority of snakes, and referred to as "undulatory". This involves a succession of loops thrusting against any resistant object or material. This produces the familiar wavy, "swimming" action. A third method, only used by a few desert species, is "side-winding". In soft sand the preceding methods are impractical because of the lack of purchase offered by the sand, therefore an interesting method has been adapted which entails literally throwing a loop of the body at a time in the direction of travel, the snake moving in a crabwise fashion.

Speed

Much has been stated by the sensation-seekers and the



ill-informed concerning the speed at which a snake can travel overland, but in the light of scientific experiments the bulk of these tales can be rejected out of hand. The statement that a snake can outpace a galloping horse is one that can have no substance whatever. Without going into any great detail, and amidst a great deal of anti-climax, suffice it to say that the fastest any snake can travel is about 8 m.p.h., and that only over very short distances. In other words a rapid walk for a few yards would leave any ophidian pursuer (which in itself is extremely unlikely) far behind.

The Tongue

The snake's tongue, usually the part of this much-maligned creature's anatomy that is most subject to wild beliefs, is devoid of any sense of taste as we know it. Instead it is much-modified to perform a more important task, as it is used for exactly the same purpose as a dog uses its nose. Every flicker of the long black tongue is equivalent to every sniff of a dog's nose. The forked tongue picks up microscopic particles from the air, and when withdrawn the forks are inserted into two cavities in the roof of the mouth. These cavities are known as Jacobson's organ. Simply, the organ "analyses" the air particles and transmits its findings to the brain via the olfactory nerve—the nerve which in all animals transmits the sense of smell. The cavities of the organ are in fact modified nasal cavities. This is the only function performed by the snake's tongue, which plays no part in the swallowing process, as it does in all other animals. The old-wives' tale about the tongue having "stinging" properties is completely unfounded.

Size of Snakes

On reading only one or two works on snakes it will be found that authors tend to differ widely in their opinions on the size that snakes can attain. Some are content to accept the estimates of any unqualified reports; some refer only to reliable and conclusively proven facts. The "record" claimed for any snake is an anaconda purported to measure 46 feet but the material evidence of this was not produced. Many other claims of around 40 feet are prevalent, but it can be generally stated however, that any measuring much in excess of 30-32 feet, is something of an exception. It should be added that the only reliable way is to measure the body as the skin alone is liable to stretching. This could be how some of the fantastic tales arise.

Feeding

The general method employed by most harmless snakes to catch their prey is to lie in wait for a suitable victim, or, in the case of nocturnal species especially, to creep up on a sleeping bird or animal etc., strike rapidly to seize the victim in its strong jaws, apply pressure with the jaws until the luckless creature stops struggling and then proceed to swallow it. However, in the case of larger snakes more drastic measures are needed to suppress the struggles of their proportionately larger prey, so directly after the initial strike a couple of coils of the body are thrown around the body of the victim. This is not to crush the beast as is popularly supposed, but to prevent the passage of air to the lungs, so that death from suffocation results.

The swallowing process is both unique and laborious. As the snake cannot tear its food to pieces it must be eaten whole, and to do this a very much modified mouth meets this problem. Instead of the lower jaw being hinged to the upper, as in other animals, it is virtually free. In addition the two bones that form each jaw are separate and can be moved independently. This results in a gape much exceeding the diameter of the head. However the bones cannot be manipulated by their own power; they can only be forced apart by something entering the mouth. The jaws slowly work in turn over the carcass and between these movements the muscles in the neck gradually drag the body farther back so that the jaws can work a little further along, and so on. Once past the head the victim is passed quite rapidly down the snake's body to the stomach, where the extra-powerful digestive juices which break down everything including the bones, come into action. It is believed in some circles that before swallowing the prey the body is coated with saliva for ease of swallowing, but this belief probably stems from an eye-witness having seen a snake with what was in fact something partially eaten and then disgorged.

Reproduction

As this brief article is designed to bring to light points that may concern snakes kept by amateurs, the subject of reproduction is one that need not be discussed in any great detail as breeding in captivity would probably involve too much expense and space for the average amateur. The majority of snakes—among them the pythons—lay eggs, but a few species, including the boas, bring forth living young. The number of eggs or young varies greatly, both

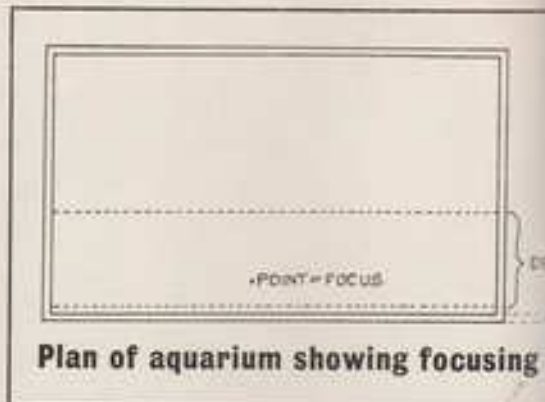
Continued on page 262

Aquarium photography

by L. E. Perkins

MANY an expert photographer, highly skilled in numerous branches of his art, has been forced to appreciate the technical difficulties involved in the field of aquarium photography so that the aquarist who invests in a camera with the intention of making pictorial records of his fish should not be over-inclined to denounce his own shortcomings purely on the grounds of his personal ineptitude in a new field of endeavour. There are few worse training grounds for the truly amateur photographer for he is hardly likely to obtain that odd hit-and-miss success that can act as a tonic when engaged in less difficult subjects.

Some of the problems involved in photographing fish in aquaria are manifest from the outset to the most unversed tyro as, for example, the likelihood of unwanted reflections arising from the mere presence of the aquarium glass. Other snags, however, only become apparent after a number of abortive attempts—snags such as those caused by the high light-absorbent quality of water as well as its magnifying characteristics. However, to deal with all



Plan of aquarium showing focusing

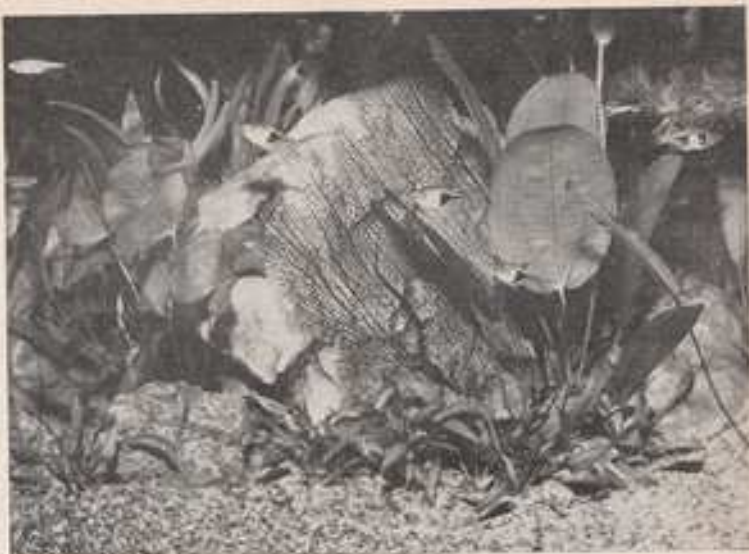


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the complex problems in a coherent manner it is preferable to outline them as they are likely to arise in practice.

Film Emulsion

The first choice to be made here is between black and white and colour film. Odd though it may appear to the novice, colour material presents less difficulties. To skilfully portray a coloured subject in terms of black and white requires a complete appreciation of how one's selected monochrome film will respond to colours in respect to one another. Take, for example, a rich red goldfish in a tank with some clumps of plants for furnishing. To the eye the contrast between the red and the green is both pleasing and marked. When converted by the monochrome film into shades of grey, however, the contrast has been so diminished that often the fish's symmetry detail is lost against that of the plants. Colour filters can be used to give modest correction but this requires some practice and frequently produces unreal results. Backgrounds, too, can be troublesome if thoughtlessly selected and it is so easy to be carried away by the eye's response to the colour of the subject and to choose a coloured background when all that is necessary is a choice of three: black, white and mid-grey. To sum up, colour film assists the beginner because its function is to portray exactly what the photographer sees at the moment of exposure and not a symmetric reproduction of low and high lights.

So far as the speed of the emulsion is concerned we have a fairly wide range among the available black and white films which are produced to cater for occasions when high shutter speeds are necessary (motor racing) or when

Above

This pleasing aquarium set-up can make an attractive shot, the fish blending in with the background

Left

A common rudd photographed with top lighting. Note fish's shadow but absence of shadows on white background



poor lighting conditions maintain (large gloomy interiors), or conversely when fine detail without grain is demanded and a slower emulsion is indicated. In the case of colour films there is not such a wide range of emulsion speeds; with aquarium photography this is not likely to be a disadvantage when we consider the problem of lighting.

Lighting

Although excellent photographs of aquarium fish have been taken by outdated lighting methods (flash powder, photoflood lamps, etc.) and many of them have not been bettered, we can now employ high speed flash at a relatively low cost and with no transportation worries—the pocket-fitting outfits of today are a far cry from the precursors of this apparatus which weighed 30 lbs. or so and left indelible deformities on my shoulder. So intense is the lighting provided by this equipment that it is quite unnecessary to use fast emulsions and the question of excess grain need not arise.

Position of Light Source

In discussing this aspect we have to introduce another factor which concerns the whereabouts and siting of the aquarium to be photographed. If it is in one's own home one has complete freedom but where public aquaria are concerned the only possible way of admitting light to the aquarium is via the front glass. Where choice exists the light source can be positioned directly above the tank but it goes without saying that densely planted aquaria will not be suited to this method. Round fish such as lionhead goldfish or inflated puffers will suffer from over-illuminated dorsal and dramatically shaded ventral areas although the latter contingency can be reduced by using light-coloured compost to reflect more light upwards. Slender-bodied fish like angels, on the other hand, can reproduce very disappointingly with no detail in the flanks occasioned by the fish tilting its dorsal towards the camera while swimming parallel with the aquarium's front glass. These factors lead me to advocate throwing the light beam through the front of the aquarium. This raises the question of unwanted reflections. There is a well founded formula proving that the angle of refraction is equal to the angle of incidence but this presupposes that a single light ray is being emitted and the fact that the wide angle throw of a flash-head comprises many thousands of light rays does not recommend the precise application of this formula. Nonetheless, it can be used as a guide and it will be found possible to position the light source at such an angle to the horizontal approach to the aquarium's front glass that all reflections are eliminated. It may be found that a band of shadow will be thrown on the interior of the tank's back about a third of the way from the top and this results from the top bar of the tank's front frame impeding the flash. This presents no drawback if the fish are swimming in the middle regions and if a black background is being used. (Backgrounds, incidentally, are best placed within the aquarium where, if they have a matt surface, they will preclude the possibility of reflections appearing in the aquarium's rear wall).

Focusing

Ideally a single lens reflex camera is called for with close-up work of this nature. Next comes the twin lens reflex and then the range-finder camera which can focus down correspondingly when supplementary lenses or extension tubes are used. The instrument lacking these focusing aids will call for manual focusing involving measurement of the distance from the film plane to the point of focus and subsequent setting of the focusing scale to agree the distance measured. Now, where to focus and how much depth of field will we require? Depth of field is going to be severely restricted since we are working at such close quarters (as near as a foot or less with small fish). Even if the lens is set at its smallest aperture the overall depth of field is only going to be two or three inches and our fish must be within this band if they are to be sharply defined. To exploit this restricted field of action to its full we need to appreciate where the field depth lies in relationship to the point of focus. As all photographers know, depth of field is the term given to that band bounded by a point in front of the spot focused upon and another behind the point of focus—a band in which good definition is obtained. The fact to remember is that it extends *behind* the point of focus although to a considerably less degree than it does in the forward direction. Bearing this in mind it becomes apparent that by focusing on the exterior of the aquarium's front glass a chunk of our available field depth is being wasted. Appreciating that the glass itself may be $\frac{1}{2}$ in. thick and a fish swimming parallel and close to the front



glass must leave room for the manipulation of its lateral fins, it becomes apparent that one may safely focus at a point some two inches beyond the front glass and obtain another couple of inches penetration towards the rear of the tank's interior. This is as much as one can hope to do when dealing with tanks not under one's control and ensures that if the fish are photographed while swimming no more than three or four inches away from the front glass they will be correctly focused.

When the aquarium is under complete control, focusing can be carried out as outlined and then the limit of the field depth determined in the following manner. Peering through the focusing screen, hold a thermometer or pencil vertically immersed in the tank and slowly move it towards the back of the tank. Note the point at which the detail of the engraving begins to blur and then introduce a sheet of clear glass to run vertically along the tank's length at the noted distance from the front. The fish should now be placed in the front section and the plants in the rear one and we then have a set-up wherein the fish cannot swim out of focus nor hide away among the plants but where the finished product reveals no trace of this example of man's triumph over lesser intelligence.

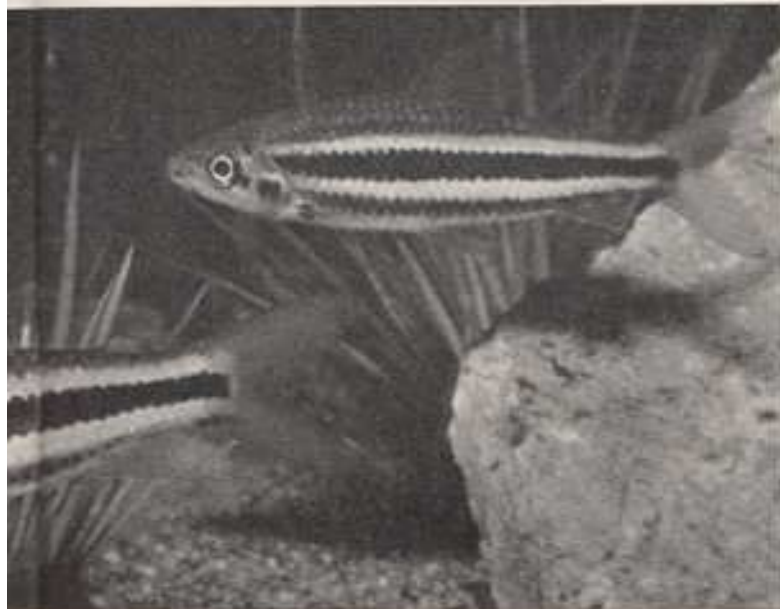
Exposure

The experienced photographer who makes his first attempt at portraying fish in aquaria is usually shattered at his under-exposed results for, having used flash equipment, he has based his exposure on a flash factor which does not take account of the light loss when the subject

is water-bound. Until one has fallen foul of this phenomenon one must be unaware of its presence but exposures made of say, an ornament in an otherwise empty tank and then in a water filled tank, will quickly illustrate the point made. No real guide can be given in the matter of exposure because so much depends on the film material in use, the power of the flash equipment, size of the aquarium, working distance operating and the extent of aquarium furnishing coupled with the density of colour of such furnishing (whether brilliant light-green plants, light-coloured compost or dark rockwork, etc.). Trial runs must be made and these are best carried out with one's own set-up. When success has been achieved with this, one soon establishes a very fair appraisal of differing conditions and set-ups and can normally make two exposures of a "foreign" tank with reasonable certainty of obtaining one good result.

Effect on Fish of Flash-light

Much is said about the adverse effect of flash-light upon fish but this is greatly exaggerated and although some species of fish show signs of alarm at the sudden intensity of flash, most very soon reappear from their retreats, curious to find out what it was all about. Some species, of course, like the goldfish varieties, take absolutely no notice whatever. The only casualty I ever encountered was a tench, taken but recently before the event from the wild, and it turned a complete somersault which threw it from the tank on to the floor. His mishap cost him no lasting hardship, however, and he lived for many years.



Leporinus striatus—photographed in a public aquarium and relying on fish swimming within the maintaining depth of field.

Our experts' answers to tropical fish-keeping queries

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

I bought a pair of pygmy sunfish (*Epiplatys spilargenteus*) just over a week ago. Since introducing them into a well-planted aquarium they have seldom emerged from behind the plants. On the few occasions I have spied them in the open they have been moving over the bottom with a slightly rolling gait. Do you think the dealer knowingly sold me an old or ailing pair?

We do not think the dealer sold you an old or ailing pair. This species is shy by nature and prefers to skulk about in thick vegetation. With regard to the rolling gait you have observed, this rather uncommon mode of progression is characteristic of *E. spilargenteus*. If you introduce plenty of livefood into the tank every day we believe you will soon see more of the sunfish. Once they become accustomed to their new environment they will not be too shy to ignore food.

Recently, at the B.A.F. show at Manchester, I saw a large fish (obviously a characin because of its tetra shape and adipose fin) which I discovered was called a pacu. I have been unable to trace the name of this fish in any of my books. Please can you give me any information about this species, with special reference to its country of origin, its suitability as an aquarium fish, and whether it has been imported into this country in the past?

The common name of pacu is applied by Brazilians to fishes of the genus *Colomesus*. The colomesos belong to the family Characidae and are quite closely related to the piranhas. Although some colomesos are predacious, a few species incline towards a herbivorous diet. Colomesos are widespread over northern South America. A few species have turned up in dealers' tanks at infrequent intervals over the last thirty years. Years ago they were usually referred to under the erroneous generic name of *Myletes*. Colomesos flourish well in captivity, provided they are given plenty of swimming space and plenty of the right sort of food.

I have been told that the hobby of keeping and breeding tropical freshwater fishes has spread beyond the Arctic Circle. Is this true?

In recent years many servicemen and technicians working in Arctic America have carried tropical fishes to their isolated stations. There, in the well-warmed quarters of their owners the little fish have bred and prospered. The progeny of some of these fishes have been presented to interested Eskimos and trappers living in the frozen north. So now you know: tropical fishkeeping as a hobby has taken root beyond the Arctic Circle.

Can you tell me why some fishes, even though they will live together on good terms and eat the same sort of food, never stay alive for long in one another's company?

Perhaps this has something to do with the chemistry of the water. For example, sail-fin mollies and Indian glass perch inhabit waters that are hard and alkaline and sometimes brackish. On the other hand, neon tetras and pencil fish come from waters that are soft and acid. It stands to reason, then, that the water in an aquarium which is suited to one species will not always suit another species. Therefore, it is advisable to keep hard and softwater fishes apart.

I could not resist buying a plecostomus catfish which my dealer told me was of a kind he had never seen before. He did not know its scientific name. The fish is a typical plecostomus in shape but not in colour or markings. It is a pretty shade of beige ornamented all over with lots of chocolate coloured spots. The larger spots on the middle flanks are interspersed with some chocolate coloured bars. Do you think you could identify this fish for me and give me its maximum length in captivity?

We feel certain your fish is *Plecostomus Hypostomus rachelae*, a species from Brazil that grows to a length of about 5 in.

I have read that rainwater is full of impurities. If what I have read is true, why do writers on aquarium keeping advocate the use of rainwater in the tropical aquarium?

Rainwater only becomes tainted with impurities when it passes through a polluted atmosphere. In country districts, where the air is reasonably pure, rainwater collected in non-toxic vessels and strained through a layer of well-washed non-calcareous grit to rid it of dust is, perhaps, the best water for all freshwater fishes. But in busy or large towns where the atmosphere is charged with petrol fumes and various chemicals rising from factory chimneys heavy rain has to fall for about an hour (to clear the atmosphere of poisonous dirt) before it is suitable (after filtering it through sand and charcoal) for fish. In short, then, clean rainwater is superior to any water drawn from the mains.

Is it true that the tiny hatchet fishes (*Carnegiella*) escape their enemies by leaping out of the water and flying to a place of safety?

It is true that hatchet fishes often escape being captured by taking great leaps out of the water. But none of these so-called flying-characins can fly like a bird. All the same, the shape and position of their pectoral fins enables them to glide above the surface for a distance of several feet. And the initial leap may take some species 12 in. or more into the air.

What makes the neon tetra luminous?

The neon tetra is not luminous in the sense that some marine fishes inhabiting very deep water are luminous. In short, you cannot see a neon tetra in the dark. But viewed under a strong light the intensity of the pigment, combined with the reflective qualities of the scales, gives the observer the impression that the fish is lighted from the inside. It is not.

Why don't blind cave characins bump into fixed and moving objects in the aquarium?

The different pressures and movements of the water created by the blind fish and other occupants of the aquarium are picked up by the extraordinarily sensitive lateral line (a sensory organ). Therefore, the blind cave fish is not handicapped in any way by its lack of sight. (It also has a highly developed sense of smell).

I have a pipe-fish (*Syngnathus*) which is refusing flake food and scraps of meat. Can you tell me what I can do to break this fish's self-imposed fast?

Try your pipe-fish on live *Daphnia* or whiteworms flicked onto the surface so that they will drop, wriggling, past the fish's head. But better still, introduce some tiny guppy fry into the tank. Another thing, bear in mind that pipe-fish are not comfortable unless they are kept in rather hard water made slightly saline by the addition of some sea salt.

Coldwater fish-keeping queries answered by A. Boarder

Some of my goldfish in a pond have black marks on them and they appear to be covered with a film. What is the cause and cure?

The black marks may be due to a form of black fungus or *Melanosis*. This can be caused by a general run-down condition of the fish. The treatment is as for *Saprolegnia* (Fungus) and the usual salt bath will clear the fish; but the conditions under which the fish are kept must receive special attention. Overcrowding and foul water can seriously affect the health of a fish when it is exposed to any infection which may be in the water.

I have lost several goldfish from my pond and cannot understand why. I have a pump which sends the water over some granite and limestone rocks back into the pond. The fish seem healthy when bought but do not live long. What can be the cause?

It is possible that free lime is being washed from the limestone and this is killing the fish. Try changing most of the water and then either do not use the pump or change the rocks to Westmorland rockery stone.

Although I have cleared out my pond twice this year the water soon turns green again. Is there anything I can do to improve matters?

Pond water turns green because of the formation of green Algae. This Algae can only grow when there is a good supply of light to the water. Changing the water may only encourage the formation. Plenty of growing water plants will usually help matters. If you can get a quantity of duck weed to place on the surface to shade out much of the light the water should soon clear. Once the water clears and if the duck weed has grown too rampant, it can be cleared from the surface.

Can you tell me the depth of water in a pond for King Carp and Golden Carp?

I think that if there is a depth of at least two and a half feet at one part this will be sufficient. I do not think that for the ordinary garden pond there is any need to go to a greater depth. The water at the lowest levels is always lacking in oxygen compared with that near the surface. Also the whole of the water in such a pond with the advised depth would not be likely to freeze.

Can I have a community tank of the following fishes—2 common goldfish; 2 shubunkins; 2 bitterlings; 1 golden rudd and 1 golden tench?

It depends entirely on the size of your tank and the sizes of the fishes. Some of them could grow to a good size and as each inch of fish requires at least 24 square inches of surface area of water you can estimate the numbers and sizes of fishes for the tank. The fishes named could live together if not over-crowded.

I have a fantail goldfish which often swims on its back. I asked about this at my local pet shop and was advised to keep it in shallow water. Is this right?

It is quite right to keep such a fish in shallow water and if you can raise the temperature to about 10°F., above what it has been used to it will help. It is also a fact that a little sea salt in the water will help. Not more than a teaspoonful to the gallon. The water need only be deep enough to just cover the extended dorsal fin.

I have recently found a few of the goldfish in my garden pond suffering from small sores on their bodies. These are just over a quarter of an inch across. Can you account for this please?

It appears that the fish have been attacked by fish lice,

(*Aegilais*). These are like miniature plaice and they swim around until they find a host. They attach themselves to a fish and suck its juices. You may be able to pick the lice off with tweezers but some may be hidden under the fins beneath the fish. If you immerse the affected fish in a solution of Dettol, at a strength of a quarter teaspoonful to a gallon of water the lice will leave the fish. Do not leave the fish in the solution unattended but if they turn over remove them at once to fresh water when they soon recover. In any case do not leave the fish in the solution for more than a few minutes.

Is it right for me to keep feeding the goldfish in my pond right through the winter?

You should reduce the feeding as the weather turns colder. Goldfish do not eat much once the water gets down to about 40°F. They take a long time to digest their food when the water is cold and in a well established pond they could go right through the winter without artificial feeding.

I have some Roach and goldfish in my pond, also a few shubunkins. I have seen some variegated fishes in the pond and wonder if they are the result of the Roach pairing with the goldfish?

The youngsters in your pond are probably young goldfish or shubunkins. Goldfish and shubunkins breed together as they are only varieties of the original goldfish. The Roach would not pair with the goldfish.

Since moving to this district I have lost a number of fancy goldfish. Post mortem showed that they had died from a form of *Melanosis* due to some cause unknown. I have now heard that the local Water Board are putting copper sulphate in the water to kill bacteria etc. Would this harm the fish?

I would think that copper sulphate is very dangerous to fish and it depends on the percentage to the water. It is known that a fifth part of copper can kill at the strength to a million parts of water. Some fishes are more quickly killed than others. I would get in touch with the Water Board and ask if the rumour is true and what suggestions they can offer. I know that many houses today have copper water pipes and that some people experience little trouble but this does not alter my opinion that copper can be very dangerous. I have had too many cases where I have proved conclusively that copper can be a killer to change my opinion about it.

Can you tell me why my goldfish have died? They have shown no signs of injury or disease but are just dead in the pond in the mornings. I have seen them often gasping a lot at the top of the water.

There is little doubt but that the fish died through asphyxiation. When fishes in a garden pond die and show no signs of injury or disease this is usually the cause. When the water gets foul the fishes are unable to obtain sufficient oxygen and they then gasp at the surface. Your pond needs cleaning out and refilling.

I have some large garden frames. Can I cover them with cellophane and use them to protect my garden pond from severe frosts?

You can use the frames as suggested. However I advise you to get Polyglase with which to cover the frames. Even this stiffer material can bend badly if it is covered with rain water. If the frames can be fitted to give a good slope this will allow the rain water to run off. I have found that the use of this material as a cover for out-door tanks in winter is quite a good idea and tanks so treated did not freeze up nearly as badly as those unprotected.

Marine queries answered

I have heard that there is another fish which, like the scorpionfish, can poison with its dorsal fin. Is this true and if so what fish?

You are probably referring to the weever fishes which are quite common in British waters. "Weever" is in fact developed from the French "wevere" meaning viper. The dorsal fin spines contain poison sacs at their bases. Pressure on these spines ruptures the sac and allows the poison to flow. The great weever (*Trachinus draco*) is most common in Great Britain, but do not worry about stings for they are deep water fish and never attack large animals. The lesser weever (*Trachinus vipera*), however, is a shallow water fish of up to 6 in. in length and can cause great pain if trodden on. It feeds on shrimps and fish fry.

Can the freshwater flounder, now becoming popular, be kept in a marine tank?

The flounder (*Platichthys flesus*) is the one and only flounder, the fresh water type offered being one and the same. The question should in fact be reversed. The salt water flounder can be kept in fresh water. It can easily be distinguished from other flat fish by the whiteness of its under or left side. It grows to 18 in. in the wild.

There seem to be many people keeping native gobies and blennies. Can you, please, tell me the difference between the two?

Gobies belong to a large family of shore-living fishes recognisable by the short blunt face and highly placed eyes, almost on the top of the head. The most unusual aspect of the goby is its ability to convert the pelvic fins into a sucking disc. The common goby (*Gobius minutus*) seldom exceeds 3 in. in length. The blennies, although similar to gobies, have only one dorsal fin—elongated to the whole length of the body. They are unable to form a disc from the pelvic fins which are less than five rays. Some blennies have a rudimentary "angling" device on the forehead which has never developed. The Tompot blenny (*Blennius gattorugineus*) is the largest of the British specimens reaching up to 9 in. in length.

Can gurnards fly?

It is doubtful whether this is possible and has never been proved. There are five types of gurnard, the flying one being *Dactylopterus volitans*, a fish not unlike the *Pterois volitans*. The flying gurnard is actually placed in a separate family (*Dactylopteridae*) from the other gurnards (*Trigloidae*). The former is easily recognised by its tremendous pectoral fins, the first few rays of which enable the fish to "walk" along the bottom of the sea. It is, all things considered, an extremely interesting fish but none have ever been seen actually airborne.

My dealer has ordered some marine fish for me and has promised to collect them from the airport and deliver them to me. What steps should I take when I receive them re changing them over to the conditions in my tank? Any other advice concerning what to do when my fish arrive would be helpful.

When your dealer gets his fish in stock take a hydrometer reading of the water he keeps them in. Then balance your own tank at home. When you receive the fishes put a few pinpricks in the plastic bag and float it in your tank. This will slowly sink and thus allow an extremely slow change of water. The top of the bag must of course be open. Keep the fishes in darkness for about a week and, if in doubt as to health, add enough methylene blue to make the tank water dark in colour. Give new specimens (and old) plenty of hiding places and do not disturb unnecessarily.

Marine News

During a recent trip to Germany I saw a new Ultra Violet marine-filter soon to be available in England. It comprises a six-inch tube fitted into the filter system which radiates a bright u.v. light. These neat little units were being used on all the marine tanks in Tropicarium of Frankfurt. They cost around £7 in Germany and the u.v. globe has an expected life of around four months. The bulbs, however, are not exchangeable, so it is a relatively expensive item. Mr. Schmidt of Tropicarium did tell me, though, that a new unit was expected shortly with replaceable bulbs. The unit is, of course, designed as a disease repellent and is, I understand, quite effective.

A fire which swept through Brockley Aquaris recently destroyed or damaged the greater part of stock in trade. Fireman did, however, consider the fish in the tanks and used water to quell the fire, which was caused by a refrigerator, and not a chemical which could have poisoned the livestock. Once the fire was under control the C.E.B. were rushed to the scene (5 p.m. on Sunday), to restore the electrical supply necessary to keep the tropical fish alive. It is gratifying to know that the authorities really do care when it comes to the push but, alas, all was in vain for the whole stock of some 3,000 fishes had to be destroyed a few days later due to the thick layer of scum and soot which covered all water surfaces.

One remarkable aspect of the fire was that practically all pregnant livebearers gave birth during the fire and smoke period.

The physiology of

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from one species to another, and in the same species according to the size and age of the mother. A very rough average for the snakes with which we are concerned is as follows: 40-50 eggs for a python, and about the same live young for a boa. However, these figures can fluctuate in some cases by as much as 20 or more.

Longevity

The average length of a snake's life is another point for conjecture, as from time to time there occurs an exception to the rule which upsets the recognised estimates. For example the average age of a particular species may be established as being 15 years, with 20 years being the outside limit, when suddenly a reliable report is received of a solitary specimen attaining the ripe old age of 29 years. As with most aspects of a snake's—or indeed any other "cold-blooded" creature's—life, so much depends on a combination of the circumstances arising from its environment. The above example can be considered as reasonably general.

Following is a brief summary of the most common pythons and boas seen in our pet shops:

Marine News by T. Ravensdale

Day and night work has restored the property and Brockley Aquaria has now re-opened for business again with all new stock including a complete refit of new nylon-coated aquariums.

The interest in coral fishes being shown by some of Britain's leading companies is soon to be seen in two public displays. A large window in the Charing Cross Road branch of Foyles, the book people, is to be devoted to a large marine display tank during the last week of November and the first week of December. A further interesting exhibit will be one at the offices of "Union Castle" Line in Boad Street. This showroom has an enormous 22 ft. full-scale model of the "Windsor Castle" in the window and under this is to be fitted five 4 ft. nylon marine aquariums. "Union Castle" is, of course, the company which brings marine specimens to the London Zoo from Madeira, so they should be quite able to cope with the problem of fish in static tanks.

A new animal and fish supermarket is to be opened shortly at Crystal Palace. It will be spread over four floors with a basement of five rooms for quarantining. The ground floor will be tropical fishes. Marine fish, mammals, birds and reptiles will all be available and special breeding and show fish are to be the speciality. The accent will be on

live bred English stock. Meticulous efforts to start the aquarium on the right foot are evident from the fact that future stock is being purchased now to be quarantined until the store opens at Christmas. The store, to be known as "Crystal Aquaria" will stock such items as civets, apes, owls, monkeys, boas, fancy goldfish and coral fishes.

Don Corning, the remarkable sealer, being used by many marine enthusiasts as a tank sealant, has recently come under fire. Apparently a chemical fungus repellent was added to the sealer in order to prevent cracking in bath-tubs due to soap attacking the product (the sealer is, after all, intended for this sort of work). This repellent has, however, produced several cases of coral fish poisoning and Don Corning have quickly answered the many enquiries by pointing out that only "Don Corning aquarium sealer should be used for marine tanks and not simply plain Don Corning sealer". The former product, although only available in America, is soon to be available from Chiswick Aquaria who first instigated the enquiry.

The International Marine Study Society found it well worth the effort to go to Belle Vue this year, for I understand that many new members were signed on. The trend towards marines is speeding faster every day. They are certainly here to stay.

snakes

BOA CONSTRICTOR (*Constrictor constrictor*)

Possibly the best of all the big snake pets. Grows to a length of approximately 12 feet. Handsomely marked with brown, black and white on a sandy-buff ground colour. Feeds chiefly on animals and birds no bigger than a pigeon.

RAINBOW BOA (*Epicrates cenchris*)

This beautiful snake owes its name not to its actual colour which is brown, but to the breath-taking iridescence of its scales when seen in the sunlight. Grows to about 6 feet.

I have deliberately omitted the ANACONDA (*Eunectes murinus*) as its size is prohibitive and it is reputed to be of uncertain temper.

RETICULATE PYTHON (*Python reticulatus*)

A snake that again grows to a very large size (it is the largest of the pythons) but is very beautiful, and is reputed to be quite amenable when young. May be a finicky feeder. Grows to about 28 feet.

INDIAN PYTHON (*Python molorus molorus*)

More common as a pet in America than Britain. Grows to around 20 feet. Marked in dark brown and yellow on light brown ground colour. A larger, darker, northern species (*python molorus britannicus*) is said to be irritable.

AFRICAN PYTHON (*Python sebae*)

By far the most oft-seen python in this country. About the size of its Indian cousin. Usually makes a very docile pet. Marked in varying shades of brown with yellow edging.

ROYAL or BALL PYTHON (*Python regius*)

Much smaller than those preceding, reaching about 5 feet. Specimens unused to being handled will coil into a tight ball, with the head inside. Very agreeable as a pet. Similar colours as other pythons but rather more bold patterns.

In the second part of this article I will deal with the requirements for these snakes, and how the main problems are to be overcome.

Danger from *Cryptocoryne haerteliana*

by Frank Partington

WHEN *Cryptocoryne haerteliana* was introduced to us some years ago we welcomed it gladly, for here was a plant which seemed everybody's friend—easy to grow but not so rampant as to need pruning as often as the Indian fern, *Ludwigia hygrophila* etc., which were the staple tank fillers at the time. What a welcome change of colour too, with its rich glossy green and wine hues.

And so its popularity continues today, for hardly a furnished tank do you see without it, and in nearly every fish house is a tank which "will only grow *C. haerteliana* down there where there is little light". It pays a big slice of the electricity bill for many a tight-budget hobbyist. But we may well be bugging a viper to our bosoms.

It is about eighteen months ago that a friend and I first noticed that there seemed to be some connection between a flourishing colony of this plant and failure of certain fish to thrive, or even to survive for more than two or three weeks.

We have long been advised of the benefits Indian fern brings to the guppy enthusiast. "First plant Indian fern and when it is thriving you can be sure your guppies will thrive"; we are constantly reminded. I have myself observed that a healthy tank of Gabomba seems to ensure healthy swordtails. It is therefore not very unlikely that some plants will have an *adversus* effect on some species of fish.

I will tabulate as clearly as I can my observations and those of society colleagues in the hope that an authority on the subject will give it serious scientific study. I know that *C. haerteliana* is now an invalid name and we should correctly refer to *Cryptocoryne nana*, but by far the majority of hobbyists know it as *C. haerteliana* and at this stage it seems important to draw their attention to these facts.

A 36 in. by 15 in. by 15 in. tank my friend set up was planted with a good variety of plants, including two *C. haerteliana* positioned about a foot from each end. Being in the living room and designed as primarily decorative, it received a wide variety of fish also—tetras, barbs, angels, danios, cats, platies, mollies, swords. The lot, but not overcrowded. For months all was well. But gradually the *C. haerteliana* spread until few other plants were left and these were dwarfed. There was now no need to syphon the bottom and even with no filter in the tank there was never any mulm. Observed through the bottom glass the gravel was always clean and full of healthy roots. This lack of trouble, and after about nine months the handful of *C. haerteliana* taken out for sale every two or three weeks was very welcome.

It was at this stage I was asked why some fish were going hollow with fins clamped whilst others thrived. No disease was apparent. The suffering fish were mostly swords, platies and guppies. But danios also were affected, the only egg-layers. Inquiries brought to light that a red swordtail of the original stock survived as did

two danios and several guppies, though they were not in best condition. Any of these species introduced recently very quickly went hollow and died, as did platies. Catfish, tetras, barbs, mollies and angels kept healthy and fed well, but barbs, mollies and angels remained small.

As the *Crypto.* had now taken over the tank, and only constant weeding kept enough swimming space for the fish, I could only give the opinion that perhaps it was making conditions which were toxic to livebearers only, except that the black mollies were not affected. We decided to test pH and expected acid readings because the thriving fish were the ones said to do best in slightly acid water. The readings were so alkaline we didn't believe them and checked the test kit. Repeats only gave the same result of over 8.0 pH.

We then dashed round all tanks with *C. haerteliana* and all were alkaline, varying in strength only in proportion of number of plants. We got samples from other people's tanks with the same results.

Another acquaintance now asked advice about his dying livebearers. Guppies and mollies did well, but stayed small, platies, swords and zebras went hollow and died. I advised taking out *C. haerteliana* or avoiding platies and swords. Next time I saw him he had thrown out the plant and his troubles disappeared.

Recent discussion with Ostram A.S. members brings new observations to light.

1. When *C. haerteliana* flourishes pH tests always show strong alkaline results.
2. Red platies and swords are quickly affected, those with no red pigment at all have not been observed to suffer. Not all of the colour varieties have been tried.
3. Some barbs, angels and mollies may not appear to suffer but growth is retarded.

Mr. Shore observes that platies in early stages will recover if treated with methylene blue as for white spot and returned to normal water.

Fish that have been in the water before the *C. haerteliana* took over are less affected. Newly introduced ones quickly die.

From these observations the following questions are posed.

1. Why are red pigmented livebearers more affected than others?
2. Why are red pigmented characins not affected, or are there hidden effects such as sterility?
3. What is the nature of the poison, if such it is, which is produced by the plant?
4. Are there any other *Cryptos.* which display similar effects?

This would appear to be good material for a thesis and I'm sure the tropical fish hobby would be helped by a proper scientific investigation into the subject.



from AQUARISTS' SOCIETIES

GENETICS was the subject of a first-class Lecture given by J. Stubbelt, at meeting of the Portsmouth A.S. held recently. The table show for the month was for single tail Goldfish varieties. The judge was J. Broadell, C.S.G.B. While the judging was taking place, a programme of slides was organised on Bruce Shrimp from Hindon A.S. The results of the table show were as follows—Goldfish: 1, F. Biscardi; 2, H. Hancock; 3, Shubunkins: 1, 2, 3 and 4, W. Evans. Best fish in the show awarded went to W. Evans for a Shubunkin.

THE officials of the Romford and Havantree A.S. remain unchanged for a further year with the exception of the Chairman, which is now in the hands of Mr. Thompson. The Secretary is Mrs. Heath, 336 Mawsey Road, Romford, Essex, the Show Secretary, Mr. J. Pym and the Treasurer, Mr. J. Wilson. For the benefit of prospective new members, slide shows and tape recorded lectures on illness, fish house construction, fish diseases and breeding, etc. have already been booked for next year's programme. Each meeting will commence with about fifteen minutes questions and answers so that any member new to the hobby has an opportunity of putting any queries he may have.

RECENTLY the British Aquarist Study Society (B.A.S.S.) held its seventh Annual General Meeting and Conference when the following members were elected to office: President: J. L. M. Judge; Chairman: Dr. G. Carr; Treasurer: F. Keene; Secretary: F. Tremble.

At the Conference in the afternoon, Mr. Colin Roe of Shirley Aquatics gave an excellent lecture, illustrated by various slides, on Tropical Marine Aquaria. This was a very good talk on a subject that provoked many questions and interest. In the time available, Mr. Roe could only touch lightly on the subject and it is hoped that he will be able to return at a later date for a more detailed account.

The second half of the meeting was a series of discussions led by certain members and taken up by the rest of the audience. The first topic was—"Man made fish are an improvement on Nature". R. Masland and B. Bacon voiced their opinions and after a lengthy discussion, it was generally agreed that there were cases for and against, but in general the choice was for the individual. Dr. Carr then talked on "Are Fish Clubs really necessary?", and after several interesting views it was agreed that Fish Societies were the backbone of the hobby. The meeting ended with a visit around the aquaria by kind permission of Dr. Gerny Veves.

THE Hounslow and District A.S. Annual Open Show was an outstanding success beyond even the Society's expectations. There were 607 exhibits and with such a tremendous show full details of individual winners of all classes cannot be given here but they will gladly be given to any exhibitor who contacts the Show Secretary, Mr. Ray Settery of 49 Longford Avenue, Bedford, Middlesex. The Best Fish Society award of the Show Trophy was won by Mr. Roy Higg of the Kingston Club with a Golden Danio and the top club was Hounslow and District Society.

Apart from the Open Show the normal club table shows continue to be very well supported and over 40 entries were booked at the last meeting.

The results were as follows: Barbs: 1, Roy Higg (Checker Barb); 2, Roma Brewer (Tiger Barb); 3, Bill Saunders (Tinsel Barb). Any Variety: 1, John Thomas (Severus); 2, Eric Sheppard (Wagtail); 3, Eric Sheppard (Norman's Handstand); 4, Eric Sheppard (Red Eyed Tetra).

The social side of the Club continues to flourish also, and a recent outing was arranged to London Zoo when the Society was conducted behind the scenes of the Aquarium. This was a very interesting and enjoyable day out.

THE Kelshley and District A.S. held their Annual Members' Show in October, with several members in attendance. The total Table Show was held, with the following results—Livebearers: 1 and 2, Mrs. Barrow; 3, Mr. Asquith; 4, B. White; 5, R. White; 6, A. Smith; 7, F. Remble; 8, H. Smith; 9, G. Carr and Misses: 1, 2 and 3, A. White; 4, Anabantids: 1 and 2, T. Cammisa; 3, Mr. Dearnsley; 4, Cichlids: 1, A. White; 2 and 3, A. Smith; 4, G. Carr and Misses: 1, R. Johnson; 2, A. Asquith; 3, B. White; 4, N. French; 5, and 6, C. Barnup; A.V. Pairs: 1, H. Smith; 2, P. Dearnsley; 3, N. French. The presentation Plaque for the Best Fish in the Show went to Mr. A. R. White with his Danio. The Judges were Mr. Carr and Mr. Firth.

A VERY successful Annual Show of the East London Aquarist and Pondkeepers' Association was held recently. A new renovation was to allow entries for Pairs of Mollies, Platies, Swordtails and Guppies. The Show in the main was for Tropical Breeding achievements, fish bred since 1st June, 1966 and divided into F.R.A.S. standards of "difficulty of breeding", not so in the usual way of making the classes A.V. Cichlid, A.V. Characin, etc., thus allowing an entry of any Fishers to compete with any other fish with the same difficulty of breeding "standard", as set down by the F.R.A.S. There were twenty furnished aquaria which added a great deal of colour and interest to the Show. The Open Club Best bred aquaria 24 - 15 - 12 for the I.G.M. Trophy was won by the East London Aquarist Club, the individual Furbished Aquaria 24 - 15 - 12 by Mr. A. Field, and the Class 12 - 4 - 8 was won by Mrs. K. Arncliffe. The award for the best plant of the Show went to Mrs. P. Harris with a most beautiful specimen of *Boltonia*.

The Open Breeders' entries of A.V. livebearers resulted in and these were divided into three classes. Class 1 with F.R.A.S. standard of difficulty of breeding—19 points and over was won by Mr. F. Victor with an entry of Emperor Tetras. Class 2, being for 18-14 points was won by Mr. A. Field with an entry of Cherry Barbs, and Class 3 was for the standard of 13 and under and this was won with an entry of Zebrafish by Mrs. P. Harris. As there were no entries for A.V. Livebearers with the F.R.A.S. standard of difficulty of 14 points and over, the class for the standard of 13 points and under was won by Mr. D. Smalley with his entry of Yellow Wagtail Platies. The classes for "Pairs of Livebearers" resulted in a lot for Mrs. P. Harris—Black Mollies; Mr. G. Gerny—Platies; Mr. P. Hives—Swordtails and Mr. J. Bentley—Guppies. The F.L.A.P.A. 5 star cup was won by Mrs. P. Harris and the 3 star Wade Trophy for Juniors by Mr. S. Mayhew who also won the "Gill Challenge Cup". Mr. A. Field won the Breeder's Achievement Cup with his entry of Ober Barbs which also won him the Manor Cup and the F.R.A.S. Shield; Mrs. P. Harris, the Credo Cup for her plant and the Olympia Cup for the cold water class was won by Mr. J. Linsell.

AT the November meeting of the Haverthorpe A.S. there was an interesting slide show about the British Aquarist Festival. Although they were slides on last year's show, it made an interesting evening for those who were unable to see it that year. The chairman Mr. Ray Higgson took some slides of this year's show and it is hoped in the near future that these will be shown.

The monthly table show was very well attended, there being about 30 entries. The class this month was for breeders and the winners were as follows: Specialised Breeders: 1, Master S. Enoch; 2 and 3, Master P. Kirby; A.O.V.: 1, Mrs. J. Dickinson; 2 and 3, Master P. Kirby; Junior Class: 1, Master A. Jobbins; 2, Master H. Chase; 3, Master P. Kirby. Anyone wishing to join the Society as a corresponding member please write or phone to the Secretary, Mrs. R. Halm, 29, Wellington Road, Leeds 12, Tel.: 21025. For information regarding admission as a member please contact the secretary.

The December meeting will be given over to a Christmas social evening. This is being organised by Miss Joan Dickinson and Miss Doreen Madgery, who are also preparing the supper. There will be also a table show for Gith and Loach.

THE chairman of the Torbay A.S., Mr. G. Thompson, gave an interesting talk on Cold-water fish at the October meeting. He brought along 12 varieties to demonstrate. A "House Aquaria" competition was arranged as was an instructional tour of "Aquariums, Biotope, Glass Terrarium". Further information can be obtained from Hon. Secretary, H. N. Allen, 21 Manor Road, Babboconch, Torquay.

MEMBERSHIP of the Eastbourne A.S. is beginning to increase and now totals twenty, and with a full programme planned for the winter it is hoped some old members who have been absent for some time will give their support and make these evenings a success.

Taking over the looking and maintenance of the local aquarium "The Blue Gem" has put quite a strain on club funds, and various schemes have been put forward to improve this state of affairs. The few members who took an interest in the Green this year all agree that the effort and work has been worthwhile, and have all learned a great deal. With all the problems of looking after tanks varying in size from three feet to twelve feet square, now sorted out, it is hoped that next year the Society will be able to put on a show of plants and fishes equal to anything in Southern England.

A hearty welcome awaits all Aquarists who would like to come along to the meetings held the first Monday of each month, at the Society's Clubhouse, The Blue Gem, Aquarists, Eastbourne. For all other information please contact the secretary, Colin George, 6 Hart Road, Eastbourne.

THE Bedworth Aquarist and Pond Society and Nuneaton A.S. held the first of their challenge shows at the Bedworth W.M.C. recently. Eighty-two fishes were on show. The judges were Mr. and Mrs. W. Eddles, Mr. D. Emery and Mr. W. Davies. The results were: Livebearers: 1, Mrs. S. Leigh (Guppy); 2, A. G. Bousley (Speckled Mollie); 3, Delves and Jones (Festral Platy); 4, T. Beasley (Black Mollie); Livebearers pairs: 1, P. Todd (Velvet Mollie); 2, Delves and Jones (Velvet Mollie); 3, Delves and Jones (Varanus Platy); 4, Mrs. P. Coombes (Tuxedo Sword); A.S.D.V. Tropical: 1, A. G. Bousley (Panchax Plethys); 2, B. Kenner (Kohli Loach); 3, D. Stringer (Harlequin); 4, Delves and Jones (Giant Danio); Anabantids: 1, P. Todd (Kissing Gourami); 2, Mr. and Mrs. R. Scally (Cambrai); 3, Mrs. S. Leigh (Dwarf Gourami); 4, J. Glover (Moonlight Gourami); Cichlids: 1, Delves and Jones (Angli); 2, Mr. and Mrs. R. Scally (Apistogramma Romboid); 3, R. Todd (Pseudotropheus Trewassani); 4, Mr. and Mrs. G. E. Cox (Nannacara Ananimo). The Best Fish in the Show was won by Mr. P. Todd with his Kissing Gourami. Points scored were: Bedworth 34; Nuneaton 17. While the judging was taking place, Mr. C. Skidmore organised a quiz. The evening prize was won by Mrs. J. Glover and Mrs. W. Eddles.

Results of an interesting table show for the Midlands Aquarist League were as follows: Rainbow, Danio, Killie: 1 and 2, R. M. Skidmore (Panchax Plethys); 3, Delves and Jones (Danio Malabaricus); 4, Mr. and Mrs. R. Scally (Panchax Plethys). Breeders

Liveries: 1. Mr. and Mrs. R. Scully (Blue Play); 2. Mr. and Mrs. W. Simpson (Black and White); 3. Mr. and Mrs. R. Scully (Blue Play); 4. Mrs. R. Coulson (Yellow Wagtail Play); Catfish and Loach: 1. R. Varden (Stone Loach); 2. Mr. and Mrs. R. Scully (Corydoras Myers); 3. K. Telle (Brown Corydoras); 4. J. Glover (Polka-dot Corydoras); Bear Fish in Show: R. Varden (Stone Loach).

THE Open Show results of the Raigate and Redhill A.S. were as follows: Club Furnished Aquaria Trophy: 1. Raigate and Redhill; 2. Furnished Aquaria Goldwater; 3. Raigate and Redhill; 4. Uxbridge; Club Furnished Aquaria Goldwater: 1. Raigate and Redhill; 2. S.P.A.S.S.; 3. Portsmouth Individual Furnished Aquaria: 1. Mrs. Stillwell (Portsmouth); 2. G. B. Bass (Raigate and Redhill); 3. R. Bagg (Kingston); 4. Miss Swaine (Uxbridge); A.V. Platy: 1. P. G. Glynn (S.P.A.S.S.); 2. H. G. Randle (Becknall); 3. T. J. Summers (Uxbridge); 4. Mrs. M. Nicol (Raigate and Redhill); A. V. Swordtail: 1. T. D. Smith (Hendon); 2. L. Pillington (Gosport); 3. J. Perrow (Gosport); 4. J. R. Howe (Wear End); A. V. Moby: 1. A. McCarthy (Carlisle); 2. H. Thompson (Uxbridge); 3. T. D. Smith (Hendon); 4. K. Devlin (Gosport); A.O.V. Livebearer: 1. N. Packman (Raigate and Redhill); 2. and 3. G. B. Bass (Raigate and Redhill); 4. S. G. Moore (Totterham); A.V. Barb: 1. R. McMillan (Raigate and Redhill); 2. R. Brad Bush (Dunstable); 3. T. D. Smith (Hendon); 4. S. G. Moore (Totterham); A.V. Characin: 1. G. E. Greenhalf (Kingston); 2. T. O. Summers (Uxbridge); 3. D. Bennett (Kingston); 4. R. Cooper (Kingston); A.V. Danio: 1. R. Barrow and W.C.M.M.; 1 and 4. R. Bagg (Kingston); 2. R. Carrott (Raigate and Redhill); 3. R. Armstrong (Becknall); 4. V. Dwarf Cichlid: 1 and 5. L. Pillington (Gosport); 2. R. Armstrong (Becknall); 4. N. Packman (Raigate and Redhill); 3. V. Angler: 1. J. Scamm (Raigate and Redhill); 2. E. D. MacLeod (Carlisle); 3. Mrs. Sherwin (Willenden); A.O.V. Cichlid: 1. G. E. Greenhalf (Kingston); 2. R. Armstrong (Becknall); 3. E. J. Carrigan (Brighton); 4. J. Stillwell (Portsmouth); A.V. Eggplant Goldfish: 1. P. Hibbert (Raigate and Redhill); 2. R. Cooper (Kingston); 3. D. Evans (Gosport); 4. D. Collier (Raigate and Redhill); A.V. Corydoras Catfish: 1. W. R. Sherwin (Willenden); 2. L. W. Wainwright (Becknall); 3. R. Bagg (Kingston); A.O.V. Catfish and Loach: 1. H. G. Randle (Becknall); 2. M. A. Carter (Becknall); 3. T. D. Smith (Hendon); 4. Mrs. Jordan (Becknall); A.V. Sumner Fish: 1. A. Marshall (Brighton); 2. T. D. Smith (Hendon); 3. R. McMillan (Raigate and Redhill); A.V. Labyrinth: 1. S. G. Moore (Totterham); 2. T. D. Smith (Hendon); 3. A. F. Halsey (Becknall); 4. G. Sorham (F.A.S.); A.V. Red Tail Shark: 1. G. B. Bass (Raigate and Redhill); 2. T. D. Smith (Hendon); 3. E. J. Carrigan (Brighton); 4. K. Gough (Gosport); A.O.V. Eel: 1. Mrs. Stillwell (Portsmouth); 2. G. E. Greenhalf (Kingston); 3. R. Rind; 4. S. G. Moore (Totterham); Breeder Livebearer: 1. H. G. Randle (Becknall); 2. J. E. Howe (Wear End); 3 and 4. A. McCarthy (Carlisle); Breeder Goldfish and Loach: 1. R. Armstrong (Becknall); 2. P. G. Glynn (S.P.A.S.S.); 3. R. A. Sauer (Woking); 4. F. G. Glynn (S.P.A.S.S.); Coldwater: Steadfast: 1. R. Whittington (Raigate and Redhill); 2 and 5. Miss Morris (Raigate and Redhill); 3. G. B. Bass (Raigate and Redhill); 4. Mrs. Smith (S.P.A.S.S.); Bramble Holes, etc.: 1 and 4. M. D. Chase (G.S.G.B.); 2. R. Eason (Willenden); 3. R. Whittington (Raigate and Redhill); Common Goldfish and London Shubunkin: 1. Mrs. Whittington (Raigate and Redhill); 2 and 4. A. F. Halsey (Cambridge); 3. W. Leach (Raigate and Redhill); Fleeting and Otoclin: 1 and 2. J. Linné (Barnford and Beconsfort); 3. R. Whittington (Raigate and Redhill); 4. Miss Morris (Raigate and Redhill); Broad Tail Moors and Comets: 1. V. R. Haas (Portsmouth); 2. Mrs. Wobb (Portsmouth); 3 and 4. R. Eason (Willenden).

Scottish and Basses: 1. J. Stillwell (Portsmouth); 2. V. R. Haas (Portsmouth); 3. R. D. and M. Dudley (S.P.A.S.S.); 4. V. P. Voysey, Native and Foreign; 1. K. A. Millhouse (Raigate and Redhill); 2. W. G. Rider (Portsmouth); 3 and 4. V. P. Voysey. There were 576 entries from twenty-eight societies.

AT the **Llanrwst Major A.S.'s** annual dinner Mr. D. Southgate presided. He welcomed the President, Alderman P. J. Smith, C.B.E. and the forty members and guests present. The Barry, Bridgend and Newport societies were represented. Mr. and Mrs. J. Wheeler of Knowbridge travelled over 80 miles to attend this social function. John Wheeler has been a friend of the members, and judging regularly at the Llanrwst shows since 1960. The President's daughter presented the Wing-Commander Smith Cup to K. Farran, a member of the year. The President presented his own trophy and Mr. and Mrs. Storey's Guppy Cup to R. S. Wigg and the Stampcup Cup to A. Rogers. Mrs. J. Wheeler presented the Miles Thomas Pencil Cup to A. Oberston. Mr. K. Farran presented the J. Holmes Memorial Cup to A. Oberston.

The chairman presented the replica cups to last year's winners. He thanked everyone for their support, and hoped they had enjoyed the evening.

Recently the Bridgend society were hosts to the Llanrwst members, for an inter-club table show, which was won by the Llanrwst society, with A. Rogers taking a first for his Platy variety. The judging was carried out by Mr. C. Lewis of Newport. The Llanrwst Major Society meet the second Tuesday, at the Llanrwst Hall, Llanrwst Major, at 7.30 p.m.

THE Thurrock A.S.'s annual show, representation at the S.A.E. introduction of an open table show, a member accepted as an F.B.A.S. class B judge, and a growing membership, are all items the society are pleased to be able to report.

The annual show was again most successful. The fish were judged by Mr. A. Jones, chairman of the F.B.A.S. The results were as follows: Guppy: 1. Mr. E. R. Nicol; 2 and 3. Mr. K. Appleyard; Mollie: 1 and 2. Mr. D. Durran; 3. Mr. K. Appleyard; Platy: 1 and 2. Mr. D. Durran; 3. Mr. E. R. Nicol; Swordtail: 1 and Best Fish in Show: Mr. P. O'Bryan; 2. Mr. J. Hartlebury; 3. Mr. K. Appleyard; Fighters: 1, 2 and 3. Mr. D. Durran; A.O.V. Lure: 1. Mr. J. Elvish; 2. Mr. D. Durran; 3. Mr. J. Elvish; 4. Mr. J. Hartlebury; Dan. Rat: 1. Mr. P. K. Hinkley; 2. Mr. J. Hartlebury; 3. Mr. P. K. Hinkley; Barb: 1. Mr. D. Durran; 2. Mr. H. Jones; 3. Mr. J. Elvish; Carlisle: 1. Mr. H. Jones; 2. Mr. P. O'Bryan; 3. Mr. P. K. Hinkley; Characin: 1. Mr. E. R. Nicol; 2. Mr. S. Handle; 3. Mr. D. Durran; A.O.V. Troop: 1. Mr. J. Hartlebury; 2. Mr. P. O'Bryan; 3. Mr. P. K. Hinkley; 4. Mr. D. Durran; Goldfish: 1. Mr. S. Handle; 2. Mr. D. Durran; 3. Mr. E. R. Nicol; Furnished Aquaria: 1. Mr. E. R. Nicol; 2. Mr. D. Durran; 3. Mr. R. Nichols; 4. Mr. J. Hartlebury. The Trophy Cup for Novice attaining highest number of points: Mr. P. O'Bryan.

The society are grateful to Mr. D. Durran and Mr. S. Handle for making the long journey to Manchester for the S.A.F., a first time venture by anyone from Thurrock and proved to be most successful. Their model of a "Yellow Submarine" with tanks mounted at various points attracted quite a lot of attention. Also on the table Mr. D. Durran and Mr. Handle set up a furnished aquaria with fish supplied by the society's president Mr. R. Nichols. Mr. D. Durran also entered his Fighters and came away with a first and second heat but congratulated on this and the consistent standard of Fighters he is producing which have won many open shows and Best Fish in Show awards this year. Other members who entered fish were Mr. E. A. Nicol and Mr. P. O'Bryan. In all a very successful first attempt.

The introduction of an open table show was discussed at recent meetings, a sub-committee set up reported favourably and the society has therefore decided that another "first time"

venture will be organized. There are still details to be ironed out but the date should be 20th April, 1968, the first Thurrock Aquarist Society's open table show.

Yet another feather in the society's cap is the acceptance of member Mr. E. R. Nicol by the F.B.A.S. as a class "B" judge, an appointment in itself well deserved. The Thurrock Aquarist Society's president, chairman, committee and members, wish someone congratulations a Merry Christmas and a Happy New Year.

THE Becknall and District A.S. open show results were as follows: Goldwater: Common goldfish: 1. J. Norris; 71 pts.; 2. W. Leach; 64 pts.; 3. J. Brites; 62 pts.; 4. E. Rowland; 62 pts.; Fancy goldfish: 1. W. Leach (Shubunkin); 84 pts.; 2. E. Leach (Shubunkin); 80 pts.; 3. L. Jordan (Great Shubunkin); 80 pts.; 4. C. P. Beavis (Great Shubunkin); 77 pts. A.O.V. Goldfish: 1. J. Stillwell (Purviswood Bass); 83 pts.; 2. E. Rowland (Daphnia); 78 pts.; 3. L. Jordan (Crucian Carp); 76 pts.; 4. R. Keeping (Sunfish); 73 pts. Tropical: Livebearers (excluding guppies): 1. R. Cooper (Merry Widow); 79 pts.; 2. A. Marshall (Linda Vittoria); 78 pts.; 3. G. Greenhalf (Marigold Platy); 75 pts.; 4. R. Armstrong (Lionel); 75 pts. Characin: 1. R. Cooper (Lancaster Splat); 85 pts.; 2. R. Armstrong (Blackford Petrol); 84 pts.; 3. O. G. Green (Hoodlunder); 83 pts.; 4. Mrs. C. A. Green (Hoodlunder); 82 pts. A.V. Labyrinth: 1. Mrs. G. Carter (Opelion Gouami); 83 pts.; 2. T. J. Summers (Black Lip Gouami); 82 pts.; 3. P. Merritt (Dwarf Gouami); 82 pts.; 4. R. Parkhurst (Dwarf Gouami); 81 pts. Danio, Rudeus, Mollie: 1. R. Dove (Giant Danio); 86 pts.; 2. W. F. and T. F. Melver (Rudeus Indochinensis); 79 pts.; 3. C. P. Beavis (Dwarf Rudeus); 77 pts.; 4. L. Jordan (Silver Danio); 75 pts. Barb: 1. R. Dove (Tinted Barb); 78 pts.; 2. Mrs. N. Jordan (Half Banded Barb); 77 pts.; 3. P. Bennett (Three Spot Barb); 76 pts.; 4. Mrs. N. Jordan (Half Banded Barb); 75 pts. Catfish: Corydoras: 1. L. Jordan (Leopard Cat); 80 pts.; 2. R. G. Cox (Corydoras Palustris); 79 pts.; 3. J. Norris (Corydoras Multilineatus); 78 pts.; 4. T. J. Summers (Leopard Cat); 77 pts. Catfish A.O.V.: 1. W. F. and T. F. Melver (Purgiticus Species); 90 pts.; 2. J. A. Wright (Shocking Loach); 84 pts.; 3. G. Greenhalf (Purgiticus Rudeus); 83 pts.; 4. T. J. Summers (Barnard Cat); 82 pts. Dwarf: 1. Mrs. N. Jordan (Red Finned Shark); 83 pts.; 2. R. Armstrong (Red Finned Shark); 82 pts.; 3. G. B. Bass (Red Tail Shark); 81 pts.; 4. R. Armstrong (Red Tail Shark); 77 pts. Dwarf Cichlid: 1. M. J. Davies (Ramses); 80 pts.; 2. M. Carter (Hansoni); 79 pts.; 3. R. Armstrong (Pelvic K.); 78 pts.; 4. P. Turkey (Pelvic K.); 75 pts. Cichlid A.O.V.: 1. P. Merritt (Eye Spot Cichlid); 86 pts.; 2. M. J. Davies (Pelvic K.); 83 pts.; 3. L. Jordan (Blue Acara); 80 pts.; 4. L. Jordan (Brown Acara); 79 pts. Gouami (male): 1. K. Baskin; 81 pts.; 2. H. C. Beech; 79 pts.; 3. K. Baskin; 78 pts.; 4. G. B. Bass; 77 pts. Gouami (female): 1. G. B. Bass; 80 pts.; 2. G. B. Bass; 77 pts.; 3. T. Duffy; 74 pts.; 4. C. Powell; 73 pts. A.O.V. Tropical: 1. R. Rowatt (Parrotfish Playtail); 85 pts.; 2. G. Greenhalf (Black Shark); 84 pts.; 3. Mr. J. Stillwell (Neon); 83 pts.; 4. M. Carter (Dwarf Betta); 83 pts. Breeder Livebearer: 1. L. G. Little (Yellow Wag Platy); 25 pts.; 2. R. G. Cox (Guppy); 74 pts.; Armstrong (Guppy); 73 pts.; 4. R. G. Cox (Guppy); 72 pts. Breeder Goldfish: 1. R. Armstrong (Neon); 79 pts.; 2. G. B. Bass (Lion Gouami); 74 pts.; 3. R. A. Sauer (Neon); 73 pts.; 4. R. Keeping (Dwarf Petmat Kribia); 73 pts. Aquarist Platy, A.V. Platy: 1. G. Greenhalf (Amann Sword); 82 pts.; 2. L. Jordan (Baby Tears); 81 pts.; 3. R. Dove (Twisted Vail); 81 pts.; 4. G. Greenhalf (Amann Sword); 80 pts. Furnished Aquaria: Individual Miniatures (4 in. tank): 1. G. B. Bass; 81 pts.; 2. B. Green; 91 pts.; 3. C. P. Beavis; 90 pts.; 4. Mrs. G. Carter; 88 pts. Furnished Aquaria: 1. Mrs. P. Baynton; 63 pts.; 2. L. Jordan; 62 pts.; 3. R. Armstrong; 61 pts.

AT the Annual General Meeting of the Yeovil and District A.S. Mr. D. S. Langdon a founder member of the Society was elected

President for a second year. The following officers were also elected: Chairman: T. C. Perry; Vice-Chairman: M. Elliott; Treasurer: C. Bushell; Secretary: A. Nicholls; Committee: B. Sisson, H. Wooding, W. Reeves, D. Pines, R. Cliff, F. Pines.

The main feature of the meeting was a decision to hold the first ever Open Show in 1968. This will be in place of the Society's annual show, the date to be announced later. It is hoped that this show will be supported by aquarists over a wide area in the South and West of England. The following officials were elected to organise this event: Show Manager: J. Holbert; Show Secretary: Mrs. T. Gilford; II King Street, Yeovil, Somerset; Committee: B. Watts, T. O'Rourke, T. Ward.

The Chairman of the Society, T. C. Perry, recalled the success of the members at Open Shows during the past year, notably the winning of the W. Butler Cup for the best Goldfish by N. Wright and the Victor Capaldi Cup for the semi-fish Fawnish Aquarist set up by D. Silver on behalf of the Society at the Bristol Show. The secretary is Mr. M. Elliott, 100 Millford Road, Yeovil.

At the October meeting of the Barry A.S. Mr. Brockham, the President and Mr. Fove and Mrs. Carey, Vice Presidents, were among the members present. At this meeting, which was the Annual General Meeting of the Society, the new Officers were elected as follows: President: Mr. J. Brockham; Vice-President: Mrs. P. Curry and Mr. W. Fove; Chairman: Mr. B. Light; Vice-Chairman: Mr. S. Nelson; Hon. Secretary: Mrs. V. Tippins, 30 Congo Terrace, Barry; Assistant Secretary: Mr. G. Tippins; Show Secretary: Mr. A. Robertson; Assistant Show Secretary: Mr. P. Plover; Treasurer: Mrs. S. Storr.

Mr. K. Parnott of Llanover Major Aquarist Society was present and gave a very interesting talk on Marine Tropicals. He discussed the many difficulties in keeping Marine fish and also how to successfully set up a Marine Aquarist.

The Hockland and Balwell A.S. was formed only twelve months ago and at the end of the first year had a total of sixty-four members on its books.

The Committee which was formed have done a wonderful job and made the running of the society a great success. There has been a table show at each fortnightly meeting with additional attractions such as slide shows, lectures and a three leg competition with the Mansfield, and the Ramworth Aquarist Societies. Members of the society have stocked and maintain a tank in the local Old People's Home where there is a great interest in the fish.

The highlight of the year was the Annual Dinner which was attended by fifty members and their friends. The presentation of the Annual Shield for the highest number of points in the year's table show was made by the Chairman, Mr. T. Power to Mr. G. Wardlaw. Next year's table show programme has been made with the novice in mind, with the idea of keeping up the newcomer's interest. Included in the programme are evenings laid aside for the sale of fish and equipment which the members may bring along to help raise their club funds.

At the Annual General Meeting of the members of the Committee who wished for re-election were returned. There was also the addition of a President, Mr. L. Simpson, who has been a very active member, and together with Mr. T. Smith has given very many prizes, etc., in the past year.

The Committee is as follows:—Chairman: Mr. T. Power; Secretary and Show Secretary: Mr. M. T. Harrington, 5 Greenwood Vale, Hockland; Nurse: Asst. Secretary: Mr. J. Foster, 15 Sandringham Road, Seaton Dale, Nottingham; Treasurer: Mr. K. Whitaker; Asst. Treasurer: Mr. Vickers; Librarian: Mr. B. Kirk; and a new post of Pandemic: Mr. J. Johnson. Committee members are: Mr. T. Smith, Mr. Garrett, Mr. M. Howe, Mr. G. Richardson and Mr. A. Reid.

A warm welcome is extended to anyone who is interested in the hobby and particulars can be obtained from the secretary.

RECENT club activities of the Uxbridge and District A.S. have included a number of well supported table shows, the entries bringing very complimentary remarks from judges on their quality. A competition for the best home furnished aquarium was won by Mr. H. Thompson, second being Miss L. Stevens and the third Mr. A. Wright. The entries were judged by show secretary, Mr. P. Gieger.

A number of highly entertaining and interesting illustrated lectures have been given, also a brain trust was held in conjunction with the Hemmings and Willford societies. Supporting the brain trust was a twelve-a-side competition with the other two clubs and in a close finish Willford finished first. Members have also been successful at open competition shows, winning prizes at Amersham, Kingston, High Wycombe, Radlett, Hemmings, Mid-Herts, Bracknell and Basingstoke.

A Lecture by Mr. Mason-Smith on tropical fish breeding, and a trip to Kenya, were enjoyed by a large audience, as was the Highland Water Garden slide show. An outing to the London Zoo was well supported in spite of the bad weather. The club social will be held in December, and we hope to see plenty of members and friends enjoying themselves.

At the first Open Show of the Mid-Herts A.S. the number of entries was over 400 with spectators coming from places as far away as Nottingham, Croydon and Kingston. The number exceeded all expectations and great interest was shown by the local public. Several new members were also enrolled. The P.F.A.S. shield and "Aquarist" for the best fish in show was won by Mr. A. Jamieson, with an Albino Guppy. The rest of the results were as follows: Fawnish Aquarist: 1, A. White; 2, J. Baines; 3, C. Withers; A.V. Barb: 1, Mrs. H. Dennis; 2, D. Laffort; 3, P. Burgess; 4, D. Laffort; A.V. Chairman: 1, R. Cooper; 2, Mrs. H. Dennis; 3, T. D. Smith; 4, G. Greenwood; Dwarf Cichlid: 1, M. J. Davis; 2, D. Stewart; 3, D. Laffort; 4, G. Greenwood; A.O.V. Goldfish: 1, A. F. Hulver; 2, G. Greenwood; 3, W. Holmes; 4, A. Jamieson; Labeonella: 1, J. D. Smith; 2, A. Jamieson; 3, Mrs. H. Dennis; 4, T. J. Summers; Fighery: 1, D. Marshall; 2, Mrs. H. Dennis; 3, T. D. Smith; 4, A. White; Ragging Tooth Carp: 1, D. Laffort; 2, J. Soames; 3, D. Hart; 4, R. Cooper; A.O.V. Toppond: 1, T. D. Smith; 2, A. Jamieson; 3, G. Greenwood; 4, J. Ashmore; A.O.V. Cichlid: 1, T. J. Summers; 2, T. D. Smith; 3, D. Laffort; 4, H. J. Thompson; A.O.V. Guppy and Labeonella: 1, A. Jamieson; 2, D. Parvall; 3, T. D. Smith; 4, C. F. Spencer; A.V. Male Guppy: 1, D. Parvall; 2, G. Greenwood; 3, R. P. Ramsey; 4, L. Wether; A.V. Female Guppy: 1, W. Holmes; 2, C. Powell; 3, L. Wether; 4, Cliff; Two-spotted: 1, T. J. Hennessey; 2, Mrs. H. Dennis; 3, T. J. Hennessey; 4, R. Savage; Molluscs: 1, H. J. Thompson; 2, Mrs. H. Dennis; 3, C. Withers; 4, T. D. Smith; Plants: 1, T. J. Summers; 2, T. D. Smith; 3, T. G. Hennessey; 4, G. Greenwood; Dishes, Basins: W.C.M.A.: 1, W. Holmes; 2, D. Stewart; 3, D. Laffort; 4, H. J. Thompson; Most Uncommon Fish Class: F. P. Ray, Mr. T. D. Smith.

THE classes, and results of the Bedford A.S. members table show were as follows: Livebearers: 1, D. Parkin (Pace); 2, J. Hodgkinson (Fawnish Guppy); 3, T. W. Bury (Male Nanyoi); 4, R. P. Ramsey; 5, Mrs. A. Firth (Zucker Barb); 6, P. Moorhouse (Royal Barb); 7, Mr. and Mrs. A. Firth (Tiger Barb); Charridae: 1, P. Burtis (Grimpey Tern); 2, C. Holdsworth (Phanagramma Intermedia); 3, Mr. and Mrs. A. Firth (Hooding Heart); Catfish and Mormon: 1, J. Hodgkinson (Nobolomochus Pulchricornis); 2, C. Holdsworth (Fundulus); 3, P. Burtis (Red Tail Black Shark); Coldwater: 1, Mr. and Mrs. G. Holmes (Shubunkin); 2, P. Moorhouse (Oranda); 3, Mr. and Mrs. G. Holmes (Shubunkin); Fishers: 1, P. Burtis (Head Hatter); Goldfish: 1, Mr. and Mrs. G. Holmes (P. Fasciata); 2, T. W. Bury (Ramirez); 3, L. R. Taylor (P. Goussier); 4, Ambrose; 5, P. Burtis (Thick Lip); 6, T. W. Bury (Thick Lip); 7, Mr. and Mrs. G. Holmes (Moonlight); A.O.V.: 1, C. Holdsworth (Beta Hymenophys);

2, C. Holdsworth (Cory Capata); 3, Mr. and Mrs. A. Firth (Black Knoll Fish); 4, accorder Lovelace; 5, D. Pines (Wood Plant); 6, C. Holdsworth (III-Pin Sword); 7, Boudier (Egglayer); 8, Mr. and Mrs. A. Firth (opoides Pericopron); 9, C. Holdsworth (Aphronotus Australis); Plants: 1, P. Moorhouse (Spartanock); 2, P. Moorhouse (Echinostoma Turcicum); 3, P. Moorhouse (Panicum).

THE Independent A.S. regret to announce the retirement from office of the secretary, Mr. J. Chapman. Mrs. Rosalind of 337, Orpington Road, Enfield, Middlesex, has been elected to fill the office, and the club would like to take this opportunity to wish her luck in her new job.

The Society is in a favourable position to win the Six Club Competition this year, after narrowly missing it last year. The club meets every Monday evening at 9 p.m., Motspur School, Hartley Road, London, N.7, and has an interesting programme of events for the current quarter. It includes many shows and illustrated lectures of various aspects of fish-keeping. New members are always welcome on any Monday evening.

THE Macclesfield A.S. held their annual general meeting at the Boys Club, Oxford Road, recently when the following officials were elected: Chairman, Mr. S. Cass; Vice chairman, Mr. R. Davison; Secretary, Mr. F. Housworth; Show Secretary, Mr. H. Wilson; Mrs. E. Wilson.

At the October meeting of the Pontefract and District A.S. Mr. R. E. Hampson, recently elected to the office of secretary, was very well attended and by a number of members with a slide show from the U.S.A. entitled "The Brain-Walker Show". Mr. Hampson followed the slides with a very good talk on varying subjects. Results of the Table Show were: Novice Class: 1, E. Gates; 2, J. Toole; 3, S. Callon; Fawnish Aquarist: 1 and 2, Piper and Goodall; 3, I. A. Thompson; Mares, Piper and Goodall were presented with the "Trophy of the Month".

THE 8th round in the Championship Cup Contest of the Crawley College A.S. was held recently and the results were as follows: 1, Mrs. J. H. Partridge (Nannulus Anomalus) 77 points; 2, Mrs. J. H. Partridge (Barbus Maculatus) 78 points; 3, Mr. Wain (Kribia Cichlid) 75 points. The judge was Mr. D. Ellis, P.F.A.S. With only one more round to be decided in the Championship, the leading contenders so far are, last year's champion Mrs. J. H. Partridge 19 points, Mr. R. E. A. Partridge 9 points, Mr. Wain 9 points, Mr. T. Guggin 6 points.

A FIRST Area Invention Year-Old Show was held by Cambridge and District A.S. recently. The class "best show ever" was most evident this time, even though in 2 different hull, and it seems it may be considered to hold a first East Anglian open show in Cambridge at a future date.

Over 200 entries were judged by Mr. Tomkin, Mr. K. Nair and Mr. P. A. Ward. Comments by the judges were of "a great show and some excellent entries". Cambridge members also competed for their own Society Trophies, but only the Area Invention Show awards are given. "Best fish in the show" was an X-ray (Pseudis Radialis) owned by Mr. G. F. Birt of Cambridge, and the results were as follows: Club: Fawnish Aquarist: 1, Cambridge; 2, Bedford; 3, Bury St. Edmunds; Individual Fawnish Aquarist: 1 and 3, R. E. Edney (Cambridge); 2, K. Able (Cambridge); A.V. Goldwater Fish: 1, and 2, K. Able (Cambridge); 3, R. E. Edney (Cambridge); Guppy: 1 and 2, R. A. Ott (Cambridge); 3, A. R. Foster (Bury St. Edmunds); A.O.V. Livebearers: 1, G. Kirby (Dunstable); 2, Mr. Jeffrey (Dunstable); 3, R. A. Ott (Cambridge); Anabantid: 1, J. and P. L. Goussier (Cambridge); Barb: 1, G. P. Riven (Cambridge); 2 and 3, R. A. Ott (Cambridge); Goldfish: 1, R. Sauerbrenner (Bedford); 2, R. P. Riley (Bury St. Edmunds);

A. A. Dardin (Bedford). Chessie: 1, G. P. Ryan (Cambridge); 2 and 3, D. Lang (St. Edmunds). Cichlids: 1, Mr. and Mrs. Jeff (Bedford); 2, D. Dent (Cambridge); 3, S. Hillwood (Cambridge). A.O.V. Guppies: 1, A. B. Foster (Illy St. Edmunds); 2, R. K. Edley (Cambridge); 3, G. P. Ryan (Cambridge); 4, G. P. Ryan (Cambridge); 5, D. Dent (Cambridge); 6, Mr. and Mrs. Jeff (Bedford); 7, R. Shary (Cambridge). Egg-layers Brood: 1, P. Harrington (Cambridge); 2, Mr. and Mrs. Jeff (Bedford); 3, R. K. Edley (Cambridge). Plants: 1, R. A. Ott (Cambridge); 2, R. Shary (Cambridge).

DETAILS are being regarding the activities of the Bedford & District Aquarists & Pond-keepers Society during the last two months.

In early September the Society held one of its informal meetings when an auction of fish and plants took place between members. The September table show was well supported and the winning entries in the three classes were as follows: *Neoburinus*: 1 and 3, Mr. Brahm; 2 and 4, Mr. Berger. Male Guppies: 1, Mr. Phillipson; 2, Mr. Ashinger; 3, Stephen Hartman; 4, Mr. F. Hartman. Female Guppies: 1 and 2, Mr. J. Hartman; 3, Mr. Barb; 4, Stephen Hartman. Two meetings were held in October, and at the first of these a welcome return visit was made by Mr. Skilton of Chelmsford. A forum on the subject of tropical aquaria was conducted by Mr. Skilton when such matters as temperature control, contents and planning were discussed. This was a very useful programme and of practical help to new members in particular. The table show for October, the last of the present series, was for Breeding Class, tropical or coldwater fish, and from very good entries the winners were: 1, Mr. Woodley (Orsdran); 2, Mr. Brahm (London. *Strobilina*); 3, Mr. Roady (Angli Fish). Mr. Brahm also won an award for his entry—a Black Moor—in the Twin Tailed Goldfish class. A table for aquarium equipment was won by Mr. Finch.

The meeting held a week later was the society's Annual All Classes Table Show—judged by Mr. John Brydon. There were nearly 100 entries in the seventeen classes and certificates were awarded for the first, second and third in each class. In addition three prizes were to be presented as follows: Best Egg-layer, Mr. W. Rowe (Planted Goldfish); Best Livebearer, Mr. Sheehan (Black Lyre Tailed Mollie); Best Janitor Entry, Mr. Simpson (Paradise Fish).

Programmes arranged for the next three meetings include a tape and slide show for November, a film show for December, and the annual prize-giving and a talk or film for January. Anyone interested will be welcome at future meetings, held on the second Monday evening of each month at St. Laurence's Church Hall, Dunnington Avenue, Berkhamstead. Further details of the Society can be obtained from the Secretary, Mr. R. Ruth, 13 Dunchford Road, Dagenham.

DETAILS of the final table show in the three Counties beetle leagues, held by Becknell and District A.S. were: Best Three Fish: 1, Becknell (*Syngnathus Robini*); 83 pts; 2, Dinton (*Glofinight Tetra*); 91 pts; 3, Reading (Red Platy); 80 pts. Club points gained: Becknell, 94; Becknell, 90; Dinton, 75; Basingstoke, 79. This gave the overall points from the year as follows: Becknell, 311 pts, Reading 277 pts, Dinton, 204 pts, Basingstoke, 174 pts. The cup for this competition has been retained by Becknell.

The Amersham and District A.S. second open show was held in September and attracted 157 entries within sixteen different classes. This was approximately double the number received last year. Exhibits included furnished aquaria, mini-tanks, coldwater and tropical fish. They were judged by Mr. and Mrs. F. Wain and the prizes presented by the chairman, Mr. J. K. Harding. A shield given for the Best Fish in the Show was won by Mr. T. D. Smith (Hendon). Mr. Smith's entry a spring net, also qualified for the award from The

Aquarist. Prizes were in the various classes are listed below, in order of merit: Guppies, male A.V.: 1, C. Paswell; 2, T. D. Smith; 3, R. Leyland. Mollies A.V.: 1, H. J. Thompson; 2, T. D. Smith; 3, T. D. Smith. Plants A.V.: 1, P. H. Hillwood; 2, R. H. Field; 3, R. Welsh. Swords A.V.: 1, B. L. Fulger; 2, C. Paswell; 3, P. H. Hillwood. Barbs A.V.: 1, P. G. Ganger; 2, R. Keating; 3, T. D. Smith. Characins A.V.: 1, T. D. Smith; 2, R. North; 3, J. W. Tibbery. Labyrinth A.V.: 1, P. H. Hillwood; 2, P. H. Hillwood; 3, Mrs. G. H. Fulger. Gals A.V.: 1, T. J. Summers; 2, T. D. Smith; 3, B. L. Fulger. Cichlids A.V.: 1, D. Cowan; 2, R. Leyland; 3, G. Rutland. Loaches A.V.: 1, P. Ganger; 2, R. Keating; 3, M. G. Claver. Danios, Raddons, Minnows: 1, P. Ganger; 2, R. Paswell; 3, Mrs. B. Swallow. Fishers: 1, T. D. Smith; 2, Miss M. Sherman; 3, A. Welsh. A.O.V. Tropical Fish: 1, T. D. Smith; 2, R. Keating; 3, P. Ganger. 10 in. by 50 in. by 10 in. Parrotfish-Tank: 1, A. Welsh; 2, G. Harris. Mini-Tank: 1, A. Welsh; 2, J. S. Young; 3, R. Welsh. Coldwater Fish: A.V.: 1, V. P. Voysey; 2, T. D. Smith; 3, W. R. Sherwin. Best Fish of the Show: T. D. Smith.

The society meets on the first and third Wednesdays in the month at the Amersham Community Centre across. Prospective new members are welcome. Details may be obtained from The Secretary, Mrs. V. Keating, 82 Townsend Road, Chesham.

An inter-society show was staged by the Alreborough & District A.S. Members of societies from Huddersfield, Keighley, Leeds, Wakefield, Bradford, Mirfield and the best society, Alreborough, estimated a total of 157 entries, and results were as follows: Novelty Adult Scene: 1, J. Kay (Alreborough). Parrotfish Mini-Tank: 1, Mrs. M. Rose (Huddersfield). Breeders: 1, C. Burnap (Alreborough); 2, J. Reynolds (Wakefield). A.V. Pairs: 1, J. Brown (Mirfield); 2, S. Leatham (Mirfield); 3, K. Emma (Alreborough). A.O.V.: 1, J. Reynolds (Wakefield); 2, P. Barrett (Bradford); 3, J. Brown (Mirfield). Characins: 1, J. Whitley (Alreborough); 2, J. Longbottom (Mirfield); 3, E. Hensell (Mirfield). Cichlids: 1, L. Thompson (Mirfield); 2, R. Taylor (Bradford); 3, Mrs. M. Maddison (Huddersfield). Anabantids: 1, J. Robinson (Alreborough); 2, R. Lister (Alreborough); 3, P. Barrett (Bradford). Catfish and Loach: 1, L. Kay (Huddersfield); 2, Mrs. F. McCourt (Leeds); 3, B. Mearns (Alreborough). Livebearers: 1, B. Leagar (Huddersfield); 2, Mrs. F. Henson (Alreborough); 3, Mrs. F. McCourt (Leeds).

The Plaque for the Best Fish in Show was won by L. Thompson of Mirfield, and the "Severan Cichlid Plaque" for the society gaining most points went to the best society Alreborough, who gained 20 points, followed by Mirfield with 16 points, Huddersfield were third with 10 points.

The feature of the October Enfield & District A.S. monthly meeting, was a T.V. nature film "Beat Through". The film included the breeding habits of the "Millers Thumb" (or Logger Head). This was interesting because the camera had had "access" in the tank during filming and one could hear the "clicks" the males made when attracting the female. Very similar to the notes made by the male Angel Fish. Also in the film were Crested Newts and Wood Spiders. The breeding habits of both these were filmed.

Following this there was a quiz come discussion on fish diseases, their symptoms and cures, also various problems members have had in trying to cure diseases. The table show was for A.V. Catfish or Loach, Results: 1, T. Mann (Pimodell); 2, Miss C. Collins (Pimodell); 3, H. Seymour (C. Myers). Mr. R. Senior judged.

The Goldfish Society of Great Britain held their tenth annual convention at the Chelms Community Centre in October. There were a record number of 144 entries in the 12 classes, the judges being Captain L. Betts,

W. Wilson and J. Blandell. During the afternoon Mr. Colin Roe, of Shirley Aquatics, gave a most interesting talk illustrated with colour slides.

Cephalopods were then conducted at section of quality Goldfish. The results and points were as follows: *Singulid* (adult): 1, H. T. Jago, 80 pts; 2, L. Biny, 79 pts; 3, D. Morris, 77 pts; 4, H. T. Jago, 76 pts. *Singulid* (juv.): 1, D. Morris, 84 pts; 2, D. Morris, 81 pts; 3, R. M. Whittington, 71 pts; 4, R. M. Whittington, 68 pts. *Tetrazin*: 1, D. Morris, 80 pts; 2, J. Linn, 78 pts; 3, J. Linn, 75 pts; 4, D. Morris, 72 pts. *Globe-eye*: 1, S. T. Tibbie, 82 pts; 2, S. Tibbie, 80 pts; 3, M. Eason, 79 pts; 4, R. Eason, 77 pts. *Brachycephaly*: 1, J. Linn, 72 pts; 2, R. Berger, 68 pts; 3, R. Dudley, 67 pts; 4, R. M. Whittington, 66 pts. *Pearlfish*: 1, C. V. Smith, 71 pts; 2, C. V. Smith, 70 pts; 3, J. Blandell, 68 pts; 4, M. D. Goss, 68 pts. *Celestials*: 1, R. Eason, 82 pts; 2, R. Eason, 75 pts; 3, J. Biny, 72 pts; 4, J. Blandell, 62 pts. *Bubble-eyes*: 1, R. Dudley, 78 pts; 2, P. A. Lowe, 77 pts; 3, P. A. Lowe, 74 pts; 4, J. Blandell, 68 pts. *Common Goldfish*: 1, P. E. Williamson, 87 pts; 2, H. T. Jago, 86 pts; 3, H. Berger, 81 pts; 4, H. Berger, 78 pts. *London Strabomus*: 1, G. King, 83 pts; 2, G. King, 79 pts; 3, G. King, 75 pts; 4, W. Lynch, 74 pts. *Fantails*: 1, J. Linn, 86 pts; 2, J. Linn, 85 pts; 3, D. Morris, 83 pts; 4, R. M. Whittington, 82 pts. *Orandas*: 1, H. T. Jago, 78 pts; 2, P. Goss, 76 pts; 3, J. Blandell, 71 pts; 4, B. Herbert, 68 pts. *Best Fish in Show*: R. D. Eason, *Celestid*.

DURING October Leamington and District A.S. were given a talk at their last meeting by Mr. Twissleton and Mr. Blackwell on *Burpitts* and *Amphibians*. The results of the table show were as follows: A.V. Barb: 1, Mrs. J. K. Smith (Cherry Barb); 2, Mrs. J. K. Smith (Nigger Barb); 3, J. Thomas (Rory Barb); A.V. Platy: 1, P. S. Thomas (Pearl Platy); 2, J. Barlow (Platy varietal); Tropical Pairs: 1, Mrs. J. K. Smith (*Nomophila striata*); 2, Thomas (*Vallinella species*); 3, Master A. James (*Sagittaria striolata*); 4, Master A. Collins (*Indian Fern*).

The second meeting was the eagerly awaited final results of the home aquaria competition which were as follows: 1, J. Thomas; 2, Mrs. J. K. Smith; 3, J. Morris; 4, Master R. Sherr (native marine).

THE Bagby and District A.S. monthly newsletter gives the following completed results: *Burpitt* Society: 1, Miss C. Bingham, 335 pts; 2, R. W. Linday, 230 pts; 3, R. Maltin, 225 pts; 4, N. Eason, 195 pts; 5, T. Wood, 120 pts; 6, A. C. Webb, 105 pts; 7, R. Lane, 70 pts; 8, R. Wright, 65 pts. *Pearlcap Cup* (Breeding): 1, R. Fox, 450 pts; 2, R. V. Spald, 400 pts; 3, A. Bingham, 380 pts; 4, D. Bonyer, 30 pts; 5, H. Harris, 20 pts. The winners of these two competitions and the winner of the Home Aquaria Competition will be presented with a plaque at the annual dinner.

THE Maresfield A.S. table show for October resulted as follows: Guppies: 1 and 2, N. Kirby; 3, N. Peterson. Swords and Plants: 1, N. Peterson; 2 and 3, K. Parker. Mollies: 1, E. Mappert; 2, E. Piers; 3, R. Moorcroft. Barbs: 1 and 2, J. Robinson; 3, R. Moorcroft. Small Characins: 1 and 2, P. Mulla; 3, S. Tickle. Large Characins: 1, R. Moorcroft; 2, J. Robinson; 3, E. Mulla. Dwarf Cichlids: 1 and 2, W. Smith; 3, F. Mulla. Large Cichlids: 1, R. Moorcroft; 2, R. Green. Anabantids: 1, R. Moorcroft; 2, F. Mulla; 3, T. O. Wrayle. Rasboras and Danios: 1, R. Moorcroft; 2, W. Smith; 3, S. Tickle. Catfish and Loach: 1 and 2, F. Mulla; 3, J. Robinson. Pairs: 1 and 2, R. Moorcroft; 3, J. Doherty. A.O.V.: 1, S. Tickle; 2, S. France; 3, R. Moorcroft. Juniors: 1, J. A. Cobb; 2 and 3, N. Kirby.

THE following officers were elected for 1967/68 by the Bethnal Green A.S. Chairman: A. W. Collins, Treasurer: J. Hays, Show Secretary: J. Day, Secretary: L. Smith, 2, Macey Road, Holloway, N.19. The society meets each Tuesday at the Bethnal Green Institute, 229 Bethnal Green Road, London, E2 and those wishing to join are invited to contact the secretary.



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Red Wag Swords	3	
Black Wag Swords	3	
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NEW TROPIC MARIN

ARTIFICIAL SEA SALT WITH GUARANTEE

5 GALLON SIZE 9/-—POSTAGE 3/- 20 GALLON SIZE 32/6—POSTAGE 4/6

This salt makes artificial sea-water almost indistinguishable from natural sea-water

TROPICAL & HARDY AQUARIUM PLANTS OVER 200 SPECIES GROWN, SEND S.A.E. FOR LIST

PLEASE NOTE—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 8 miles from Birmingham, Midland "Red" Bus No. 150 from Bus Station, Birmingham, passes the door, slight at "The Crown," Monkspath.

HOURS OF BUSINESS—Weekdays 10 a.m.—5 p.m. Sundays 10 a.m.—12.30 p.m. for sale of plants only.

CLOSED ALL DAY EVERY MONDAY

TERMS OF BUSINESS—Cash with order please. Fish sent by rail. Tropical minimum order £7-10s., insulated container and cartage 10/- Cold water minimum order £3 plus 10/- can and cartage. Plants by post (minimum order 10/-) please add 2/6 post and packing.